9-2015

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Xia CHEN
Singapore Management University, xchen@smu.edu.sg

Qiang CHENG
Singapore Management University, qcheng@smu.edu.sg

Alvis K. LO
Boston College

Xin WANG
University of Hong Kong

SMU SINGAPORE MANAGEMENT UNIVERSITY | School of Accountancy

Singapore Management University

School of Accountancy Research Paper Series Vol. 2, No. 2

(Paper No: 2014-18)

CEO Contractual Protection and Managerial Short-Termism

Xia Chen

Qiang Cheng

Alvis K. Lo

Xin Wang

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Xia Chen
Singapore Management University

Qiang Cheng
Singapore Management University

Alvis K. Lo
Boston College

Xin Wang
The University of Hong Kong

March 2014

Abstract

How to address managerial short-termism has been an important issue for companies, regulators, and researchers. In this paper we examine the impact of CEO contractual protection, in the form of employment agreements and severance pay agreements, on managerial short-termism. We find that firms with CEO contractual protection are less likely to cut R&D expenditures to avoid earnings decreases and are less likely to engage in real earnings management. The effect of CEO contractual protection is both statistically and economically significant. We further find that this effect increases with the duration and monetary strength of CEO contractual protection. The cross-sectional analyses indicate that this effect is stronger for firms in more homogeneous industries and for firms with higher transient institutional ownership, where the protection is particularly important for CEOs, and is stronger when there are weaker alternative monitoring mechanisms.

Key words: employment agreement, severance pay agreement, managerial short-termism

JEL codes: G32, M40

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* We thank Mary Barth, Phil Berger, Brian Cadman, Aiyesha Dey, Fabrizio Ferri, David Larcker, Doug Skinner, Adam Vitalis, Xue Wang, Dan Wangerin, Terry Warfield, Jingjing Zhang, and workshop and conference participants at George Washington University, National Taiwan University, National University of Singapore, The University of Hong Kong, University of Wisconsin-Madison, the 2012 AAA annual meeting, the 2012 CAPANA conference, the 2012 European Accounting Association Congress, the 2012 London Business School Accounting Symposium, and the 2013 FARS meeting for helpful comments. We thank Abbie Daly and Qing Liao for excellent research assistance. We thank the financial support from the Wisconsin Alumni Research Foundation, the School of Accountancy Research Center at Singapore Management University, and the General Research Fund of Hong Kong Research Grants Council (project No. 456011). Please contact authors at xchen@smu.edu.sg (Xia Chen), qcheng@smu.edu.sg (Qiang Cheng), alvis.lo@bc.edu (Alvis Lo), and wangxacy@hku.hk (Xin Wang).

1. Introduction

Managerial short-termism, or managerial myopia, has attracted increasing attention from researchers and practitioners in the last couple of decades. Managerial short-termism refers to cutting long-term investments, such as research and development, in order to meet or beat short-term performance targets (Porter 1992). Prior studies have studied extensively whether and how managerial short-termism can be alleviated by enhancing monitoring or by granting stock-based compensation to managers (e.g., Bushee 1998; Cheng 2004; Farber 2005).[1] However, the role of CEO employment contract (other than CEO compensation structure) in influencing managerial myopia has not been explored, despite the prevalence of CEO employment contract and its importance in affecting managerial behavior.

In this paper, we investigate whether CEO employment contract can affect managers' incentives to engage in myopic behavior and hence influence the extent of managerial short-termism. The fundamental driver of managerial short-termism is the pressure on managers to deliver short-term performance.[2] CEO employment contract can ease such pressure by protecting CEOs from short-term performance swing and downside risk (Rau and Xu 2013). We focus on two types of CEO employment contract that can provide such protection to CEOs: CEO employment agreements and standalone *ex-ante* severance pay agreements. We refer to firms with such CEO employment contracts as firms with CEO contractual protection. CEO employment agreements are fixed-term comprehensive contracts between CEOs and firms; they generally specify termination pays as well as other terms such as non-competition and

[1] Overall, there is mixed evidence on whether equity incentives help alleviate managerial short-termism. While earlier studies find that CEO equity incentives reduce managerial myopia (e.g., Dechow and Sloan 1991; Cheng 2004), later studies provide mixed evidence and some even suggest that equity incentives can induce myopic behavior (e.g., Cheng and Warfield 2005; Efendi et al. 2007; Erickson et al. 2006; Burns and Kedia 2006).

