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CEO and director compensation, CEO turnover and institutional investors: Is there cronyism in the UK?

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Abstract

This paper provides new evidence that correlated abnormal compensation of CEOs and directors is symptomatic of agency problems associated with cronyism. We find that director abnormal compensation has a negative impact on the likelihood of CEO turnover and reduces the sensitivity of CEO turnover to poor stock performance. However, for firms with greater institutional ownership the adverse effects of director abnormal compensation are mitigated, and the negative impact of abnormal compensation on firm performance is reduced. These findings suggest that correlated abnormal compensation of CEOs and directors is likely associated with agency problems.

JEL classification: G20, G34

Keywords: agency problems; director compensation; CEO turnover; institutional investors; board effectiveness.

1. Introduction

Economic theory suggests that directors residing at the apex of the organization are crucial to the well-functioning of the firm. In particular, they play a vital role in the internal control system that serves to resolve conflicts of interests between decision-makers and residual risk bearers. As a result, a large body of empirical literature has been devoted to the question as to what makes a good director. The literature shows that a number of director characteristics such as prior experience, financial expertise, other commitments, and independence from the CEO are related to directors' supervisory and disciplinary capacity (Fich and Shivdasani, 2006; Güner et al., 2008; Hwang and Kim, 2009; Harford and Schonlau, 2013; Coles et al., 2014; Field and Mkrtchyan, 2017). However, the evidence on whether director compensation mitigates or reinforces barriers to objective monitoring is still scant, which is perhaps surprising given the voluminous evidence in the CEO compensation literature that monetary incentives can affect managerial behavior. Notable exceptions are the studies of Brick et al. (2006) and Bebchuk et al. (2010) that show that abnormal compensation of directors coinciding with that of the CEO is associated with firm underperformance, reflecting agency problems due to CEO-director reciprocity, so called cronyism.

In this paper, we shed new light on the relation between director abnormal compensation[1] and the quality of the board's decisions. Specifically, we examine the quality of the board's decision to retain or fire the CEO. We focus on this decision because it is one of the board's primary responsibilities, and a decision that lies at the heart of the debate on the costs of managerial entrenchment.[2] Further, we investigate whether the presence of institutional

[1] The variable of interest in the paper, a proxy for cronyism, is the predicted component of CEO (director) compensation that is due to residual director (CEO) compensation, calculated following the methodology of Brick et al. (2006, p.420). It represents the proportion of CEO (director) compensation predicted by the director (CEO) compensation variable in excess of the controls for the standard economic determinants of compensation. Throughout the paper, this variable is referred to as 'CEO (director) abnormal compensation' for the sake of brevity.

[2] Hermalin and Weisbach (2003) argue that one way to evaluate the board's effectiveness is to assess the quality of CEO turnover decisions. Similarly, Hermalin (2005) and Jenter and Kanaan (2015) argue that among the few corporate decisions for which the board plays a significant role, the most common, and arguably among the most important ones, are those decisions pertaining to the selection, monitoring, and retention or dismissal of the CEO.

investors, and thus the existence of an important external governance mechanism, helps mitigate the effects of abnormal compensation.

In theory, the board of directors acts as a constraint on the CEO's ability to deviate from the maximization of shareholder value. However, in practice directors might be subject to agency problems, which would undermine their ability to monitor management effectively. Indeed, directors may have incentives to side with the CEO, as the latter plays an important role in their nomination process (Mace, 1986; Lorsch and MacIver, 1989; Shivdasani and Yermack, 1999).[3] At the very least, CEOs approve, if not choose, the slate of directors and this slate is rarely challenged by shareholders (Hermalin and Weisbach, 1998; Coles et al., 2014). Thus, catering to the wishes of the CEO could increase the likelihood that a director will be re-appointed, which ultimately results in substantial CEO and managerial power. Relatedly, directors, regardless of whether they are independent in the conventional and legal sense, likely assign their allegiance to the CEO especially if they have personal ties with the latter (Hwang and Kim, 2009; Fracassi and Tate, 2012; Hallock, 1997)[4] or have been appointed by the CEO (Coles et al., 2014), which undermines their ability to perform their monitoring role.

As the CEO becomes powerful within the firm, he acquires a great deal of control over his board and this control includes his influence on the process whereby CEO compensation and director compensation are determined (Bebchuk and Fried, 2004; Bebchuk et al., 2010). Accordingly, to the extent that the CEO can provide benefits to the directors via, e.g., higher compensation, taking actions against the CEO increases the likelihood that the directors will forego these benefits, making them more reluctant to take such actions. In other words, here

[3] Corporate law states that shareholders choose the board of directors. However, as Hermalin and Weisbach (1998) note, in practice, shareholders almost always vote for the slate proposed by management. As a result, CEOs have a great deal of influence on how the slate is determined, and in turn the process whereby directors are appointed. Mace (1986) and Lorsch and MacIver (1989) provide case-study evidence that CEOs play an important role in selecting new board members. Shivdasani and Yermack (1999) find that CEO involvement in the selection of new board members decreases the firm's subsequent number of independent directors.

[4] Hwang and Kim (2009) and Fracassi and Tate (2012) show that social ties between the directors and the CEO undermine directors' effectiveness with respect to their disciplinary and monitoring functions. Hwang and Kim (2009) find that such ties increase CEO fixed pay and reduce CEO pay-performance sensitivity.

director abnormal compensation can be thought of as capturing the disutility to directors from monitoring the CEO, and in turn what the CEO can get away with. Therefore, we expect that CEOs at firms with higher director abnormal compensation are less likely to be dismissed following poor performance.

We begin the analysis by showing that CEO compensation and director compensation are positively related and that this positive relation is associated with subsequent firm underperformance, consistent with Brick et al. (2006). We then investigate the relation between CEO turnover decisions and director abnormal compensation. We find that CEO turnover is insensitive to good stock performance (i.e., a positive firm stock return adjusted by the market return), but it is highly sensitive to poor stock performance (i.e., a negative firm stock return adjusted by the market return). More importantly, the sensitivity of CEO turnover to poor stock performance is significantly reduced by director abnormal compensation, suggesting that CEOs at firms with higher director abnormal compensation are less likely to be dismissed for underperformance. This finding is in line with the cronyism hypothesis: the CEO uses his or her power to help directors acquire higher compensation in exchange for the latter's loyalty and for the CEO to avoid being replaced in the wake of bad performance.

Having established an association between abnormal compensation on the one side and future firm performance and CEO turnover on the other, we next explore whether the effects of abnormal compensation vary across firms with different levels of institutional holdings. Institutional investors should reduce the extent to which board actions can deviate from the interests of shareholders because there are costs to the directors and CEO from outsiders' recognition of and reaction to managerial rent extraction. It has been well-documented that institutional investors are effective monitors (Shleifer and Vishny, 1986; Gillan, 2006) whose presence is associated with higher firm value (McConnell and Servaes, 1990), higher pay-performance sensitivity and lower levels of compensation (Hartzell and Starks, 2003), and more

monitoring (Brickley et al., 1988).[5] Therefore, to the extent that cronyism reflects agency issues and that effective monitoring by institutional investors mitigates such issues, the effects of abnormal compensation on firm performance and CEO turnover should be weakened by the presence of institutional investors.

Our findings are consistent with this prediction. First, we find that institutional ownership mitigates not only the positive relation between director compensation and CEO cash compensation but also the negative relation between director abnormal compensation and CEO turnover. Second, director abnormal compensation lowers the sensitivity of CEO turnover to poor stock performance in firms with low, but not high, levels of institutional holdings. Third, institutional ownership reduces the negative impact of abnormal compensation on firm performance. Taken together, these findings suggest that institutional investors moderate executive compensation, and enhance the threat of dismissal, thereby mitigating the negative impact of agency problems on firm performance. These findings provide further support for the cronyism hypothesis. Finally, we find that firms with higher director abnormal compensation are more likely to engage in earnings management and that this effect is reduced by institutional ownership. This further confirms the cronyism hypothesis.

Our paper makes the following major contributions to the literature. First, the study most closely related to ours is Brick et al. (2006), which shows that abnormal compensation of directors and CEOs and the resulting firm underperformance over the following year are likely reflective of the board culture problem they refer to as cronyism. Our findings extend this line of enquiry by uncovering how cronyism affects a key function of the board: boards with

[5] The existing literature has established two primary channels through which institutional investors exert governance and mitigate agency issues. The first channel is direct intervention in a firm, otherwise known as "voice." For instance, Crane et al. (2016) show that greater institutional ownership leads firms to pay more dividends. Moreover, their results on shareholder proposals and proxy voting behavior are consistent with institutions assuming a monitoring role and pushing for higher dividends through shareholder proposals and voting. The second channel is selling one's shares if the manager underperforms, otherwise known as "exit" (Edmans and Manso, 2011).

abnormal compensation are associated with suboptimal CEO turnover decisions, thereby weakening internal governance. Our results also complement theirs by providing evidence that this problem exists in the UK where CEOs and other directors are much less likely to be entrenched. There are at least two reasons why entrenchment is less severe in the UK. First, CEO-chair duality is the exception rather than the norm: Mira et al. (2018) find that in only 15% of their sample there is CEO-chair duality. Similarly, Fernandes et al. (2013) show that for the year 2005, 5% of the CEOs of UK firms are also the Chairman of the board. This compares to 54% and 64% in the US samples of Fernandes et al. (2013) and Duru et al. (2013), respectively, and 75% of the S&P 500 firms in 2003 studied by Chhaochharia and Grindstein (2007). Second, unlike the US where most companies have staggered boards to limit director change (see e.g., Duru et al., 2013, who find that 61% of their sample firms have staggered boards), in the UK there are no restrictions to CEO and director turnover. Hence, one would expect cronyism not to exist in the UK. Nevertheless, we find strong evidence of cronyism.

Second, our paper adds to the literature on the relation between CEO turnover and various board/director attributes. A number of studies find that CEO turnover-performance sensitivity is significantly lower when the directors are busy (i.e., they hold three or more directorships) (Fich and Shivdasani, 2006), when they share social ties with the CEO (Hwang and Kim, 2009), and when the board consists of a majority of inside directors (Guo and Masulis, 2015) or directors appointed after the CEO assumed office (Coles et al., 2014). Our results complement previous work in this line of inquiry by suggesting another factor influencing CEO turnover-performance sensitivity, i.e., director abnormal compensation.

Our paper also contributes to the literature on whether institutional investors monitor their investee firms. Denis et al. (1997) and Aggarwal et al. (2011) provide evidence that institutional ownership enhances the sensitivity of CEO turnover to firm performance. Our paper adopts a different angle: We hypothesize and show that institutional ownership reduces the negative

effect of director abnormal compensation on CEO turnover-performance sensitivity. This finding implies that the directors' concerns for violating the normative expectations imposed by institutional investors may reduce their incentives to pursue private benefits, while making them more likely to monitor and discipline the CEO.

Finally, our study highlights the importance of compensation packages of directors in shaping the latter's incentives and ensuring the well-functioning of the board. Policies and practices that improve the transparency of the process whereby directors' remuneration packages are designed strengthen the alignment of interests between directors and shareholders, and consequently promote boardroom dynamics that support the firm's long-term success. Consistent with this view, in 2013 the UK government implemented directors' remuneration reforms that require that the directors' remuneration report of listed firms must include details of both payments/benefits received by the directors in the financial year being reported on and future director remuneration policy, and that the remuneration policy must be approved by an ordinary resolution of the shareholders at least every three years.[6]

The remainder of the paper is organized as follows. Section 2 describes the data and explains the model. Section 3 presents the results, and Section 4 concludes.

2. Model specification and data

2.1. Determinants of compensation

A long-standing literature addresses the determinants of managerial compensation. To measure director (CEO) abnormal compensation, we estimate regressions whose dependent variable is the cash and total compensation of directors (the CEO). The independent variables include firm, executive, and governance characteristics that have been used in previous studies.

[6] See the Department for Business Innovation and Skills (BIS) report on directors' remuneration reforms, released on March 18, 2013. Details are available at: https://www.gov.uk/government/publications/directors-remuneration-reforms-frequently-asked-questions.

Firm size typically accounts for the largest proportion of variation in executive compensation (Murphy, 1999). Managing large firms requires more effort and managerial expertise because of the increased complexity of investment and operating decisions. Thus, large firms use higher levels of compensation to attract more talented executives. We measure firm size as the logarithm of sales.

We include Tobin's q to account for growth opportunities. Smith and Watts (1992) find that the larger the proportion of firm value represented by growth opportunities, the more closely managers' compensation is tied to firm value, and the greater the variance of their compensation. To compensate for the additional risk, higher pay is required. Similarly, both leverage and stock return volatility increase the riskiness of equity-based compensation and thus should be associated with higher compensation (Fernandes et al., 2013).

A central prediction of agency theory is a positive link between compensation and performance (Holmström, 1979; Jensen and Murphy, 1990). We include both market (stock return) and operating (return on assets) measures as indicators of directors' prior performance. In addition, firms with more tangible assets may have lower agency costs because such assets are easier to monitor (Himmelberg et al., 1999). Thus, we expect a negative relation between firm tangibility, measured as the ratio of plant, property, and equipment to total assets (PPE_{t-1}/TA_{t-1}), and total compensation. All of the above firm characteristics are lagged by one year relative to the dependent variable to mitigate potential endogeneity. Detailed definitions are shown in Appendix A. To reduce the influence of outliers, we winsorize all of the above variables at the first and 99^{th} percentiles.

Moreover, we include both Insider ownership[7] and Total institutional ownership to account for the impact of ownership structure on executive compensation. Greater insider ownership is associated with lower compensation (Fernandes et al., 2013). Intense monitoring

[7] Insiders are defined as shareholders who hold at least 5% of the outstanding shares such as officers and directors and their immediate families, other corporations, and individuals.

by institutional investors may exert pressure on the executives. To the extent that such pressure lowers utility, executives demand higher pay to compensate for the utility loss (Hermalin, 2005).

We also control for board characteristics. First, both large boards (Yermack, 1996) and busy boards (Fich and Shivdasani, 2006) are associated with lower monitoring effectiveness, and thus higher compensation. We measure board busyness as the ratio of the number of current board positions held by all the directors on the board to board size (Current board positions). Second, the more independent the board, the greater is the monitoring of the executives and the higher is the latter's compensation for disutility (Hermalin, 2005). We measure board independence as the ratio of the number of independent directors to board size. Third, CEO Chairman is a dummy that equals one if the CEO is also the Chairman, and zero otherwise.

Our final set of controls is CEO and director characteristics. Note that these variables are at the individual CEO or director level. Age is the age of the CEO or director in years, which might impact human capital risk and in turn executive compensation. Tenure is the CEO's or director's time in position in years. The relation between tenure and director compensation is expected to be ambiguous (Ryan and Wiggins, 2001). On the one hand, directors with longer tenure are more likely to be entrenched and powerful, which could lead to higher compensation. On the other hand, such directors might have greater share ownership from previous equity grants due to their longer tenure, thereby aligning their interests with those of the shareholders. External is a dummy that equals one if the CEO or director was hired from outside the firm, and zero otherwise. Murphy and Zabojnik (2006) document that directors hired from outside the firm earn significantly more than those promoted internally. They interpret this finding as evidence for the relative importance of general over firm-specific managerial ability.[8]

[8] Murphy and Zabojnik (2006) define general managerial ability as managerial skills that are valuable to all companies, e.g., financial and accounting expertise and management skills. In contrast, firm-specific managerial capital refers to skills, experience and knowledge valuable only to the specific organization, e.g., connections with colleagues and clients and familiarity with the culture and regulations of a specific company.

