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Structure Homogeneity in CEO Compensation

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STRUCTURE HOMOGENEITY IN CEO COMPENSATION

BY

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ACCEPTANCE

This dissertation was prepared under the direction of the Danya Mi's Dissertation Committee. It has been approved and accepted by all members of that committee, and it has been accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Business Administration in the J. Mack Robinson College of Business of Georgia State University.

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ABSTRACT

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Prior compensation literature documents and investigates trending practices in CEO incentive contracting by exploring the designs of individual contractual components (e.g., performance targets, pay type, etc.) rather than the overall contract structure. Using distance measures based on a comprehensive set of contract elements derived from firms' proxy statements, I identify factors that are associated with a firm's CEO compensation structure homogeneity, which describes the degree to which a firm's CEO compensation structure is similar to industry practice. My study demonstrates that, consistent with the predictions under optimal contracting theory, a firm adopts a CEO compensation contract that is more similar to industry practice when the firm shares more common risks with its industry or when its owners share more common interests with its industry peers. However, the board of directors' ability to communicate and obtain inside information, as well as the use of compensation consultants, also contributes to compensation homogeneity unexplained by general CEO/firm specific characteristics. Lastly, I find evidence that CEO compensation homogeneity has a negative association with shareholders' wealth in the subsequent periods.

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1. Introduction

CEO compensation attracts much public attention, not only because CEOs are key corporate figures under the spotlight, but also because incentive contracting is an important corporate governance mechanism firm owners use to monitor and control (via corporate board) CEO behavior (Shleifer and Vishny 1997). Prior literature suggests that efficient incentive contracts should be specifically tailored to firm and CEO characteristics. However, both academic research and business media observe a lack of variability in CEO incentive contracts (e.g., Mishel and Wolfe 2019; Jensen and Murphy 1990; Murphy 2013; Core, Guay and Larcker 2003; Nobel 2015). For instance, as shown in Figure 1, over 80% of the large U.S. companies use accounting metrics in their performance measures and around 90% companies that publicly disclose their CEO compensation use equity to award their CEOs. It is practically unclear which type of incentive contracts is more effective as various forces work together to shape the structure of an incentive contract.

Therefore, in this study, I develop a measure of the similarity of a firm's CEO compensation package to industry practice and find that contract homogeneity persists even after controlling for CEO- and firm-specific characteristics. Using this measure, I investigate potential causes of contract homogeneity and its impact on shareholders' wealth.[1]

Prior compensation literature purports that, to establish interest alignment, CEO compensation packages should tailor to shareholder preferences and match firm- and CEO-specific characteristics (e.g., David, Kochhar, and Levitas 1998; Murphy and Zabojnik 2004). Other than firm and CEO characteristics, the extant literature also proposes several factors that contribute to

[1] CEO compensation is usually composed of two to three incentive grants, each one of which contain contractual terms from different aspects, such as award type, vesting criterion, performance measure, etc. Together with the amount of fixed pay, a CEO compensation package represents the entire contract structure adopted in a CEO incentive contract.

the contracting choices in CEO incentive contracts, including CEO labor market forces, social and political forces, and managerial power (Murphy and Zabojnik 2004; Jensen and Murphy 1990; Bebchuk and Fried 2003). Although these forces seem to influence CEO compensation structure from multi-aspects simultaneously, prior studies on CEO compensation structure largely focuses on specific key contract components of incentive contract (Core and Guay 1999; Bennett, Bettis, Goplan, and Milbourn 2017; Gong, Li, and Shin 2011; Bettis, Bizjak, Coles, and Kalpathy 2018). These key components include award types, performance measures, target types, and vesting criteria. Prior studies examine the determinants and impacts of these contractual components in isolation to shed light on our knowledge of CEO compensation structure. The issue here is an individual contractual component is likely to be interrelated with the other compensation components. For example, theoretically if a firm increases the use of equity awards, it is less likely to use performance-based incentives in its incentive contracts because equity itself is closely tied to firm performance. However, it is empirically unclear how specific design choice of a contractual element would interfere with the design of the overall contractual structure, which in turn influences managerial decisions. Therefore, although prior literature examining individual contractual components provides a great amount of inferential value, examining this issue from a more holistic point of view gives additional evidence to the overall compensation mosaic.

In this study, I approach the issue of CEO compensation homogeneity from two broader aspects. First, instead of focusing on a specific contractual component in incentive contracts, I incorporate all the key contractual components and their interrelations. Examining overall contract structure is necessary because incentive contracts take effect on individuals as a whole piece. Second, rather than examining compensation similarity between two CEO compensation packages as done in the accounting literature (Gallani 2016), I examine the degree to which a firm's entire

CEO compensation package structure is similar to industry practice.[2] The comparison between an individual CEO compensation package and industry practice can facilitate the understanding of trending practices in incentive contracting and further identify the key forces that shape the compensation structure we observe today.

I measure CEO compensation homogeneity using the distance measures developed to evaluate between-object proximity, which is widely applied in numerous social science studies.[3] I first list the five primary contractual dimensions that are identified as the key components of a compensation package in prior literature. These dimensions include: (1) award type; (2) vesting schedule; (3) performance measure; (4) target type; and (5) pay structure.[4] Next, I extract and quantify the contract elements of CEO compensation from each one of the dimensions relying on the information provided via firms' proxy statements. Using the contract elements from these dimensions as contracting metrics, I calculate pairwise distance among contracts of firms in the same fiscal year within each industry and construct an aggregated distance score for each firm-year.[5] I reverse this distance score and use it as a proxy for the level of homogeneity in a CEO compensation package in a firm-year. Based on a comprehensive set of contract components, this

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[2] Gallani (2016) finds that the performance measures and pay mix in two firms' CEO compensation packages are more similar to each other if these two firms are connected.

[3] The accounting studies that also use these techniques are Gallani (2016) and Brown (2017). Gallani (2016) has a similar setting, in which the author focuses on the comparisons between two selected features in CEO compensation packages of two firms.

[4] To be precise, in each one of the contractual dimensions, there are several variables that capture the characteristics of an incentive contract. These variables include: weight of cash/equity/stock award; weight of cliff/long-term vesting schedule; weight of accounting/price performance measures; weight of performance-based incentives; weight of RPE/hybrid performance targets; number of incentive grants used; number of performance measures used; total dollar amount (i.e., total grant value and salary) offered in the compensation package; and relation between fixed and contingent pay. These variables together describe a compensation structure to a very detailed extent. One limitation with these contracting metrics is that the levels of performance targets are not considered because (1) it is implausible to aggregate grant level targets (usually for different performance measures) to meaningful package level targets, and (2) target levels reflect not only target difficulty but also prior performance, making inter-firm comparison less informative.

[5] A high value of distance score suggests that a firm's CEO incentive contract has a structure that deviates from the common practice in its industry, while a low value of distance score suggests that the firm uses an incentive contract structure that is generic in its industry.

measure identifies compensation packages that contain similar contractual structures relative to industry practice. I then empirically examine the potential determinants and consequences of *structure homogeneity* in CEO compensation packages and investigate the implications of this contracting practice.

First, I examine two firm-specific factors that, if in line with optimal contracting, should be positively associated with CEO compensation homogeneity. Specifically, I predict and find that firms' common risk and common ownership are significantly positively associated with the measures of structure homogeneity in CEO compensation package. Consistent with the optimal contracting theory, these findings support that firms use homogeneous compensation structures, in part, to induce principal-agent interest alignment.

Second, I examine the associations between board-specific characteristics and CEO compensation homogeneity. I analyze the relationships between contract homogeneity and three primary board structures: board size, board independence, and multiple directorships. Among these board attributes, board independence, in general, is a favorable board attribute while the findings on board size and multiple directorships are mixed (Sah and Stiglitz 1986, 1991; Vafeas 1999). However, regardless of their implications on board quality, these attributes all capture directors' capacity to communicate with each other and the management (Cheng 2008; Harris and Raviv 2008; Jiraporn, Davidson, DaDalt, and Ning 2009). This aspect of board attributes is essential in incentive contracting as drafting an incentive contract requires specific information from insiders regardless of the quality of board. Consistent with my predictions, I find that firms with larger boards, higher percentage of outside directors, and more multiple directorships are more likely to use incentive contracts with greater structure homogeneity. These findings demonstrate that the design of incentive contracts converges to industry practice when the costs to

communicate and obtain internal information are high for corporate boards. Although, outside directors and directors holding multiple board assignments may purposefully pursue compensation homogeneity for good reasons, the performance tests show results inconsistent with this explanation. In addition, I also find that the use of compensation consultants is positively associated with firms' CEO compensation homogeneity.

Through the tests examining the relation between performance and compensation homogeneity, I find some evidence that firms with greater structure homogeneity in their CEO compensation packages experience better accounting performance in the contracting period but experience worse performance in the subsequent accounting period. The findings on performance impacts suggest that the adoption of homogeneous incentive contracts represents firms' attempts to optimize contract efficiency; however, following industry practice in the design of compensation package appears to hurt shareholders' wealth in the long run. In other words, the associations between structure homogeneity and firm performance in different accounting periods indicate that in general the use of homogeneous contract structure is not an optimal contracting practice.

To better understand what a homogeneous contract structure would look like, I examine the associations between structure homogeneity and five primary contract attributes: pay level, the use of equity award, the use of long-vesting schedule, the use of performance-based grants, and the use of accounting performance measures. I further examine the associations between overall structure homogeneity and the homogeneity in each one of the five contractual dimensions and find that each individual contractual dimension contributes to this overall structure characteristic. I also investigate the relationships between each dimension of structure homogeneity in CEO

compensation package and the identified firm-/board-specific attributes. I further discuss the empirical findings in Section 5.

This study contributes to the incentive contract literature. Firm owners use incentive contracting as an important tool to align managers' interests with their own economic benefits (Healy and Palepu 2001). Although prior literature studies CEO incentive contracts extensively using both the optimal contracting approach (Murphy 1999; Core, Guay, and Larcker 2001) and the managerial power approach (Bebchuk and Fried 2003, 2004), many questions regarding overall contract structure are not empirically examined in the literature. This study provides a missing piece of the CEO compensation puzzle by investigating structure homogeneity in CEO compensation package relative to industry-wide practice. Specifically, through a measure that identifies tailored compensation packages from homogeneous ones, I empirically examine the potential determinants and effects of a package level structure characteristic.

By identifying the determinants of structure homogeneity in CEO compensation package, this study extends our understanding of contracting practices in real-world business and identifies the institutional factors that may influence overall contractual structures. Theory-wise, the structure homogeneity determinants identified in this study provides direct evidence consistent with Bebchuk and Fried's (2003) claim that compensation arrangements are shaped by a mixture of forces (e.g., social/political forces and CEO/firm characteristics). Findings in this study also provides some possible explanations to the existence of trending practice in incentive contracting.

This study also contributes to the corporate governance literature. Corporate governance has drawn much public attention since the scandals of 2001-2002 and the financial crisis of 2008-2009 (Larcker and Tyan 2011). The corporate board plays a crucial role in governance systems. Thus, researchers and practitioners are interested in investigating the effects of different board

characteristics (e.g., Cheng 2008; Ferris, Jagannathan, and Pritchard 2003). To ensure that the corporate board serves the interests of shareholders, NYSE requires that the three principal board committees (audit, compensation, and nominating) of listed companies contain solely independent directors (Faleye, Hoitash, and Hoitash 2011). However, this requirement may cause unintended consequences in firms' monitoring processes. Similarly, prior literature documents that board size and multiple directorships are important factors that influence board quality. The findings of this study add on to the literature by revealing an impact of board size, independence, and multiple directorships on CEO incentive contracting that might be overlooked by regulators and practitioners.

2 Theory Development

2.1 Contracting Theories and CEO Incentive Contract

There are two dominating theoretical frameworks in the compensation literature. The optimal contracting model assumes boards can design efficient incentive contracts that maximize shareholders' wealth (Murphy 1999). On the contrary, the managerial power approach views contracting as part of the agency problem itself and managers use their power to influence contracting decisions (Bebchuk and Fried 2003).[6]

Based on these two frameworks, the extant empirical studies investigate contracting behavior from five main dimensions. Findings regarding the five dimensions demonstrate that factors influencing one dimension of the contractual elements are likely to influence contracting specifications in the other dimensions. For example, Core and Guay (1999) find that the optimal equity incentive level is related to firm size, growth opportunities, and monitoring costs. In the

[6] A few review studies provide detailed summaries of the extant findings in the compensation literature: see Core, Guay and Larcker (2003), Frydman and Jenter (2010), Frydman and Saks (2010), Goergen and Renneboog (2011), and Edmans, Gabaix and Jenter (2017).

meanwhile, prior literature also documents that CEO pay level is associated with firm size (Gabaix and Landier 2008; Gabaix, Landier and Sauvagnat 2014), firm risk (Cheng, Hong and Scheinkman 2015), CEO characteristics (Graham, Li and Qiu 2012), and governance mechanisms (e.g., Armstrong, Ittner, and Larcker 2012; Balsam, Gu and Mao 2018; Conyon, Park and Sadler 2009). Additionally, a firm's choice of performance measures depends on not only the informativeness of the performance measures (De Angelis and Grinstein 2015), but also firm owners' investment horizons and strategic imperatives (Li and Wang 2016), which also influence a firm's decision on the vesting schedule of CEO incentives (Gopalan, Milbourn, Song, and Thakor 2014).

