



Remuneration of Board Members in a Two-Tier System: The Indonesian Evidence

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Abstract

This paper examines the determinants of remuneration level of board members in a developing economy that adopts a two-tier board structure system. Corporate governance structure, firm-specific characteristics, and firm performance are hypothesized as significant determinants. The sample consists of 442 firm-year observations, comprising 255 listed firms on the Indonesia Stock Exchange (IDX) in the financial years 2006 and 2007. I provide empirical evidence that firm size and the number of board members are positively associated with remuneration level. Smaller firms are found to expend higher proportion of their financial resources to compensate their board members. Further, this study investigates pay-performance sensitivity and reveals that changes in the firm's market value are positively associated with changes in remuneration level.

Keywords: Board remuneration, corporate governance, pay-performance sensitivity, two-tier board, Indonesia

1. Introduction

In a corporation, where the separation between ownership and control exists, agency problems may arise because the management may not behave in the best interests of the shareholders (Jensen and Meckling, 1976). Given this condition, internal and external corporate governance mechanisms play important roles in minimizing the principal-agent conflicts. These governance mechanisms include ownership structure, board size, board independence, board meetings, and auditor choice,



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among others, which are well-established in the literature. Another governance mechanism gaining wider and wider attention in the literature is the remuneration structure of board members or top executives, which is also viewed as an important tool in minimizing the agency problems (Dong and Ozkan, 2008). Jensen and Murphy (1990) argue that it is appropriate for the firm to pay the management on the basis of the shareholders' wealth, since maximizing the wealth is the goal of the firm. Hence, the remuneration scheme is considered significant to motivate executives to perform their managerial duties in line with the best interests of the shareholders, as well as to recruit and maintain high-quality managers (Anderson and Bizjak, 2003).

As calls for better corporate governance increase, compensation structure is getting widely addressed in the literature. As counted by Hallock and Murphy (1999), studies on executive pay have grown from one or two papers per year before 1985 to sixty papers in 1995. In the financial economics literature, mostly based on the agency theory, scholars have attempted to investigate the linkage between compensation structure and a number of variables, such as firm performance (e.g. Jensen and Murphy, 1990; Bushman et al., 1996), corporate governance structure (e.g. Core et al., 1999; Newman and Mozes, 1999), capital structure (John and John, 1993), and investment behavior (Bizjak et al., 1993). In other disciplines, previous studies have investigated the association between executive pay and various aspects, including earnings management (Holthausen et al., 1995), industrial regulation (Hubbard and Palia, 1995), strategic interactions (Aggarwal and Samwick, 1999), and social comparisons (O'Reilly et al., 1988).

It is important to note that previous research on the determinants of compensation structure is largely dominated by US studies. Public disclosure of executive compensation in the US has long been regulated (Andjelkovic et al., 2002; Brunello et al., 2001), resulting in an extensive body of empirical studies using the country's data. On the other hand, such studies outside the US are



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relatively limited, partly due to data availability issues (Unite et al., 2008). Empirical evidence from developed markets is provided by studies in the context of the UK (Laing and Weir, 1999), Japan (Basu et al., 2007), Italy (Brunello et al., 2001), Germany (Kaplan, 1998), and Hong Kong (Cheng and Firth, 2006), among others. Such evidence from emerging markets, where public disclosure of executive compensation is relatively weaker, is unsurprisingly scarce. Researchers have conducted studies using the data from Bulgaria (Jones and Kato, 1996), China (Firth et al., 2006), the Philippines (Unite et al., 2006), and Malaysia (Abdullah, 2006; Abdul-Wahab and Abdul-Rahman, 2009), among others.

The purpose of the present study is to examine the determinants of compensation structure of the Indonesian listed corporations. This study contributes to the knowledge in three important ways. First, I extend the existing literature on director compensation by examining such an issue in a developing economy that has different regulatory and social environments from those of developed economies, where most previous research has been conducted. Indonesia, which is one of twenty largest economies in the world, has an emerging capital market that attracts growing foreign investments. Second, this paper focuses on an economy that adopts a two-tier board system. Indonesia adopts two-tier system, like such countries as Germany, the Netherlands, Austria, and China, where corporations shall have supervisory and management boards. Hence, it extends the scope of previous studies that are mostly based on economies adopting unitary board system. Third, as an emerging market, Indonesia already has a system of corporate governance regulations, but the practice is still relatively left behind international norms. Additionally, compensation structure of the Indonesian listed firms is relatively well-kept secret and not disclosed to the public. From my observation, there are very few listed firms that disclose the detail of compensation elements and levels for each individual board member. Further, most listed firms in Indonesia are family-controlled (Claessens et



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al., 2000), making the secrecy of the compensation package is more prevalent. This condition leads me to employ several measures of compensation level in my models to provide more comprehensive insights.

The present paper is organized in the following manner. Section 2 reviews prior studies and develops hypotheses. This is followed by Section 3, which describes the data and methodology used in this study. Empirical results and discussions are presented in Section 4. Finally, Section 5 provides concluding remarks.

2. Literature review and hypotheses development

2.1. Theoretical review

One of the important characteristics of modern corporations is the separation between the shareholders and the management (Berle and Means, 1932). Since managers may have different incentives from those of the shareholders, they could make decisions that are not in the best interests of the shareholders. This condition leads to a principal-agent problem, which was later formalized by Jensen and Meckling (1976) in agency theory. They argue that “it is generally impossible for the principal and the agent at zero cost to ensure that the agent will make optimal decisions from the principal’s viewpoint” (p. 5). As stated by Mak and Li (2001), while the shareholders want their wealth to be maximized, managers may have other personal interests such as salary, job security, and prestige. Principal-agent conflicts appear to be more prevalent in corporations with diffused ownership structure, where there is no a single majority shareholder. In firms with concentrated ownership, such problems may exist between the controlling shareholder and minority shareholders.

Corporate governance mechanisms are intended to minimize the agency conflicts. In other words, the purpose of such mechanisms is to encourage managers to act in the best interest of the



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shareholders. Denis (2001) provides examples of such mechanisms, such as bonding managers contractually, monitoring them, and providing them with incentives for their good performance. In this case, compensation scheme for executives has an important role. As argued by John and John (1993), executive compensation plays important roles in aligning incentives of the management with those of the shareholders, as well as to mitigate risk-shifting incentives. Conyon and He (2004), summarizing the propositions of previous works, state that executive remuneration package is optimally determined by the board of directors based on economic determinants, the nature of agency conflicts, and difficulties in monitoring. Some firms use compensation consultants peer groups in determining the remuneration scheme (Bizjak et al., 2008).