Although we control for many firm characteristics, it is inevitable that other unobserved firm characteristics, such as corporate culture, investment strategies and the demand for unique management skills, also impact compensation. Thus, we use firm-fixed effects regressions to account for the firms' latent traits.[9] One advantage of the fixed effects method is that it generates parameters on observed firm characteristics that are not affected by omitted variable bias as long as the omitted variables are time-invariant (Graham et al., 2012). For example, Graham et al. (2012) show that the effect of firm size on executive compensation declines significantly after controlling for firm-fixed effects, suggesting that the size effect is likely overstated when the time-invariant unobservables are not properly accounted for. In addition, we use robust standard errors clustered at the firm level to compute the t-statistics.

2.2. Data sources and description

Our dataset is obtained from three different sources. First, the CEO and director compensation data is obtained from BoardEx. Cash compensation is the sum of salary and bonuses. Equity-based compensation includes stock awards, long-term incentive plans (LTIPs) and options.[10] Total compensation is the sum of cash and equity-based compensation. Second, institutional ownership data is obtained from Thomson One Banker. Third, data on other firm-specific controls is collected from Datastream.

An issue with the compensation data arises from the fact that new executives assume office at different times during their first fiscal year. Thus, reported compensation may be affected by a timing problem. Furthermore, the extent of this timing problem varies with the type of new executive. The reported salary/bonus for internally promoted executives is the amount earned over the entire fiscal year. Although the figure does not represent only pay

[9] The Hausman test rejects the use of a random effects model.

[10] The value of LTIPs is set to be the value obtainable on the grant date. Stock option value is calculated by using the Black-Scholes model based on the vesting period and it is therefore the estimated value of the options awarded, as opposed to their intrinsic value. Compensation data is in constant 2005 pounds.

earned after the change in position, the magnitude of the timing problem for internal replacements should be much less than that for external replacements (Chang et al., 2016). To eliminate the timing problem and ensure the robustness of the test results, we exclude new executives (i.e., those with tenure of less than one year). As a result, the final sample consists of 19,291 CEO/director-year observations from 1,294 UK-listed non-financial firms over the period 1998-2009.[11] We use the logarithm of compensation for regression purposes because the compensation data is skewed.

Table 1 reports descriptive statistics for the level of managerial compensation and the main explanatory variables. Compared with the US sample used by Brick et al. (2006), the sample in this paper includes firms of a similar size (average sales are £1,650 million, compared with the average of $2,884 million reported by Brick et al.), with similar growth opportunities (the average Tobin's q is 1.980, compared with the 1.848 reported by Brick et al.) and stock return volatility (0.403 compared with 0.386).

Insert Table 1 about here

For the ownership structure and board composition variables, we note first that the sample firms have average insider ownership of 27.1%, compared with 32.0% in Fernandes et al. (2013) for a sample of non-US firms. The mean fraction of independent directors is 38.2%, compared with 51.5% reported by Conyon et al. (2018) for UK firms. The boards have eight members on average, compared with an average of nine members reported by Ozkan (2007) for UK firms.

Moreover, 11.3% of the CEOs in our sample also chair their board. This is comparable with the 16.0% reported by Fernandes et al. (2013) for non-US firms but is much less than the 53.6% reported for US firms.

[11] We exclude financial companies for the following reasons: i) they tend to have special asset compositions and are subject to relatively stricter regulation compared to non-financial companies; and ii) Tobin's q cannot be compared across financial and non-financial companies (Ozkan, 2012).

3. Results

3.1. CEO compensation, director compensation and firm performance: Replicating past findings

We begin by modeling the logarithm of cash and total compensation for both individual directors and the CEO in Table 2. Consistent with prior studies (Ozkan, 2007; Fernandes et al., 2013), we find that executive compensation is positively related to $LnSales_{t-1}$, Stock return, Total institutional ownership, Fraction of independent directors, and Board size, and negatively related to PPE_{t-1}/TA_{t-1} and Insider ownership.

Insert Table 2 about here

We then examine the impact of director compensation on the logarithm of CEO cash and total compensation by including Residual director total compensation as an additional explanatory variable. Residual director total compensation is defined as the sum of the residual compensation of all (non-CEO) board members in the firm, where residual compensation is the residual in the director total compensation regression, i.e., model 2 of Table 2. The results are presented in Table 3. As in Brick et al. (2006), the estimated coefficients on Residual director total compensation are significantly positive, suggesting that CEO compensation increases with director compensation. In terms of economic significance, the results in models 1 and 2 indicate that if Residual director total compensation increases from 0 to 0.1, i.e., total abnormal compensation increases by £47,140 per year for the directors,[12] CEO cash compensation increases by 1.06% and total compensation increases by 3.09% relative to the mean levels.

[12] The average total compensation for the directors in our sample (in inflation-adjusted 2005 pounds) is £495,359 (Table 1). At this level, residual log compensation of 0.1 translates into abnormal compensation of £47,140 (£495,359 × (1 – 1 / exp(0.1))), or roughly 10% of compensation.

These increases correspond to approximately £4,673 cash and £27,095 total compensation annually for the CEO.

Insert Table 3 about here

A potential concern with the interpretation of the results shown in Table 3 is that the effect captured by Residual director total compensation might simply be due to board size. To address this concern, we find in an untabulated analysis that the results are robust to alternative definitions of the residual director compensation variable, namely, i) the average (instead of the sum) of the residual compensation of all directors on the board, and ii) the fraction of excessively paid directors, where excessively paid directors are those with positive residuals from the director total compensation regression (model 2 of Table 2).

Finally, we examine the relation between abnormal compensation and firm performance. Following Brick et al. (2006), we measure cronyism as the difference between fitted CEO compensation without director compensation and fitted CEO compensation with director compensation:

$$Fitted\ CEO\ compensation\ without\ Dir\ compensation = X\hat{\beta}_1$$

$$Fitted\ CEO\ compensation\ with\ Dir\ compensation = X\hat{\beta}_2 + Z\hat{\delta}$$

$$\text{CEO\_DUE\_TO\_DIR} = Fitted\ CEO\ compensation\ with\ Dir\ compensation - Fitted\ CEO\ compensation\ without\ Dir\ compensation$$

where X is the matrix of data used in the first CEO total compensation regression. $\hat{\beta}_1$ represents the vector of the estimated coefficients of model 4, Table 2, which does not include director compensation as an explanatory variable. $\hat{\beta}_2$ represents the vector of the estimated coefficients of model 2, Table 3, which includes the director compensation variable. Z is the matrix of the director compensation variable, and $\hat{\delta}$ denotes the vector of its estimated coefficients.

CEO_DUE_TO_DIR represents the incremental proportion of CEO compensation due to higher director compensation. It is calculated as the difference between the fitted CEO

compensation regression with (from model 2, Table 3) and that without (from model 4, Table 2) director compensation as an explanatory variable. CEO_DUE_TO_DIR can be considered a measure of abnormal compensation, because it captures the part of CEO compensation due to higher director compensation, in excess of the controls for the standard determinants of compensation. Likewise, DIR_DUE_TO_CEO is the incremental proportion of director compensation due to higher CEO compensation. It is calculated as the difference between fitted director compensation with (from an untabulated regression) and that without (from model 2, Table 2) CEO compensation as an explanatory variable.

Insert Table 4 about here

Table 4 reports the summary statistics for the governance characteristics for the firms in the highest and lowest quintiles based on the estimated CEO and director abnormal compensation. The differences in means between the highest and lowest quintiles, along with the significance levels, are also reported. Consistent with Brick et al. (2006), we find some evidence that high abnormal compensation of CEOs and directors is less likely observed in firms with greater institutional ownership and those with a higher fraction of independent directors since the presence of institutional investors and that of independent directors may mitigate the agency problems in the boardroom.

In addition, we relate the estimated abnormal compensation variables to the three CEO characteristics known to capture managerial entrenchment and governance quality. First, Tenure is the number of years the CEO has been in the post. The CEO's ability to deviate from shareholder value maximization may vary over his time in office. As the CEO becomes more influential in the firm over time, he will have more sway over his board and will be better able to engage in rent-seeking activities (Pan et al., 2016). Second, CPS (CEO pay slice) is defined as the percentage of the total compensation of the top five executives that is paid to the CEO. It is a measure of the relative importance of the CEO in the top executive team. Bebchuk et al.

(2011) show that a greater CPS is associated with lower accounting profitability, lower firm value, lower acquisition announcement returns, a higher likelihood of the CEO receiving a lucky options grant, i.e., an options grant at the lowest price of the month, and lower performance sensitivity of CEO turnover. They interpret these findings as evidence that a greater CPS is indicative of agency problems. Third, CEO-director tie is a dummy variable that equals one if the CEO has at least one network tie with the other directors through past work experience or past educational institutions, and zero otherwise.[13] The CEO's internal connectedness through network ties may enable the CEO to gain automatic support from the directors, thereby facilitating rent extraction.

The results indicate that firms with high abnormal CEO and/or director compensation are more likely to have a CEO with longer tenure, with a greater CPS, and with connections to the other directors through network ties.[14] All these findings suggest that poor governance is more likely to exist in firms that provide abnormal compensation to their CEO and directors, consistent with the notion that abnormal compensation reflects agency problems.

Table 5 presents the results for the relation between abnormal compensation and firm performance/valuation over the following year. We use the below specifications:

$$Firm\ performance = \alpha_0 + \alpha_1 DIR\_DUE\_TO\_CEO + \alpha_2 Other\ Controls + \varepsilon_1$$

$$Firm\ performance = \theta_0 + \theta_1 CEO\_DUE\_TO\_DIR + \theta_2 Other\ Controls + \varepsilon_2$$

The dependent variables include Industry-*adj. Tobin's q* (Industry-adj. ROA), which is the difference between the firm's *Tobin's q* (ROA) and the mean value for all firms in the same Fama-French industry, and Abnormal return, which is the annual abnormal returns derived

[13] The data on network ties is obtained from BoardEx. The two types of ties considered include overlaps in past employment (working as an employee for the same firm or serving on the same board) and those in past education. Only network ties established during overlapping years are included. Further, to avoid reverse causality, we include only network ties developed prior to the CEO and the directors joining the firm.

[14] The results are qualitatively similar when the cronyism variables are calculated based on cash compensation and equity compensation separately. Interestingly, the results seem to suggest that poor governance practices are more likely to exist in firms with abnormal cash compensation than in firms with abnormal equity compensation.

from the three-factor Fama-French model.[15] Overall, we find a negative relation between CEO/director abnormal compensation and firm performance, consistent with the view that abnormal compensation is symptomatic of agency problems.[16] Further, the observation that the negative relation is typically statistically significant after controlling for CPS and CEO-director tie suggests that our abnormal compensation variables likely capture unexplored dimensions of agency issues that cannot be explained by the CEO's dominance in the firm or his connectedness to the board.

Lending further confidence to the validity of the findings, we confirm in untabulated analysis that controlling for additional board characteristics, namely, the fraction of independent directors and the fraction of directors with three or more directorships, has little impact on our results.

Insert Table 5 about here

[15] The abnormal returns are estimated using the following three-factor model,

$$R_{i,t} - rf_t = \alpha_i + \beta^{MKT}_i MKT_t + \beta^{SMB}_i SMB_t + \beta^{HML}_i HML_t + \varepsilon_{i,t},$$

where $R_{i,t}$ is the return of firm i in month t, and rf_t is the monthly return on the three-month UK Treasury Bills. MKT_t is the excess return of the UK FTSE All Share index, SMB is the Small-Minus-Big (SMB) size factor, HML is the High-Minus-Low (HML) value factor. Firm i's expected return in month t is calculated as the sum of the estimated intercept and the products of factor loadings, estimated using 60-month rolling windows, and realizations of the three factors in that month. The abnormal return in month t is the difference between the firm's actual stock return and its estimated expected return. Annual abnormal returns are then the aggregated buy-and-hold returns using the monthly abnormal returns over the past year. Data on the three factors for the UK is from Gregory et al. (2013) and is available at:
http://business-school.exeter.ac.uk/research/centres/xfi/famafrench/files/.

[16] A potential alternative explanation for the observed lower returns for firms with higher abnormal compensation is that such firms are associated with lower systematic risk. We argue that this is highly unlikely for mainly two reasons. First, the risk associated with abnormal compensation is related to agency problems within the firm and thus is idiosyncratic. Second, for each year, we divide the sample firms into quintiles based on CEO_DUE_TO_DIR (DIR_DUE_TO_CEO) and track their subsequent annual stock returns. If lower returns for firms with higher abnormal compensation are due to lower systematic risk, then the difference in stock returns between the top and bottom quintiles should persist over time (Chambers et al., 2002; Lev et al., 2009). In untabulated results, we find that the difference in stock returns does not persist and that it tends to reduce to zero in the fifth year after portfolio formation. This observation is consistent with the view that the market underestimates the negative impact of poor governance and that this underestimation disappears over time. According to Edmans (2011), this correction can take about five years, which our data confirms.

3.2. Abnormal compensation and CEO turnover

To provide further support for the cronyism hypothesis, we examine whether abnormal compensation reduces the likelihood of CEO dismissal. Given that firms with high abnormal compensation exhibit underperformance, it should be expected that the CEOs of such firms are more likely to be replaced, unless the abnormal compensation is at least partly due to agency problems associated with cronyism. Higher compensation of directors strengthens their loyalty to the CEO, making the CEO's position more secure, irrespective of his performance.

We construct two indicators of CEO turnover. Overall turnover is an indicator variable equal to one if the CEO for firm i in year t-1 is not the same as in year t, and zero otherwise. We then distinguish between forced and voluntary turnover, following the classification of Parrino (1997), frequently used in CEO turnover studies (e.g., Peters and Wagner, 2014; Guo and Masulis, 2015; Jenter and Lewellen, 2010; Jenter and Kanaan, 2015). Specifically, our second indicator, Forced turnover, equals one, if (1) news articles report that the CEO has been fired, forced out, or retires or resigns due to policy differences or pressure; (2) the CEO is under the age of 60 and news articles do not report the reason for the departure as death, poor health, or the acceptance of another comparable position (within the firm or elsewhere); or (3) news articles report that the CEO is retiring but the retirement is not announced at least six months before the succession, and zero otherwise. Finally, cases classified as forced are reclassified as voluntary if news sources convincingly indicate that the departure is due to reasons unrelated to the firm's activities. We search the Lexis-Nexis database to collect the information needed for this classification. Ultimately, our sample includes 816 cases of CEO turnover of which 356 are classified as forced.

Table 6 reports the results for the logit regressions on overall and forced CEO turnover. The regressions are of the form:

$$ln[Prob(Turnover)/(1 - Prob(Turnover))]$$

$$= \mu_0 + \mu_1 DIR\_DUE\_TO\_CEO + \mu_2 Other\ Controls + \varepsilon_3$$

The variable of interest is DIR_DUE_TO_CEO. Following prior studies, we control for potential determinants of CEO turnover, including the firm-specific return, market return, CPS, CEO internal connectedness, board size, board independence, CEO tenure dummies,[17] age, and the CEO Chairman indicator. In particular, Firm-specific return is defined as the difference between the firm's stock return and Market return, [18] where Market return is the return on the FTSE All Share index.