However, these studies tend to view the choices of individual contractual terms as done in a vacuum.[7] Moreover, choices of different contractual terms are usually interdependent.[8] It is, therefore, necessary to incorporate a comprehensive set of contractual components, from different dimensions in particular, to examine the structure and overall characteristic of an incentive contract.

2.2 Firm Attributes and CEO Compensation Homogeneity

I first examine the firms-specific characteristics that can influence CEO compensation homogeneity within the scope of optimal contracting approach. Firms use CEO incentive contracts to motivate risk-averse managers to bring shareholders economic benefits (Jensen and Murphy 1990). Incentive contracts with certain contractual structures motivate managerial actions in certain ways. Under the optimal contracting approach, firms are more likely to use industry-wide homogeneous compensation packages when doing so leads to a desirable behavioral impact. For

[7] As discussed in Section 1, the grants of a compensation package may use different contractual terms. For instance, a firm may assign a time-vesting grant and a performance-vesting grant simultaneously in the same incentive contract, or the firm can use different award types in these two grants.

[8] The use of some contractual terms directly determines the use of the other terms. For instance, if a firm uses performance-based grants, it must also determine the performance measures and performance targets for the grants. Some contractual terms are less likely to be associated with each other. For instance, both cash and equity awards (award type) can be either long-term or short-term (vesting schedule).

instance, risk is a key factor that influences incentive contracting (Prendergast 2002). If a firm is largely influenced by more risk factors that also impact its industry peers in a similar fashion, the firm would adopt an incentive contract with a structure that is more similar to industry practice to address those common risks. Therefore, I expect a firm to use a more homogeneous CEO compensation package if it shares more common risks with its industry. This leads to the first hypothesis:

> ***H1:*** A firm's structure homogeneity in its CEO compensation package is ***positively*** associated with the common risks shared with its industry.

Furthermore, a firm owners' primary goal is to maximize their own economic benefits. When shareholders use incentive contracts to ensure that their interests would align with the interests of managers, shareholders select specific incentive structures to serve their specific purposes. Prior literature finds that a firm's CEO compensation policy depends on its shareholders' preferences and investment horizon (David et al. 1998; Cadman and Sunder 2014). Therefore, when a firm has a higher proportion of influential shareholders who have similar preferences to other firm owners in the same industry (i.e., high industry common ownership) and these preferences are effectively incorporated in its contract design, the firm's CEO incentive contract should also demonstrate a structure that converges to industry-wide practice. To test this prediction, I form the following hypothesis:

> ***H2:*** A firm's CEO compensation homogeneity is ***positively*** associated with the proportion of common ownership shared with its industry peers.

2.3 Board Attributes and CEO Compensation Homogeneity

The board of directors is one of the most important mechanisms firm owners rely on to monitor and control executives' actions (Akyol and Cohen 2013). The board of directors undertakes two primary roles, monitoring and advising top management (Jensen 1993; Armstrong

et al. 2012; Larcker and Tayan 2013). Board members carry out these roles through different activities, including advising and monitoring the drafting of CEO incentive contracts (Faleye et al. 2011).

The compensation committee on the board provides advice on the design of CEO incentive contracts, sometimes with the assistance of compensation consultants (Cadman, Carter and Hillegeist 2010). The board and the shareholders can then oversee and approve the recommendations given by the compensation committee (Mace 1972; Price 2018).

Agency theory suggests that CEO's personal interests are not fully aligned, or even may conflict, with the interests of the firm owners (Jensen and Meckling 1976; Ross 1973). Executive compensation is one of the most important mechanisms to address potential agency problems (Shleifer and Vishny 1997). Optimal contracting theory and managerial power theory are both used in the literature to explain contracting practices (Frydman and Jenter 2010). Under the optimal contracting approach, a corporate board is expected to design the incentive contracts that maximize shareholders' wealth (Core, Holthausen and Larcker 1999). Firms are more likely to use homogenous incentive contracts if such contracts motivate mangers to act in the interests of shareholders. However, since directors' behaviors are also subject to agency problems and various constraints (Bebchuk and Fried 2003), incentive contracting can be a venue from which managers extract their rents (Abernethy, Kuang and Qin 2015; Morse, Nanda and Seru 2011). Therefore, to better understand the underlying mechanisms that lead to structure homogeneity in CEO compensation, it is critical to clarify the relationship between firms' CEO compensation homogeneity and corporate boards, through which incentive contracts are generated.

Both the advising and monitoring tasks in incentive contracting require effective communication between disparate parties and essential information from insiders. However,

boards with different structures may carry out these tasks differently depending on their costs of communication and their ability to obtain essential information. There are three board attributes that signal board quality in different ways, but all directly influence board members' communication costs. According to Jensen (1993), board size is a factor that determines whether a board can function effectively. As board size increases, the members on the board bear higher coordination and communication costs. These costs eventually slow down the decision-making processes of the board of directors (Cheng 2008). Moreover, both economic and social psychology studies on group decision-making suggest that decisions made by larger groups are likely to be less risky and less extreme (Sah and Stiglitz 1986, 1991). The final choices made by a larger group are more likely to be "a compromise among individual positions." (Moscovici and Zavalloni 1969). Under the context of drafting incentive contracts, board consensus on the structure of an incentive contract is easier to emerge if the contract structure is more similar to common practice in the industry. These arguments are consistent with the standpoint raised by Jensen and Murphy (1990) that social/political forces hinder the construction of tailored contractual structures. Putting this intuition together, larger boards are more likely to approve homogeneous compensation structures, which can be readily justified as legitimate practice commonly observed in the industry. Therefore, I form the following hypothesis:

> ***H3a:*** A firm's CEO compensation homogeneity is ***positively*** associated with its board size.

Similarly, director independence may also affect a board's decision to use homogeneous contracts. Corporate boards are composed of either affiliated or outside directors, and the latter provide valuable monitors but also bear higher communication costs when acquiring information from insiders (Faleye et al. 2011). Nevertheless, major stock exchanges (i.e., NYSE and Nasdaq) and regulatory bodies pay close attention to the composition of the boards of directors, board

independence in particular. NYSE, for instance, requires that the compensation, nominating, and audit committees be entirely composed of independent directors, while the Sarbanes-Oxley Act of 2002 (SOX) imposes the same requirement for the audit committee.

Although outside directors can effectively curtail agency problems, their ability to acquire relevant information from insiders is limited (Harris and Raviv 2008). If insiders do not provide sufficient information in the process of incentive contracting, the outsiders will have to make decisions based on alternative information sources, such as industry-wide practice.[9] Therefore, higher percentage of outside directors on board may further induce the use of homogenous incentive contracts. These arguments lead to the following hypothesis:

H3b: A firm's CEO compensation homogeneity is ***positively*** associated with its board independence.

Another important board attribute that draws much attention in the corporate governance literature is multiple directorships (Ferris et al. 2003). This attribute describes the number of external board assignments held by directors on the board. One stream of literature suggests that directors who have multiple board assignments may be too busy to effectively fulfill their monitoring roles, leading to weaker corporate governance and worse firm performance (Core et al. 1999; Jiraporn et al. 2009). Other studies indicate that multiple directorships signal director quality and reputational capital (Vafeas 1999), which are positively related to firm performance and are in line with shareholder interests (Miwa and Ramseyer 2000; Brown and Maloney 1999).

[9] Both board size and board independence also relate to firms' agency problems. On the one hand, boards with larger size have more severe agency problems because individual directors' costs of not fulfilling their monitoring responsibility is relatively lower (Cheng 2008). The agency problems caused by larger board size may also affect the CEO compensation homogeneity of a firm. On the other hand, prior literature views board independence as a favorable characteristic of corporate boards, because outside directors can better perform their monitoring duties (Faleye et al. 2011). Contrary to the effect of large board size on agency problems, board independence may decrease agency problems in a firm. However, Larcker and Tayan (2011) point out that it is difficult to infer the quality of the board by examining the structure of the board. Therefore, I do not make a prediction based on board quality inferred from observable board attributes in my hypotheses (Larcker and Tayan, 2011).

Regarding the practice of incentive contracting, this board attribute is more likely to induce the adoptions of homogenous CEO compensation packages because director busyness serves as another factor that increases the communication costs for the board of directors. For instance, Jiraporn et al. (2009) find that individual directors with multiple board assignments are more likely to be absent from board meetings. In addition, directors would be more likely to refer to industry-wide practice in incentive contracting if they have board experiences from multiple firms. Thus, my next hypothesis is:

> ***H3c:*** A firm's CEO compensation homogeneity is ***positively*** associated with its multiple directorships.

It is also possible that board independence and multiple directorships induce compensation homogeneity through mechanisms other than the above. Specifically, outside directors and directors who hold external board assignments are more likely to be aware of industry contracting practices that are more effective and widely used. Therefore, regardless of the communication costs to obtain inside information in incentive contracting, board independence and multiple directorships may still induce the adoption of homogeneous incentive contracts if such practice sounds plausible to the board of directors. This argument gives an alternative explanation to the predictions in H3's.

2.4 CEO Incentive Contract Homogeneity and Compensation Consultant

In the process of incentive contracting, firms can seek advice from compensation consultants. A sizable proportion of large U.S. firms hire compensation consultants in the design of incentive contracts.[10] Although consultants provide professional advice on compensation designs, there are critics questioning the role of compensation consultants (Bebchuk and Fried 2003, 2004; U.S.

[10] The sample firms in ISS Incentive Lab database are large U.S. firms. Based on the data, 81.5% of the firm-years in the sample of this study show record of using compensation consultants.

House of Representative 2007). In particular, compensation consultants are viewed as a mechanism to justify CEO pay (Armstrong et al. 2012). It is true that compensation consultants may have the expertise to design more tailored incentive contracts, but it is unlikely that they have more inside information than the board of directors to customize CEO compensation packages. Even if consultants manage to obtain the information necessary for tailored incentive contracts, as discussed in Section 2.2, the board of directors may not be able to tell it is plausible to adopt contracting practices that deviate much from industry norm. On the contrary, with access to a good amount of contracting data, compensation consultants are more likely to recommend certain practices readily supported by the data at hand. Therefore, I expect that firms with compensation consultants use CEO compensation packages more similar to industry practice:

> ***H4:*** A firm's CEO compensation homogeneity is ***positively*** associated with its use of compensation consultant.

2.5 CEO Incentive Contract Homogeneity and Firm Performance

In this section, I discuss the consequences of adopting homogeneous incentive contracts. Based on the discussions in Section 2.2 and 2.3, as well as the findings from prior literature, the underlying reasons for using homogeneous compensation packages are mixed. Showing the consequences of using homogeneous incentive contracts provides insights into the implications of the underlying construct.

On the one hand, structure homogeneity in CEO compensation packages may fit well in CEO labor market dynamic. Firms use incentive contracts to attract or retain talent (Carter, Franco and Tuna 2019). By using common contracting practices, firms make their incentive contracts appealing and easy to compare. Therefore, homogeneous compensation packages may bring shareholders greater economic benefits by attracting or retaining competent executives. On the other hand, structure homogeneity in CEO compensation packages may be just an easily justifiable

camouflage that CEOs can use to conceal their rent extracting activities (Bebchuk and Fried 2003). Therefore, homogeneous compensation packages may not serve to align manager and owner interests and may negatively influence shareholder wealth. It is also possible that structure homogeneity has no effect on firm performance as a result of mixed forces. Therefore, I examine the following research question:

> ***RQ:*** What is the association between CEO compensation homogeneity and firm performance?

3. Data and Methodology

3.1 Sample Selection

I obtain CEO compensation information from ISS Incentive Lab Academic Data (1998-2018). The database provides contract information at grant level. There are 75,068 CEO grants available among a total of 408,126 grant samples. These CEO grants are components of 25,151 CEO compensation packages constructed by 2,225 firms. The CEO grant samples are used to construct the compensation homogeneity measures (see Section 3.2). All final data is collected at firm-year level to conduct analyses. Table 1 outlines the construction of the samples used in the analyses.

I start with 25,151 firm-years and remove any firm-year observations without complete grant level data. I remove observations that have missing compensation homogeneity values or missing CEO attributes, leaving 11,463 sample firm-years. I then require ownership information from Thomson-Reuters Institutional Holdings (13F), firms' financial information from COMPUSTAT, market data from CSRP, and analyst following data from I/B/E/S. This procedure further reduces the sample size to 10,810 firm-years. The sample is further reduced by 1,175 observations in the analyses of board attributes. Board attribute data is obtained from BoardEx.

3.2 Measuring CEO Compensation Homogeneity

I construct a package-level contracting matrix (1 by 14) for each firm-year in the sample based on the grant level contractual components from different aspects. The compiled package-level contracting matrix presents an incentive contract based on the five key dimensions of a compensation package (i.e., award type, vesting schedule, performance measure, target type, and pay structure). Appendix A describes the procedure of aggregating grant level information to package level in detail. Table A1 presents an example of a CEO compensation structure at grant level. The grant level information is then translated to package level information. As shown in Table A2, all the contractual components are translated into a weight relative to the total grant value of an incentive contract. This measure incorporates different aspects of contract elements all at once, capturing the package-level contracting status from a comprehensive perspective.