Since the goal of a firm is to increase shareholders wealth, executive compensation structure should be determined on the basis of shareholders wealth (Jensen and Murphy, 1990). Hence, compensation structure would appear to be powerful incentives for managers to increase firm value. Additionally, Holmstrom (1979) contends that compensation structure should be ideally based on performance measures that are as informative as possible. Remuneration scheme on the basis of observable performance measures is expected to align the interests of the shareholders and the management (Brunello et al., 2001). The change in remuneration level based on the change in firm performance, which is commonly called as “pay-performance sensitivity,” also gains wide attention from researchers in the literature.

Corporate governance structure, which includes board and ownership characteristics, is also viewed as significant determinants of compensation structure. Boards of directors are expected to have independent directors with certain experiences and expertise to better monitor the management (Jensen and Meckling, 1976) and to protect the rights of minority shareholders. As addressed in a number of studies, board structure plays an important role in determining compensation structure.



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Fama (1980) and Fama and Jensen (1983) suggest that decisions on compensation structure should be made by independent directors, because they are better able to make unbiased opinions. On the other hand, Crystal (1991) argues that the decisions on compensation structure made by outside directors are ineffective because those directors are essentially hired by the CEO. This condition leads to remuneration scheme that is suboptimal for the firm, but advantageous for the CEO (Core et al., 1999). To the best of my knowledge, the propositions on the role of ownership structure in determining the compensation level are scarce in the literature. According to Cheng and Firth (2006), board members or top managers that have the firm's shareholdings seem to have lower compensation due to large dividend payouts and the avoidance of adverse publicity, but they may also have higher compensation since they can use their voting rights to award themselves higher.

Further, firm-specific characteristics may also have significant influences on the level of executive compensation. As summarized by Brunello et al. (2001) and Firth et al. (1999), it is common that the level of top executive pay is positively associated with firm size. In a competitive market for managers, higher-quality people may be allocated to top-level positions in large firms (Rosen, 1992). Large firms generally have a more extensive organizational hierarchy, where there are different compensation schemes for each managerial level (Simon, 1957). Additionally, it is common that larger firms have higher absolute profit compared to their smaller counterparts. Hence, high level of executive compensation in a large firm may appear to be insignificant compared to the firm's total operational expenses (Firth et al., 1999).

2.2. Firm performance and remuneration level

Holmstrom (1979) and Jensen and Murphy (1990) argue that it is appropriate for firms to determine director compensation level based on the firm performance. This means that board



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members should be better paid for their good performance. Previous studies use various measures of firm performance as the determinant of compensation level of board members or executives, including return on assets (ROA), return on equity (ROE), Tobin's Q, and stock returns.

A number of studies provide evidence on the positive association between accounting-based performance (such as ROA and ROE) and the level of CEO pay, such as Sanders and Carpenter (1998), Laing and Weir (1999), Newman and Mozes (1999), Zhou (2000), Andjelkovic et al. (2002), and Cheng and Firth (2006). Other studies also find positive relationship between the level of CEO remuneration and market-based performance (Tobin's Q and stock returns), including Bustman et al. (1996), Chung and Pruitt (1996), Conyon and Peck (1998), Core et al. (1999), Vafeas (2003), and Chhaochharia and Grinstein (2009). A different result is suggested by Jiang et al. (2009), which find that CEO pay is negatively related to ROA. It is important to note that these studies are based on samples in few countries such as the United States and the United Kingdom, where the remuneration level of board members and top executives, including CEO, are commonly disclosed by listed firms.

In countries where the disclosure of remuneration level tends to be weaker, researchers use other proxies to measure the pay level, such as total board compensation and average director compensation. Andreas et al. (2010), addressing German companies, find that ROA is positively associated with average director compensation. Using total board remuneration as the proxy for pay level, Abdul-Wahab and Abdul-Rahman (2009) also indicate the positive relationship in the context of Malaysia. Based on the data of Japanese firms, Basu et al. (2007) find that ROA and market-to-book ratio positively and significantly affect total executive compensation.

In the Indonesian case, I posit a direct relationship between firm performance and remuneration level. Firms with higher level of performance may appreciate their board members with higher level of compensation. Many Indonesian studies (e.g. Darmadi, 2011) show that better performance are



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likely to belong to larger firms, which probably have more financial resources to pay their board members. The large firms may be also more attractive for high-quality managers, which tend to be well-compensated. I formulate the first and second hypotheses as follows:

H1: There is a positive and significant association between accounting-based performance (profitability) and remuneration level.

H2: There is a positive and significant association between market-based performance (market value) and remuneration level.

2.3. Board structure and remuneration level

Pearce and Zahra (1992) and Dalton et al. (1999) argue that board size is one of the important determinants of effective governance. It is argued that larger groups have more skills and expertise that are required to solve problems (Jackson, 1992). The relationship between board size and firm performance is well-established in the literature (e.g. Yermack, 1996; Eisenberg et al., 1998; Coles et al., 2008), yet relatively few studies hypothesize that board size has a significant influence on remuneration level. Using samples of US firms, Core et al. (1999) and Conyon and He (2004) find that the influence of board size on the remuneration level is significantly positive. Additionally, Sanders and Carpenter (1998) provide evidence that the size of top management team positively influences the level of CEO pay.

In the context of Indonesia, it is expected that firms with larger board size tend to have more financial resources to hire more people serving on their boards. From the finding of Darmadi and Andriansyah (2011), it is found that firms with larger board size are likely to have higher level of business complexity. Given this condition, I posit that board size positively influences the remuneration structure. Hence, the hypothesis is stated as:



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H3: There is a positive and significant association between board size and remuneration level.

As abovementioned, different arguments persist in the literature on whether independent directors better determine executive remuneration. Arguing that independent directors conduct better monitoring on the board remuneration, Firth et al. (1999) and Abdul-Wahab and Abdul Rahman (2009) provide evidence on the negative relationship between board independence and the compensation level based on the data of Hong Kong and Malaysia, respectively. Contrary to their results, Core et al. (1999) find that the proportion of inside directors is negatively related to CEO level in US firms. Similarly, Li et al. (2007) suggest a positive relationship between board independence and CEO compensation in Chinese firms.

For the Indonesian case, we predict that the relationship between the fraction of independent members on BOC and the compensation level is positive. It seems that the country's governance system tends to be weaker, thus independent members may not be fully independent of the management. Such an environment in Indonesia seems to be relatively similar to that in Hong Kong, where the management typically nominates the independent directors, which can later encourage higher compensation for the management (Cheng and Firth, 2006). As such, it is hypothesized that:

H4: There is a positive and significant association between the proportion of independent commissioners and remuneration level.