Insert Table 6 about here

The results are consistent with the cronyism hypothesis. The coefficient on DIR_DUE_TO_CEO in model 1 is negative and statistically significant at the 1% level (z-statistic = -2.98). [19] The higher the director compensation due to the CEO compensation variable, the less likely the directors are to dismiss the CEO. In terms of economic significance, the coefficient on DIR_DUE_TO_CEO is -0.185, suggesting that with a 0.1 increase in DIR_DUE_TO_CEO (or approximately half of a standard deviation),[20] the CEO turnover

[17] Following Bebchuk et al. (2011), we use categorical values for CEO tenure to account for the possibility that the effect of tenure on CEO turnover might not be monotonic. In untabulated results, we find that the use of tenure as a continuous variable does not materially change the results.

[18] The use of relative performance measures can be justified via both Holmström (1982) and Gibbons and Murphy (1990). They argue that relative performance evaluation (RPE) is valuable if agents face some common uncertainties because RPE can provide incentives, while partially insulating agents from common uncertainties. Furthermore, Gibbons and Murphy (1990) argue that CEO performance is more likely to be evaluated relative to aggregate market movements than to industry movements. Warner et al. (1988) provide evidence that market-adjusted stock returns are a better predictor of CEO dismissals than absolute performance. Accordingly, we measure firm-specific performance as the difference between the firm stock return and the market return (FTSE All Share index return) over the year prior to the CEO turnover. We use the absolute performance measure, namely the firm stock return, as a robustness check and find that the results do not change qualitatively.

[19] To address the issue that the main independent variables of interest (the residual director compensation variable as well as CEO_DUE_TO_DIR and DIR_DUE_TO_CEO) are derived from fitting regressions, we use the adjusted standard errors of the regression coefficients, i.e., the Murphy-Topel standard error calculated following Hole's (2006) approach and the bootstrap standard error. The results obtained using the adjusted standard errors are similar to those reported above.

[20] DIR_DUE_TO_CEO has a standard deviation of 0.224 and CEO_DUE_TO_DIR has a standard deviation of 0.247.

probability decreases by approximately 2% (exp (–0.185 × 0.1) – 1). Model 2 shows that the coefficient on DIR_DUE_TO_CEO remains negative and statistically significant at the 5% level (z-statistic = -2.01) after controlling for the CEO's internal dominance (CPS) and connectedness (CEO-director tie). Moreover, and as expected, the relation between the firm-specific return and CEO turnover is negative and significant: CEOs who perform poorly relative to the market are more likely to be replaced. In models 3 and 4, we perform the same exercise for Forced turnover and find the same patterns.

As a supplementary analysis (untabulated), we examine whether CEO_DUE_TO_DIR affects CEO turnover decisions. We do not find evidence that CEO compensation due to directors has a significant impact on CEO dismissal. Thus, in subsequent analyses we focus on DIR_DUE_TO_CEO, which is also the focus of our hypotheses.

In Table 7, we examine whether directors with higher abnormal compensation are less likely to dismiss the CEO, despite poor performance. To test this, we estimate the following logit regression:

$$ln[Prob(Turnover)/(1 - Prob(Turnover))]$$
$$= \beta_0 + \beta_1 Firm\ specific\ return \times DIR\_DUE\_TO\_CEO$$
$$+ \beta_2 Firm\ specific\ return + \beta_3 DIR\_DUE\_TO\_CEO + \beta_4 Other\ Controls + \varepsilon_4$$

In model 1, where the dependent variable is Overall turnover, the coefficient on Firm-specific return is negative and statistically significant at the 5% level and the coefficient on the interaction between Firm-specific return and DIR_DUE_TO_CEO is insignificant. However, the latter coefficient becomes significant and positive in model 3 where Forced turnover is used, providing support for the argument that director abnormal compensation reduces CEO turnover-performance sensitivity.

Insert Table 7 about here

We then split the firm-specific return into positive and negative returns in models 2 and 4. The representative specification is:

$$
\begin{aligned}
ln[Prob(Turnover)/(1-Prob(Turnover))] \\
&= \gamma_0 + \gamma_1 Positive\ firm\ specific\ return \times DIR\_DUE\_TO\_CEO \\
&+ \gamma_2 Negative\ firm\ specific\ return \times DIR\_DUE\_TO\_CEO \\
&+ \gamma_3 Positive\ firm\ specific\ return + \gamma_4 Negative\ firm\ specific\ return \\
&+ \gamma_5 DIR\_DUE\_TO\_CEO + \gamma_6 Other\ Controls + \varepsilon_5
\end{aligned}
$$

The positive (negative) firm-specific return is equal to the firm-specific return if the latter is positive (negative), and zero otherwise. We find that the CEO is more likely to be replaced after bad (but not good) performance relative to the market return. However, the positive coefficient on the interaction with Negative firm-specific return (i.e., Negative firm-specific return × DIR_DUE_TO_CEO) counters the negative baseline link between stock performance and CEO turnover. Thus, whereas CEOs are normally penalized for poor performance, CEOs in firms with higher director abnormal compensation are less likely to be dismissed for poor performance, consistent with the cronyism hypothesis. As a robustness check (not tabulated), we repeat the tests in Tables 6 and 7 incorporating the fraction of directors with three or more directorships as an additional control. The results are not materially affected.

3.3. The impact of institutional investors

The results thus far indicate that abnormal compensation is associated with weaker governance, as evidenced by subsequent underperformance and a lower sensitivity of CEO turnover to poor performance, consistent with the cronyism hypothesis. Yet, this is not the whole story. Although agency problems that reduce the monitoring effectiveness of the board may exist, the firm should still be able to rely on the external monitoring by institutional investors. Previous studies stress the role of institutional investors in monitoring their investee

firms and improving firm performance (Denis et al., 1997; Hartzell and Starks, 2003; Brickley et al., 1988). To shed further light on the cronyism hypothesis, we examine whether institutional investor presence, as proxied by Total institutional ownership, influences the effects of abnormal compensation shown in the previous tables. If abnormal compensation is associated with agency issues, then institutional ownership may mitigate the corresponding effects of abnormal compensation.

We conduct three sets of tests to examine whether institutional investors help mitigate agency issues in the boardroom. First, we analyze the effect of institutional ownership on the relation between director compensation and CEO compensation. We expect institutional ownership to weaken this relation. Table 8 presents the results of the regressions that include the interaction term between Total institutional ownership and Residual director total compensation. Consistent with the cronyism hypothesis, we find that the positive relation between director compensation and CEO cash compensation is mitigated by institutional ownership. The coefficient on the interaction term in model 1 is statistically significant at the 5% level (t-statistic = -2.41) and has the opposite sign of the coefficient on Residual director total compensation. In terms of economic significance, the coefficient on Residual director total compensation suggests that if Residual director total compensation increases by 0.1, i.e., an increase in total abnormal compensation of £47,140 per year for directors, CEO cash compensation increases by £6,965 or by 1.58% from its mean value. Moreover, the coefficient on the interaction term between Residual director total compensation and Total institutional ownership is -0.093, implying that with 50% institutional ownership, the sensitivity of CEO cash compensation to Residual director total compensation is reduced by approximately one-third.

Insert Table 8 about here

Nevertheless, the coefficient on the interaction term is insignificant in model 2, where the dependent variable is the logarithm of CEO total compensation. Institutional monitoring appears only to reduce the impact of director compensation on CEO cash compensation, implying that institutional investors are more concerned with the proportion of CEO compensation that is less performance contingent.

Second, we explore whether institutional ownership changes the relation between director abnormal compensation and CEO turnover. For firms with high institutional ownership, it is more difficult for the CEO to influence director compensation to reduce board scrutiny. The pressure and constraints imposed by institutional investors reduce directors' incentives to pursue their own interests at the detriment of shareholder interests. We thus expect institutional ownership to weaken the relation between director abnormal compensation and CEO turnover.

Insert Table 9 about here

To test this conjecture, we augment models 2 and 4 of Table 6 by including Total institutional ownership and its interaction with DIR_DUE_TO_CEO as an additional explanatory variable. Models 1 and 4 of Table 9 show the results for overall and forced CEO turnover, respectively, for the whole sample. Consistent with our prediction, the effect of DIR_DUE_TO_CEO on CEO turnover is mitigated by Total institutional ownership. The coefficient on the interaction term is statistically significant at the 10% level and has the opposite sign of the coefficient on DIR_DUE_TO_CEO in both models.

In models 2 and 3, we examine whether director abnormal compensation has a differential effect on the performance sensitivity of overall CEO turnover across firms with high institutional ownership and those with low institutional ownership. In models 5 and 6, we repeat the exercise for forced CEO turnover, and distinguishing again between firms with high institutional ownership and those with low institutional ownership. A firm is included in the

high institutional ownership group if its institutional ownership is above the sample median; otherwise, it is included in the low institutional ownership group (see column title).

Several observations can be made. The results suggest that the link between poor performance and CEO turnover is stronger (both in terms of significance and magnitude) in firms with high institutional ownership. This is not surprising given that CEOs of firms with high institutional ownership are likely subject to greater external monitoring and thus are more likely to be dismissed for poor performance. Further, the coefficient on the interaction between Negative firm-specific return and DIR_DUE_TO_CEO is positive, weakening the negative link between performance and CEO turnover. Importantly, the positive coefficient is only statistically significant for firms with low institutional ownership.[21] This is consistent with the notion that the severity of agency problems – as reflected by both reduced overall and forced turnover in the wake of poor performance – decreases with institutional monitoring.

Third, we investigate whether institutional ownership affects the relation between abnormal compensation and firm performance. Assuming institutional investors provide effective monitoring, we expect the negative relation between abnormal compensation and firm performance to be mitigated for firms with high levels of institutional ownership. Hence, we re-estimate the regressions in Table 5 for the subsamples with high and low levels of institutional ownership based on the sample median. The dependent variables are the three firm performance measures, i.e., Industry-*adj. Tobin's q*, Industry-adj. ROA, and Abnormal return. The variables of interest are CEO_DUE_TO_DIR and DIR_DUE_TO_CEO. For the sake of simplicity, only the coefficients on the variables of interest are reported, while all other factors are controlled for in each model.

Table 10 presents the regression results. Consistent with our prediction, we find that institutional investors weaken the negative effect of abnormal compensation on firm

[21] The difference between the coefficients for the high and low institutional ownership groups is significant at the 10% level.

performance. In models 4 to 6 where the low institutional ownership subsample is used, all three coefficient estimates on CEO_DUE_TO_DIR and all three coefficient estimates on DIR_DUE_TO_CEO are negative, of which two each are statistically significant. In contrast, none of the coefficients in models 1 to 3 estimated using the high institutional ownership subsample is statistically significant. Moreover, the coefficients estimated using the low institutional ownership subsample are larger in absolute value than those for the high institutional ownership group. To sum up Tables 9 and 10, we find that monitoring by institutional investors mitigates the effects of abnormal compensation on both CEO turnover and firm performance. In turn, these findings provide further evidence that abnormal compensation of the directors and the CEO is at least partly due to agency problems.

Insert Table 10 about here

3.4. Additional robustness checks and further analysis

3.4.1 Additional robustness checks

We undertake additional tests to ensure the robustness of the findings. First, we employ alternative model specifications for the CEO turnover regressions by adding Ln(Sales), Leverage, Stock return volatility as additional controls, following Gao et al. (2014). Untabulated results suggest that CEO turnover is more likely in larger firms and firms with high volatility, consistent with previous literature, and the main findings are unaffected. Second, we run ordinary least squares (OLS) regressions with industry and year effects, in addition to the firm-fixed effects estimations.[22] The main findings continue to support the cronyism hypothesis.

[22] Whereas firm-fixed effects account for time-invariant unobservables at the firm level, they also remove all between-firm variation from the data. This might jeopardize the results for variables with a cross-sectional feature (Zhou, 2001), such as Fraction of independent directors, Current board positions and Board size. Although substantially different across firms, those variables typically only change slowly from year to year within a firm. Untabulated results show that the above cross-sectional variables become highly significant at the 1% level or better across all OLS regressions.

3.4.2 Director abnormal compensation by board committee

To further our understanding of the functioning of the board, we construct three alternative measures of director abnormal compensation based on board committee membership. DIR_DUE_TO_CEO_AUD is defined as the proportion of compensation for directors serving on the audit committee that can be explained by the CEO compensation variable. Likewise, DIR_DUE_TO_CEO_COM (DIR_DUE_TO_CEO_NOM) is the proportion of compensation to directors sitting on the compensation (nomination) committee that can be explained by the CEO compensation variable. We obtain data on committee membership from BoardEx. One committee that is likely to be particularly important is the board's nomination committee, given its role in determining the composition of the entire board, and the quality of directors and ultimately the effectiveness of internal governance (Guo and Masulis, 2015). In support of this view, we find in Tables 11 and 12 that the observed effects of director abnormal compensation on firm performance/value and CEO turnover-performance sensitivity are driven primarily by abnormal compensation of directors who sit on the nomination committee.

Insert Table 11 about here

Insert Table 12 about here

On a related note, Guo and Masulis (2015) show that board and committee structure have distinct but complementary effects on board monitoring. Hence it is possible that our abnormal compensation variables are simply proxies for committee structure, which could be correlated with the quality of CEO turnover decisions and firm performance. To address this possibility, we confirm that our main results are not sensitive to controlling for four direct measures of

committee structure:[23] Nomination committee independence is the ratio of the number of independent directors to the total number of directors on the nomination committee; Compensation committee independence is the ratio of the number of independent directors to the total number of directors on the compensation committee; Audit committee independence is the ratio of the number of independent directors to the total number of directors on the audit committee; and CEO on committee is a dummy variable that equals one if the CEO is on the compensation committee or the nomination committee, and zero otherwise.

3.4.3 Additional evidence from earnings management

Our final set of tests investigates whether CEO and director abnormal compensation are also associated with higher levels of earnings management, as per the cronyism hypothesis.[24] To measure earnings management, we use discretionary accruals (DA) derived from the modified Jones model (Jones, 1991; and Dechow et al., 1995). Following prior studies, this measure is estimated using cross-sectional regressions of total accruals on changes in sales and on property, plant, and equipment (PPE) within industries.[25] Table 13 presents the results. In models 1 and 2, where the key independent variables are the two abnormal compensation variables, we find that only DIR_DUE_TO_CEO has a significant and positive effect on DA.

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[23] The average percentage of independent directors is 97.2%, 96.1%, and 83.4% for the audit committee, compensation committee, and nomination committee, respectively.

[24] We also examine acquisition announcement returns but do not find evidence that CEO or director abnormal compensation has a significant impact on them.