A firm's package level information is then compared with each one of its industry peer's contracting matrix based on the quantified contractual terms and each pair of the comparison produces a value that represents the dissimilarity between the two contracts compared. I use two alternative methods to calculate the distance of each contract pair: Euclidean distance (Hair, Black, Anderson, and Tatham 2006) of standardized Principal Component scores and Mahalanobis distance (Mahalanobis 1936). Both methods incorporate the correlations between elements and project multi-dimensional data to a single space.[11] As described in Appendix B, I then take the median of all the distance values derived from the pairwise comparisons and this value becomes the inverse of a firm's CEO compensation homogeneity. I take the natural logarithm of one plus

[11] The calculation of Mahalonobis distance automatically weighs each variable equally and accounts for covariances (Brown 2017), while the calculation of Euclidean distance itself does not account for scale and covariance. Instead, variables used in the calculation of Euclidean distance are first transformed using PCA. This procedure takes care of the two issues aforementioned.

the distance measure and reverse the value (Brown 2017) to represent CEO compensation homogeneity. To make sure the comparisons between incentive contracts are reasonable and complete, the construction of CEO compensation homogeneity requires the information of grant value for each grant. If any one of a firm's incentive grants has missing grant value, the firm is removed from the sample firm-year. This data procedure brings down the sample size to 9,635 observations. I further define all variables used in the analyses in Appendix C. All continuous variables are winsorized at the 1st and 99th percentiles.

3.3 Firm and Board Attributes vs. CEO Compensation Homogeneity

First, I examine the relationships between the identified firm-/board- specific attributes and CEO compensation homogeneity with the following regression model:

$$Homogeneity_{i,t} = \beta_0 + \sum \beta_j \, firm_{det_{i,t-1}} + \sum \beta_k \, board_{det_{i,t-1}} + \beta_6 Consultant_{i,t} + \sum \beta_l \, Controls_{i,t-1} + Year + Industry + \varepsilon_{i,t} \quad (1)$$

where *i* and *t* denote firm and fiscal year subscripts, respectively. The dependent variable *Homogeneity* is the main variable of interest. It represents one of the measures of CEO compensation homogeneity calculated for each firm-year (i.e. *Homogeneity_ed* and *Homogeneity_md*), and *firm_det* represents two independent variables, firm *i*'s common risk (*Common_risk*) and common ownership (*Common_own*). The term *board_det* includes three independent variables: Board size (*Board_size*), board independence (*Board_ind*), and multiple directorship (*Board_busy*). *Consultant* is an indicator variable, which equals to 1 if firm *i* in year *t* hires a compensation consultant, and 0 otherwise. The coefficients on *firm_det* will be used to examine the association between a firm's CEO compensation homogeneity and its common risk (H1) and the proportion of common ownership (H2). The coefficients on *board_det* will be used to examine the association between CEO compensation homogeneity and board size (H3a), board

independence (H3b), and multiple directorships (H3c). Lastly, the coefficient β_6 on *Consultant* will be used to investigate the H4. *Controls* denotes controls variables. I include year and industry fixed effects to account for the effect of time-trends and time-invariant industry effect because the extent of structure homogeneity varies across industries (Figure 5). I also cluster standard errors at firm level to adjust for unobserved firm effects (Petersen 2009).

The general control variables include CEO and firm characteristics that are documented to be influential on the structure of CEO incentive contracts in prior compensation literature. I first include several CEO characteristics among the control variables. The CEO level control variables include age (*CEO_age*), years in position (*CEO_tenure*), and chairman on board (*CEO_chair*). These variables capture CEO characteristics such as risk preferences, experiences, and power (e.g., Hill and Phan 1991; Serfling 2014; Amzaleg, et al. 2014; Essen, Otten and Carberry 2015). All the CEO control variables are measured in the contracting period.

Other than CEO characteristics, firms with different characteristics may require different contract structures to induce certain managerial decisions. I include firm characteristics such as size (*Asset*), growth opportunities (*MTB*), leverage (*Leverage*), and prior performance (i.e. *ROA* and *RET*) to control for firms' operational environment. In addition, I also control for firms' industry competition (*Concentration*) as it affects firms' strategic move (Bushman, Hendricks and Williams 2016). I include analyst following (*Analyst*) to control for firms' market attention and information environment, which also influences the components of incentive contracts theoretically (Abowd 1990; Lazear 1986). Another important factor that impacts the structure of an incentive contract is ownership structure. Large shareholders can exert governance and influence firm decisions (Edmans 2014). Thus I control for percentage of large shareholders of each sample firm (*BlockOwn*). Prior literature also identifies firm risk as an essential determinant

of compensation structures (Cao and Wang 2013; Cheng et al. 2015; Gong et al. 2011). Therefore, I include variables that control for prior firm risk (i.e. *EarnVol* and *RetVol*). All the firm control variables are measured in the accounting period prior to the contracting period.

3.4 CEO Compensation Homogeneity vs. Firm Performance

To better understand the effects of structure homogeneity in CEO compensation package, I test the association between compensation homogeneity and firm performance. Specifically, I examine the effect of compensation homogeneity on accounting and market performance in different horizons. I estimate the following regression model to investigate RQ:

$$Perform_{i,t+n} = \beta_0 + \beta_1 Homogeneity_t + \sum \beta_l \, Controls_{i,t-1} + Year + Industry + \varepsilon_{i,t} \quad (2)$$

where *i* and *t* denote firm and fiscal year subscripts respectively, and *n* equals 0, 1, 2, or 3. It signifies the number of year(s) after contracting period *t*. The dependent variable *Perform* refers to a firm's accounting performance: return on assets (*ROA*). *Perform* also includes stock performance: returns (*RET*). The independent variable of interest is *Homogeneity,* which represents either one of the compensation homogeneity measures constructed (*Homogeneity_ed* or *Homogeneity_md*). I also include firm and CEO characteristics in the regression models to control for the effects of other factors on firm performance and compensation attributes. I include year and firm fixed effects to account for the effect of time-trends and time-invariant firm effect on firm performance. β_1 will be used to investigate the research question in Section 2.5.

3.5 Descriptive Statistics

In Table 2 Panel A, I report the descriptive statistics on variables of interest and controls for all sample firm-years. The firm size in total assets of my sample is $ 5,791 million on average, which is on the right tail of the sample firms in recent compensation studies (Balsam, Gu and Mao 2018; Abernethy et al. 2015; Tice 2020). This figure is consistent with the notion that ISS Incentive

Lab provide compensation information of large public firms for each year (Bettis, et al. 2018; Tice 2019).

Table 2 Panel B presents the trends of the primary contractual terms during the sample period. Consistent with prior literature, the first two columns show that CEO incentive contracts become increasingly complex as they include 59 percent more incentive grants and use four times more performance measures over the past two decades. As shown in Figure 1, over 90 percent of the sample firm-years use equity awards in their CEO compensation packages. Although equity awards remain popular over the past two decades, firms are gradually replacing option awards with stock awards in terms of the weight in total value of incentive grants, while the weight of cash awards moves around 20 to 30 percent of total grant value. The value of contingent pay in CEO compensation fluctuates largely from year to year, but it has a clear increasing trend (see Figure 2). Similarly the weight of performance-based incentives has increased dramatically and more firms have started to use RPE grants and grants with both APE and RPE (see Figure 3). Moreover, compared with stock performance measure, accounting performance measures are more widely used by firms in their CEO compensation packages (see Figure 4). Table 2 Panel C presents the usage of primary contract features by major industries. These statistics indicate that the use of contractual features varies across industries.

Table 3 summarizes the correlations of each pair of selected continuous variables used in the analyses. Based on Table 3, the correlation between firm size and compensation homogeneity is negative (-0.0543 and -0.0843), meaning larger firms tend to use more tailored contract structure, as these firms are usually more complex. On the other hand, the correlation between firms' analyst coverage and compensation homogeneity are positive (0.0909 and 0.0938), indicating that compensation homogeneity might be subject to the impact of market attention. I conduct a number

of formal tests to examine the determinants and consequences of CEO compensation homogeneity and discuss the results.

4. Results

4.1 Tests of Firm and Board attributes

Table 4 presents the results of regression model (1). Columns (1) and (3) use *Homogeneity_ed* as dependent variable, while columns (2) and (4) use *Homogeneity_md* as dependent variable. Columns (1) and (2) demonstrate the associations between specific CEO/firm characteristics and compensation homogeneity. The negative coefficients on CEO age and tenure suggest a positive association with the use of tailored compensation packages. This is because when board of directors have greater familiarity with CEOs, they are more capable of drafting incentive contracts that fit CEO attributes. These associations are also consistent with the argument that the board of directors need to obtain more information from management to design tailored incentive contracts.

H1 predicts that firms' common risk is positively associated with their CEO compensation homogeneity. Columns (3) and (4) show the regression results with the specified firm and board attributes of interest. The coefficients of *Common_risk* are positive and significant for the two *Homogeneity* measures (0.069, t=3.99; 0.101, t=2.82). These results support my prediction in H1 that, under optimal contracting assumption, a firm tends to use more homogeneous incentive contract if the amount of common risks shared between the firm and its industry is high. The coefficients on *Common_own* support H2, in which I predict that a firm tends to use more homogeneous incentive contract if its shareholders simultaneously own stakes of more industry peers (0.168, t=2.74; 0.340, t=2.51). These findings imply that optimal contracting, in part, explains the existence of structure homogeneity in CEO compensation package.

The coefficients on *Board_size*, *Board_ind*, and *Board_busy* presented in Table 4 also support the predictions in H3a, H3b, and H3c, respectively. First, I find a significantly positive association between *Board_size* and *Homogeneity* (0.063, t=3.61; 0.082, t=2.15), supporting my prediction in H3a that large board size increases communication costs and induces the use of homogeneous incentive contracts. Second, in H3b I predict that high degree of board independence makes it more difficult to obtain information from management, leading to the adoption of industry-wide contracting practice. Consistent with my prediction, the coefficients on *Board_ind* are also significantly positive (0.142, t=2.50; 0.334, t=3.01). Lastly, consistent with my prediction in H3c, I find a positive association between *Board_busy* and *Homogeneity* (0.045, t=2.78; 0.090, t=2.49). This finding further supports that certain board attributes impede a firm's adoption of tailored incentive contracts.

H4 predicts that the use of compensation consultant increases CEO compensation homogeneity because consultants are more likely to use available industry-wide data to support their recommendations. Also, recommendations backed by industry-wide practice are more likely to be accepted by the board of directors. The coefficients on *Consultant* strongly support my prediction in H4 (0.099, t=5.97; 0.159, t=4.66).

4.2 Tests of Firm Performance

In this section, I discuss the results reported in Table 5. This table shows the results of regression model (2), where the dependent variable is one of the performance measures (i.e. *ROA* and *RET*) measured in different accounting periods. The independent variable of interest is *Homogeneity* (i.e. *Homogeneity_ed* and *Homogeneity_md*). In Panel A and B of Table 5, columns (1) through (8) show ROA in year *t* (contracting period), *t+1*, *t+2*, and *t+3*, respectively. The coefficient is positive and significant for one homogeneity measure *Homogeneity_md* (0.005,

t=2.03) in column (2) but becomes negative in columns (3) and (5) (-0.015, t=-2.92; -0.015, t=-2.81). Panel B of Table 5 does not show positive performance impact in year t but does show negative performance impact in year t+1 and t+3. To summarize, the test results presented in Table 5 provide some evidence that compensation homogeneity negatively impacts firms' accounting and stock performance in the subsequent accounting period.

5. Additional Analyses

5.1 Contract Attributes and Compensation Homogeneity

In this section, I examine CEO compensation homogeneity, the construct of interest. I first examine the relations between primary contract attributes and compensation homogeneity. Examining the associations between compensation homogeneity and individual contract attributes further reveals what a homogenous CEO incentive contract would look like. I modify model (1) and estimate the following regression model:

$$Homogeneity_{i,t} = \beta_0 + \sum \beta_c Contract_{i,t} + \sum \beta_j firm_{det\,i,t-1} + \sum \beta_k board_{det\,i,t-1} + \beta_6 Consultant_{i,t} + \sum \beta_l Controls_{i,t-1} + Year + Industry + \varepsilon_{i,t} \quad (3)$$

where *Contract* represents five primary contract attributes for firm *i* in year *t*: (1) The total value of pay from salary and bonus (*Pay*); (2) The use of equity award (*Award_equity*); (3) The use of long-term vesting schedule (*Vest_long*); (4) The use of performance-based grants (*PerformanceBase*); and (5) The use of accounting performance measures (*Measure_accounting*).[12]

Table 6 presents the results for regression model (3). The coefficients on *Contract* provide some insights on what compensation homogeneity is capturing. The coefficient on *Pay* is

[12] *Award_equity*, *Vest_long*, *PerformanceBase*, and *Measure_accounting* are all indicator variables, which equal 1 if firm *i* uses the specified contract component in any one of its incentive grants, and 0 otherwise.

significantly negative (-0.036, t=-2.7) when the dependent variable is *Homogeneity_md*, indicating that firms may compensate CEOs with higher pay for using tailored incentive contracts. The coefficients on *Award_equity* (0.344, t=24.57; 0.422, t=14.12), *Vest_long* (0.237, t=11.57; 0.631, t=18.56), and *Measure_accounting* (0.202, t=8.45; 0.580, t=13.46) are all positive and significant, while the coefficients on *PerformanceBase* are significantly negative (-0.175, t=-6.47; -0.551, t=-12.00).[13] These results indicate that the choices of contractual features inherently influence the structure homogeneity of an incentive contract. In particular, a performance-based grant is more likely to introduce unique elements to the contract through different combinations of performance measures. However, firms seem to use equity awards, accounting performance measures, and vesting horizon in similar fashions. What is more, the negative relation between pay level and structure homogeneity is in line with findings in prior literature regarding compensation complexity and compensation risk (Albuquerque, Carter, and Lynch 2018; Albuquerque, Albuquerque, Carter, and Dong 2020). That is, with fewer reference points, tailored incentive contracts could be perceived as more complex and riskier by managers. Therefore, CEOs need to be compensated at higher pay level when their incentive contracts are less similar to industry practice.