2.4. Ownership structure and remuneration level

Concentrated ownership is viewed as one of the important governance mechanisms to minimize agency problems (Kaplan and Minton, 2004) and to better monitor the management (Shivdasani, 1993), but it can also lead to asset expropriation tendency of the controlling shareholder (Haniffa and Hudaib, 2006). Concentrated ownership may affect the design of remuneration level in a firm. A



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number of previous studies have documented a negative association between blockholders ownership and the compensation level (e.g. Hambrick and Finkelstein, 1995; Core et al., 1999; Cheng and Firth, 2006).

As indicated by Claessens et al. (2000), concentrated ownership is common in firms listed on East Asian capital markets, including Indonesia. Due to the country's institutional environment where the governance system tends to be weaker, we argue that concentrated ownership would be less efficient in monitoring and encouraging higher level of remuneration. Therefore, my hypothesis is:

H5: There is a positive and significant association between concentrated ownership and remuneration level.

The proportion of shares held by board members or the management may affect the pay level, either positively or negatively (Cheng and Firth, 2006). Some studies show that insider ownership positively influences the remuneration level, such as Basu et al. (2007), Li et al. (2007), and Byrd et al. (2010). Other research, however, provides evidence on the negative relationship between insider ownership and pay level. Such studies include Mehran (1995), Core et al. (1999), Firth et al. (1999), and Andreas et al. (2010).

In the Indonesian setting, where shareholdings in the name of insiders are quite uncommon, it is expected that insider ownership negatively affects compensation level. It seems that insider ownership is more common in family-controlled firms, where the insiders tend to have family relationships with the founder or the controlling shareholder. They may increase their wealth from larger dividend payouts rather than higher salary. This prediction leads me to formulate the following hypothesis:

H6: There is a negative and significant association between board members ownership and remuneration level.



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Claessens et al. (2000) also show that listed firms in East Asian capital markets are mainly family controlled. Thus, people serving in the boardroom are partly due to family relationships with the founder or the controlling shareholder. To a particular extent, the control of a firm in the hand of family tends to lead to weaker monitoring mechanisms on the management. Similar to Hypothesis 6, I predict that family ownership has a negative impact on remuneration level. It is predicted that the controlling family increases the wealth of the board members from sources other than the remuneration scheme. Additionally, family-controlled firms tend to be smaller firms (Darmadi, 2011), which have relatively less financial resources to hire people serving on the board. Hence, it is hypothesized that:

H7: There is a negative and significant association between family ownership and remuneration level.

2.5. Firm-specific characteristics and remuneration level

Previous studies on the board remuneration generally find that firm size is positively associated with the remuneration level. Simon (1957), Rosen (1992), and Firth et al. (1999) provide arguments on this finding as abovementioned. Additionally, larger firms are likely to have more financial resources to hire more high-quality people holding seats in their boardrooms. Further, larger firms tend to have higher level of business risks and diversification, thus they compensate their board members and executives higher to handle their complex and highly-skilled jobs. Following prior findings, I hypothesize that:

H8: There is a positive and significant association between firm size and remuneration level.

H9: There is a positive and significant association between business complexity and remuneration level.



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I also consider the firm's debt as a significant determinant of the pay level. Using the Hong Kong data, Cheng and Firth (2006) do not find any significant link between leverage and CEO pay. Additionally, Abdullah (2006) find that financially-distressed Malaysian listed firms pay their directors significantly lower than their peers.

For the Indonesian case, even though the managers of financially-distressed firms have to deal with difficult jobs to make the firms healthier, I predict that those firms may not have a considerable amount of financial resources to pay their managers. Hence, following Abdullah (2006), it is hypothesized that:

H10: There is a negative and significant association between firm leverage and remuneration level.

3. Research design

3.1. Sample description

To capture the recent development in the determinants of board remuneration, I collect the data from the financial years 2006 and 2007. My initial sample comprises all firms listed on the Indonesia Stock Exchange (IDX), previously known as the Jakarta Stock Exchange (JSX), as at 31 December of respective years. Due to their unique characteristics, banks and financial firms are excluded from the sample. I also exclude firms with negative book value of equity and firms with incomplete data. This selection process ends up in 194 and 248 sample firms for the years 2006 and 2007, respectively. There are 257 unique firms captured in the 442 firm-year observations. The data are mainly obtained from the *IDX Watch*, previously published as the *JSX Watch*, an annual capital market directory issued by *Bisnis Indonesia*, a prominent business newspaper in the country. Additionally, some of the data are also hand-collected from the annual reports and financial statements of the sample firms,

which are downloadable from the Internet. Table 1 shows selection process and industry breakdown of the sample firms.

[Insert Table 1 about here]

3.2. Regression model

Previous studies employ different estimation technique in their multivariate analysis, such as ordinary least squares (OLS), two-stage least squares (2SLS), and fixed effects. In the present study, I mainly employ OLS regressions, following Firth et al. (1999) and Unite et al. (2008) that also use two-year data. Moreover, similar to Coles et al. (2008), it is argued that the variations in remuneration level tend to appear in the cross-section rather than in the time-series. In analyzing the determinants of remuneration structure, the econometric model is specified as follows:

$$\begin{aligned} \text{Remuneration} = & \beta_0 + \delta_1 (\text{Firm performance}) + \delta_2 (\text{Board structure}) \\ & + \delta_3 (\text{Ownership structure}) + \delta_4 (\text{Firm-specific characteristics}) \end{aligned}$$

(1)

Second, I examine whether changes in performance and other firm characteristics have positive impacts on changes in pay. Similar to Shaw and Zhang (2010), I use percentage of the changes instead of absolute values of such changes. Hence, the following model is also employed in this study:

$$\begin{aligned} \text{Change in remuneration} = & \beta_0 + \delta_1 (\text{Change in firm performance}) \\ & + \delta_2 (\text{Change in firm-specific characteristics}) \end{aligned}$$

(2)



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3.3. Variable measurement

In countries where the disclosure of individual executive compensation is common, such as the US, the UK, and Australia, researchers commonly use pay level of CEO or each individual executive as the dependent variable in their regression models. Even, in such studies as Core et al. (1999) and Clarkson et al. (2006), regressions are conducted separately for different types of CEO compensation, namely salary, cash, and bonus. Indonesia is among countries with relatively weak disclosure of board remuneration. The country's capital market regulations only require listed firms to disclose the aggregate amount of remuneration rewarded to the members of BOC and BOM.