[25] We construct this measure in two steps. First, we estimate the following cross-sectional model within each year and Fama-French 49 industry:

$$\frac{TA_{i,t}}{Assets_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{Assets_{i,t-1}} + \beta_2 \frac{\Delta REV_{i,t}}{Assets_{i,t-1}} + \beta_3 \frac{PPE_{i,t}}{Assets_{i,t-1}} + \varepsilon_{i,t} \quad (4)$$

where i indexes firms and t indexes years. TA_t denotes total accruals, defined as the change in non-cash current assets minus the change in current liabilities excluding the current proportion of long-term debt, minus depreciation and amortization for year t. $Assets_{t-1}$ is total assets at the end of year t-1. ΔREV_t is the change in sales from year t-1 to t. PPE_t is the gross value of plant, property and equipment at the end of year t. We require a minimum of 10 observations for the estimation. Second, we use the estimated coefficients from equation (4) and the following model to compute the fitted normal accruals $NA_{i,t}$:

$$NA_{i,t} = \hat{\beta}_0 + \hat{\beta}_1 \frac{1}{Assets_{i,t-1}} + \hat{\beta}_2 \frac{(\Delta REV_{i,t} - \Delta AR_{i,t})}{Assets_{i,t-1}} + \hat{\beta}_3 \frac{PPE_{i,t}}{Assets_{i,t-1}} \quad (5)$$

where $\Delta AR_{i,t}$ is the change in receivables. We subtract the change in receivables from the change in sales as credit sales might also be a potential source of accounting manipulation. Discretionary accruals are then computed as $DA_{i,t} = TA_{i,t} / Assets_{i,t-1} - NA_{i,t}$.

Adding the interaction term of DIR_DUE_TO_CEO with Total institutional ownership to model 3, we find that the coefficient on the interaction is negative and statistically significant, offsetting the positive baseline effect of DIR_DUE_TO_CEO. Taken together, while firms with higher director abnormal compensation are more likely to engage in earnings management, the presence of institutional investors mitigates this. These findings are again in line with the cronyism hypothesis, providing further support to the latter.

Insert Table 13 about here

4. Conclusion

This paper tests the validity of the cronyism hypothesis, according to which correlated abnormal compensation of CEOs and directors is associated with agency problems, for the case of the UK. In the UK, CEOs and directors are much less likely to be entrenched than in the US. There are at least two reasons why this may be the case. First, successive codes of best practice in corporate governance have discouraged CEOs from acting as the Chairman of the board of directors. Hence, CEO duality is a rare occurrence in the UK. Second, staggered boards which are the norm in the US are unheard of in the UK. Hence, one would expect that the cronyism hypothesis does not apply to the UK.

However, we find strong and consistent evidence in favor of the cronyism hypothesis for the UK. First, we show that firms with higher director abnormal compensation tend to exhibit lower firm performance/value, a reduced probability of CEO turnover, and weakened CEO turnover-performance sensitivity, suggesting that directors with higher abnormal compensation are less effective monitors. However, the observed impairment in monitoring effectiveness is alleviated by institutional investors as we find the negative relation between director abnormal compensation and CEO turnover to be less prominent when institutional ownership is high. In addition, in firms with high levels of institutional ownership, CEOs are less likely to avoid being replaced following poor performance, and the negative impact of

abnormal compensation on firm performance/value is less severe. Finally, further evidence from earnings management confirms the cronyism hypothesis. Firms with higher director abnormal compensation are more likely to engage in earnings management, especially when institutional ownership is low.

Overall, our paper calls for reforms that enhance the disclosure of director compensation. Importantly, our results also suggest that the negative effects of director abnormal compensation on firm performance/value and CEO turnover-performance sensitivity are mainly driven by the levels of abnormal compensation of the members of the nomination committee. Hence, investors and regulators may want to give particular attention to the compensation levels of the members of this important board committee.

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Table 1. Summary statistics

This table presents summary statistics for the main input variables. Director (CEO) cash compensation is the sum of salary and bonus for directors (CEO) in constant 2005 pounds. Director (CEO) total compensation is the sum of cash and equity compensation for directors (CEO) in constant 2005 pounds. We report summary statistics for the compensation variables in thousands of pounds. Sales is sales in constant 2005 pounds at the previous financial year end. We use its logarithmic transformation, LnSales, in all regressions. Leverage is total debt divided by total assets at the previous financial year end. *Tobin's q* is total assets plus market value of equity minus book value of equity divided by total assets, at the previous financial year end. Stock return is the holding period stock return over the past year. Stock-return volatility is annualized standard deviation of daily stock returns over the past year. ROA is earnings before interest, taxes, depreciation, and amortization (EBITA) divided by total assets, at the previous financial year end. PPE/TA is the ratio of tangible assets (i.e., plant, property, and equipment) to total assets, at the previous financial year end. Insider ownership is the number of closely held shares by insiders as a percentage of the number of shares outstanding, where insiders are defined as shareholders who hold at least 5% of the outstanding shares. Total institutional ownership is institutional ownership by all institutional investors as a percentage of market capitalization. Board size is the number of executive and non-executive directors. Fraction of independent directors is the ratio of the number of independent directors to board size. CEO Chairman is a dummy that equals one if the CEO is also the Chairman, and zero otherwise. Current board positions is the ratio of the number of current board positions held by all directors on the board to board size. Age is the age of the CEO/director in years. Tenure is the number of years the CEO/director had been in position. External is a dummy equal to one if the CEO/director is hired from outside the firm, and zero otherwise. The sample consists of 19,291 observations (including 5,769 CEO-year observations and 13,522 director-year observations) from 1,294 UK listed nonfinancial companies.

	N	Mean	Median	Standard deviation
A. Executive compensation				
Director cash compensation (£000)	13,522	275.747	195.676	267.309
Director equity compensation (£000)	13,522	219.611	33.355	851.922
Director total compensation (£000)	13,522	495.359	252.301	980.998
CEO cash compensation (£000)	5769	440.835	290.100	465.354
CEO equity compensation (£000)	5769	436.021	41.230	1,960.714
CEO total compensation (£000)	5769	876.856	384.648	2,216.208
B. Determinants of executive compensation				
$Sales_{t-1}$ (£000)	19,291	1,650,191	145,179	9,004,436
$Leverage_{t-1}$	19,291	0.189	0.163	0.174
Tobin's q_{t-1}	19,291	1.980	1.473	1.607
Stock return	19,291	0.141	0.077	0.530
Stock-return volatility	19,291	0.403	0.342	0.234
ROA_{t-1}	19,291	0.076	0.119	0.216
PPE_{t-1}/TA_{t-1}	19,291	0.285	0.211	0.252
Insider ownership	19,291	0.271	0.238	0.218
Total institutional ownership	19,291	0.501	0.525	0.274
Board size	19,291	8.062	8.000	2.816
Fraction of independent directors	19,291	0.382	0.400	0.181
Current board positions	19,291	1.719	1.625	0.563
CEO Chairman	19,291	0.113	0.000	0.314
Age	19,291	49.995	50.000	7.588
Tenure	19,291	5.692	3.900	5.026
External	19,291	0.551	1.000	0.497

Table 2. CEO and director compensation

This table provides regression results on individual CEO and director compensation. The dependent variables are the logarithm of cash and total compensation in constant 2005 pounds. The control variables include: LnSales is the logarithm of sales in constant 2005 pounds. Leverage is total debt divided by total assets. *Tobin's q* is total assets plus market value of equity minus book value of equity divided by total assets. Stock return is the holding period stock return over the past year. Stock-return volatility is the annualized standard deviation of daily stock returns for the past year. ROA is earnings before interest, taxes, depreciation, and amortization (EBITA) divided by total assets. PPE/TA is the ratio of tangible assets (i.e., plant, property, and equipment) to total assets. Insider ownership is the number of closely held shares by insiders as a percentage of the number of shares outstanding, where insiders are defined as shareholders who hold at least 5% of the outstanding shares. Total institutional ownership is institutional ownership by all institutional investors as a percentage of market capitalization. Board size is the number of executive and non-executive directors. Fraction of independent directors is the ratio of the number of independent directors to board size. CEO Chairman is a dummy that equals one if the CEO is also the Chairman. Current board positions is the ratio of the number of current board positions held by all directors on the board to board size. Age is age of executives in years. Tenure is the number of years in position in the firm. External is a dummy equal to one if the executive is hired from outside the firm, and zero otherwise. t-statistics are based on robust standard error clustered at the firm level. '*', '**' and '***' denote significance at the 10%, 5% and 1% level, respectively.

	Director compensation		CEO compensation	
	(1)	(2)	(3)	(4)
	LnCash	Lntotal	LnCash	Lntotal
$LnSales_{t-1}$	0.034***	0.031***	0.023***	0.028***
	(3.78)	(3.15)	(3.07)	(2.97)
$Leverage_{t-1}$	0.080	0.059	-0.103	-0.024
	(1.27)	(0.69)	(-1.14)	(-0.23)
Tobin's q_{t-1}	0.003	0.011	0.003	0.012
	(0.52)	(1.17)	(0.48)	(1.26)
Stock return	0.010	0.028*	0.015	0.016
	(0.93)	(1.66)	(1.21)	(0.81)
Stock return volatility	-0.163***	-0.199***	-0.138***	-0.170***
	(-4.75)	(-4.14)	(-3.72)	(-3.16)
ROA_{t-1}	0.010	-0.074	0.062	0.001
	(0.22)	(-1.09)	(1.25)	(0.02)
PPE_{t-1}/TA_{t-1}	-0.194**	-0.288**	-0.254**	-0.323**
	(-1.99)	(-2.01)	(-2.36)	(-2.19)
Insider $ownership_{t-1}$	-0.146***	-0.214***	-0.095	-0.151*
	(-2.96)	(-3.07)	(-1.56)	(-1.89)
Total institutional $ownership_{t-1}$	0.076**	0.115*	0.174***	0.208***
	(2.09)	(1.94)	(4.29)	(3.40)
Board $size_{t-1}$	-0.001	0.001	0.022***	0.027***
	(-0.12)	(0.19)	(3.29)	(3.05)
Fraction of independent $directors_{t-1}$	0.193**	0.400***	0.107	0.331***
	(2.51)	(3.88)	(1.44)	(3.27)
Current board $positions_{t-1}$	0.040*	0.053*	0.026	0.028
	(1.87)	(1.75)	(1.03)	(0.83)
CEO $Chairman_{t-1}$	-0.038	-0.043	-0.091*	-0.063
	(-1.39)	(-1.19)	(-1.66)	(-1.12)
Age	-0.003**	-0.007***	-0.004	-0.011***
	(-2.09)	(-4.91)	(-1.42)	(-3.58)
Tenure	0.006***	0.004**	0.005*	0.003
	(3.07)	(2.00)	(1.68)	(0.86)
External	-0.021	-0.035**	-0.022	-0.014
	(-1.41)	(-2.02)	(-0.76)	(-0.39)
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	13,522	13,522	5769	5769
Adjusted R-sq	0.316	0.280	0.447	0.339

Table 3. The impact of director compensation on CEO compensation

This table examines the impact of director compensation on CEO compensation. The dependent variables are the logarithm of CEO cash compensation in constant 2005 pounds and the logarithm of CEO total compensation in constant 2005 pounds, respectively. The variable of interest is: Residual director total compensation, i.e., the sum of residuals in the director total compensation regression (model 2 Table 2) of all board members in a firm. Other control variables include the same firm, CEO and governance characteristics variables as in Table 2. t-statistics are based on robust standard error clustered at the firm level. '*', '**' and '***' denote significance at the 10%, 5% and 1% level, respectively.

	CEO compensation	
	(1)	(2)
	LnCash	Lntotal
Residual director total compensation	0.106***	0.309***
	(9.53)	(23.71)
LnSales $_{t-1}$	0.024***	0.029***
	(3.33)	(3.90)
Leverage $_{t-1}$	-0.096	-0.006
	(-1.10)	(-0.06)
Tobin's q $_{t-1}$	0.004	0.013*
	(0.54)	(1.67)
Stock return	0.018	0.023
	(1.43)	(1.40)
Stock return volatility	-0.140***	-0.177***
	(-3.94)	(-4.07)
ROA $_{t-1}$	0.064	0.007
	(1.32)	(0.13)
PPE $_{t-1}$/TA $_{t-1}$	-0.244**	-0.295**
	(-2.37)	(-2.40)
Insider ownership $_{t-1}$	-0.101*	-0.169**
	(-1.73)	(-2.49)
Total institutional ownership $_{t-1}$	0.178***	0.221***
	(4.67)	(4.24)
Board size $_{t-1}$	0.021***	0.024***
	(3.26)	(3.16)
Fraction of independent directors $_{t-1}$	0.118*	0.361***
	(1.69)	(4.49)
Current board positions $_{t-1}$	0.023	0.018
	(0.97)	(0.68)
CEO Chairman $_{t-1}$	-0.104*	-0.101*
	(-1.92)	(-1.91)
Age	-0.003	-0.007***
	(-0.94)	(-2.59)
Tenure	0.003	-0.001
	(1.22)	(-0.34)
External	-0.024	-0.021
	(-0.88)	(-0.65)
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
N	5769	5769
Adjusted R-sq	0.497	0.563

Table 4. The cronyism measures and other governance characteristics

This table reports summary statistics of governance variables for subsamples of firms in the highest and lowest quintiles of the estimated abnormal compensation variables. The differences in means between the highest and lowest quintiles, along with the significance levels, are reported. CEO_DUE_TO_DIR is the proportion of CEO compensation explained by the director compensation variable. DIR_DUE_TO_CEO is the proportion of director compensation explained by the CEO compensation variable. Total institutional ownership is institutional ownership by all institutional investors as a percentage of market capitalization. Board size is the number of executive and non-executive directors on the board. Fraction of independent directors is the ratio of the number of independent directors to board size. CEO Chairman is a dummy that equals one if the CEO is also the Chairman, and zero otherwise. Current board positions is the ratio of the number of current board positions held by all directors on the board to board size. Tenure is the number of years in position in the firm. CPS is the fraction of the aggregate compensation of the firm's top five executive team captured by the CEO. CEO-director tie is a dummy variable that equals one if the CEO has at least one network tie with other directors through past employment (either working as an employee or serving on the board) or past educational institutions, and zero otherwise. '*', '**' and '***' denote significance at the 10%, 5% and 1% level, respectively.

Quintiles based on CEO_DUE_TO_DIR				
	N	Highest quintile	Lowest quintile	Difference
Board size	1154	8.158	8.233	-0.076
Total institutional ownership	1154	0.500	0.537	-0.037**
Fraction of independent directors	1154	0.377	0.398	-0.020***
Current board positions	1154	1.733	1.744	-0.011
CEO Chairman	1154	0.104	0.097	0.007
Tenure	1154	6.610	6.026	0.584**
CPS	1154	0.371	0.346	0.025*
CEO-director tie	1154	0.275	0.233	0.042*

Quintiles based on DIR_DUE_TO_CEO				
	N	Highest quintile	Lowest quintile	Difference
Board size	1154	8.205	8.370	-0.165
Total institutional ownership	1154	0.511	0.530	-0.019*
Fraction of independent directors	1154	0.384	0.396	-0.012*
Current board positions	1154	1.773	1.750	0.023
CEO Chairman	1154	0.101	0.099	0.003
Tenure	1154	6.495	6.068	0.427*
CPS	1154	0.402	0.327	0.075***
CEO-director tie	1154	0.300	0.241	0.059**

Table 5. Abnormal compensation and firm performance

This table provides estimated coefficients from regressions on firm performance/valuation over the following year. The dependent variables include: Industry-*adj. Tobin's q* (ROA) is the difference between the firm's *Tobin's q* (ROA) and the mean value for all firms in the same Fama-French 12 industry. Abnormal return is the annual abnormal returns derived from a three-factor Fama-French model. The variables of interest include: CEO_DUE_TO_DIR is the portion of CEO compensation due to the director compensation variable, while DIR_DUE_TO_CEO is the portion of director compensation due to the CEO compensation variable. Other control variables include: LnSales is the logarithm of sales in constant 2005 pounds. Stock return volatility is the standard deviation based on daily stock return over the prior year. CPS is the fraction of the aggregate compensation of the firm's top five executive team captured by the CEO. CEO-director tie is a dummy variable that equals one if a CEO has at least one network tie with other directors through past employment (either working as an employee or serving on the board) or past educational institutions, and zero otherwise. t-statistics are based on robust standard errors clustered at the firm le vel. '*', '**' and '***' denote significance at the 10%, 5% and 1% level respectively.