5.2 Structure Homogeneity of Individual Contractual Components

Next, I examine the structure homogeneity based on individual dimensions of contract components (i.e. award type, vesting schedule, performance measure, target type, and pay). This test explores whether the overall structure homogeneity is driven by the structure homogeneity of

[13] Some of the contractual features included in the tests are highly correlated, therefore potential multicollinearity issue may incur. Using a Variance Inflation Factors (VIF), I test for multicollinearity among the independent variables of interest. The VIFs do not exceed the threshold value of 10, therefore I keep the contractual variables in the same regression models.

any particular dimensions. I use the following regression model to investigate the relationships between structure homogeneity of individual dimensions and the overall structure homogeneity:

$$Homogeneity_{i,t} = \beta_0 + \sum \beta_c Homogeneity_{iv_{i,t}} + \sum \beta_j firm_{det_{i,t-1}} + \sum \beta_k board_{det_{i,t-1}} + \beta_6 Consultant_{i,t} + \sum \beta_l Controls_{i,t-1} + Year + Industry + \varepsilon_{i,t} \quad (4)$$

where *Homogeneity_iv* represents the key dimensions of contract components used to construct the overall structure homogeneity of a compensation package. Table 8 Panel A reports the results of model (4). The coefficients on *Homogeneity_iv* are all significantly positive, indicating that the overall structure homogeneity in CEO compensation package is not driven by the homogeneity of any single dimension of contract components.

I re-run model (1), replacing dependent variables with *Homogeneity_iv* to investigate how firm-/board- specific attributes affect the structure of each dimension.[14] Results presented in Panel B of Table 8 show that the identified firm/board attributes influence the structure homogeneity of individual contract dimensions in similar manners directionally, except *hg_Target*. Specifically, when the dependent variable represents structure homogeneity of target types (*hg_Target*), the coefficient on *Board_ind* is marginally significant (-0.215, t=-1.88), while the coefficient on *Consultant* is negative and significant (-0.166, t=-6.59). These results imply that outside directors and consultants may rely more on industry-wide practice but less on inside information from management to draft customized structure of target types.

I also re-examine model (2) using *Homogeneity_iv* as independent variables and report the results in Panel C of Table 7. The structure homogeneity of individual contract dimensions imposes

[14] The regression results of model (4) using *Homogeneity_iv* calculated with Mahalanobis distance provide the same inferences as shown in Table 7.

different impacts on firm performance. The mixed results shown in Panel C indicate that individual contract dimensions may not be sufficient to explain the overall performance impact of structure homogeneity in CEO compensation package.

6. Conclusion

Extending the extant literature documenting and explaining the existence of trending practice in CEO incentive contracting, this study empirically investigates compensation homogeneity, a contract structure attribute at compensation package level and identifies factors that contribute to such phenomenon. The extant literature uses the relation between realized pay and shareholder wealth to access the impact of compensation structure (Jensen and Murphy 1990; Mishra, McConaughy, and Gobeli 2000; Brick, Palmon and Wald 2012). Strong pay-performance relationship is considered as a favorable feature in incentive contracts by regulators and investors (Bettis, Bizjak, Coles, and Kalpathy 2010; Gerakos, Ittner, and Larcker 2007). However, the effectiveness of performance-based incentives varies with firm owners' capacity to monitor and evaluate managers' input (Lazear 1986; Jensen and Murphy 1990). It is, therefore, difficult to translate theoretically plausible pay-performance relationship into empirically tractable models (Abowd 1990).[15] Moreover, CEO compensation packages with dissimilar structures may not necessarily lead to different pay-performance relationship. Through a horizontal comparison of incentive contract structures, the homogeneity measure in this study incorporates the primary contractual components indiscriminately, unveiling a more complete picture of the effect of package level homogeneity in CEO compensation.

[15] The impacts of incentives on manager behaviors can even fall outside of the boundary of the standard principal-agent model, as managers' behaviors are driven by not only economic benefits, but also certain social preferences (Stevens and Thevaranjan 2010). Therefore, apart from the contingent elements in CEO incentive contract, the role of non-contingent part should not be ignored.

Using this measure, I identify firms that use similar incentive contract structures to industry practice and show evidence that compensation homogeneity unexplained by general firm/CEO factors is associated with undesirable outcomes for firm owners. More importantly, the findings in this study provide meaningful practical implications to both regulators and practitioners. Specifically, when implementing policies to improve board independence and multiple directorships, firms and regulators should be aware of the unintended effect of their boards of directors on the processes of incentive contracting. It is true that outside directors and those who hold multiple board memberships may impose stronger monitor and provide better advice, firms may not be able to obtain desirable CEO incentive contracts out of such board composition. It is, therefore, important to put in additional mechanisms to fill in such unintended information gap in incentive contracting. Furthermore, the findings in this study also reveal that compensation consultant might not be a plausible mechanism for getting around the issue aforementioned.

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Appendix A. Contractual Components Used to Compare CEO Incentive Contracts

Five dimensions of contract Components:

Award Type
Vesting Schedule
Performance Measure
Target Type
Pay

Variable name	Type	Definition
Award Type		
(1) Award_Cash_weight	num	The weight of cash awards over the total value of all the incentive grants in a compensation package. The weight is calculated as total value (at target level) of incentive grants that use cash awards divided by total expected value of all incentive grants.
(2) Award_Option_weight	num	The weight of option awards over the total value of all the incentive grants in a compensation package. The weight is calculated as total value of incentive grants that use option awards divided by total fair value of all incentive grants.
(3) Award_Stock_weight	num	The weight of stock awards over the total value of all the incentive grants in a compensation package. The weight is calculated as total value of incentive grants that use stock awards divided by total fair value of all incentive grants.
Vesting Schedule		
(4) Vest_cliff_weight	num	The weight of cliff vesting over the total value of all the incentive grants in a compensation package.
(5) Vest_long_weight	num	The weight of long-term vesting (longer than 11 months) over the total value of all the incentive grants in a compensation package.
Performance Measure		
(6) Perf_performbase_weight	num	The weight of performance-based incentive grants over the total value of all the incentive grants in a compensation package.
(7) Measure_n	num	The total number of performance measures used in a compensation package.
(8) Measure_accounting_weight	num	The weight of accounting performance measures over the total value of all the incentive grants in a compensation package.

(9) Measure_Price_weight	num	The weight of price performance measures over the total value of all the incentive grants in a compensation package.
Target Type		
(10) Perf_RPE_weight	num	The weight of RPE incentive grants over the total value of all the incentive grants in a compensation package.
(11) Perf_absrel_weight	num	The weight of RPE/ABS incentive grants over the total value of all the incentive grants in a compensation package.
Pay		
(12) Grant_n	num	Total number of incentive grants used in a compensation package.
(13) Pay	num	Natural logarithm of the total dollar value of a compensation package, which is calculated as the sum of annual salary and the total fair value of all the incentive grants at grant date. The total value of each incentive grant is collected based on award types (a firm-year observation is removed from the sample if any one of the incentive grants has missing grant value).[16] • Equity awards: grant date fair value disclosed in the proxy statement. Following Bettis, Bizjak, Coles, and Kalpathy (2018), for missing values of stock awards, I estimate the missing values using stock price during the grant year. For missing values of option awards, I estimate the missing values based on the Black-Scholes model (Yermack 1995). • Non-equity awards: dollar amount to be awarded at target level performance.
(14) Pay_ratio	num	The percentage of fixed pay offered in a compensation package. The ratio is calculated as salary divided by Pay.

[16] An alternative way to treat the missing grant value is to remove firm-year observations as long as they have any one grant with missing grant value. Using homogeneity measures with this sampling criteria, I find similar results for the tests in the analyses.

Table A1 BROADCOM CORPORATION CEO Compensation Structure at Grant Level

Note: This table summarizes the compensation structure of BROADCOM CORPORATION in 2007. The company used three incentive grants in its CEO incentive contract. The total salary paid to the CEO in 2007 was $60,000.

Grant	Award type	Vesting criterion	Vesting horizon	Performance measure	Metric type	Target type	Grant value ($)
1	Cash	Cliff	Short	Accounting	Sales/Other/Profit Margin	absolute	32,500
2	Option	Ratable	Long	Time	-	-	2,435,700
3	Stock	None	Long	Time	-	-	3,786,950

Table A2 BROADCOM CORPORATION CEO Compensation Structure at Package Level

Note: This table demonstrates the construction of a package level compensation structure based on information in Table A1. A contracting metric with fourteen variables is constructed for each firm-year to represent its compensation structure (as shown in the bolded box below).

Award type	Award_Cash_weight = 0.005 Award_Option_weight = 0.389 Award_Stock_weight = 0.605	32,500/6,255,150 2,435,700/6,255,150 3,786,950/6,255,150
Vesting schedule	Vest_cliff_weight = 0.005 Vest_long_weight = 0.995	32,500/6,255,150 (2,435,700 + 3,786,950)/6,255,150
Performance measure	Perf_performbase_weight = 0.005 Measure_n = 3 Measure_accounting_weight = 0.005 Measure_Price_weight = 0	32,500/6,255,150 Number of performance measures used 32,500/6,255,150 No price performance measure used
Target type	Perf_RPE_weight = 0 Perf_absrel_weight = 0	No RPE used No RPE used
Pay	Grant_n = 3 Pay = 15.66 Pay_ratio = 0.010	Number of grants used ln(32,500 + 2,435,700 + 3,786,950 +60,000) 60,000/6,315,150

Appendix B. Calculating Structure Homogeneity in CEO Compensation Package

Principal Component Analysis and Euclidean Distance

To incorporate a more complete set of contractual terms in the construction of contract homogeneity, I compute an alternative distance measure using Euclidean distance after transforming original contracting metric vectors into vectors of essential factors. This procedure not only takes care of variations in scale, but also linearly transforms variables into a lower dimensional space while preserving information to the best extant. In such a way, the following Euclidean distance function can be applied to compare two incentive contracts:

$$D = \sqrt{\sum_{i=1}^{n} (a - b)^2}$$

where *D* is the value of distance between two objects represented by vectors *a* and *b*.

I follow the following steps to calculate CEO compensation homogeneity:

1. Fourteen contract components from five different dimensions are selected to describe a CEO incentive contract (defined in Appendix A). Each sample firm-year is assigned with a 1×14 contracting matrix representing its contract structure.
2. Based on the fourteen variables used by firms in the same year, fourteen coefficients are generated to define a single principal component. I maintain fourteen principal components as they all explain a significant portion of total variance (above 70%). I end up with a 14×14 coefficient matrix. The contracting matrices are transformed to a new 1×14 matrices, which is the products of the original contracting matrix (1×14) and this coefficient matrix (14×14).
3. Using the vectors containing PCA scores, the Euclidean distance function can be applied to pairwise compare firms' incentive contracts in the same industry year.
4. Similarly, for each specific firm year, I calculate its CEO compensation homogeneity by taking the median value of its pairwise *D*'s with all its industry peers and taking the natural logarithm of the inverse of 1+D (*Homogeneity_ed*).

Mahalanobis Distance

Mahalanobis distance is conventionally used to measure the distance between a random point and a distribution (Mahalanobis 1936). It can also be used to measure dissimilarity between two random vectors using the following function:

$$D^2 = (a - b)^T * C^{-1} * (a - b)$$

where D^2 is the value representing distance between two objects in a multi-dimensional space. In this study, the formula can be interpreted as: *a* and *b* are the quantified contracting metric vectors of two incentive contracts, while C^{-1} denotes the inverse covariance matrix of the fourteen variables in the contracting metric vector. The covariance matrix is calculated to capture the joint variability of each pair of variables in the contracting metric vector. This distance measure incorporates between variable correlations and different variable scales.

I follow the following steps to calculate CEO compensation homogeneity:

1. Fourteen contract components from five different dimensions are selected to describe a CEO incentive contract (defined in Appendix B). Therefore, each sample firm-year is assigned with a 1×14 contracting matrix representing its contract structure.
2. A covariance matrix is calculated based on the fourteen variables of all sample firms. I then take the inverse of the covariance matrix.
3. Firms in the same industry year are then compared pairwise using their contractual term vectors and the covariance matrix.

4. For each specific firm year, I calculate its CEO incentive homogeneity by taking the median value of its pairwise D^2's with all its industry peers and taking the natural logarithm of the inverse of $1+D^2$ (*Homogeneity_md*).