[2] See, for examples, DeFond and Park (1997) on the pressure related to job security, Matsunaga and Park (2001) and Comprix and Muller III (2006) on the pressure related to executive compensation, Stein (1988) on the takeover pressure, and Stein (1989) and Bhojraj and Libby (2005) on the capital market pressure to deliver short-term performance.

confidentiality. CEOs with employment agreements cannot be fired within the term without good cause. Standalone severance pay agreements stipulate the amount and terms of payments executives can receive when their employment is terminated. Both employment agreements and standalone severance pay agreements offer protection to CEOs by increasing the cost of termination to the firm and by providing CEOs with compensation for termination and downside risk (Rusticus 2006; Xu 2010).[3] As a result, we predict that CEOs with contractual protection are under lower pressure to maintain high short-term performance and are thus less likely to engage in myopic behavior compared to those without contractual protection.

We test this prediction using S&P 500 firms with required data over the period 1995-2008. We hand collect CEO employment agreement and severance pay agreement information from proxy statements. Following prior research (e.g., Bushee 1998), in the main analyses we capture managerial short-termism using the likelihood of cutting R&D expenditures when the firm faces a potential earnings decrease that can be averted by cutting R&D. We choose this proxy because the tradeoff between meeting current earnings targets and increasing long-term firm performance is particularly salient in the case of cutting R&D (e.g., Graham et al. 2005). Specifically, we select a set of firms with pre-tax, pre-R&D earnings that are below the prior year's level, but by an amount that is smaller than the prior year's R&D. We refer to these firms as the small earnings decrease (SD) group, our test group. Since managers of these firms have incentives to cut R&D to meet earnings targets, we predict that within the SD group, CEO contractual protection is negatively associated with the likelihood of cutting R&D. Given that the existence

[3] While executives with an employment agreement or a severance pay agreement will not receive termination payments if they are fired with good cause, good cause usually does not include CEO incompetence or poor firm performance. That is, CEOs fired because of poor performance will be able to receive termination or severance payments. For example, in April 2011, Six Flags paid out $30 million to the former Chief Financial Officer Jeffrey Speed in an arbitration case. Speed won the ruling by arguing that his dismissal without good cause violated his employment agreement with Six Flags (*Wall Street Journal*, November 11, 2011).

of CEO contractual protection varies with firm and CEO characteristics (e.g., Gillan et al. 2009; Rau and Xu 2013), we control for the endogeneity issue using both the instrument variable approach and the Heckman approach (e.g., Doidge et al. 2004). We find that, consistent with our prediction, within the SD group, firms with CEO contractual protection are significantly less likely to cut R&D expenditures than those without such protection. The estimated difference ranges from 20.4 to 24.6 percentage points, depending on the model specifications. This difference is economically significant given that about half of the firms in the SD group cut R&D expenditures.

Unlike for the SD group, for the other firm-years, managers do not have the incentives to cut R&D to meet short-term earnings targets, either because cutting R&D cannot help firms avoid earnings decreases (when firms have large earnings decreases) or because cutting R&D is unnecessary (when firms have earnings increases). As such, we expect that CEO contractual protection does not affect the likelihood of cutting R&D for these firm-years. The results are consistent with this prediction, further alleviating the concern that our finding for the SD group is driven by unobserved firm or CEO characteristics that affect both CEO contracts and R&D decisions.

To reinforce our main inference, we examine whether the impact of CEO contractual protection on managerial short-termism increases with the duration and monetary strength of the protection. We find that, as expected, the impact is stronger when the duration of CEO protection is longer and when the monetary protection provided by the severance pay is of greater magnitude. Our findings are also robust to a battery of sensitivity tests.

We conduct a series of cross-sectional analyses to provide additional insights. First, we examine whether the impact of CEO contractual protection on managerial short-termism varies

with industry homogeneity. When the firm is in a more homogenous industry, it is easier to find a suitable CEO candidate and the threat of CEO dismissal is thus higher (e.g., Parrino 1997). Accordingly, CEOs without contractual protection may be more likely to engage in myopic behavior and the impact of CEO protection is thus greater in more homogeneous industries. Second, when shareholders have shorter investment horizon, CEOs are under greater pressure to deliver short-term performance (e.g., Shleifer and Vishny 1990). Thus, we predict that CEO contractual protection is more important for firms with higher ownership by transient institutional investors. Third, we examine how the impact of CEO protection varies with alternative monitoring mechanism. Since CEO protection and board monitoring are alternative mechanisms in addressing managerial short-termism, we predict that the impact of CEO protection is stronger when board independence is lower. Our empirical findings are consistent with all the above predictions.

In an additional test, we use the extent of real earnings management as an alternative proxy for managerial myopic behavior. Following prior studies, we measure real earnings management using abnormal production costs and abnormal discretionary expenditures and combine them to capture the overall extent of real earnings management. We focus on the suspect firms – firms that meet or just beat earnings targets – in the analyses because these firms are more likely to have engaged in real earnings management to meet short-term performance targets. We find that, among the suspect firms, firms with CEO contractual protection are associated with a lower extent of real earnings management compared to those without CEO protection. This finding lends further support to our inference that CEO contractual protection mitigates managerial short-termism.