	(1) Industry-adj. Tobin's q	(2) Abnormal return	(3) Industry-adj. ROA	(4) Industry-adj. Tobin's q	(5) Abnormal return	(6) Industry-adj. ROA
CEO_DUE_TO_DIR $_{t-1}$	-0.015*	-0.197**	-0.010	—	—	—
	(-1.73)	(-2.48)	(-1.13)			
DIR_DUE_TO_CEO $_{t-1}$	—	—	—	-0.027**	-0.086**	-0.012
				(-2.15)	(-2.32)	(-1.25)
CPS $_{t-1}$	0.430**	0.024	0.044	0.408*	0.238**	0.045
	(2.13)	(0.23)	(1.46)	(1.84)	(2.29)	(1.35)
CEO-director tie $_{t-1}$	-0.066	0.020	-0.011	-0.066	0.029	-0.011
	(-1.11)	(0.67)	(-1.23)	(-1.12)	(0.94)	(-1.22)
Stock return volatility	0.043	0.315***	-0.045*	0.043	0.312***	-0.045*
	(0.39)	(4.00)	(-1.81)	(0.39)	(3.94)	(-1.81)
LnSales $_{t-1}$	0.002	-0.038***	0.001	0.002	-0.037***	0.001
	(0.08)	(-3.34)	(0.16)	(0.07)	(-3.21)	(0.16)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	5471	5592	5471	5471	5592	5471
Adjusted R-sq	0.010	0.029	0.016	0.010	0.029	0.016

Table 6. Director abnormal compensation and CEO turnover

This table displays the results of logit regressions on CEO turnover. The sample consists of 5,129 observations with available data on CEO turnover in year t (1999-2009) and explanatory variables in the year prior to the turnover. The dependent variables are the overall and forced turnover dummies. DIR_DUE_TO_CEO is the proportion of director compensation due to the CEO compensation variable. Other control variables include: CEO pay slice (CPS) is the fraction of the aggregate compensation of the firm's top five executive team captured by the CEO. CEO-director tie is a dummy variable that equals one if a CEO has at least one network tie with other directors through past employment (either working as an employee or serving on the board) or past educational institutions, and zero otherwise. Board size is the number of executive and non-executive directors. Fraction of independent directors is the ratio of the number of independent directors to board size. Firm-specific return is the difference between firm stock return and Market return over the year prior to the CEO turnover, where Market return is the FTSE All Share index return. Tenure dummy equals one if CEO tenure falls within the corresponding range, e.g. CEO tenure=2 equals one if CEO tenure is between two and three years. CEO tenure=1 is the hold-out group. CEO age>60 dummy is a dummy equal to one if the CEO's age is above 60, and zero otherwise. CEO Chairman is a dummy equal to one if the CEO is also the Chairman, and zero otherwise. t-statistics are based on robust standard errors clustered at the firm level. '*', '**' and '***' denote significance at the 10%, 5% and 1% level, respectively. The industry dummies are based on the 12 Fama-French industries.

	Overall turnover		Forced turnover	
	(1)	(2)	(3)	(4)
DIR_DUE_TO_CEO $_{t-1}$	-0.185***	-0.127**	-0.145**	-0.093*
	(-2.98)	(-2.01)	(-2.43)	(-1.92)
CPS $_{t-1}$	—	-1.292***	—	-0.965**
		(-3.58)		(-2.12)
CEO-director tie $_{t-1}$	—	-0.151	—	-0.266*
		(-1.28)		(-1.65)
Board size $_{t-1}$	0.063*	0.047*	0.058	0.048
	(1.82)	(1.69)	(1.60)	(1.17)
Fraction of indep. dirs $_{t-1}$	-0.121	0.161	0.018	0.236
	(-0.49)	(0.60)	(0.06)	(0.70)
Firm-specific return $_{t-1}$	-0.185*	-0.192**	-0.486***	-0.494***
	(-1.93)	(-2.03)	(-3.07)	(-3.12)
Market return $_{t-1}$	7.116***	6.915***	5.987***	5.836***
	(7.31)	(7.23)	(4.68)	(4.59)
CEO tenure=2 $_{t-1}$	0.099	0.106	0.262	0.272
	(0.76)	(0.81)	(1.51)	(1.56)
CEO tenure=3 $_{t-1}$	-0.154	-0.149	-0.083	-0.066
	(-0.98)	(-0.95)	(-0.39)	(-0.31)
CEO tenure=4 $_{t-1}$	-0.041	-0.036	0.028	0.040
	(-0.26)	(-0.23)	(0.13)	(0.18)
CEO tenure=5 $_{t-1}$	0.139	0.136	0.034	0.035
	(0.83)	(0.81)	(0.14)	(0.14)
CEO tenure=6 $_{t-1}$	0.112	0.100	0.020	0.021
	(0.63)	(0.56)	(0.08)	(0.08)
CEO tenure>6 $_{t-1}$	0.047	0.042	-0.319*	-0.320*
	(0.37)	(0.33)	(-1.72)	(-1.72)
CEO age>60 dummy $_{t-1}$	0.485***	0.470***	-1.625***	-1.627***
	(3.76)	(3.59)	(-4.23)	(-4.24)
CEO Chairman $_{t-1}$	0.290**	0.264**	0.291	0.279
	(2.20)	(2.01)	(1.52)	(1.45)
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	5129	5129	5129	5129
Pseudo R-sq	0.057	0.061	0.067	0.070

Table 7. Director abnormal compensation and CEO turnover performance sensitivity

This table examines whether director abnormal compensation affects CEO turnover performance sensitivity. The sample consists of 5,129 observations with available data on CEO turnover in year t (1999-2009) and explanatory variables in the year prior to the turnover. The dependent variables are the overall and forced turnover dummies. The variables of interest include: Firm-specific return and its interaction with DIR_DUE_TO_CEO, where Firm-specific return is the difference between firm stock return and the market return over the year prior to the CEO turnover. Positive firm-specific return and Negative firm-specific return and their interactions with DIR_DUE_TO_CEO, where Positive (Negative) firm-specific return is the firm-specific return if that return is positive (negative), and zero otherwise. DIR_DUE_TO_CEO is the proportion of director compensation due to the CEO compensation variable. The other control variables are the same as in Table 6 model 2. t-statistics are based on robust standard errors clustered at the firm level. '*', '**' and '***' denote significance at the 10%, 5% and 1% level, respectively. The industry dummies are based on the 12 Fama-French industries.

	Overall turnover		Forced turnover	
	(1)	(2)	(3)	(4)
DIR_DUE_TO_CEO $_{t-1}$	-0.128**	0.025	-0.069*	0.218
	(-2.06)	(0.27)	(-1.72)	(1.07)
Firm-specific return $_{t-1}$	-0.192**	—	-0.553***	—
	(-1.99)		(-3.40)	
Firm-specific return $_{t-1}$×DIR_DUE_TO_CEO $_{t-1}$	0.010	—	0.217**	—
	(0.09)		(2.50)	
Positive firm-specific return $_{t-1}$	—	-0.010	—	-0.104
		(-0.13)		(-0.75)
Negative firm-specific return $_{t-1}$	—	-0.808***	—	-1.262***
		(-3.93)		(-4.90)
Positive firm-specific return $_{t-1}$×DIR_DUE_TO_CEO $_{t-1}$	—	-0.136	—	0.003
		(-1.17)		(0.03)
Negative firm-specific return $_{t-1}$×DIR_DUE_TO_CEO $_{t-1}$	—	0.777**	—	0.872**
		(2.37)		(2.25)
Market return $_{t-1}$	6.917***	6.991***	5.836***	5.708***
	(7.22)	(7.18)	(4.61)	(4.48)
CPS $_{t-1}$	-1.292***	-1.260***	-0.935**	-0.927**
	(-3.58)	(-3.50)	(-2.06)	(-2.05)
CEO-director tie $_{t-1}$	-0.151	-0.158	-0.267*	-0.284*
	(-1.28)	(-1.34)	(-1.65)	(-1.75)
Board size $_{t-1}$	0.047	0.056*	0.048	0.062*
	(1.49)	(1.92)	(1.26)	(1.83)
Fraction of independent directors $_{t-1}$	0.161	0.223	0.248	0.344
	(0.60)	(0.83)	(0.74)	(1.02)
CEO tenure=2 $_{t-1}$	0.106	0.092	0.271	0.250
	(0.81)	(0.70)	(1.55)	(1.41)
CEO tenure=3 $_{t-1}$	-0.149	-0.155	-0.058	-0.051
	(-0.95)	(-0.98)	(-0.27)	(-0.24)
CEO tenure=4 $_{t-1}$	-0.037	-0.025	0.045	0.066
	(-0.23)	(-0.16)	(0.20)	(0.30)
CEO tenure=5 $_{t-1}$	0.136	0.147	0.043	0.060
	(0.81)	(0.87)	(0.17)	(0.24)
CEO tenure=6 $_{t-1}$	0.100	0.094	0.021	0.014
	(0.56)	(0.52)	(0.08)	(0.06)
CEO tenure>6 $_{t-1}$	0.042	0.056	-0.315*	-0.301
	(0.33)	(0.44)	(-1.70)	(-1.61)
CEO age>60 dummy $_{t-1}$	0.470***	0.470***	-1.630***	-1.636***
	(3.59)	(3.57)	(-4.24)	(-4.25)
CEO Chairman $_{t-1}$	0.265**	0.268**	0.282	0.288
	(2.01)	(2.04)	(1.47)	(1.50)
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	5129	5129	5129	5129
Pseudo R-sq	0.061	0.065	0.071	0.076

Table 8. Institutional investors and the impact of director compensation on CEO compensation

This table examines how institutional investors change the effect of director compensation on CEO compensation. The dependent variables are the logarithms of CEO cash and total compensation in constant 2005 pounds, respectively. The variables of interest are: Residual director total compensation is the sum of residuals from the director total compensation regression (model 2 Table 2) of all board members in the firm, and its interaction term with Total institutional ownership. Total institutional ownership is institutional ownership by all institutional investors as a percentage of market capitalization. The other control variables include the same firm, CEO and governance characteristics as in models 3 and 4 of Table 2. t-statistics are based on robust standard errors clustered at the firm level. '*', '**' and '***' denote significance at the 10%, 5% and 1% level, respectively.

	CEO compensation	
	(1)	(2)
	LnCash	Lntotal
Residual director total compensation	0.158***	0.305***
	(7.13)	(10.09)
Residual director total compensation×Total institutional ownership	-0.093**	0.008
	(-2.41)	(0.15)
LnSales $_{t-1}$	0.025***	0.029***
	(3.49)	(3.87)
Leverage $_{t-1}$	-0.096	-0.006
	(-1.11)	(-0.06)
Tobin's q $_{t-1}$	0.004	0.013*
	(0.57)	(1.66)
Stock return	0.018	0.023
	(1.46)	(1.40)
Stock return volatility	-0.143***	-0.176***
	(-4.05)	(-4.06)
ROA $_{t-1}$	0.062	0.007
	(1.29)	(0.14)
PPE $_{t-1}$/TA $_{t-1}$	-0.252**	-0.295**
	(-2.47)	(-2.40)
Insider ownership	-0.106*	-0.169**
	(-1.80)	(-2.49)
Total institutional ownership	0.172***	0.222***
	(4.43)	(4.21)
Board size	0.020***	0.024***
	(3.17)	(3.15)
Fraction of independent directors	0.111	0.362***
	(1.58)	(4.47)
Current board positions	0.024	0.018
	(1.03)	(0.68)
CEO Chairman	-0.105*	-0.101*
	(-1.94)	(-1.90)
Age	-0.003	-0.007***
	(-0.95)	(-2.59)
Tenure	0.003	-0.001
	(1.21)	(-0.34)
External	-0.024	-0.021
	(-0.88)	(-0.65)
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
N	5769	5769
Adjusted R-sq	0.499	0.563

Table 9. Institutional investors, director compensation and CEO turnover

This table examines whether institutional ownership alters the relation between CEO turnover and director abnormal compensation. The variables of interest are: DIR_DUE_TO_CEO is the proportion of director compensation due to the CEO compensation variable and its interaction with Total institutional ownership, where Total institutional ownership is institutional ownership by all institutional investors as a percentage of market capitalization. Firm-specific return is the difference between firm stock return and the market return over the year prior to the CEO turnover. Positive firm-specific return and Negative firm-specific return and their interactions with DIR_DUE_TO_CEO, where Positive (Negative) firm-specific return is the firm-specific return if that return is positive (negative), and zero otherwise. The other control variables are the same as in Table 6 model 2. t-statistics are based on robust standard errors clustered at the firm level. '*', '**' and '***' denote significance at the 10%, 5% and 1% level, respectively. The industry dummies are based on the 12 Fama-French industries.

	Overall turnover dummy			Forced turnover dummy		
	(1) Whole sample	(2) High institutional ownership	(3) Low institutional ownership	(4) Whole sample	(5) High institutional ownership	(6) Low institutional ownership
DIR_DUE_TO_CEO $_{t-1}$	-0.282**	0.042	-0.010	-0.184*	0.187	-0.015
	(-2.34)	(0.33)	(-0.08)	(-1.87)	(1.09)	(-0.07)
DIR_DUE_TO_CEO $_{t-1}$×Total institutional ownership $_{t-1}$	0.334*	—	—	0.169*	—	—
	(1.74)			(1.87)		
Total institutional ownership $_{t-1}$	-0.121	—	—	-0.015	—	—
	(-0.76)			(-0.07)		
Firm-specific return $_{t-1}$	-0.193**	—	—	-0.493***	—	—
	(-2.07)			(-3.11)		
Positive firm-specific return $_{t-1}$	—	-0.060	-0.040	—	-0.252	-0.096
		(-0.36)	(-0.39)		(-0.79)	(-0.61)
Negative firm-specific return $_{t-1}$	—	-1.273***	-0.513*	—	-1.333***	-1.125***
		(-3.72)	(-1.92)		(-2.91)	(-3.40)
Positive firm-specific return $_{t-1}$×DIR_DUE_TO_CEO $_{t-1}$	—	-0.086	-0.132	—	-0.089	0.227
		(-0.71)	(-0.82)		(-0.52)	(0.83)
Negative firm-specific return $_{t-1}$×DIR_DUE_TO_CEO $_{t-1}$	—	0.539	0.765*	—	0.240	1.651**
		(1.03)	(1.84)		(0.42)	(2.32)
Market return $_{t-1}$	6.793***	10.858***	4.897***	5.779***	8.820***	3.169*
	(7.05)	(5.79)	(4.03)	(4.57)	(4.67)	(1.71)
CPS $_{t-1}$	-1.280***	-1.734***	-1.071**	-0.950**	-1.761**	-0.519
	(-3.55)	(-2.71)	(-2.52)	(-2.07)	(-2.04)	(-0.99)
CEO-director tie $_{t-1}$	-0.150	-0.300*	-0.074	-0.266*	-0.280	-0.324
	(-1.27)	(-1.86)	(-0.46)	(-1.65)	(-1.28)	(-1.41)