In this study, I use four proxies for pay level. First, I employ total remuneration of board members, as reported in notes to the financial statements. Using publicly-available data, this aggregate amount seems to be the most reasonable choice. I hand-collect annual reports of 143 firms included in my sample, and find that there are only ten firms disclosing the remuneration of each individual board member. The total compensation is also used in previous studies, such as Adams (2003), Unite et al. (2008), and Abdul-Wahab and Abdul-Rahman (2009). Second, I use average remuneration per board member, which is obtained by dividing total compensation divided by the number of people serving on BOC and BOM. A number of studies employ this average pay level, including Muslu (1998), Firth et al. (1999), and Andreas et al. (2010). Third, predicted remuneration for each individual executive (BOM members) is also used in this study. From aggregate compensation reported in financial statements, BOM members generally receive more than their colleagues serving on BOC. For this purpose, I assume that BOM members are paid three times larger than those on BOC[1]. Finally, following Byrd et al. (2010), we use total compensation relative to firm size, to examine the factors determining the firm's expenditure on board remuneration compared to its book value of assets.



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Table 2 shows the description of research variables. I include independent variables on firm performance, board structure, ownership ownership, and firm-specific characteristics in our models. The numbers of business segments and subsidiaries are used as proxies for business complexity. Additionally, concentrated ownership is measured using the proportions of common shares held by the largest shareholder and blockholders. Following previous studies (Mak and Kusnadi, 2005; Haniffa and Hudaib, 2006), blockholders are defined as shareholders who own 5 percent of common shares or more.

With respect to family ownership, modifying Achmad's (2006) approach, I categorize the sample firms into four groups based on the largest shareholder. The types of the largest shareholder are foreign institutions, government entities, domestic non-business entities (cooperatives and foundations), and domestic business entities. Firms whose the largest shareholder is domestic business entities are considered family-controlled firms, except in pyrimiding and cross-shareholding cases[2].

[Insert Table 2 about here]

4. Empirical results and discussions

4.1. Descriptive statistics and univariate analysis

Table 3 reports descriptive statistics of variables used in the present study. Total board remuneration (TOTREM) is found to vary greatly, ranging from Indonesian Rupiah (IDR) 49 million to IDR 297 billion per annum. Accordingly, such a great variability is also found in average board remuneration (AVEREM) and predicted average remuneration for BOM members (BOMREM). Further, the sample firms on average expend 0.9 percent of the value of their assets to compensate their board members (REM/ASSET).



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As indicated by previous Indonesian studies, ROA of the sample firms also shows a great range, with the average of 3.22 percent. The market value of these firms generally exceeds their book value of assets, which is indicated by the average of Tobin's Q of 1.69. With respect to board structure, the combined number of people serving on BOC and BOM (BDSIZE) is 8.79, on average. The mean and median values of the proportion of independent commissioners (BOCINDEP) are 0.38 and 0.33, respectively. Hence, most firms in our sample have complied with the country's capital market regulations, which require listed firms to have independent commissioners of at least 30 percent of the number of BOC members.

In terms of ownership structure, the descriptive statistics confirm the findings of Claessens et al. (2000) in their studies on nine East Asian markets, including Indonesia. They document that concentrated ownership is common among listed firms in these countries. Among my sample firms, the proportion of shares held by blockholders (BLOCK) is 70 percent, on average. In some cases, the largest shareholder appears to be the only blockholder, indicating that the proportion of public ownership (i.e. shares that are freely traded on the stock exchange) is relatively low. Claessens et al. (2000) also indicate that most listed firms in East Asian countries are family-controlled. I find that 58 percent of the sample firms are family-controlled, as indicated using a dichotomous variable (FAMILY). Again, this confirms the documentation of Claessens et al.'s (2000). Even though most of the firms are family-controlled, the shareholdings by BOC and BOM members (BDOWN) are quite uncommon, where the mean and median values are 2 percent and zero, respectively.

From the 442 firm-year observations, there are 186 firms with complete data for both 2006 and 2007. I construct 186 observations to analyze changes in remuneration level and firm performance. It is found that board remuneration of my observations grows 29 percent on average. The average values



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of the growth of ROA and Tobin's q are 17 percent and 60 percent, respectively. Finally, the book value of assets shows positive annual growth of 26 percent in 2007, on average.

[Insert Table 3 about here]

Table 4 reports the comparison of mean values of selected variables between different types of firm. Panel A presents the differences between larger and smaller firms. A firm is considered large if its book value of assets is larger than the median value (IDR 803 billion). In addition to total assets, total board remuneration and ROA of the larger firms are found to be significantly higher than their smaller counterparts. This may be partly due to the fact that larger firms generally have more financial resources to compensate their board members with high salary to cope with the complex nature of their business. To deal with their nature of business, they may also attract high-quality managers and provide them with higher pay level. In terms of remuneration expenditure (the ratio of total board remuneration to total assets), smaller firms expend significantly higher than their larger peers to pay their board members. Thus, this confirms the suggestion of Firth et al. (1999) that board remuneration in large firms seems to be insignificant compared to their total operational expenses.

Panel B differentiates between family-controlled firms and non-family-controlled ones. As previously defined, a firm is considered family-controlled if its largest shareholder is a domestic business entity, except in pyramiding and cross-shareholding cases. The total assets of non-family firms are significantly larger than their family-controlled counterparts, implying that family-controlled firms are likely to be smaller ones. Accordingly, total board remuneration and ROA of family-controlled firms are found to be significantly lower. In addition, remuneration expenditure (relative to total assets) of family-controlled firms is significantly larger than that of non-family firms, but the difference is marginally significant at the 0.10 level.

[Insert Table 4 about here]



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The results of correlation analysis, using Pearson correlation coefficients, are reported in Table 5. It is revealed that TOTREM is positively related to ASSET, implying that larger firms expend higher absolute value of money to pay their board members. ASSET is found to positively correlate with four variables, namely ROA, BDSIZE, BUSSEGM, and SUBSID. Accordingly, these four variables are positively associated with TOTREM. These findings imply that that higher absolute value of board remuneration is likely to be expended by larger firms, which are characterized by higher profitability, larger board size, and greater numbers of business segments and subsidiaries. Further, ASSET has a negative association with FAMILY, suggesting that family-controlled firms are likely to be smaller firms. In line with this, the correlation between FAMILY and TOTREM is found to be negative.

In terms of remuneration expenditure relative to total assets (REM/ASSET), the table shows that smaller firms expend higher proportion of their assets to pay their board members, which can be seen from the negative correlation between ASSET and REM/ASSET. Smaller board size, which is more likely to belong to smaller firms, is also associated with higher REM/ASSET. Again, this confirms the preposition of Firth et al. (1999) that high absolute value of board remuneration in large firms is insignificant compared to their larger business scale.