Appendix C. Variable Definitions

Variable	Definition
Homogeneity	CEO compensation homogeneity calculated using distance measure. There are two alternative measures for this variable: *Homogeneity_ed* and *Homogeneity_md* (see Appendix A and B).
Homogeneity_iv	Structure homogeneity based on individual contract components calculated with PCA and Euclidean Distance. There are five dimensions of contract components: *hg_awardtype*, *hg_vesting*, *hg_performance*, *hg_target*, and *hg_pay*.
Pay	Natural logarithm of the total dollar amount offered in a compensation package, which is calculated as the sum of annual salary and the total value of all the incentive grants (see Appendix A).
Vest_long	An indicator that equals to 1 if a firm uses any long-vesting grants in its CEO incentive contract in a given year, and 0 otherwise.
Equity_award	An indicator that equals to 1 if a firm uses any equity award in its CEO incentive contract in a given year, and 0 otherwise.
PerformanceBase	An indicator that equals to 1 if a firm uses any performance-based incentive in its CEO incentive contract in a given year, and 0 otherwise.
Measure_accounting	An indicator that equals to 1 if a firm uses any accounting performance measure in its CEO incentive contract in a given year, and 0 otherwise.
Common_risk	Stock return variance that is explained by value-weighted industry stock returns. It is the R^2 from regressing the firm's stock returns on value-weighted industry return (two-digit SIC) over the prior 36 months.
Common_own	Average fraction of industry peers' shares held by a firm's top 5 shareholders, using the equation: $\frac{1}{n-1}\sum_{i}^{5}\sum_{j\neq k} v_{ik}$, where v_{ik} is shareholder *i*'s ownership share of firm *k*, while *i* is also one of the top 5 shareholders of firm *j*. *k* denotes all the industry competitors of firm *j* (see Anton et al. 2018).
Board_size	Natural logarithm of total number of directors serving on board.
Board_ind	Percentage of independent directors serving on board. An independent director is defined as directors who are marked as NED in BoardEx database.
Board_busy	Natural logarithm of the average number of board assignments the directors of a firm hold during a fiscal year.
Consultant	An indicator that equals to 1 if a firm uses a compensation consultant, and 0 otherwise.
CEO_age	Natural logarithm of a CEO's age in a given fiscal year.
CEO_tenure	Natural logarithm of the number of years a CEO has been in the position in a given fiscal year.
CEO_chair	An indicator that equals to 1 if a CEO serves as Chairman or Vice Chairman on board, and 0 otherwise.
Asset	Natural logarithm of total year end assets.

MTB	Market to book ratio, which is measured as: $\frac{totalassets-totalequity+marketvalue}{totalassets}$
Leverage	Firm leverage measured as: $\frac{totallong-termdebt+totalcurrentliabilities}{totalassets}$
Analyst	Natural logarithm of the number of financial analysts who follow a firm.
BlockOwn	Percentage of shares that are owned by blockholders.
ROA	Return on assets, which is measured as income before extraordinary items divided by end of year total assets.
RET	Buy-and-hold stock return over the holding period, calculated as the ending share price minus the beginning share price divided by the beginning share price.
EarnVol	Standard deviation of earnings (income before extraordinary items divided by end of year total assets) over the past 4 years.
RetVol	Standard deviation of monthly returns of a year.
Concentration	Sum of the squares of the market shares of the firms' sales within each two-digit SIC industry.

Figure 1.
Note: This figure illustrates the trend of the percentage usage of each award type in CEO compensation packages among all the sample firm-years.

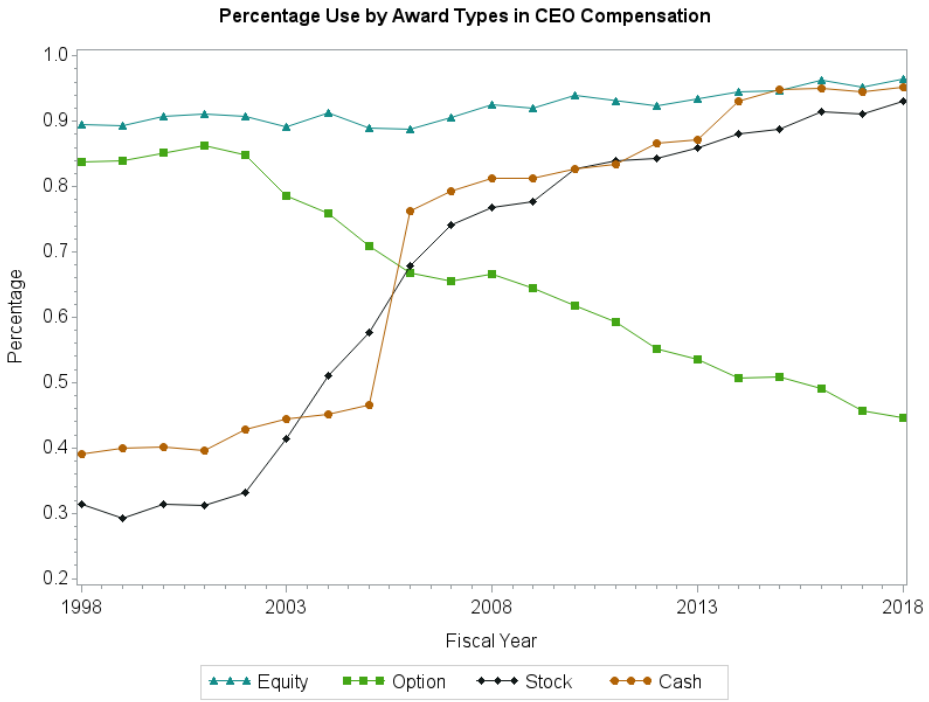

Figure 2.
Note: This figure illustrates the trend of pay level in CEO compensation packages among all the sample firm-years.

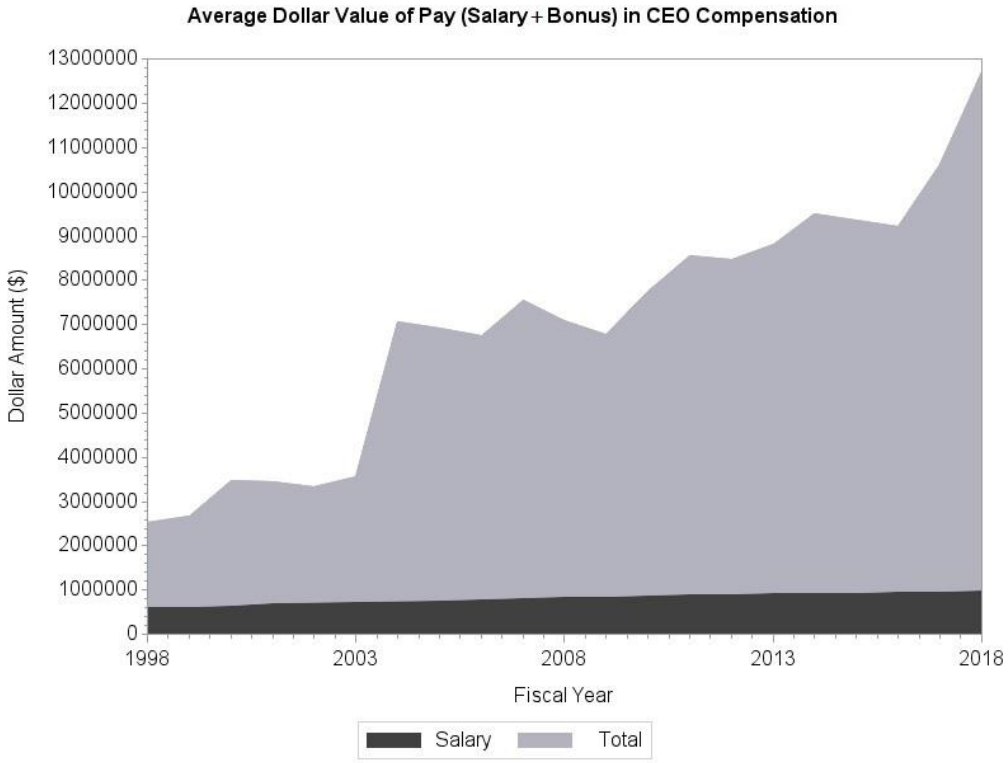

Figure 3
Note: This figure illustrates the trend of percentage usage of performance-based incentives and RPE incentive in CEO compensation packages among all the sample firm-years.

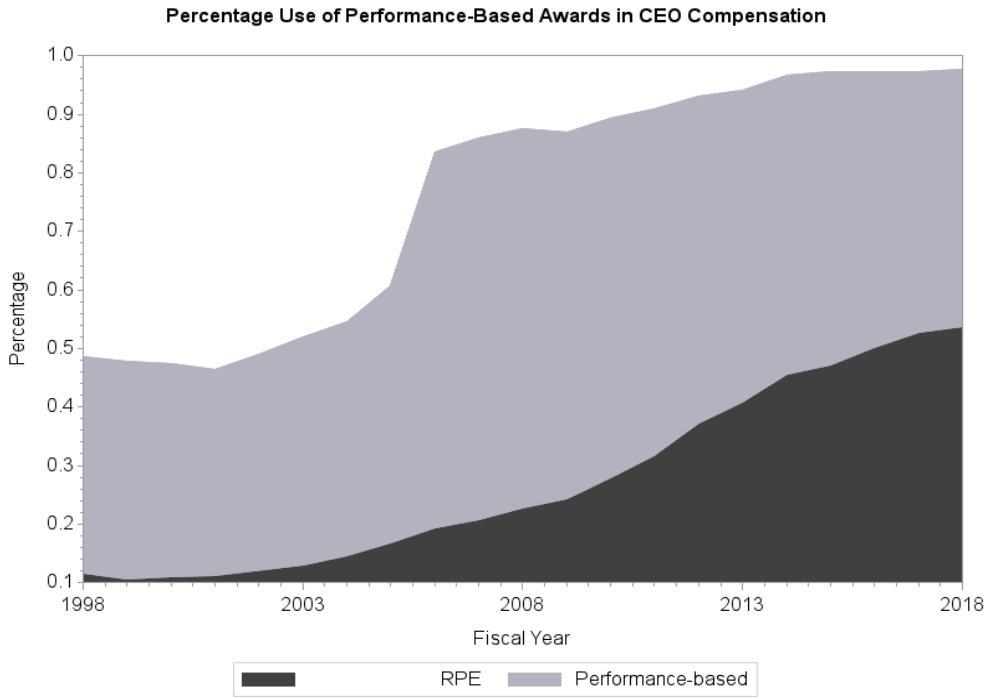

Figure 4
Note: This figure illustrates the trend of percentage usage of accounting and price performance measures in CEO compensation packages among all the sample firm-years.

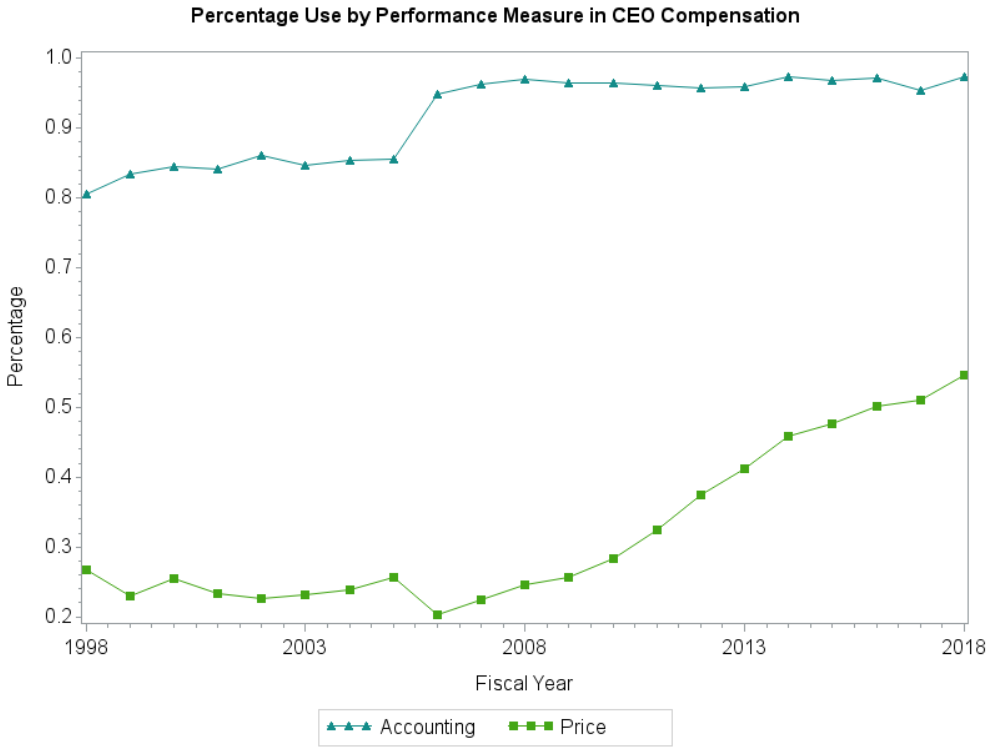

Figure 5

Note: This figure illustrates the level of structure homogeneity of different industries.