Board size $_{t-1}$	0.049*	0.063*	0.045	0.049	0.029	0.083*
	(1.78)	(1.69)	(1.33)	(1.48)	(0.74)	(1.71)
Fraction of independent directors $_{t-1}$	0.219	0.559	0.230	0.241	0.682	0.346
	(0.80)	(1.19)	(0.73)	(0.70)	(1.06)	(0.85)
CEO tenure=2 $_{t-1}$	0.102	0.370*	-0.148	0.269	0.148	0.291
	(0.78)	(1.84)	(-0.82)	(1.54)	(0.54)	(1.25)
CEO tenure=3 $_{t-1}$	-0.147	0.084	-0.355*	-0.066	0.021	-0.130
	(-0.93)	(0.36)	(-1.65)	(-0.31)	(0.07)	(-0.44)
CEO tenure=4 $_{t-1}$	-0.033	0.172	-0.127	0.040	-0.040	0.094
	(-0.21)	(0.68)	(-0.62)	(0.18)	(-0.12)	(0.32)
CEO tenure=5 $_{t-1}$	0.142	0.430*	-0.071	0.036	0.102	0.031
	(0.84)	(1.73)	(-0.30)	(0.15)	(0.30)	(0.09)
CEO tenure=6 $_{t-1}$	0.103	0.565**	-0.339	0.020	0.434	-0.546
	(0.58)	(2.18)	(-1.26)	(0.08)	(1.36)	(-1.27)
CEO tenure>6 $_{t-1}$	0.039	0.411**	-0.270	-0.324*	-0.276	-0.343
	(0.31)	(2.05)	(-1.58)	(-1.74)	(-1.02)	(-1.35)
CEO age>60 dummy $_{t-1}$	0.469***	0.726***	0.278	-1.627***	-1.242**	-1.944***
	(3.58)	(3.69)	(1.48)	(-4.23)	(-2.30)	(-3.58)
CEO Chairman $_{t-1}$	0.255*	0.308	0.265	0.280	-0.038	0.429*
	(1.93)	(1.45)	(1.61)	(1.45)	(-0.10)	(1.82)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	5129	2573	2556	5129	2573	2531
Pseudo R-sq	0.061	0.083	0.068	0.070	0.093	0.080

Table 10. Institutional investors, abnormal compensation and firm performance

This table re-estimates the models in Table 5 for subsamples of different levels of institutional ownership. We classify a firm into the high (low) institutional ownership group if Total institutional ownership is above (below) the sample median. The dependent variables include: Industry-*adj. Tobin's q* (ROA) is the difference between the firm's *Tobin's q* (ROA) and the mean value for all firms in the same Fama-French 12 industry. Abnormal return is the annual abnormal returns derived from the three-factor Fama-French model. The variables of interest include: CEO_DUE_TO_DIR is the proportion of CEO compensation due to the director compensation variable, while DIR_DUE_TO_CEO is the proportion of director compensation due to the CEO compensation variable. For simplicity, only the coefficient estimates on the variables of interest are presented, while the same set of controls as in Table 5 along with year dummies are included in each regression. t-statistics are based on robust standard errors clustered at the firm level. '*', '**' and '***' denote significance at the 10%, 5% and 1% level, respectively.

	Firm-fixed effects regression					
	High institutional ownership			Low institutional ownership		
	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Industry-adj. Tobin's q	Abnormal return	Industry-adj. ROA	Industry-adj. Tobin's q	Abnormal return	Industry-adj. ROA
$CEO\_DUE\_TO\_DIR_{t-1}$	0.085	-0.193	0.009	-0.093*	-0.233*	-0.022
	(1.48)	(-1.51)	(1.55)	(-1.92)	(-1.91)	(-1.61)
	2753	2810	2753	2718	2782	2718
$DIR\_DUE\_TO\_CEO_{t-1}$	0.032	-0.082	0.005	-0.053*	-0.097**	-0.014
	(1.25)	(-1.48)	(0.87)	(-1.91)	(-2.14)	(-1.37)
	2753	2810	2753	2718	2782	2718

Table 11
Firm performance and director abnormal compensation by board committee

This table provides estimated coefficients from regressions on firm performance/valuation over the following year. The dependent variables include: Industry-*adj. Tobin's q* (ROA) is the difference between the firm's *Tobin's q* (ROA) and the mean value for all firms in the same Fama-French 12 industry. Abnormal return is the annual abnormal returns derived from a three-factor Fama-French model. The variables of interest include: CEO_DUE_TO_DIR is the proportion of CEO compensation due to the director compensation variable. DIR_DUE_TO_CEO_AUD is the proportion of compensation to directors sitting on the audit committee explained by the CEO compensation variable. DIR_DUE_TO_CEO_COM is the proportion of compensation to directors sitting on the compensation committee explained by the CEO compensation variable. DIR_DUE_TO_CEO_NOM is the proportion of compensation to directors sitting on the nomination committee explained by the CEO compensation variable. For simplicity, only the coefficient estimates on the variables of interest are presented, while the same set of controls as in Table 5 are included in each regression. t-statistics are based on robust standard errors clustered at the firm le vel. '*', '**' and '***' denote significance at the 10%, 5% and 1% level respectively. Year dummies results are suppressed.

	(1) Industry-adj. Tobin's q	(2) Abnormal return	(3) Industry-adj. ROA	(4) Industry-adj. Tobin's q	(5) Abnormal return	(6) Industry-adj. ROA	(7) Industry-adj. Tobin's q	(8) Abnormal return	(9) Industry-adj. ROA
DIR_DUE_TO_CEO_ AUD $_{t-1}$	-0.034	-0.094	0.011	—	—	—	—	—	—
	(-0.06)	(-0.39)	(1.18)						
DIR_DUE_TO_CEO_ COM $_{t-1}$	—	—	—	-0.019	-0.121*	-0.027	—	—	—
				(-1.56)	(-1.82)	(-1.31)			
DIR_DUE_TO_CEO_NOM $_{t-1}$	—	—	—	—	—	—	-0.038*	-0.255**	-0.033
							(-1.87)	(-2.03)	(-0.62)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	5471	5592	5471	5471	5592	5471	5471	5592	5471
Adjusted R-sq	0.010	0.021	0.016	0.010	0.022	0.016	0.010	0.022	0.016

Table 12
CEO turnover performance sensitivity and director abnormal compensation by board committee

This table examines whether institutional ownership alters the relationship between CEO turnover and director abnormal compensation. The variables of interest are: DIR_DUE_TO_CEO_AUD is the proportion of compensation to directors sitting on the audit committee explained by the CEO compensation variable. DIR_DUE_TO_CEO_COM is the proportion of compensation to directors sitting on the compensation committee explained by the CEO compensation variable. DIR_DUE_TO_CEO_NOM is the proportion of compensation to directors sitting on the nomination committee explained by the CEO compensation variable. Positive firm-specific return and Negative firm-specific return and their interactions with DIR_DUE_TO_CEO, where Positive (Negative) firm-specific return is the firm-specific return if that return is positive (negative), and zero otherwise. For simplicity, only the coefficient estimates on the variables of interest are presented, while the same set of controls as in Table 6 model 2 are included in each regression. t-statistics are based on robust standard errors clustered at the firm level. '*', '**' and '***' denote significance at the 10%, 5% and 1% level respectively. Year and industry-level dummies results are suppressed. Industry dummy variables are based on 12 Fama-French industries.

	Overall turnover			Forced turnover		
	(1)	(2)	(3)	(4)	(5)	(6)
Positive firm-specific return $_{t-1}$	0.052	0.053	0.067	-0.102	-0.103	-0.096
	(0.70)	(0.71)	(0.84)	(-0.76)	(-0.76)	(-0.70)
Negative firm-specific return $_{t-1}$	-0.468**	-0.469**	-0.488**	-1.110***	-1.113***	-1.115***
	(-2.34)	(-2.35)	(-2.45)	(-4.50)	(-4.51)	(-4.52)
DIR_DUE_TO_CEO_ AUD $_{t-1}$	-0.147	—	—	-0.355	—	—
	(-0.90)			(-0.96)		
Positive firm-specific return $_{t-1}$ × DIR_DUE_TO_CEO_ AUD $_{t-1}$	-0.406	—	—	-0.071	—	—
	(-0.52)			(-0.42)		
Negative firm-specific return $_{t-1}$ × DIR_DUE_TO_CEO_ AUD $_{t-1}$	1.368	—	—	1.245	—	—
	(1.15)			(1.11)		
DIR_DUE_TO_CEO_ COM $_{t-1}$	—	-0.140	—	—	-0.333	—
		(-0.86)			(-1.27)	
Positive firm-specific return $_{t-1}$ × DIR_DUE_TO_CEO_ COM $_{t-1}$	—	-0.390	—	—	-0.056	—
		(-1.08)			(-0.34)	
Negative firm-specific return $_{t-1}$ × DIR_DUE_TO_CEO_ COM $_{t-1}$	—	1.321	—	—	1.152	—
		(1.57)			(1.37)	
DIR_DUE_TO_CEO_NOM $_{t-1}$	—	—	-0.107	—	—	-0.288*
			(-0.69)			(-1.76)
Positive firm-specific return $_{t-1}$ × DIR_DUE_TO_CEO_NOM $_{t-1}$	—	—	-0.310	—	—	-0.084
			(-1.44)			(-0.50)
Negative firm-specific return $_{t-1}$ × DIR_DUE_TO_CEO_NOM $_{t-1}$	—	—	1.104**	—	—	1.164**
			(2.18)			(1.99)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	5129	5129	5129	5129	5129	5129
Pseudo R-sq	0.063	0.063	0.064	0.076	0.075	0.075

Table 13. Abnormal compensation and earnings management

This table examines the relation between abnormal compensation and earnings management, and whether institutional ownership influences this relation. The dependent variable DA is discretionary accruals estimated from the modified version of the Jones model. The variables of interest include: CEO_DUE_TO_DIR is the proportion of CEO compensation due to the director compensation variable. DIR_DUE_TO_CEO is the proportion of director compensation due to the CEO compensation variable and its interaction with Total institutional ownership. The other control variables include the same firm, CEO and governance characteristics as in the baseline compensation regressions. t-statistics are based on robust standard errors clustered at the firm level. '*', '**' and '***' denote significance at the 10%, 5% and 1% level, respectively. The industry dummies are based on the 12 Fama-French industries.

	(1) DA	(2) DA	(3) DA
CEO_DUE_TO_DIR $_{t-1}$	0.036	—	—
	(1.63)		
DIR_DUE_TO_CEO $_{t-1}$	—	0.020**	0.026**
		(2.07)	(2.23)
DIR_DUE_TO_CEO $_{t-1}$×Total institutional ownership $_{t-1}$	—	—	-0.012*
			(-1.73)
LnSales $_{t-1}$	0.005	0.005	0.006
	(1.05)	(1.04)	(1.04)
Leverage $_{t-1}$	0.049	0.049	0.048
	(0.69)	(0.68)	(0.67)
Tobin's q $_{t-1}$	0.003	0.003	0.003
	(0.36)	(0.36)	(0.36)
Stock return	0.002	0.002	0.002
	(0.16)	(0.16)	(0.17)
Stock return volatility	-0.023	-0.023	-0.023
	(-0.51)	(-0.51)	(-0.51)
ROA $_{t-1}$	0.358***	0.358***	0.358***
	(6.10)	(6.13)	(6.12)
PPE $_{t-1}$/TA $_{t-1}$	0.088	0.089	0.089
	(0.77)	(0.78)	(0.78)
Insider ownership	0.074	0.074	0.075
	(1.02)	(1.02)	(1.03)
Total institutional ownership	-0.006	-0.007	-0.007
	(-0.15)	(-0.16)	(-0.17)
Board size	-0.012**	-0.011**	-0.011**
	(-2.17)	(-2.17)	(-2.18)
Fraction of independent directors	-0.071	-0.070	-0.071
	(-1.04)	(-1.04)	(-1.03)
Current board positions	0.019	0.018	0.018
	(1.09)	(1.07)	(1.08)
CEO Chairman	-0.006	-0.006	-0.006
	(-0.21)	(-0.21)	(-0.21)
Age	-0.004*	-0.004*	-0.004*
	(-1.66)	(-1.68)	(-1.68)
Tenure	0.002	0.002	0.002
	(0.98)	(0.99)	(1.00)
External	-0.012	-0.011	-0.011
	(-0.59)	(-0.55)	(-0.55)
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	5156	5156	5156
Adjusted R-sq	0.026	0.027	0.027

Appendix A. Compensation variables and the determinants of compensation

Variable	Definition
A. Compensation variables	
Cash compensation	The sum of salary and bonus in constant 2005 pounds.
Equity compensation	The sum of stock and option awards in constant 2005 pounds. It is calculated as the sum of the market value of shares, long-term incentive plans and option plans estimated using the Black-Scholes model.
Total compensation	The sum of cash and equity compensation in constant 2005 pounds.
Residual director total compensation	The sum of the residual compensation of all board members in the firm, where the residual compensation is the residual in the director total compensation regression (i.e., model 2 Table 2).
B. Firm characteristics	
$LnSales_{t-1}$	The logarithm of sales in constant 2005 pounds at the previous financial year end.
$Leverage_{t-1}$	Total debt divided by total assets at the previous financial year end.
Tobin's q_{t-1}	Total assets plus market value of equity minus book value of equity divided by total assets, at the previous financial year end.
Stock return	Holding period stock return over the past year.
Stock-return volatility	Annualized standard deviation of daily stock returns for the past year.
Firm-specific return	The difference between firm stock return and the market return.
Positive firm-specific return	It equals the firm-specific return if that return is positive, and zero otherwise.
Negative firm-specific return	It equals the firm-specific return if that return is negative, and zero otherwise.
ROA_{t-1}	Earnings before interest, taxes, depreciation, and amortization (EBITA) divided by total assets, at the previous financial year end.
PPE_{t-1}/TA_{t-1}	The ratio of tangible assets (i.e., plant, property, and equipment) to total assets, at the previous financial year end.
C. Ownership structure	
Insider ownership	The number of closely held shares by insiders as a percentage of the number of shares outstanding, where insiders are defined as shareholders who hold at least 5% of the outstanding shares such as officers and directors and immediate families, other corporations, and individuals.
Total institutional ownership	Institutional ownership by all institutional investors as a percentage of market capitalization.
D. Board characteristics	
Board size	The total number of executive and non-executive directors.
Fraction of independent directors	The ratio of the number of independent directors to board size.
CEO Chairman	Dummy that equals one if the CEO is also the Chairman, and zero otherwise.
Current board positions	The ratio of the number of current board positions held by all directors on the board to board size.
E. CEO/director characteristics	
Age	Age of the CEO/director in years.
Tenure	Number of years the CEO/director had been in the current position.
External	Dummy that equals one if the CEO/director is hired from outside the firm, and zero otherwise.

CEO_DUE_TO_DIR	The proportion of CEO compensation explained by the director compensation variable.
DIR_DUE_TO_CEO	The proportion of director compensation explained by the CEO compensation variable.
DIR_DUE_TO_CEO_ AUD	The proportion of compensation to directors sitting on the audit committee explained by the CEO compensation variable.
DIR_DUE_TO_CEO_ COM	The proportion of compensation to directors sitting on the compensation committee explained by the CEO compensation variable.
DIR_DUE_TO_CEO_ NOM	The proportion of compensation to directors sitting on the nomination committee explained by the CEO compensation variable.
CEO pay slice (CPS)	The fraction of the aggregate compensation of the firm's top five executives captured by the CEO.
CEO-director tie	Dummy that equals one if the CEO has at least one network tie with the other directors through past employment (either working as an employee or serving on the board) or past educational institutions, and zero otherwise. Only network ties established during overlapping years are included.