I also confirm the finding of Darmadi and Andriansyah (2011), who indicate a positive relationship between board size and business complexity among the Indonesian listed firms. Table 5 shows that ASSET has a direct relationship with business complexity, as measured by the numbers of business segments (BUSSEGM) and subsidiaries (SUBSID). This seems to suggest that larger firms employ more people on the board to deal with higher level of business complexity, and they thereby are willing to allocate more financial resources to compensate their board members.

[Insert Table 5 about here]



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4.2. Determinants of board remuneration

I further conduct multivariate regression analyses to examine the impacts of firm performance, board structure, ownership structure, and firm-specific characteristics on remuneration level. Before the regressions are run, the models need to be tested first to make sure that they do not suffer from multicollinearity, heteroskedasticity, and autocorrelation problems. I deal with heteroskedasticity and autocorrelation problems by using White or Newey-West standard error estimates, as suggested by Brooks (2008). In terms of multicollinearity, Wooldridge (2003) explains that the actual magnitude of a multicollinearity problem is not well-defined. The results of correlation analysis in Table 5 generally indicate that multicollinearity problems do not exist.

Based on Equation (1), the regression result of the determinants of remuneration level is reported in Table 6. Models (1), (2), and (3) indicate quite similar results, with Model (1) showing the strongest explanatory power. To capture potential differences in remuneration level across industries and years, I include industry and year dummy variables, as suggested by Basu et al. (2007).

From the three models, firm performance, as measured by ROA and Tobin's Q, is found not to be affecting remuneration level. Hence, this finding does not support both Hypotheses 1 and 2. This contradicts empirical evidence provided by many prior studies, which indicates that high-performing firms tend to higher pay their board members. Even though higher level of ROA is positively correlated with pay level, as indicated by the result of correlation analysis provided in Table 5, the regression result suggests that profitability is not a significant determinant of the pay level. As such, in Indonesia, either accounting-based or market-based performance is not a good predictor of the remuneration of board members.



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With respect to board structure, I find that BDSIZE is positively related to compensation level. Thus, Hypotheses 3 is supported. Size of the firm may explain these positive associations. As presented in Table 5, the BDSIZE and ASSET is positively correlated at the 0.01 level. This implies that firms hiring more people to serve in their boardrooms, that are likely to have larger size, tend to allocate higher absolute value of their financial resources for remuneration. These large firms may also have more financial resources to recruit greater number of and higher-quality managers to handle their complex business. The positive association between board size and remuneration level confirms the finding of Sanders and Carpenter (1998) and Core et al. (1999). Further, board independence (INDEP) is not significantly associated with remuneration level, leading me to reject Hypothesis 4. In the context of Indonesia, it is found that the proportion of independent commissioners on BOC is neither more nor less efficient in discouraging higher level of remuneration.

Further, I find no evidence on the association between ownership structure and the remuneration level. Contrary to our expectation, the coefficient of blockholders ownership (BLOCK), as a proxy for concentrated ownership, is not significant. Concentrated ownership is generally prevalent in the Indonesian listed firms, making it insignificant in explaining board remuneration level. Similarly, board ownership (BDOWN) is also found not to be significantly associated with remuneration level. One of the possible interpretations is that share ownership by board members is quite uncommon among the Indonesian listed firms. Surprisingly, family ownership (FAMILY) positively influences remuneration level, marginally significant at the 0.10 level. The direction is contrary to the predicted sign, as formulated in Hypothesis 7. Even though family-controlled firms are generally smaller than their peers, as indicated by the correlation result and previous Indonesian studies (e.g. Darmadi, 2011), they are likely to highly reward their board members.



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Supporting Hypothesis 8, firm size (ASSET) has a positive and significant relationship with remuneration level. This finding is then consistent with the result of many studies previously conducted. Larger firms may have more financial resources to hire greater number of high-quality people serving in their boardrooms. Further, larger firms tend to have higher level of business risks and diversification, thus they compensate their board members and executives higher to handle such complex and highly-skilled jobs. However, business complexity, as indicated by the numbers of business segments (BUSSEGM) and subsidiaries (SUBSID), is not a significant determinant. Thus, Hypothesis 9 is not supported. Finally, contrary to my expectation, the level of firm leverage (LEVRG) has an insignificant association with pay level. Hence, financially-distressed firms pay their board members neither significantly higher nor lower compared to their healthier counterparts.

Using remuneration expenditure relative to firm size (REM/ASSET) as the dependent variable, I report the regression result in Model (4) of Table 6. I start from ASSET. The relationship between ASSET and REM/ASSET is negative. This finding suggests that smaller firms expend higher percentage of their resources to pay their board members and top management. As suggested by Firth et al. (1999), higher level of remuneration provided by large firms to their board members and top management is relatively insignificant compared to their business scale. Accordingly, family-controlled firms (which tend to be smaller firms) are likely to allocate higher proportion of their resources for such remuneration, as indicated by a positive and significant relationship (at the 0.05 level) between FAMILY and REM/ASSET.

Board ownership (BDOWN) is negatively associated with REM/ASSET, suggesting that board members do not benefit from their share ownership to allocate higher percentage of the firm's financial resources to reward themselves. The increase of their wealth may also be obtained from other sources, such as dividend payouts for themselves as the shareholders, as well as control of the



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firm in the hand of their families. The latter condition is more prevalent in family-controlled firms, where family members of the controlling shareholder are commonly engaged in BOC and BOM (Achmad, 2006).

[Insert Table 6 about here]

4.3. Pay-performance sensitivity

Similar to a number of studies in the literature, I examine whether changes in firm performance lead to changes in the remuneration level. The results of this examination are presented in Table 7. It can be seen that Models (1), (2), and (3) have weak explanatory powers (p -values of F -statistics are greater than 0.10). Even though these three models are not good enough to explain the variability in remuneration changes, it is found that changes in Tobin's Q are positively associated with changes in total board remuneration, as shown in Model (1). This suggests that enhanced firm value appears to be the firm's consideration to increase the pay level of their board members. This may be related to the goal of the firm, which is maximizing the wealth of its shareholders. Thus, when firm value (Tobin's Q) is enhanced, the shareholders seem to appreciate the performance of the board members and then increase their compensation. This finding is in line with previous empirical evidence, such as Firth et al. (2006) and Merhebi (2006), who find that the increase of the shareholders' wealth has a positive and significant relationship with the increase of CEO pay. On the other hand, changes in profitability (ROA) are not significantly associated with such changes in the remuneration level, implying that market value is considered more important in reflecting the performance of board members.