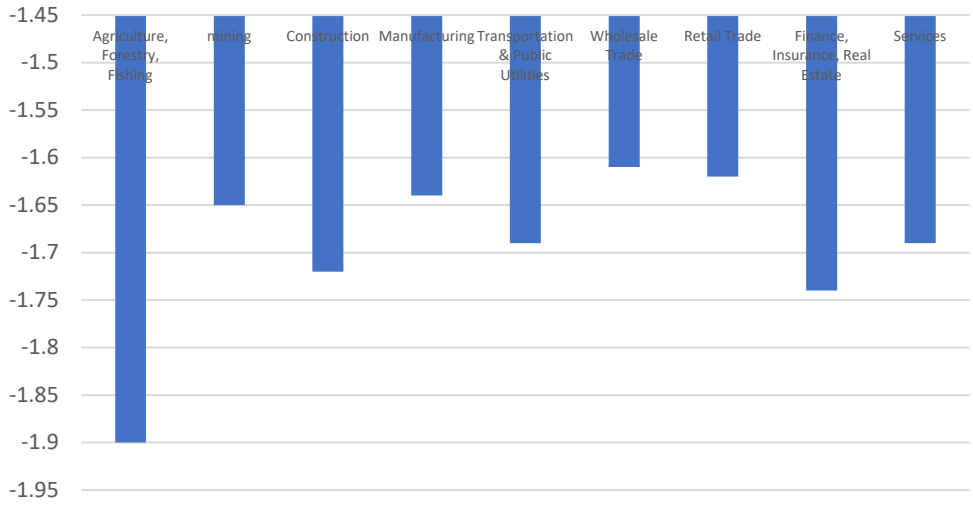

Table 1. Sample Selection

	Firm-Year Observations
Firms in ISS with incentive grant data from 1998 to 2018	25,151
Less firms missing CEO incentive contract homogeneity values	(7,106)
Less firms missing CEO attributes	(6,582)
Less firms missing general controls	(653)
Less firms missing board attributes	(1,175)
	9,635

Table 2. Descriptive Statistics

Note: This table presents the descriptive statistics for the variables used in the analyses (Panel A) and variables used to construct the measure of compensation homogeneity (*Homogeneity*). The sample used to test the main hypotheses include 9,635 observations. All continuous variables used in the analyses are winsorized at 1st and 99th percentiles. The variables used in the analyses are defined in Appendix C.

Panel B reports the descriptive statistics for the fourteen contract components by fiscal year.

Panel C reports the descriptive statistics for the usage of primary contract features by industry.

Panel A. Descriptive Statistics of All Variables Used in the Analyses

Variable	Obs	Mean	Std. Dev.	Min	Max
Homogeneity_ed	9,635	-1.66982	0.219031	-2.71129	-0.53591
Homogeneity_md	9,635	-2.89762	0.468514	-4.72156	-0.8952
hg_Award	9,635	-0.96058	0.34015	-1.8074	0
hg_Vesting	9,635	-0.82656	0.3108	-1.97121	0
hg_Performance	9,635	-1.09217	0.3983	-2.25542	0
hg_Target	9,635	-0.47526	0.567293	-2.2639	0
hg_Pay	9,635	-0.91971	0.24236	-1.94366	-0.48009
Pay	9,635	15.51449	0.839265	12.06011	17.72753
Award_equity	9,635	0.944927	0.228135	0	1
Vest_long	9,635	0.973843	0.159611	0	1
PerformanceBase	9,635	0.848268	0.358779	0	1
Measure_accounting	9,635	0.824972	0.380011	0	1
Common_risk	9,635	0.383991	0.223916	0.000228	0.925412
Common_own	9,635	0.125552	0.061718	0	0.338319
Board_size	9,635	2.503587	0.269955	1.609438	3.178054
Board_ind	9,635	0.85176	0.077606	0.444444	1
Board_busy	9,635	0.528305	0.234704	0	1.252763
Consultant	9,635	0.814652	0.388599	0	1
CEO_age	9,635	4.011527	0.117149	3.637586	4.343805
CEO_tenure	9,635	1.657106	0.87824	0	3.526361
CEO_chair	9,635	0.480638	0.499651	0	1
$ASSET_{t-1}$	9,635	8.664246	1.525951	4.182859	13.38219
MTB_{t-1}	9,635	2.013017	1.274782	0.706241	14.40553
$Leverage_{t-1}$	9,635	0.262989	0.197601	0	1.037564
$Analyst_{t-1}$	9,635	2.455594	0.670889	0	3.610918
$BlockOwn_{t-1}$	9,635	0.271832	0.199034	0	1
ROA_t	9,635	0.047169	0.0845	-0.93729	0.311541
RET_t	9,635	0.107549	0.551512	-0.93364	13.42453
EarnVol	9,635	0.036119	0.059845	0.000401	1.078681
RetVol	9,635	0.092055	0.056506	0.023381	0.608168
Concentration	9,635	0.063511	0.063652	0.010457	0.389779

Panel B. Descriptive Statistics of Contractual Components by Fiscal Year

Fiscal Year	#grant	#measure	Option award	Cash award	Stock award	Performance-based grant	RPE grant	RPE/ABS grant	Cliff vesting	Long vesting	Accounting measure	Price measure
			(weight in value)									
1998	2.189	1.092	0.679	0.215	0.106	0.175	0.025	0.010	0.388	0.857	0.133	0.020
1999	2.153	1.112	0.687	0.219	0.094	0.192	0.021	0.011	0.371	0.882	0.130	0.017
2000	2.186	1.171	0.698	0.191	0.111	0.170	0.016	0.011	0.358	0.872	0.109	0.012
2001	2.207	1.124	0.698	0.197	0.105	0.159	0.014	0.009	0.343	0.881	0.105	0.008
2002	2.155	1.202	0.684	0.200	0.116	0.174	0.015	0.010	0.351	0.905	0.116	0.010
2003	2.168	1.296	0.586	0.234	0.180	0.209	0.023	0.014	0.381	0.906	0.135	0.010
2004	2.253	1.453	0.542	0.213	0.243	0.206	0.030	0.013	0.393	0.889	0.131	0.017
2005	2.353	1.566	0.451	0.255	0.294	0.281	0.047	0.027	0.438	0.918	0.169	0.033
2006	2.806	2.475	0.341	0.298	0.361	0.460	0.081	0.040	0.495	0.863	0.339	0.050
2007	3.001	2.649	0.312	0.289	0.399	0.481	0.086	0.047	0.504	0.865	0.355	0.058
2008	3.035	2.738	0.305	0.293	0.401	0.489	0.093	0.047	0.521	0.858	0.361	0.065
2009	3.045	2.835	0.281	0.312	0.406	0.504	0.106	0.053	0.527	0.855	0.360	0.069
2010	3.213	2.967	0.253	0.285	0.462	0.508	0.119	0.064	0.526	0.873	0.364	0.076
2011	3.180	3.108	0.241	0.283	0.476	0.542	0.136	0.074	0.542	0.911	0.377	0.089
2012	3.219	3.320	0.210	0.294	0.496	0.587	0.163	0.092	0.571	0.917	0.399	0.112
2013	3.240	3.455	0.202	0.281	0.517	0.598	0.184	0.111	0.580	0.920	0.401	0.123
2014	3.354	3.769	0.182	0.283	0.535	0.620	0.201	0.128	0.593	0.930	0.403	0.136
2015	3.399	3.867	0.175	0.280	0.545	0.632	0.211	0.138	0.599	0.934	0.393	0.145
2016	3.483	3.979	0.164	0.266	0.564	0.644	0.219	0.152	0.607	0.926	0.413	0.148
2017	3.474	3.969	0.153	0.266	0.580	0.658	0.234	0.162	0.632	0.937	0.444	0.151
2018	3.509	4.011	0.141	0.257	0.602	0.650	0.237	0.176	0.621	0.946	0.437	0.149

Panel C. Descriptive Statistics of Contractual Feature Usage by Industry

Two-digit SIC Industry Group	Total Pay (in million)		Equity award (%)	Long-term (%)	Performance-based award (%)	Accounting measure (%)	RPE (%)
	mean	median					
Agriculture, Forestry, Fishing	5.349	3.667	82.7	90.4	76.9	75.0	17.3
Mining	5.917	3.915	95.9	97.6	74.7	66.8	47.9
Construction	7.154	6.096	90.4	94.0	78.4	74.9	25.4
Manufacturing	5.635	4.051	92.8	96.9	76.3	71.9	26.1
Transportation & Public Utilities	5.252	3.386	93.0	96.2	80.6	73.1	42.9
Wholesale Trade	4.668	3.329	92.3	97.4	81.0	78.3	11.1
Retail Trade	6.220	4.246	89.9	95.5	77.2	75.2	15.8
Finance, Insurance, Real Estate	5.192	3.306	91.7	95.3	74.7	68.2	29.2
Services	5.805	3.672	89.7	94.4	71.0	66.7	11.3

Table 3. Correlation Matrix of Selected Variables

Note: This table presents the correlation matrix. Correlations in bold are statistically significant at the 10 percent level.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
(1) Homogeneity_md	**1**																		
(2) Homogeneity_ed	**0.798**	**1**																	
(3) Common_risk	-0.019	**-0.046**	**1**																
(4) Common_own	**0.032**	-0.007	**0.218**	**1**															
(5) Board_size	0.013	-0.005	**0.112**	**-0.053**	**1**														
(6) Board_ind	**0.103**	**0.047**	**0.031**	0.009	**0.300**	**1**													
(7) Board_busy	**0.064**	**0.078**	**0.041**	**0.058**	**0.140**	**0.264**	**1**												
(8) Asset	**-0.054**	**0.225**	**-0.084**	**0.331**	**0.050**	**0.571**	**0.234**	**1**											
(9) MTB	**0.051**	**-0.028**	**0.083**	**-0.164**	**0.055**	**-0.247**	**-0.174**	**-0.390**	**1**										
(10) Leverage	**-0.043**	**0.105**	**-0.064**	**0.113**	**0.047**	**0.072**	**0.048**	**0.139**	**-0.187**	**1**									
(11) Analyst	**0.091**	**0.116**	**0.094**	**0.175**	**0.039**	**0.150**	**0.057**	**0.354**	**0.142**	**-0.164**	**1**								
(12) BlockOwn	-0.018	-0.007	0.000	**0.019**	**0.089**	**-0.087**	**-0.055**	**-0.107**	**-0.050**	**0.094**	**-0.097**	**1**							
(13) ROA_{t-1}	**0.023**	**-0.020**	**0.030**	-0.001	**0.055**	**-0.035**	**-0.071**	**-0.081**	**0.398**	**-0.218**	**0.121**	**-0.114**	**1**						
(14) RET_{t-1}	0.008	-0.012	-0.002	0.007	**-0.025**	**-0.036**	-0.006	**-0.052**	**0.106**	**-0.011**	**-0.039**	0.005	**0.038**	**1**					
(15) EarnVol	**0.026**	0.011	**0.038**	**-0.037**	**-0.068**	**-0.184**	**-0.026**	**-0.260**	**0.112**	-0.004	**-0.037**	**0.082**	**-0.310**	**0.095**	**1**				
(16) RetVol	-0.016	**-0.088**	**0.030**	**0.046**	**-0.103**	**-0.183**	**-0.097**	**-0.227**	**0.000**	**0.020**	**-0.088**	**0.098**	**-0.287**	**0.208**	**0.352**	**1**			
(16) Concentration	**-0.024**	0.001	**0.014**	**0.169**	-0.001	**0.054**	**-0.027**	**-0.022**	**-0.025**	-0.008	**0.044**	**0.041**	**0.069**	0.017	**-0.035**	**0.054**	**1**		
(18) CEO_age	**-0.045**	-0.004	**-0.042**	**0.076**	**0.024**	**0.118**	**0.040**	**0.152**	**-0.060**	**0.024**	**0.032**	**-0.038**	**0.032**	-0.012	**-0.089**	**-0.079**	**-0.014**	**1**	
(19) CEO_tenure	**-0.074**	**-0.134**	**-0.077**	**0.068**	**0.096**	**-0.102**	**-0.098**	**-0.073**	**0.065**	-0.017	0.014	0.008	**0.054**	-0.002	**-0.067**	**-0.026**	**-0.035**	**0.326**	**1**

Table 4. Firm and Board Attributes

Note: This table shows OLS estimates based on model (1), where the dependent variable is *Homogeneity* and the independent variables of interest are *Common_risk*, *Common_own*, *Board_size*, *Board_ind*, *Board_busy*, and *Consultant*. Columns (1) and (3) present the estimates for models with *Homogeneity_ed* as dependent variable, while columns (2) and (4) present the estimates for models with *Homogeneity_md* as dependent variable.
All regressions include fixed year and industry effects. t-statistics are reported in parentheses below coefficients and are based on standard errors that are clustered by firm. Levels of significance are indicated by *, **, and ***, for 10%, 5%, and 1%, respectively.