NOT FOR PUBLICATION
Supporting documentation
Results available from the author upon request

Table A1
Section 3.1: The impact of director compensation on CEO compensation using alternative measures of residual director compensation

This table examines the impact of director compensation on CEO compensation using alternative measures of residual director compensation. The dependent variables are the logarithm of CEO cash compensation in constant 2005 pounds and the logarithm of CEO total compensation in constant 2005 pounds respectively. The variables of interest are: Fraction of excessively paid directors is the ratio of the number of excessively paid directors to board size, where excessively paid directors are those with positive residual compensation. Residual director total compensation_Average is the average (instead of the sum) of residual compensation of all directors on the board. Other controls are included. t-statistics are based on robust standard error clustered at the firm level. '*', '**' and '***' denote significance at the 10%, 5% and 1% level respectively. Year dummies results are suppressed.

	CEO compensation			
	(1)	(2)	(3)	(4)
	LnCash	Lntotal	LnCash	Lntotal
Fraction of excessively paid directors	0.664***	1.605***	—	—
	(14.36)	(24.42)		
Residual director total compensation_Average	—	—	0.257***	0.751***
			(11.81)	(24.88)
LnSales $_{t-1}$	0.022***	0.025***	0.023***	0.028***
	(3.00)	(3.28)	(3.34)	(4.03)
Leverage $_{t-1}$	-0.095	-0.005	-0.085	0.026
	(-1.07)	(-0.05)	(-0.98)	(0.30)
Tobin's q $_{t-1}$	0.004	0.013	0.005	0.016**
	(0.55)	(1.55)	(0.67)	(2.04)
Stock return	0.020	0.026	0.016	0.019
	(1.59)	(1.49)	(1.33)	(1.20)
Stock return volatility	-0.139***	-0.173***	-0.147***	-0.197***
	(-3.87)	(-3.59)	(-4.22)	(-4.75)
ROA $_{t-1}$	0.049	-0.031	0.065	0.010
	(1.01)	(-0.54)	(1.36)	(0.19)
PPE $_{t-1}$/TA $_{t-1}$	-0.228**	-0.259**	-0.262**	-0.348***
	(-2.23)	(-2.02)	(-2.57)	(-2.90)
Insider ownership	-0.095	-0.153**	-0.091	-0.141**
	(-1.62)	(-2.12)	(-1.58)	(-2.19)
Total institutional ownership	0.177***	0.217***	0.178***	0.220***
	(4.61)	(4.01)	(4.77)	(4.52)
Board size	0.018***	0.018**	0.019***	0.019**
	(2.80)	(2.22)	(3.01)	(2.57)
Fraction of independent directors	0.195***	0.543***	0.114	0.349***
	(2.75)	(6.05)	(1.64)	(4.46)
Current board positions	0.031	0.041	0.024	0.021
	(1.30)	(1.37)	(1.03)	(0.81)
CEO Chairman	-0.107*	-0.103*	-0.108**	-0.113**
	(-1.90)	(-1.77)	(-1.98)	(-2.11)
Age	-0.003	-0.010***	-0.003	-0.007***
	(-1.23)	(-3.30)	(-0.94)	(-2.59)
Tenure	0.004	0.002	0.004	-0.000
	(1.60)	(0.61)	(1.31)	(-0.13)
External	-0.023	-0.019	-0.019	-0.007
	(-0.85)	(-0.56)	(-0.71)	(-0.23)
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	5769	5769	5769	5769
Adjusted R-sq	0.488	0.468	0.502	0.591

Table A2
Section 3.1: The impact of director compensation on CEO compensation using alternative measures of residual director compensation

This table examines the impact of director compensation on CEO compensation using another alternative measure of residual director compensation. In Panel A, we rerun the director total compensation regression, where the dependent variable is defined as the average total compensation received by all directors on a board. Panel B presents the regression results of CEO cash and total compensation on Residual director total compensation 2, where Residual director total compensation 2 is the residual in the first-step director compensation regression in Panel A. Average_Age is the average age of all directors on a board. Average_Tenure is the average tenure of all directors on a board. Percent_External is the percentage of externally hired directors on a board. Other controls are included. t-statistics are based on robust standard error clustered at the firm level. '*', '**' and '***' denote significance at the 10%, 5% and 1% level respectively. Year dummies results are suppressed.

Panel A: First-step director compensation regression

	Average director total compensation
	(1)
	Lntotal
$LnSales_{t-1}$	0.029***
	(3.03)
$Leverage_{t-1}$	0.006
	(0.06)
Tobin's q_{t-1}	0.008
	(0.79)
Stock return	0.026
	(1.49)
Stock return volatility	-0.155***
	(-2.90)
ROA_{t-1}	-0.050
	(-0.74)
PPE_{t-1}/TA_{t-1}	-0.284**
	(-2.11)
Insider ownership	-0.223***
	(-3.00)
Total institutional ownership	0.083
	(1.42)
Board size	0.018**
	(2.42)
Fraction of independent directors	0.368***
	(3.77)
Current board positions	0.061**
	(2.08)
CEO Chairman	0.017
	(0.36)
Average_Age	-0.006**
	(-2.18)
Average_Tenure	-0.000
	(-0.10)
Percent_External	-0.036
	(-1.07)
Firm fixed effects	Yes
Year fixed effects	Yes
N	5,769
Adjusted R-sq	0.355

Panel B: The impact of director compensation on CEO compensation		
	CEO compensation	
	(1)	(2)
	LnCash	Lntotal
Residual director total compensation 2	0.260***	0.761***
	(12.21)	(25.71)
$LnSales_{t-1}$	0.023***	0.028***
	(3.34)	(3.83)
$Leverage_{t-1}$	-0.101	-0.020
	(-1.18)	(-0.24)
Tobin's q_{t-1}	0.004	0.013
	(0.52)	(1.63)
Stock return	0.015	0.016
	(1.24)	(0.99)
Stock return volatility	-0.138***	-0.170***
	(-3.96)	(-4.15)
ROA_{t-1}	0.063	0.004
	(1.32)	(0.09)
PPE_{t-1}/TA_{t-1}	-0.257**	-0.331***
	(-2.53)	(-2.84)
Insider ownership	-0.094*	-0.150**
	(-1.66)	(-2.42)
Total institutional ownership	0.174***	0.208***
	(4.65)	(4.28)
Board size	0.022***	0.027***
	(3.46)	(3.73)
Fraction of independent directors	0.113*	0.348***
	(1.65)	(4.55)
Current board positions	0.026	0.027
	(1.14)	(1.10)
CEO Chairman	-0.096*	-0.077
	(-1.78)	(-1.49)
Age	-0.002	-0.007**
	(-0.87)	(-2.43)
Tenure	0.003	-0.001
	(1.23)	(-0.34)
External	-0.018	-0.003
	(-0.66)	(-0.09)
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
N	5,769	5,769
Adjusted R-sq	0.504	0.602

Table A3
Footnote 16: Abnormal compensation and subsequent stock returns

This table tracks the subsequent stock returns of the five groups based on abnormal compensation. For each year, we divide all of the firms in the sample into five groups based on CEO_DUE_TO_DIR or DIR_DUE_TO_CEO and then track their subsequent stock returns. Panel A presents the annual returns for the five groups from year t + 2 to t + 5. Panel B shows the cumulative returns for the five groups from year t + 2 to t + 5. The cumulative returns are simply the sum of annual returns. For instance, the five-year cumulative return is the sum of annual returns from one year to five years after portfolio formation. The difference in subsequent stock returns between the top and bottom groups are reported. t-statistics are based on the Newey-West standard errors. '*', '**' and '***' denote significance at the 10%, 5% and 1% level respectively.

Panel A: Subsequent annual returns

Portfolio of CEO_DUE_TO_DIR	i is years after portfolio formation			
	i = 2	i = 3	i = 4	i = 5
1: Bottom	20.42%	12.60%	12.81%	12.66%
2	16.49%	12.89%	8.07%	11.21%
3	11.95%	7.38%	8.49%	9.45%
4	9.10%	6.77%	9.12%	10.35%
5: Top	6.50%	5.69%	8.55%	9.58%
Top minus Bottom	-13.92%***	-6.91%**	-4.26%*	-3.08%
t-value	-4.11	-3.04	-2.03	-1.40

Portfolio of DIR_DUE_TO_CEO	i is years after portfolio formation			
	i = 2	i = 3	i = 4	i = 5
1: Bottom	19.39%	13.11%	10.70%	13.52%
2	12.89%	9.78%	10.90%	11.28%
3	10.44%	7.09%	8.09%	9.46%
4	10.63%	9.43%	11.05%	11.93%
5: Top	6.10%	6.01%	9.41%	11.96%
Top minus Bottom	-13.29%***	-7.10%**	-1.29%	-1.56%
t-value	-3.6	-3.13	-0.66	-0.84

Panel B: Subsequent cumulative returns

Portfolio of CEO_DUE_TO_DIR	i is years after portfolio formation			
	i = 2	i = 3	i = 4	i = 5
1: Bottom	34.67%	47.27%	60.08%	72.74%
2	29.78%	42.67%	50.74%	61.95%
3	22.67%	30.05%	38.54%	47.99%
4	19.48%	26.25%	35.37%	45.72%
5: Top	23.77%	29.46%	38.01%	47.59%
Top minus Bottom	-10.90%	-17.81%**	-22.07%**	-25.15%***
t-value	-1.56	-2.34	-2.87	-3.28

Portfolio of DIR_DUE_TO_CEO	i is years after portfolio formation			
	i = 2	i = 3	i = 4	i = 5
1: Bottom	32.59%	45.70%	56.40%	69.92%
2	21.75%	31.53%	42.43%	53.71%
3	20.29%	27.38%	35.47%	44.93%
4	19.37%	28.80%	39.85%	51.78%
5: Top	23.08%	29.09%	38.50%	50.46%
Top minus Bottom	-9.51%	-16.61%*	-17.90%*	-19.46%**
t-value	-1.22	-1.85	-1.96	-2.54

Table A4
Section 3.4.2: Abnormal compensation and firm performance with additional committee-level controls

This table provides estimated coefficients from regressions on firm performance/valuation over the following year. The dependent variables include: Industry-*adj. Tobin's q* (ROA) is the difference between the firm's *Tobin's q* (ROA) and the mean value for all firms in the same Fama-French 12 industry. Abnormal return is the annual abnormal returns derived from a three-factor Fama-French model. The variables of interest include: CEO_DUE_TO_DIR is the portion of CEO compensation due to the director compensation variable, while DIR_DUE_TO_CEO is the portion of director compensation due to the CEO compensation variable. Other control variables include: Audit committee independence is the ratio of the number of independent directors to the total number of directors on the audit committee. Compensation committee independence is the ratio of the number of independent directors to the total number of directors on the compensation committee. Nomination committee independence is the ratio of the number of independent directors to the total number of directors on the nomination committee. CEO on committee is a dummy variable that equals one if a CEO is on either the compensation committee or the nomination committee, and zero otherwise. LnSales_{t-1} is the logarithm of sales in constant 2005 pounds. Stock return volatility is the standard deviation based on daily stock return over the prior year. CPS_{t-1} is the fraction of the aggregate compensation of the firm's top five executive team captured by the CEO. CEO-director tie_{t-1} is a dummy variable that equals one if a CEO has at least one network tie with other directors through past employment (either working as an employee or serving on the board) or past educational institutions, and zero otherwise. t-statistics are based on robust standard errors clustered at the firm le vel. '*', '**' and '***' denote significance at the 10%, 5% and 1% level respectively.

	(1) Industry-adj. Tobin's q	(2) Abnormal return	(3) Industry-adj. ROA	(4) Industry-adj. Tobin's q	(5) Abnormal return	(6) Industry-adj. ROA
$\text{CEO\_DUE\_TO\_DIR}_{t-1}$	-0.059*	-0.196***	0.007	—	—	—
	(-1.77)	(-4.98)	(0.91)			
$\text{DIR\_DUE\_TO\_CEO}_{t-1}$	—	—	—	-0.019	-0.087***	-0.002
				(-1.34)	(-4.76)	(-0.53)
Audit committee independence	-0.568	-0.259	-0.026	-0.570	-0.243	-0.025
	(-1.33)	(-1.14)	(-0.44)	(-1.34)	(-1.06)	(-0.43)
Compensation committee independence	0.374	-0.226	0.017	0.377	-0.241	0.016
	(1.12)	(-1.01)	(0.26)	(1.12)	(-1.08)	(0.26)
Nomination committee independence	-0.041	0.245**	0.034	-0.036	0.224**	0.033
	(-0.20)	(2.29)	(1.24)	(-0.18)	(2.13)	(1.23)
CEO on committee	0.035	0.015	-0.001	0.037	0.009	-0.001
	(0.55)	(0.42)	(-0.15)	(0.58)	(0.25)	(-0.12)
CPS_{t-1}	0.202	0.072	0.080***	0.157	0.276***	0.084**
	(1.03)	(0.67)	(2.65)	(0.72)	(2.67)	(2.56)
CEO-director tie_{t-1}	-0.039	0.010	-0.014	-0.041	0.020	-0.014
	(-0.65)	(0.33)	(-1.57)	(-0.69)	(0.64)	(-1.54)

Stock return volatility	0.029	0.343***	-0.036*	0.030	0.339***	-0.036*
	(0.31)	(4.81)	(-1.68)	(0.32)	(4.73)	(-1.69)
$LnSales_{t-1}$	-0.025	-0.030***	0.005	-0.025	-0.029***	0.005
	(-1.07)	(-2.68)	(1.27)	(-1.07)	(-2.63)	(1.28)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	5471	5592	5471	5471	5592	5471
Adjusted R-sq	0.002	0.022	0.007	0.002	0.022	0.007

Table A5
Section 3.4.2: Director abnormal compensation and CEO turnover performance sensitivity with additional committee-level controls

This table examines whether director abnormal compensation affects CEO turnover performance sensitivity. The sample consists of 5,129 observations with available data on CEO turnover in year t (1999-2009) and explanatory variables in the year prior to the turnover. The dependent variables are the overall and forced turnover dummies. The variables of interest include: Firm-specific return and its interaction with DIR_DUE_TO_CEO, where Firm-specific return is the difference between firm stock return and the market return over the year prior to the CEO turnover. Positive firm-specific return and Negative firm-specific return and their interactions with DIR_DUE_TO_CEO, where Positive (Negative) firm-specific return is the firm-specific return if that return is positive (negative), and zero otherwise. DIR_DUE_TO_CEO is the proportion of director compensation due to the CEO compensation variable. Audit committee independence is the ratio of the number of independent directors to the total number of directors on the audit committee. Compensation committee independence is the ratio of the number of independent directors to the total number of directors on the compensation committee. Nomination committee independence is the ratio of the number of independent directors to the total number of directors on the nomination committee. CEO on committee is a dummy variable that equals one if a CEO is on either the compensation committee or the nomination committee, and zero otherwise. The other control variables are the same as in Table 6 model 2. t-statistics are based on robust standard errors clustered at the firm level. '*', '**' and '***' denote significance at the 10%, 5% and 1% level, respectively. The industry dummies are based on the 12 Fama-French industries.