As reported in Model (4) of Table 7, changes in Tobin's Q is again found to be positively related to the changes in remuneration expenditure, relative to firm size ($Ch(FIRM/ASSET)$). It is important to note that Model (4) is highly significant (F -statistic = 155.594) in explaining the



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variability of $Ch(FIRM/ASSET)$. As such, when the market value is enhanced, it seems that the shareholders are happy to expend increased proportion of the firm's assets to compensate their board members. Additionally, changes in ROA are also marginally significant at the 0.10 level. This implies that to a particular extent, the increase of profitability may be behind the shareholders' decision to increase the remuneration expenditure, relative to firm size, for board members.

[Insert Table 7 about here]

5. Concluding remarks

Previous research on board and executive pay is mostly based on developed economies. This paper extends the existing literature by investigating the determinants of board remuneration in a developing country that adopts a two-tier system and has a weaker disclosure environment. Being one of twenty largest economies in the world, Indonesia is a main emerging market in Asia and attracts a large number of foreign portfolio investments. Based on propositions existing in theoretical works, I hypothesize that firm performance, board structure, ownership structure, and firm-specific characteristics are significantly associated with remuneration structure. Considering high secrecy of remuneration scheme among listed firms in the Indonesian capital market, this study uses four different dependent variables, namely total board remuneration, average board remuneration, predicted average executive remuneration, and remuneration expenditure relative to firm size.

This study employs an unbalanced panel data set, comprising 442 firm-year observations of 255 non-financial firms listed on the Indonesia Stock Exchange (IDX) in the financial years 2005 and 2006. The results from multivariate regression analysis reveal that firm size, board size, and family ownership are positively associated with remuneration package. It is important to note that larger firms are featured by larger board size and less family control, based on the result of correlation



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analysis. Hence, family-controlled firms are considered overwhelmingly compensating their board members. When remuneration expenditure, relative to firm size, is employed as the dependent variable, it is found that firm size is negatively associated with the expenditure. In contrast, family ownership, which is less prevalent in large firms, is found to be positively significant. Even though large firms provide higher remuneration for their board members, the amount is considered insignificant compared to their total value of assets. Family-controlled firms, which are likely to be smaller ones, tend to expend higher proportion of their financial resources to reward their boards. Based on 186 cross-sectional observations, it is found that changes in remuneration scheme have a positive and significant relationship with changes in Tobin's Q. Shareholders may appreciate the management and board members for the increase in firm value and their wealth, leading to the improvement in remuneration level and expenditure. In addition, changes in ROA also positively affect remuneration expenditure, marginally significant at the 0.10 level.

This research is subject to some limitations. First, it only employs the data for two financial years. Hence, future research needs to use longer time span to provide more powerful insights into the determinants of board remuneration. Second, OLS is mainly used as a tool in multivariate regression in this study. Using longer time span, more sophisticated estimation techniques may need to be employed to check the robustness of the results.

My results may also bring some practical implications. Based on the findings of my pay-performance sensitivity tests, this seems that top management of the Indonesian listed firms tends to be relatively less rewarded for the improvement of firm performance. This research then confirms the importance of a remuneration committee, which is expected to provide independent recommendations on appropriate remuneration for board members based on their performance. However, in smaller



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firms, the costs to establish and maintain such a committee may outweigh the benefits. In this case, independent commissioners on BOC are expected to play such a role.

Notes

- [1] Average board remuneration is not a good proxy for remuneration of individual board members, since BOM members are generally paid higher than their counterparts on BOC. From 143 annual reports for the financial year 2007, I find that there are only ten firms disclosing remuneration for each board member. From these ten firms, I find that BOM members are paid higher, varying between 100 to 400 percent, than their colleagues on BOC. Hence, I assume that BOM members are paid three times (200 percent) higher than BOC members. I recognize that this assumption may be ambiguous to a particular extent, since it appears to be an overwhelming generalization. However, I believe that this proxy would provide more powerful insights into the determinants of management pay among the Indonesian listed firms.
- [2] I recognize that this identification method may be ambiguous to a particular extent. Descriptive statistics in Table 3 show that 58 percent of our observations are family-controlled firms. Based on a sample of 178 Indonesian listed firms for the financial year 1996, Claessens et al. (2000) documented that 69 percent of those firms are family-controlled. Hence, I considered my identification method relatively appropriate. Following La Porta et al. (1999), a firm's structure is a pyramid if there is at least one listed firm between it and the ultimate owner in the chain of control; while in a cross-shareholding, a listed firm own shares in its controlling shareholders (another listed firm) or in the firms along the chain of control. Claessens et al. (2000) also indicate that pyramid structure and cross-shareholdings are common in East Asian capital markets.

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Table 1
 Sample description

The final sample comprises an unbalanced panel data set of 444 firm-year observations, covering 257 unique non-financial firms listed on the Indonesia Stock Indonesia (IDX), previously known as the Jakarta Stock Exchange (JSX), during the financial years 2006 and 2007. Panel A shows the selection process to obtain the final sample. Panel B shows industry breakdown of the sample firms. The sample firms come from eight non-financial sectors on the IDX.

Description	2006	2007	Total
<i>Panel A: Sample selection process</i>			
IDX's listed firms as at 31 December	344	383	727
Financial firms	(65)	(68)	(133)
Firms with negative book value of equity	(20)	(23)	(43)
Firms with incomplete data	(65)	(44)	(109)
Sample firms	194	248	442
<i>Panel B: Industry breakdown</i>			
Agriculture	6	11	17
Basic and chemical	42	44	86
Consumer goods	25	28	53
Infrastructure, utilities, and transportation	14	21	35
Mining	9	13	22
Miscellaneous	23	33	56
Property, real estate, and building construction	25	38	63
Trade, service, and investment	50	60	110
Sample firms	194	248	442

Table 2
Description of research variables

Variables	Acronym	Definition
Dependent variables		
Total remuneration	TOTREM	Natural log of total board remuneration
Average remuneration	AVEREM	Natural log of total board remuneration divided by the number of board members
Predicted average executive remuneration	BOMREM	Natural log of total board remuneration divided by the number of board members, where BOM members are assumed to be paid three times larger than BOC members
Remuneration expenditure	REM/ASSET	Ratio of total board remuneration to the book value of assets
Independent variables		
<i>Firm performance</i>		
Return on assets	ROA	Net income divided by the book value of assets
Tobin's Q	TOBINQ	Natural log of the ratio of market value to the book value of assets, where market value is calculated as the book value of assets minus the book value of equity plus the market value of equity
<i>Board structure</i>		
Board size	BDSIZE	Natural log of total number of members serving on BOC and BOM
Proportion of independent commissioners	BOCINDEP	Proportion of independent commissioners on BOC
<i>Ownership structure</i>		
Blockholders ownership	BLOCK	Proportion of common shares held by blockholders (shareholders who own 5 percent or more)
Board ownership	BDOWN	Proportion of common shares held by board members
Family ownership	FAMILY	Dichotomous with 1 if the firm is family-controlled and 0 otherwise
<i>Firm-specific characteristics</i>		
Firm size	ASSET	Natural log of the book value of assets
Leverage	LEVRG	Ratio of total liabilities to total assets
Business segment	BUSSEGMENT	Natural log of the number of business segments