Lastly, we perform tests to substantiate our assumptions and to address alternative

explanations. Consistent with our argument that cutting R&D to achieve earnings targets is a manifestation of managerial myopia, we find that within the SD group, cutting R&D is associated with poorer performance in the future. Confirming our assumption that CEO employment contracts can protect CEOs from short-term performance swing and downside risk, we find that CEO contractual protection reduces the likelihood of CEO turnover after poor performance. Our tests also suggest that alternative explanations (e.g., differential investment opportunities or the quiet life story) do not explain our results. For example, if our results are driven by differential investment opportunities between firms with and without CEO contractual protection, we expect to obtain similar results for other types of investments, such as capital expenditures. In contrast, under our managerial myopia argument, we should not obtain similar results because unlike cutting R&D, cutting capital expenditures does not improve the current year's earnings. Consistent with our argument and inconsistent with the alternative explanation, we do not find significant difference in the likelihood of cutting capital expenditures between firms with and without CEO contractual protection.

Our paper contributes to the literature in several important ways. First, we contribute to the literature on managerial short-termism by documenting the impact of CEO contractual protection on managerial short-termism. Our evidence suggests that, apart from board monitoring and CEO incentive compensation, CEO employment contracts can also help address managerial myopia. Our paper thus extends prior studies on CEO myopia, such as Dechow and Sloan (1991) and Cheng (2004). These studies find that CEOs who are close to retirement are more myopic and that equity incentives can partially alleviate such myopia. By explicitly controlling for CEO age and CEO equity incentives in the analyses, we provide evidence on the incremental impact of CEO contracts, including employment agreements and standalone severance pay agreements,

both of which are widely used in practice. We would like to note that while both CEO equity incentives and contractual protection can address myopic behavior, the underlying reasons are different. While the former enhances the upside potential so that CEOs enjoy the benefits of successful long-term investments, the latter increases the job security and reduces the downside risk so that CEOs are less concerned with the adverse consequences of unsuccessful long-term investments (Rau and Xu 2013).

Second, we contribute to the emerging literature on CEO employment contracts. This literature so far mainly focuses on the determinants of CEO contracts. We extend this literature by examining the impact of CEO contracts on corporate decisions.[4] While the popular press often associates employment agreements and ex post severance pay with managerial power and entrenchment, our evidence suggests that *ex ante* such contracts can expand managers' horizon and address the agency problem of managerial short-termism. This speaks to the benefits of employment agreements and severance pay agreements. A caveat is that such contracts have costs as well. For example, CEOs with contractual protection may shirk or become entrenched. Examining the net benefits or costs of CEO contracts is beyond the scope of our paper.

The remainder of the paper is organized as follows. Section 2 summarizes prior research and develops hypotheses. Section 3 discusses the sample and data. Section 4 examines the determinants of CEO contractual protection and discusses how we address the endogeneity issue.

[4] Note that our paper focuses on managerial myopia – cutting R&D or engaging in real earnings management to meet short-term earnings targets. It differs from concurrent studies that examine the impact of CEO contracts on firms' risk-taking (e.g., Huang 2010; Xu 2011). These studies find that *on average* CEO contracts are positively correlated with the *level* of long-term investments, including R&D and capital expenditures. In contrast, we examine whether managers cut R&D when they face a tradeoff between meeting short-term earnings targets and maintaining R&D investments, circumstances where myopic behavior is most likely to occur. We find that CEO contractual protection reduces CEOs' tendency to cut R&D in such situations (i.e., the SD group). At the same time, we find that CEO protection is not associated with the change in R&D for the other firm-years where CEO myopic behavior is not expected. This contrast in results highlights that in order to examine managerial myopia, it is critical to identify circumstances where managerial myopia is most salient. In addition, we examine the impact of CEO contracts on real earnings management.

Section 5 reports the main analyses and the cross-sectional tests. Section 6 reports the analyses using alternative proxies for managerial myopia and Section 7 presents the analyses that substantiate our assumptions and address alternative explanations. Section 8 concludes.

2. Prior research and hypothesis development

2.1 Prior research on CEO employment agreements and severance pay agreements

In this section we discuss the background and prior literature related to CEO employment agreements and severance pay agreements.