	Overall turnover		Forced turnover	
	(1)	(2)	(3)	(4)
DIR_DUE_TO_CEO $_{t-1}$	-0.104	0.015	0.056	0.198
	(-1.60)	(0.17)	(0.64)	(1.64)
Firm-specific return $_{t-1}$	-0.073		-0.504***	—
	(-0.94)		(-3.43)	
Firm-specific return $_{t-1}$×DIR_DUE_TO_CEO $_{t-1}$	-0.015		0.198**	—
	(-0.16)		(2.46)	
Positive firm-specific return $_{t-1}$	—	0.043		-0.121
		(0.61)		(-0.89)
Negative firm-specific return $_{t-1}$	—	-0.483**		-1.119***
		(-2.39)		(-4.52)
Positive firm-specific return $_{t-1}$×DIR_DUE_TO_CEO $_{t-1}$	—	-0.120		0.010
		(-1.15)		(0.10)
Negative firm-specific return $_{t-1}$×DIR_DUE_TO_CEO $_{t-1}$	—	0.556*		0.780**
		(1.83)		(2.08)
Audit committee independence	-0.332	-0.336	0.869	0.838
	(-0.67)	(-0.68)	(1.01)	(0.98)
Compensation committee independence	0.537	0.594	-0.201	-0.127
	(1.33)	(1.47)	(-0.28)	(-0.18)
Nomination committee independence	-0.084	-0.095	0.182	0.197

	(-0.25)	(-0.28)	(0.37)	(0.40)
CEO on committee	0.045	0.059	0.155	0.184
	(0.37)	(0.48)	(0.98)	(1.16)
Market return $_{t-1}$	0.507*	0.479*	2.186***	2.139***
	(1.90)	(1.79)	(4.94)	(4.78)
CPS $_{t-1}$	-1.627***	-1.611***	-0.905**	-0.912**
	(-4.33)	(-4.26)	(-1.98)	(-2.01)
CEO-director tie $_{t-1}$	-0.185	-0.189	-0.296*	-0.311**
	(-1.59)	(-1.63)	(-1.88)	(-1.97)
Board size $_{t-1}$	0.070***	0.077***	0.056**	0.067***
	(3.46)	(3.71)	(2.43)	(2.90)
Fraction of independent directors $_{t-1}$	0.132	0.172	0.129	0.214
	(0.50)	(0.65)	(0.39)	(0.64)
CEO tenure=2 $_{t-1}$	0.074	0.066	0.238	0.221
	(0.58)	(0.51)	(1.38)	(1.27)
CEO tenure=3 $_{t-1}$	-0.201	-0.203	-0.061	-0.051
	(-1.29)	(-1.30)	(-0.28)	(-0.24)
CEO tenure=4 $_{t-1}$	-0.063	-0.057	0.024	0.037
	(-0.40)	(-0.36)	(0.11)	(0.17)
CEO tenure=5 $_{t-1}$	0.097	0.103	0.022	0.033
	(0.59)	(0.63)	(0.09)	(0.14)
CEO tenure=6 $_{t-1}$	0.061	0.060	0.037	0.034
	(0.34)	(0.34)	(0.15)	(0.13)
CEO tenure>6 $_{t-1}$	0.053	0.064	-0.328*	-0.315*
	(0.42)	(0.50)	(-1.77)	(-1.69)
CEO age>60 dummy $_{t-1}$	0.354***	0.353***	-1.604***	-1.607***
	(2.72)	(2.70)	(-4.17)	(-4.16)
CEO Chairman $_{t-1}$	0.317**	0.322**	0.319*	0.321*
	(2.34)	(2.38)	(1.68)	(1.69)
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	5129	5129	5129	5129
Pseudo R-sq	0.023	0.025	0.041	0.044

Table A6
Section 3.1: Abnormal compensation and firm performance with additional board controls

This table provides estimated coefficients from regressions on firm performance/valuation over the following year. The dependent variables include: Industry-*adj. Tobin's q* (ROA) is the difference between the firm's *Tobin's q* (ROA) and the mean value for all firms in the same Fama-French 12 industry. Abnormal return is the annual abnormal returns derived from a three-factor Fama-French model. The variables of interest include: CEO_DUE_TO_DIR is the portion of CEO compensation due to the director compensation variable, while DIR_DUE_TO_CEO is the portion of director compensation due to the CEO compensation variable. Other control variables include: LnSales is the logarithm of sales in constant 2005 pounds. Stock return volatility is the standard deviation based on daily stock return over the prior year. CPS is the fraction of the aggregate compensation of the firm's top five executive team captured by the CEO. CEO-director tie is a dummy variable that equals one if a CEO has at least one network tie with other directors through past employment (either working as an employee or serving on the board) or past educational institutions, and zero otherwise. Fraction of independent directors is the ratio of the number of independent directors to board size. Fraction of busy directors is the ratio of the number of directors with three or more directorships to board size. t-statistics are based on robust standard errors clustered at the firm le vel. '*', '**' and '***' denote significance at the 10%, 5% and 1% level respectively.

	(1) Industry-adj. Tobin's q	(2) Abnormal return	(3) Industry-adj. ROA	(4) Industry-adj. Tobin's q	(5) Abnormal return	(6) Industry-adj. ROA
CEO_DUE_TO_DIR $_{t-1}$	-0.015*	-0.197**	-0.010	—	—	—
	(-1.72)	(-2.48)	(-1.14)			
DIR_DUE_TO_CEO $_{t-1}$	—	—	—	-0.024*	-0.086**	-0.008
				(-1.78)	(-2.27)	(-0.95)
CPS $_{t-1}$	0.454**	0.039	0.056*	0.433*	0.267**	0.057*
	(2.12)	(0.33)	(1.74)	(1.82)	(2.35)	(1.65)
CEO-director tie $_{t-1}$	-0.066	0.020	-0.011	-0.066	0.028	-0.011
	(-1.12)	(0.65)	(-1.22)	(-1.12)	(0.93)	(-1.20)
Stock return volatility	0.043	0.315***	-0.045*	0.043	0.312***	-0.045*
	(0.39)	(3.98)	(-1.81)	(0.39)	(3.92)	(-1.81)
LnSales $_{t-1}$	0.002	-0.038***	0.001	0.002	-0.036***	0.001
	(0.10)	(-3.30)	(0.20)	(0.09)	(-3.15)	(0.21)
Fraction of indep. dirs $_{t-1}$	-0.096	-0.110	-0.040	-0.092	-0.160	-0.041
	(-0.45)	(-0.86)	(-1.35)	(-0.43)	(-1.26)	(-1.35)
Fraction of busy dirs $_{t-1}$	-0.042	0.080	-0.031	-0.040	0.062	-0.031
	(-0.26)	(0.91)	(-1.32)	(-0.25)	(0.71)	(-1.32)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	5471	5592	5471	5471	5592	5471
Adjusted R-sq	0.010	0.029	0.017	0.009	0.029	0.017

Table A7
Section 3.2: Director abnormal compensation and CEO turnover controlling for board busyness

This table displays the results of logit regressions on CEO turnover. The sample consists of 5,129 observations with available data on CEO turnover in year t (1999-2009) and explanatory variables in the year prior to the turnover. The dependent variables are the overall and forced turnover dummies. DIR_DUE_TO_CEO is the proportion of director compensation due to the CEO compensation variable. Other control variables include: CEO pay slice (CPS) is the fraction of the aggregate compensation of the firm's top five executive team captured by the CEO. CEO-director tie is a dummy variable that equals one if a CEO has at least one network tie with other directors through past employment (either working as an employee or serving on the board) or past educational institutions, and zero otherwise. Board size is the number of executive and non-executive directors. Fraction of independent directors is the ratio of the number of independent directors to board size. Fraction of busy directors is the ratio of the number of directors with three or more directorships to board size. Firm-specific return is the difference between firm stock return and Market return over the year prior to the CEO turnover, where Market return is the FTSE All Share index return. Tenure dummy equals one if CEO tenure falls within the corresponding range, e.g. CEO tenure=2 equals one if CEO tenure is between two and three years. CEO tenure=1 is the hold-out group. CEO age>60 dummy is a dummy equal to one if the CEO's age is above 60, and zero otherwise. CEO Chairman is a dummy equal to one if the CEO is also the Chairman, and zero otherwise. t-statistics are based on robust standard errors clustered at the firm level. '*', '**' and '***' denote significance at the 10%, 5% and 1% level, respectively. The industry dummies are based on the 12 Fama-French industries.

	Overall turnover		Forced turnover	
	(1)	(2)	(3)	(4)
DIR_DUE_TO_CEO $_{t-1}$	-0.186***	-0.121*	-0.142**	-0.088*
	(-2.98)	(-1.90)	(-2.32)	(-1.85)
CPS $_{t-1}$	—	-1.457***	—	-1.104**
		(-3.95)		(-2.35)
CEO-director tie $_{t-1}$	—	-0.180	—	-0.286*
		(-1.53)		(-1.76)
Board size $_{t-1}$	0.057***	0.036*	0.054**	0.039
	(2.99)	(1.73)	(2.31)	(1.50)
Fraction of indep. dirs $_{t-1}$	-0.202	0.064	-0.033	0.172
	(-0.81)	(0.24)	(-0.11)	(0.51)
Fraction of busy dirs $_{t-1}$	0.351	0.547**	0.225	0.410
	(1.63)	(2.46)	(0.74)	(1.29)
Firm-specific return $_{t-1}$	-0.183*	-0.190**	-0.483***	-0.490***
	(-1.92)	(-2.03)	(-3.06)	(-3.11)
Market return $_{t-1}$	7.062***	6.806***	5.948***	5.745***
	(7.25)	(7.12)	(4.66)	(4.53)
CEO tenure=2 $_{t-1}$	0.100	0.109	0.263	0.274
	(0.77)	(0.84)	(1.51)	(1.57)
CEO tenure=3 $_{t-1}$	-0.149	-0.141	-0.082	-0.063
	(-0.95)	(-0.89)	(-0.38)	(-0.29)
CEO tenure=4 $_{t-1}$	-0.034	-0.022	0.032	0.049
	(-0.21)	(-0.14)	(0.15)	(0.23)
CEO tenure=5 $_{t-1}$	0.142	0.141	0.036	0.037
	(0.85)	(0.83)	(0.15)	(0.15)
CEO tenure=6 $_{t-1}$	0.122	0.113	0.024	0.027
	(0.68)	(0.63)	(0.10)	(0.11)
CEO tenure>6 $_{t-1}$	0.067	0.072	-0.309*	-0.304
	(0.52)	(0.57)	(-1.66)	(-1.63)
CEO age>60 dummy $_{t-1}$	0.482***	0.463***	-1.627***	-1.632***
	(3.74)	(3.53)	(-4.23)	(-4.24)
CEO Chairman $_{t-1}$	0.294**	0.266**	0.289	0.273
	(2.24)	(2.02)	(1.51)	(1.41)
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	5129	5129	5129	5129
Pseudo R-sq	0.058	0.062	0.067	0.070

Table A8
Section 3.2: Director abnormal compensation and CEO turnover performance sensitivity controlling for board busyness

This table examines whether director abnormal compensation affects CEO turnover performance sensitivity. The sample consists of 5,129 observations with available data on CEO turnover in year t (1999-2009) and explanatory variables in the year prior to the turnover. The dependent variables are the overall and forced turnover dummies. The variables of interest include: Firm-specific return and its interaction with DIR_DUE_TO_CEO, where Firm-specific return is the difference between firm stock return and the market return over the year prior to the CEO turnover. Positive firm-specific return and Negative firm-specific return and their interactions with DIR_DUE_TO_CEO, where Positive (Negative) firm-specific return is the firm-specific return if that return is positive (negative), and zero otherwise. DIR_DUE_TO_CEO is the proportion of director compensation due to the CEO compensation variable. The other control variables are the same as in Table 6 model 2. t-statistics are based on robust standard errors clustered at the firm level. '*', '**' and '***' denote significance at the 10%, 5% and 1% level, respectively. The industry dummies are based on the 12 Fama-French industries.

	Overall turnover		Forced turnover	
	(1)	(2)	(3)	(4)
DIR_DUE_TO_CEO $_{t-1}$	-0.122*	0.029	-0.073*	0.223
	(-1.94)	(0.32)	(-1.81)	(1.12)
Firm-specific return $_{t-1}$	-0.190**	—	-0.548***	—
	(-1.99)		(-3.38)	
Firm-specific return $_{t-1}$×DIR_DUE_TO_CEO $_{t-1}$	0.010	—	0.214**	—
	(0.09)		(2.46)	
Positive firm-specific return $_{t-1}$	—	-0.015	—	-0.107
		(-0.19)		(-0.77)
Negative firm-specific return $_{t-1}$	—	-0.786***	—	-1.247***
		(-3.81)		(-4.83)
Positive firm-specific return $_{t-1}$×DIR_DUE_TO_CEO $_{t-1}$	—	-0.135	—	0.003
		(-1.15)		(0.03)
Negative firm-specific return $_{t-1}$×DIR_DUE_TO_CEO $_{t-1}$	—	0.775**	—	0.865**
		(2.37)		(2.21)
Market return $_{t-1}$	6.807***	6.879***	5.745***	5.626***
	(7.11)	(7.08)	(4.56)	(4.44)
CPS $_{t-1}$	-1.457***	-1.414***	-1.072**	-1.049**
	(-3.95)	(-3.83)	(-2.28)	(-2.24)
CEO-director tie $_{t-1}$	-0.181	-0.186	-0.287*	-0.301*
	(-1.54)	(-1.58)	(-1.77)	(-1.85)
Board size $_{t-1}$	0.036*	0.046**	0.039	0.053**
	(1.73)	(2.18)	(1.51)	(2.08)
Fraction of independent directors $_{t-1}$	0.064	0.133	0.185	0.289
	(0.24)	(0.50)	(0.55)	(0.86)
Fraction of busy directors $_{t-1}$	0.547**	0.513**	0.402	0.361
	(2.46)	(2.31)	(1.26)	(1.14)
CEO tenure=2 $_{t-1}$	0.109	0.095	0.273	0.252
	(0.83)	(0.73)	(1.56)	(1.42)
CEO tenure=3 $_{t-1}$	-0.140	-0.146	-0.055	-0.048
	(-0.89)	(-0.92)	(-0.25)	(-0.22)

CEO tenure=4 $_{t-1}$	-0.023	-0.013	0.053	0.073
	(-0.14)	(-0.08)	(0.24)	(0.33)
CEO tenure=5 $_{t-1}$	0.141	0.152	0.045	0.062
	(0.83)	(0.90)	(0.18)	(0.25)
CEO tenure=6 $_{t-1}$	0.112	0.105	0.028	0.019
	(0.62)	(0.58)	(0.11)	(0.07)
CEO tenure>6 $_{t-1}$	0.072	0.083	-0.299	-0.287
	(0.57)	(0.65)	(-1.60)	(-1.52)
CEO age>60 dummy $_{t-1}$	0.463***	0.463***	-1.634***	-1.641***
	(3.53)	(3.51)	(-4.25)	(-4.25)
CEO Chairman $_{t-1}$	0.267**	0.271**	0.277	0.284
	(2.02)	(2.05)	(1.44)	(1.48)
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	5129	5129	5129	5129
Pseudo R-sq	0.062	0.066	0.072	0.076