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Subsidiary SUBSID The number of subsidiaries

Table 3
 Descriptive statistics

This table reports descriptive statistics of the sample firms. TOTREM is total board remuneration. AVGREM is average board remuneration. BOMREM is predicted average remuneration for the members of the Board of Management (BOM). REM/ASSET is total remuneration divided by the book value of assets. ROA is return on assets. TOBINQ is Tobin's Q, calculated as market value divided by the book value of assets. BDSIZE is the number of people serving on the Board of Commissioners (BOC) and BOM. BOCINDEP is the proportion of independent commissioners on BOC. BLOCK is the proportion of common shares held by blockholders (shareholders who own 5 percent or more). BDOWN is the proportion of common shares held by the members of BOC and BOM. FAMILY is a dichotomous variable, which equals 1 if the firm is family-controlled and 0 otherwise. ASSET is the book value of assets. LEVRG is the ratio of total liabilities to total assets. BUSSEGM is the number of business segments. SUBSID is the number of subsidiaries. TOTREM, AVEREM, BOMREM, TOBINQ, BDSIZE, ASSET, and BUSSEGM are reported in their absolute values, not in natural log. Ch(TOTREM), Ch(AVEREM), Ch(BOMREM), Ch(REM/ASSET), Ch(ROA), Ch(TOBINQ), and Ch(ASSET) represent changes in TOTREM, AVEREM, BOMREM, REM/ASSET, ROA, TOBINQ, and ASSET, respectively.

Variables	Number of obs.	Mean	Median	Standard Deviation	Minimum	Maximum
TOTREM (million IDR)	442	8,767	3,823	17,979	49	297,700
AVEREM (million IDR)	442	851	465	1,331	10	17,512
BOMREM (million IDR)	442	1,268	690	2,072	16	28,810
REM/ASSET	442	0.0090	0.0043	0.0284	0.0001	0.4840
ROA (percent)	442	3.22	2.93	10.93	-89.50	62.20
TOBINQ	442	1.69	1.18	3.29	0.15	65.40
BDSIZE	442	8.79	8	3.27	4	27
BOCINDEP	442	0.38	0.33	0.10	0.20	1.00
BLOCK	442	0.70	0.75	0.19	0.08	0.99
BDOWN	442	0.02	0.00	0.07	0.00	0.79
FAMILY	442	0.58	1	0.49	0	1
ASSET (billion IDR)	442	3,144	803	7,488	7	82,059
LEVRG	442	0.50	0.52	0.22	0.00	0.99
BUSSEGM	442	2.70	3	1.42	1	9
SUBSID	442	6.16	2	13.37	0	193
Ch(TOTREM)	186	0.29	0.10	0.85	-0.87	6.32
Ch(AVEREM)	186	0.30	0.11	0.90	-0.85	7.79
Ch(BOMREM)	186	0.31	0.12	0.96	-0.85	8.76
Ch(REM/ASSET)	186	0.45	-0.04	4.86	-0.91	65.34
Ch(ROA)	186	0.17	-0.08	4.23	-22.05	29.63
Ch(TOBINQ)	186	0.60	0.08	3.55	-0.73	46.14
Ch(ASSET)	186	0.26	0.14	0.72	-0.98	8.73

Table 4

Comparison of selected variables between different types of firm

This table reports the difference in mean values of selected variables between different types of firm. Panel A reports the comparison between larger firms and smaller firms, where a firm is considered large if the book value of assets is larger than the median value. Panel B reports the comparison between family and non-family firms, where a firm is considered a family firm if the largest shareholder is a domestic business entity, except in pyramiding and cross-shareholding cases. TOTREM is total board remuneration. REM/ASSET is total remuneration divided by the book value of assets. ROA is return on assets. TOBINQ is Tobin's Q, calculated as market value divided by the book value of assets. ASSET is the book value of assets. TOTREM, TOBINQ, and ASSET are reported in their absolute values, not in natural log. Standard deviations are in parentheses. *, **, and *** denote statistical significance (two-tailed) at the 0.10, 0.05, and 0.01 levels, respectively

Panel A: Larger and smaller firms

Variables	Larger firms (N = 221)	Smaller firms(N = 221)	t-statistics
TOTREM (million IDR)	14,706 (23,702)	2,829 (3,917)	7.350***
REM/ASSET	0.0041 (0.0041)	0.0140 (0.0394)	3.683***
ROA	5.51 (8.06)	0.92 (12.80)	4.515***
TOBINQ	1.70 (1.19)	1.68 (4.51)	0.086
ASSET (billion IDR)	5,972 (9,812)	316 (222)	8.568***

Panel B: Family-controlled and non-family-controlled firms

Variables	Family firms (N =258)	Non-family firms (N = 184)	t-statistics
TOTREM (million IDR)	7,117 (9,480)	11,082 (25,368)	2.022**
REM/ASSET	0.0108 (0.0365)	0.0065 (0.0080)	1.835*
ROA	2.05 (8.27)	4.85 (13.68)	2.477**
TOBINQ	1.64 (4.08)	1.76 (1.67)	0.424
ASSET (billion IDR)	2,258 (5,423)	4,387 (9,547)	2.727***

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Table 5
 Correlation analysis between variables

This table reports Pearson correlation coefficients between selected variables. TOTREM is natural log of total board remuneration. REM/ASSET is total remuneration divided by the book value of assets. ROA is return on assets. TOBINQ is natural log of the ratio of market value to the book value of assets. BDSIZE is natural log of the number of people serving on the Board of Commissioners (BOC) and BOM. BOCINDEP is the proportion of independent commissioners on BOC. BLOCK is the proportion of common shares held by blockholders (shareholders who own 5 percent or more). BDOWN is the proportion of common shares held by the members of BOC and BOM. FAMILY is a dichotomous variable, which equals if the firm is family-controlled and 0 otherwise. ASSET is natural log of the book value of assets. LEVRG is the ratio of total liabilities to total assets. BUSSEGM is natural log of the number of business segments. SUBSID is the number of subsidiaries. *, **, and *** denote statistical significance (two-tailed) at the 0.10, 0.05, and 0.01 levels, respectively.