		Dependent variable: *Homogeneity$_t$*							
VARIABLES		**(1)**		**(2)**		**(3)**		**(4)**	
Common_risk$_{t-1}$	**(+)**					**0.069*** **	**(3.99)**	**0.101*** **	**(2.82)**
Common_own$_{t-1}$	**(+)**					**0.168*** **	**(2.74)**	**0.340** **	**(2.51)**
Board_size$_{t-1}$	**(+)**					**0.063*** **	**(3.61)**	**0.082** **	**(2.15)**
Board_ind$_{t-1}$	**(+)**					**0.142** **	**(2.50)**	**0.334*** **	**(3.01)**
Board_busy$_{t-1}$	**(+)**					**0.045*** **	**(2.78)**	**0.090** **	**(2.49)**
Consultant$_t$	**(+)**					**0.099*** **	**(5.97)**	**0.159*** **	**(4.66)**
CEO attributes:									
CEO_age$_t$		-0.070*	(-1.85)	-0.108	(-1.42)	-0.069*	(-1.87)	-0.102	(-1.37)
CEO_tenure$_t$		-0.015***	(-3.18)	-0.022**	(-2.23)	-0.010**	(-2.27)	-0.014	(-1.48)
CEO_chair$_t$		0.006	(0.78)	0.005	(0.28)	-0.001	(-0.12)	-0.008	(-0.46)
Firm attributes:									
ASSET$_{t-1}$		-0.007*	(-1.70)	-0.021***	(-2.58)	-0.023***	(-5.15)	-0.046***	(-5.09)
MTB$_{t-1}$		-0.005	(-1.61)	-0.009	(-1.09)	-0.007**	(-2.01)	-0.010	(-1.26)
Leverage$_{t-1}$		0.018	(0.91)	0.026	(0.57)	0.010	(0.53)	0.010	(0.24)
Analyst$_{t-1}$		0.038***	(4.19)	0.050***	(3.07)	0.032***	(3.90)	0.042***	(2.74)
BlockOwn$_{t-1}$		0.005	(0.31)	-0.008	(-0.23)	0.006	(0.39)	-0.007	(-0.19)
ROA$_{t-1}$		-0.019	(-0.47)	0.061	(0.69)	-0.015	(-0.38)	0.071	(0.83)
RET$_{t-1}$		-0.000	(-0.01)	-0.002	(-0.17)	-0.001	(-0.18)	-0.003	(-0.29)
EarnVol$_{t-1}$		0.088*	(1.79)	0.112	(0.98)	0.071	(1.49)	0.077	(0.68)
RetVol$_{t-1}$		-0.111	(-1.56)	-0.243*	(-1.67)	-0.099	(-1.43)	-0.218	(-1.53)
Concentration$_{t-1}$		-0.103	(-0.70)	0.419	(1.59)	-0.099	(-0.65)	0.427	(1.59)

Year-fixed Effects	Yes	Yes	Yes	Yes
Industry-fixed Effects	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes
Observations	9,635	9,635	9,635	9,635
Adjusted R-squared	0.136	0.182	0.159	0.197
Degrees of Freedom	31	31	37	37

Table 5. CEO Compensation Homogeneity and Accounting Performance

Note: Panel A of this table shows OLS estimates based on model (2), where the dependent variables are *ROA* in year *t*, *t+1*, t+2, and *t+3*, respectively. The independent variable of interest is *Homogeneity*. Odd numbered columns present the estimates for models with *Homogeneity_ed* as independent variable, while even numbered columns present the estimates for models with *Homogeneity_md* as independent variable.
Panel B of this table shows OLS estimates based on model (2), where the dependent variables are *RET* in year *t*, *t+1*, t+2, and *t+3*, respectively. The The independent variable of interest is *Homogeneity*. Odd numbered columns present the estimates for models with *Homogeneity_ed* as independent variable, while even numbered columns present the estimates for models with *Homogeneity_md* as independent variable.
All regressions include fixed year and firm effects. t-statistics are reported in parentheses below coefficients and are based on standard errors that are clustered by firm. Levels of significance are indicated by *, **, and ***, for 10%, 5%, and 1%, respectively.

Panel A. CEO Compensation Homogeneity and ROA

	Dependent variables:															
	ROA_t				ROA_{t+1}				ROA_{t+2}				ROA_{t+3}			
VARIABLES	**(1)**		**(2)**		**(3)**		**(4)**		**(5)**		**(6)**		**(7)**		**(8)**	
***Homogeneity*$_t$**	**-0.001**	**(-0.29)**	**0.005****	**(2.03)**	**-0.015*****	**(-2.92)**	**-0.001**	**(-0.31)**	**-0.015*****	**(-2.81)**	**-0.003**	**(-0.98)**	**-0.008**	**(-1.55)**	**-0.003**	**(-1.27)**
$ASSET_{t-1}$	-0.019***	(-5.19)	-0.018***	(-5.10)	-0.027***	(-5.69)	-0.026***	(-5.54)	-0.027***	(-5.37)	-0.026***	(-5.27)	-0.024***	(-4.81)	-0.024***	(-4.78)
MTB_{t-1}	0.020***	(9.55)	0.020***	(9.54)	0.014***	(4.91)	0.014***	(4.90)	0.011***	(3.68)	0.011***	(3.67)	0.010***	(3.64)	0.010***	(3.63)
$Leverage_{t-1}$	0.011	(0.98)	0.012	(1.01)	0.021	(1.63)	0.022*	(1.71)	0.047***	(3.41)	0.047***	(3.45)	0.055***	(3.71)	0.055***	(3.74)
$Analyst_{t-1}$	0.002	(0.75)	0.002	(0.64)	0.002	(0.49)	0.001	(0.30)	-0.002	(-0.58)	-0.003	(-0.72)	-0.000	(-0.02)	-0.000	(-0.06)
$BlockOwn_{t-1}$	-0.011*	(-1.84)	-0.011*	(-1.78)	-0.002	(-0.32)	-0.002	(-0.28)	-0.002	(-0.32)	-0.002	(-0.32)	0.011	(1.55)	0.011	(1.54)
ROA_{t-1}	0.227***	(8.82)	0.226***	(8.82)	0.020	(0.85)	0.021	(0.86)	-0.010	(-0.44)	-0.010	(-0.42)	-0.027	(-1.04)	-0.027	(-1.04)
RET_{t-1}	0.010***	(5.15)	0.010***	(5.18)	0.007***	(3.50)	0.007***	(3.49)	0.001	(0.29)	0.001	(0.29)	0.004**	(2.07)	0.004**	(2.09)
$EarnVol_{t-1}$	0.101***	(2.99)	0.099***	(2.95)	0.173***	(4.63)	0.170***	(4.56)	0.101***	(3.07)	0.100***	(3.03)	0.023	(0.72)	0.023	(0.72)
$RetVol_{t-1}$	-0.097***	(-3.35)	-0.097***	(-3.34)	-0.087***	(-3.29)	-0.088***	(-3.27)	-0.062**	(-2.43)	-0.062**	(-2.43)	-0.071**	(-2.53)	-0.071**	(-2.53)
$Board\_size_{t-1}$	0.006	(0.75)	0.006	(0.71)	0.004	(0.50)	0.004	(0.47)	-0.000	(-0.03)	-0.000	(-0.05)	0.000	(0.03)	0.000	(0.03)
$Board\_ind_{t-1}$	-0.009	(-0.45)	-0.008	(-0.41)	-0.027	(-1.28)	-0.026	(-1.24)	-0.022	(-0.91)	-0.021	(-0.89)	-0.018	(-0.77)	-0.018	(-0.78)
CEO_age_t	0.014	(0.83)	0.015	(0.92)	0.036*	(1.66)	0.038*	(1.74)	0.064***	(2.71)	0.065***	(2.75)	0.040*	(1.82)	0.040*	(1.82)
CEO_tenure_t	-0.000	(-0.08)	-0.000	(-0.14)	-0.004*	(-1.95)	-0.004**	(-1.97)	-0.006***	(-2.64)	-0.006***	(-2.64)	-0.003	(-1.42)	-0.003	(-1.39)
CEO_chair_t	0.007**	(2.42)	0.007**	(2.46)	0.008**	(2.28)	0.008**	(2.31)	0.004	(1.13)	0.004	(1.16)	0.002	(0.33)	0.002	(0.34)
Year-fixed Effects	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Firm-fixed Effects	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Firm Cluster	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Observations	9,635		9,635		9,333		9,333		8,284		8,284		7,342		7,342	
Adjusted R-squared	0.480		0.481		0.417		0.416		0.416		0.415		0.409		0.409	
Degrees of Freedom	33		33		33		33		32		32		31		31	

Table 5. (continued)

Panel B. CEO Compensation Homogeneity and RET

	Dependent variables:															
	RET_t				RET_{t+1}				$RETt_{t+2}$				$RETt_{t+3}$			
VARIABLES	**(1)**		**(2)**		**(3)**		**(4)**		**(5)**		**(6)**		**(7)**		**(8)**	
***Homogeneity*$_t$**	**-0.036**	**(-1.02)**	**-0.022**	**(-1.21)**	**-0.078****	**(-2.30)**	**-0.019**	**(-1.14)**	**-0.108**	**(-1.59)**	**-0.053**	**(-1.62)**	**-0.160***	**(-1.90)**	**-0.077***	**(-1.75)**
$ASSET_{t-1}$	**-0.143*****	**(-6.76)**	**-0.143*****	**(-6.71)**	**-0.069*****	**(-3.35)**	**-0.067*****	**(-3.27)**	**-0.106****	**(-2.34)**	**-0.104****	**(-2.31)**	**-0.214*****	**(-3.53)**	**-0.212*****	**(-3.49)**
MTB_{t-1}	-0.054***	(-4.61)	-0.054***	(-4.59)	-0.035***	(-4.06)	-0.035***	(-4.00)	-0.069***	(-3.66)	-0.069***	(-3.65)	-0.117***	(-5.09)	-0.117***	(-5.09)
$Leverage_{t-1}$	0.288***	(3.70)	0.289***	(3.70)	0.264***	(2.64)	0.268***	(2.68)	0.754***	(3.77)	0.758***	(3.79)	0.876***	(3.84)	0.882***	(3.87)
$Analyst_{t-1}$	-0.073***	(-3.24)	-0.073***	(-3.27)	-0.021	(-0.76)	-0.024	(-0.87)	-0.087	(-1.57)	-0.089	(-1.62)	-0.102	(-1.54)	-0.105	(-1.59)
$BlockOwn_{t-1}$	-0.053	(-0.86)	-0.054	(-0.88)	0.111**	(2.34)	0.111**	(2.35)	0.287***	(3.16)	0.285***	(3.15)	0.472***	(3.44)	0.469***	(3.43)
ROA_{t-1}	-0.658***	(-2.67)	-0.656***	(-2.66)	-0.349**	(-2.35)	-0.347**	(-2.32)	-0.267	(-0.97)	-0.263	(-0.96)	-0.291	(-0.92)	-0.290	(-0.91)
RET_{t-1}	-0.136***	(-10.07)	-0.136***	(-10.06)	-0.085***	(-5.62)	-0.085***	(-5.59)	-0.123***	(-4.38)	-0.123***	(-4.36)	-0.102***	(-3.61)	-0.101***	(-3.58)
$EarnVol_{t-1}$	0.074	(0.35)	0.074	(0.35)	0.137	(0.70)	0.128	(0.66)	0.353	(0.60)	0.350	(0.60)	0.475	(0.94)	0.472	(0.94)
$RetVol_{t-1}$	1.740***	(5.40)	1.739***	(5.40)	0.009	(0.04)	0.007	(0.04)	0.078	(0.19)	0.075	(0.18)	0.599	(1.11)	0.596	(1.10)
$Board\_size_{t-1}$	0.012	(0.19)	0.012	(0.20)	0.025	(0.52)	0.024	(0.51)	0.082	(0.85)	0.083	(0.86)	0.138	(1.07)	0.139	(1.08)
$Board\_ind_{t-1}$	-0.038	(-0.24)	-0.040	(-0.25)	0.023	(0.11)	0.023	(0.12)	0.142	(0.44)	0.138	(0.43)	0.228	(0.71)	0.222	(0.68)
CEO_age_t	0.086	(0.83)	0.085	(0.83)	0.070	(0.69)	0.075	(0.75)	-0.081	(-0.33)	-0.081	(-0.33)	-0.288	(-0.90)	-0.289	(-0.90)
CEO_tenure_t	-0.014	(-1.01)	-0.014	(-1.00)	-0.019*	(-1.70)	-0.020*	(-1.70)	-0.026	(-0.93)	-0.026	(-0.91)	-0.009	(-0.23)	-0.007	(-0.19)
CEO_chair_t	0.038*	(1.85)	0.038*	(1.85)	0.019	(1.01)	0.020	(1.03)	0.016	(0.40)	0.016	(0.41)	-0.035	(-0.62)	-0.034	(-0.60)
Year-fixed Effects	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Firm-fixed Effects	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Firm Cluster	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Observations	9,635		9,635		9,331		9,331		8,269		8,269		7,308		7,308	
Adjusted R-squared	0.188		0.188		0.177		0.177		0.184		0.184		0.259		0.259	
Degrees of Freedom	33		33		33		33		32		32		31		31	

Table 6. CEO Compensation Homogeneity and Primary Contract Attributes

Note: This table shows OLS estimates based on model (3), where the dependent variable is Homogeneity and the independent variables of interest are five primary contract attributes. Column (1) presents the estimates for model with *Homogeneity_ed* as dependent variable, while column (2) presents the estimates for model with *Homogeneity_md* as dependent variable.

Both regressions include fixed year and industry effects. t-statistics are reported in parentheses and are based on standard errors that are clustered by firm. Levels of significance are indicated by *, **, ***, for 10%, 5%, and 1%, respectively.