	TOTREM	REM/ASSET	ROA	TOBINQ	BDSIZE	BOCINDEP	BLOCK
TOTREM	1.000						
REM/ASSET	0.056	1.000					
ROA	0.142***	-0.066	1.000				
TOBINQ	0.069	0.431***	0.070	1.000			
BDSIZE	0.427***	-0.109**	0.182***	0.012	1.000		
BOCINDEP	0.005	0.005	0.033	-0.019	-0.031	1.000	
BLOCK	-0.061	0.038	0.159***	-0.010	-0.009	-0.062	1.000
BDOWN	-0.065	-0.007	0.007	-0.018	-0.118**	-0.016	0.022
FAMILY	-0.109**	0.075	-0.127***	-0.018	-0.150***	-0.001	-0.078*
ASSET	0.695***	-0.093*	0.152***	0.033	0.493***	0.080*	-0.138***
LEVRG	0.039	-0.023	-0.245***	0.012	0.104**	-0.067	0.047
BUSSEGM	0.208***	-0.075	0.049	0.010	0.293***	0.131***	-0.229***
SUBSID	0.218***	-0.035	0.139***	0.040	0.215***	-0.033	-0.098**

	BDOWN	FAMILY	ASSET	LEVRG	BUSSEGM	SUBSID
BDOWN	1.000					
FAMILY	0.055	1.000				
ASSET	-0.069	-0.140***	1.000			
LEVRG	-0.054	-0.061	0.077	1.000		
BUSSEGM	-0.043	0.001	0.315***	0.090*	1.000	
SUBSID	-0.047	0.030	0.238***	0.117**	0.314***	1.000

Table 6

OLS regressions of the remuneration level on firm performance, board structure, ownership structure, and firm-specific characteristics

This table reports OLS regressions of the board remuneration level on firm performance, board structure, ownership structure, and firm-specific variables. The dependent variables of Models (1), (2), (3), and (4) are TOTREM, AVEREM, BOMREM, and REM/ASSET, respectively. TOTREM is natural log of total board remuneration. AVEREM is natural log of average board remuneration. BOMREM is natural log of predicted average remuneration for the members of the Board of Management (BOM). REM/ASSET is total board remuneration divided by the book value of assets. ROA is return on assets. TOBINQ is natural log of the ratio of market value to the book value of assets. BDSIZE is natural log of the number of people serving on the Board of Commissioners (BOC) and BOM. BOCINDEP is the proportion of independent commissioners on BOC. BLOCK is the proportion of common shares held by blockholders (shareholders who own 5 percent or more). BDOWN is the proportion of common shares held by the members of BOC and BOM. FAMILY is a dichotomous variable, which equals 1 if the firm is family-controlled and 0 otherwise. ASSET is natural log of the book value of assets. LEVRG is the ratio of total liabilities to total assets. BUSSEGM is natural log of the number of business segments. SUBSID is the number of subsidiaries. Robust *t*-statistics, based on heteroskedasticity- and autocorrelation- consistent standard errors, are in parentheses. *, **, and *** denote statistical significance (one-tailed) at the 0.10, 0.05, and 0.01 levels, respectively.

Independent variables	Predicted sign	Dependent variables			
		TOTREM	AVEREM	BOMREM	REM/ASSET
		(1)	(2)	(3)	(4)
Intercept		1.869*** (3.612)	1.869*** (3.612)	2.359*** (4.634)	0.030*** (2.449)
ROA	+	0.006 (0.931)	0.006 (0.931)	0.005 (0.842)	-0.000 (-0.464)
TOBINQ	+	0.063 (0.507)	0.063 (0.507)	0.062 (0.488)	0.007 (0.923)
BDSIZE	+	1.415*** (6.702)	0.415** (1.965)	0.411** (1.930)	0.001 (0.218)
BOCINDEP	+	0.573 (1.203)	0.573 (1.203)	0.523 (1.129)	0.011 (0.745)
BLOCK	+	0.029 (0.098)	0.029 (0.098)	0.017 (0.058)	-0.001 (-0.325)
BDOWN	-	-0.138 (-0.274)	-0.138 (-0.274)	-0.162 (-0.316)	-0.019** (-1.659)
FAMILY	-	0.164* (1.630)	0.164* (1.630)	0.147* (1.489)	0.004** (1.829)
ASSET	+	0.438*** (8.234)	0.438*** (8.234)	0.434*** (8.159)	-0.005*** (-3.499)
LEVRG	-	0.173 (0.640)	0.173 (0.640)	0.147 (0.579)	0.001 (0.113)
BUSSEGM	+	0.076 (0.774)	0.076 (0.774)	0.071 (0.726)	0.003 (0.862)
SUBSID	+	-0.001 (-0.187)	-0.001 (-0.187)	-0.000 (-0.022)	0.000 (1.059)
Industry dummy		Yes	Yes	Yes	Yes

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Year dummy	Yes	Yes	Yes	Yes
Number of observations	442	442	442	442
R^2	0.630	0.499	0.496	0.114
F -statistics	37.759***	22.150***	21.857***	2.863***

Table 7

Pay-performance sensitivity using changes in remuneration level and firm performance

This table reports OLS regressions of changes in board remuneration level on changes in firm performance. The dependent variables of Models (1), (2), (3), and (4) are Ch(TOTREM), Ch(AVEREM), Ch(BOMREM), and Ch(REM/ASSET), respectively. Ch(TOTREM) is the change in total board remuneration. Ch(AVEREM) is the change in average board remuneration. Ch(BOMREM) is the change in predicted average remuneration of the members of Board of Management (BOM). Ch(REM/ASSET) is the change in total board remuneration expenditure, relative to the book value of assets. Ch(ROA) is the change in natural assets. Ch(TOBIQ) is the change in the ratio of market value to the book value of assets. Ch(ASSET) is the change in the book value of assets. Robust t -statistics, based on heteroskedasticity-consistent standard errors, are in parentheses. *, **, and *** denote statistical significance (one-tailed) at the 0.10, 0.05, and 0.01 levels, respectively.

Independent variables	Dependent variables			
	Ch(TOTREM)	Ch(AVEREM)	Ch(BOMREM)	Ch(REM/ASSET)
	(1)	(2)	(3)	(3)
Intercept	0.331** (1.986)	0.329** (1.750)	0.343* (1.635)	-0.342 (-1.122)
Ch(ROA)	0.032 (1.133)	0.029 (1.144)	0.032 (1.167)	0.124* (1.427)
Ch(TOBIQ)	0.012** (1.759)	0.008 (1.254)	0.008 (0.107)	1.285*** (9.977)
Ch(ASSET)	0.081 (0.733)	0.081 (0.752)	0.087 (0.784)	-0.134 (-1.236)
Industry dummy	Yes	Yes	Yes	Yes
Number of observations	186	186	186	186
R^2	0.056	0.042	0.047	0.888
F -statistics	1.032	0.848	0.862	155.594***