	Dependent variable: ***Homogeneity$_t$***			
VARIABLES	**(1)**		**(2)**	
Pay$_t$	**-0.010**	**(-1.53)**	**-0.036*** **	**(-2.70)**
Award_equity$_t$	**0.344*** **	**(24.57)**	**0.422*** **	**(14.12)**
Vest_long$_t$	**0.237*** **	**(11.57)**	**0.631*** **	**(18.56)**
PerformanceBase$_t$	**-0.175*** **	**(-6.47)**	**-0.551*** **	**(-12.00)**
Measure_accounting$_t$	**0.202*** **	**(8.45)**	**0.580*** **	**(13.46)**
Common_risk$_{t-1}$	0.056***	(3.60)	0.083**	(2.52)
Common_own$_{t-1}$	0.114**	(2.12)	0.270**	(2.18)
Board_size$_{t-1}$	0.052***	(3.55)	0.076**	(2.24)
Board_ind$_{t-1}$	0.073	(1.61)	0.228**	(2.42)
Board_busy$_{t-1}$	0.021	(1.41)	0.057*	(1.68)
Consultant$_t$	0.064***	(3.91)	0.112***	(3.49)
CEO attributes:				
CEO_age$_t$	-0.080***	(-2.70)	-0.120*	(-1.87)
CEO_tenure$_t$	-0.006*	(-1.65)	-0.007	(-0.78)
CEO_chair$_t$	0.002	(0.24)	-0.002	(-0.14)
Firm attributes:				
ASSET$_{t-1}$	-0.018***	(-4.29)	-0.033***	(-3.69)
MTB$_{t-1}$	-0.005*	(-1.67)	-0.006	(-0.74)
Leverage$_{t-1}$	0.012	(0.74)	0.016	(0.41)
Analyst$_{t-1}$	0.021***	(3.09)	0.023*	(1.75)
BlockOwn$_{t-1}$	0.012	(0.84)	0.015	(0.47)
ROA$_{t-1}$	0.002	(0.05)	0.092	(1.07)
RET$_{t-1}$	-0.002	(-0.49)	-0.004	(-0.39)
EarnVol$_{t-1}$	0.061	(1.39)	0.065	(0.67)
RetVol$_{t-1}$	0.002	(0.04)	-0.061	(-0.49)
Concentration$_{t-1}$	-0.104	(-0.76)	0.478**	(2.01)
Year-fixed Effects	Yes		Yes	
Industry-fixed Effects	Yes		Yes	
Firm Cluster	Yes		Yes	
Observations	9,635		9,635	
Adjusted R-squared	0.339		0.325	
Degrees of Freedom	42		42	

Table 7. Structure Homogeneity of Individual Contract Components

Note: Panel A of this table shows OLS estimates based on model (4), where the independent variables are individual structure homogeneity of contract components: *hg_Award*, *hg_Vesting*, *hg_performance*, *hg_target*, and *hg_pay*. The dependent variable is *Homogeneity*. Column (1) presents the estimates for model with main variables calculated using Euclidean distance of PCA, while Column (2) presents the estimates for model with main variables calculated using Mahalanobis distance.

Panel B of this table shows OLS estimates based on model (1), where the dependent variables are individual structure homogeneity of contract components calculated with Euclidean distance of PCA. The independent variables are identified firm and board attributes.

Panel C of this table shows estimates based on model (2), where the dependent variables are accounting or stock performance in year *t, t+1, t+2,* and *t+3,* respectively. The coefficients on *Controls* are not tabulated in the table. All regressions include fixed effects. t-statistics are reported in parentheses below coefficients and are based on clustered by firm. Levels of significance are indicated by *, **, and ***, for 10%, 5%, and 1%, respectively.

Panel A. Overall Structure Homogeneity and Individual Component Structure Homogeneity

	Dependent variable: *Homogeneity$_t$*			
VARIABLES	**(1)**		**(2)**	
hg_Award$_t$	**0.203*** **	**(29.56)**	**0.081*** **	**(7.17)**
hg_Vesting$_t$	**0.182*** **	**(24.05)**	**0.205*** **	**(23.33)**
hg_Performance$_t$	**0.208*** **	**(29.53)**	**0.260*** **	**(25.33)**
hg_Target$_t$	**0.112*** **	**(26.47)**	**0.158*** **	**(23.35)**
hg_Pay$_t$	**0.325*** **	**(36.59)**	**0.337*** **	**(31.45)**
Common_risk$_{t-1}$	0.035	(1.21)	0.045	(0.60)
Common_own$_{t-1}$	0.020***	(2.69)	0.016	(0.84)
Board_size$_{t-1}$	0.051**	(2.23)	0.148**	(2.48)
Board_ind$_{t-1}$	0.037***	(5.22)	0.067***	(3.07)
Board_busy$_{t-1}$	0.019***	(3.16)	0.039**	(2.07)
Consultant$_t$	-0.019	(-1.33)	-0.006	(-0.15)
CEO attributes:				
CEO_age$_t$	-0.005***	(-3.01)	-0.004	(-0.79)
CEO_tenure$_t$	-0.001	(-0.18)	-0.001	(-0.10)
CEO_chair$_t$	-0.001	(-0.57)	-0.002	(-0.50)
Firm attributes:				
ASSET$_{t-1}$	-0.003**	(-2.22)	-0.004	(-0.79)
MTB$_{t-1}$	-0.010	(-1.22)	-0.031	(-1.23)
Leverage$_{t-1}$	0.003	(0.93)	0.004	(0.52)
Analyst$_{t-1}$	-0.008	(-1.09)	-0.031	(-1.55)
BlockOwn$_{t-1}$	-0.010	(-0.59)	0.040	(0.83)
ROA$_{t-1}$	0.000	(0.19)	-0.003	(-0.58)
RET$_{t-1}$	0.002	(0.09)	-0.023	(-0.35)
EarnVol$_{t-1}$	-0.067**	(-2.19)	-0.137*	(-1.78)
RetVol$_{t-1}$	-0.223***	(-2.96)	-0.259*	(-1.77)
Concentration$_{t-1}$				
Year-fixed Effects	Yes		Yes	
Industry-fixed Effects	Yes		Yes	
Firm Cluster	Yes		Yes	
Observations	9,635		9,635	
Adjusted R-squared	0.786		0.702	
Degrees of Freedom	41		41	

Table 7. (continued)

Panel B. Firm and Board Attributes

	Dependent variables:									
	hg_Award$_t$		***hg_Vesting$_t$***		***hg_Performance$_t$***		***hg_Target$_t$***		***hg_Pay$_t$***	
VARIABLES	**(1)**		**(2)**		**(3)**		**(4)**		**(5)**	
Common_risk$_{t-1}$	**0.080*** **	**(2.91)**	**0.062** **	**(2.43)**	**0.109*** **	**(4.24)**	**-0.012**	**(-0.30)**	**0.041** **	**(2.24)**
Common_own$_{t-1}$	**0.161***	**(1.79)**	**0.148***	**(1.82)**	**0.154***	**(1.92)**	**-0.050**	**(-0.35)**	**0.151** **	**(2.30)**
Board_size$_{t-1}$	**0.045***	**(1.74)**	**0.016**	**(0.65)**	**0.054** **	**(2.43)**	**-0.036**	**(-0.84)**	**0.072*** **	**(3.69)**
Board_ind$_{t-1}$	**0.137**	**(1.61)**	**0.168***	**(1.86)**	**0.073**	**(0.85)**	**-0.215***	**(-1.88)**	**0.125** **	**(2.16)**
Board_busy$_{t-1}$	**0.010**	**(0.38)**	**0.013**	**(0.54)**	**-0.006**	**(-0.24)**	**-0.014**	**(-0.34)**	**0.019**	**(1.03)**
Consultant$_t$	**0.115*** **	**(5.08)**	**0.076*** **	**(3.33)**	**0.065*** **	**(3.71)**	**-0.166*** **	**(-6.59)**	**0.147*** **	**(6.62)**
CEO attributes:	0.009	(0.17)	-0.078	(-1.53)	-0.078	(-1.59)	-0.048	(-0.64)	-0.048	(-1.28)
CEO_age$_t$	-0.017**	(-2.48)	0.001	(0.17)	-0.003	(-0.47)	-0.002	(-0.16)	-0.002	(-0.45)
CEO_tenure$_t$	0.010	(0.89)	0.008	(0.78)	0.001	(0.13)	-0.041**	(-2.21)	0.002	(0.22)
CEO_chair$_t$	-0.015**	(-2.30)	-0.006	(-1.04)	-0.022***	(-3.51)	-0.042***	(-3.78)	-0.025***	(-5.49)
Firm attributes:	-0.004	(-0.68)	0.003	(0.71)	-0.004	(-0.78)	0.021***	(2.70)	-0.014***	(-4.21)
ASSET$_{t-1}$	0.003	(0.09)	-0.001	(-0.02)	-0.046*	(-1.72)	0.053	(1.06)	0.071***	(3.37)
MTB$_{t-1}$	0.052***	(4.97)	0.035***	(3.44)	0.021**	(2.19)	-0.019	(-1.23)	0.031***	(3.29)
Leverage$_{t-1}$	0.006	(0.25)	-0.020	(-0.84)	0.022	(0.98)	0.076**	(2.01)	0.011	(0.62)
Analyst$_{t-1}$	-0.055	(-0.88)	-0.088	(-1.62)	0.014	(0.26)	-0.016	(-0.22)	0.067	(1.61)
BlockOwn$_{t-1}$	-0.003	(-0.51)	-0.002	(-0.30)	-0.000	(-0.09)	-0.014	(-1.20)	0.004	(0.71)
ROA$_{t-1}$	0.037	(0.38)	0.102	(1.23)	0.191**	(2.16)	0.096	(0.95)	-0.023	(-0.42)
RET$_{t-1}$	-0.088	(-0.82)	0.107	(1.10)	-0.035	(-0.33)	0.284**	(1.97)	-0.174**	(-2.31)
EarnVol$_{t-1}$	-0.234	(-0.81)	0.368*	(1.68)	0.584**	(2.21)	0.569**	(2.14)	-0.248*	(-1.67)
RetVol$_{t-1}$	-0.826***	(-3.23)	-0.738***	(-3.28)	-0.199	(-0.75)	0.607*	(1.79)	-1.039***	(-5.91)
Concentration$_{t-1}$	0.080***	(2.91)	0.062**	(2.43)	0.109***	(4.24)	-0.012	(-0.30)	0.041**	(2.24)
Year-fixed Effects	Yes		Yes		Yes		Yes		Yes	
Industry-fixed Effects	Yes		Yes		Yes		Yes		Yes	
Firm Cluster	Yes		Yes		Yes		Yes		Yes	
Observations	9,635		9,635		9,635		9,635		9,635	
Adjusted R-squared	0.194		0.146		0.366		0.359		0.209	
Degrees of Freedom	37		37		37		37		37	

Table 7. (continued)

Panel C. Firm Performance

	Dependent variables:															
	ROA_t				ROA_{t+1}				ROA_{t+2}				ROA_{t+3}			
VARIABLES	**(1)**		**(2)**		**(3)**		**(4)**		**(5)**		**(6)**		**(7)**		**(8)**	
$hg\_Award_{t\,t}$	-0.006**	(-2.22)	-0.004**	(-2.20)	-0.009**	(-2.49)	-0.005**	(-2.23)	-0.009**	(-2.23)	-0.004*	(-1.69)	-0.003	(-0.78)	-0.001	(-0.48)
$hg\_Vesting_t$	-0.002	(-0.59)	-0.001	(-0.38)	-0.008**	(-2.01)	-0.004*	(-1.88)	-0.010**	(-2.35)	-0.005**	(-2.42)	-0.001	(-0.21)	-0.001	(-0.29)
$hg\_Performance_t$	-0.001	(-0.20)	0.002	(0.96)	-0.001	(-0.28)	0.000	(0.24)	0.000	(0.06)	0.000	(0.07)	-0.001	(-0.21)	-0.001	(-0.32)
hg_Target_t	-0.001	(-0.50)	0.000	(0.06)	-0.001	(-0.59)	0.000	(0.11)	0.000	(0.07)	0.001	(0.59)	-0.001	(-0.50)	-0.000	(-0.10)
hg_Pay_t	0.010**	(2.32)	0.005**	(2.32)	0.004	(0.78)	0.001	(0.48)	-0.002	(-0.36)	-0.001	(-0.20)	-0.002	(-0.34)	-0.002	(-0.61)
Observations	9,635		9,635		9,333		9,333		8,284		8,284		7,342		7,342	
Adjusted R-squared	0.481		0.481		0.417		0.417		0.417		0.416		0.409		0.409	
Degrees of Freedom	37		37		37		37		36		36		35		35	

	Dependent variables:															
	RET_t				RET_{t+1}				$RETt_{t+2}$				$RETt_{t+3}$			
VARIABLES	**(1)**		**(2)**		**(3)**		**(4)**		**(5)**		**(6)**		**(7)**		**(8)**	
$hg\_Award_{t\,t}$	-0.074**	(-2.56)	-0.034**	(-1.99)	-0.022	(-0.83)	-0.013	(-0.85)	-0.004	(-0.08)	-0.017	(-0.55)	0.009	(0.15)	-0.010	(-0.27)
$hg\_Vesting_t$	-0.018	(-0.67)	-0.002	(-0.18)	-0.014	(-0.64)	-0.008	(-0.62)	-0.036	(-0.76)	-0.016	(-0.64)	-0.071	(-1.26)	-0.032	(-1.14)
$hg\_Performance_t$	0.016	(0.73)	-0.007	(-0.47)	-0.016	(-0.74)	-0.008	(-0.57)	-0.023	(-0.50)	-0.010	(-0.37)	-0.045	(-0.88)	-0.014	(-0.39)
hg_Target_t	-0.030**	(-2.35)	-0.009	(-1.17)	-0.021	(-1.19)	-0.008	(-0.84)	-0.000	(-0.02)	-0.001	(-0.08)	0.003	(0.08)	-0.006	(-0.28)
hg_Pay_t	0.036	(1.08)	0.012	(0.69)	-0.015	(-0.55)	-0.009	(-0.65)	-0.095	(-1.59)	-0.059*	(-1.91)	-0.109	(-1.32)	-0.067	(-1.60)
Observations	9,635		9,635		9,331		9,331		8,269		8,269		7,308		7,308	
Adjusted R-squared	0.189		0.188		0.177		0.177		0.184		0.185		0.259		0.259	
Degrees of Freedom	37		37		37		37		36		36		35		35	