CEO employment agreement (EA) refers to a comprehensive *written* agreement that specifies the employment terms between the firm and the CEO, including the CEO's responsibilities, compensation, perquisites, termination conditions and payments (e.g., severance pay), and restrictions on outside activities. Note that compensation contract alone is not regarded as an EA. A typical EA has a fixed term of two to five years and can get renewed, amended or extended. Among the S&P 500 firms in 2000, Gillan et al. (2009) find that 225 firms have EAs with their CEOs with an average term of three years. Within the contract terms, CEOs cannot be dismissed without good cause. "Good cause," as specified in EAs, usually includes breach of fiduciary duties and willful misconduct but does not include incompetence or poor performance. In contrast, CEOs without EAs are employed at will. For example, General Electric Company (GE) does not have an EA with its CEO. In its 2006 proxy statement, GE states that "GE does not, in general, enter into employment agreements with our senior executive officers. They serve at the will of the Board. This enables the company to remove a senior executive officer prior to retirement whenever it is in the best interests of the company."

Therefore, from a CEO's perspective, an EA benefits the CEO by offering protection over

the contract period. This benefit is likely higher when it is uncertain whether the CEO is a good fit for the company and when the likelihood of CEO dismissal is high (Schwab and Thomas 2006). From the firm's perspective, an EA allows the firm to attract CEO candidates who otherwise would not consider the position. At the same time, an EA is costly to the firm because it is more difficult to renegotiate with a CEO with an EA or to terminate the employment. Gillan et al. (2009) study the determinants of EAs among S&P 500 firms. They find that firms with higher volatility of sales growth, with lower market-adjusted returns, and in industries with lower survival rate, are more likely to have EAs with their CEOs, consistent with CEOs being more likely to seek protection when the uncertainty of the business environment is high. They also find that firms in more homogeneous industries and those with outside CEOs are more likely to have EAs with their CEOs, consistent with CEOs having a greater demand for contractual protection when there is a greater likelihood of being replaced. Lastly, they find that CEOs with higher salary and more incentive-based compensation are more likely to have EAs, consistent with the notion that contractual protection is more important when CEOs have more to lose.

A standalone severance pay agreement (SA) specifies the amount and conditions of the payments to a CEO upon the CEO's dismissal without good cause. The definition of good cause is similar to that in EAs. Unlike an EA, an SA typically does not have a definite term and therefore will cover the CEO in the foreseeable future. While some argue that SA reflects CEO entrenchment and poor corporate governance (e.g., Bebchuk and Fried 2004), others argue that it is part of the optimal contract between the firm and its CEO. First, a firm's performance in the future is informative of the CEO's ability and efforts. Therefore, an optimal contract should include deferred compensation that is based on the firm's performance in the future, and severance pay is one form of deferred compensation (Fama 1980). Second, the threat of

dismissal can lead to agency problems, such as avoiding risky but positive net present value projects or engaging in suboptimal behavior in order to deliver short-term performance. SAs, by compensating CEOs upon dismissal, can be used *ex ante* to address such problems (Almazan and Suarez 2003; Inderst and Mueller 2005; Rau and Xu 2013).

The studies to date provide evidence consistent with both the entrenchment and optimal contracting arguments. For example, Yermack (2006) and Rusticus (2006) find that the use of SAs is higher for firms with weaker corporate governance, larger firms, firms in more uncertain operating environments, and firms with outside CEOs. Rau and Xu (2013) conclude that SA is largely a form of compensation for risk; they find that SAs are more likely to be used when executives' human capital is at greater risk and they do not find evidence suggesting that SAs reflect CEOs' rent extraction. Cadman et al. (2011) draw a similar conclusion.

Note that while the popular press sometimes laments the excessive *ex post* severance payments, the above studies and this paper focus on the *ex ante* severance pay agreements, not the *ex post* severance payments.

2.2 The main hypothesis

Whether a CEO has contractual protection can affect a firm's operations. Gillan et al. (2009) argue that "CEOs facing less uncertainty are less likely to avoid risky positive net present value projects or to pursue overly conservative financing and dividend policies." Firms make similar arguments. For example, in its 2003 proxy statement, Sysco states that "Severance agreements were in the best interest of the Company and its stockholders in that they secure the continued services of these executive officers and ensure their undivided dedication to their duties without being influenced by the uncertainty of continued employment." Recent studies provide evidence consistent with CEO contractual protection influencing firms' investments

(Huang 2010; Xu 2011).

We focus on how CEO contractual protection affects managerial myopia, i.e., whether managers cut long-term investments in order to achieve short-term earnings targets. First, CEO contractual protection enhances job security. It is more costly for a firm to dismiss a CEO with contractual protection and hence the CEO will be better protected from short-term performance swing, compared to a CEO without contractual protection. Prior studies provide evidence consistent with this argument. For example, Rusticus (2006) and Xu (2010) find that CEO employment agreements and severance pay agreements reduce the likelihood of CEO turnover. We confirm in our sample that CEO contractual protection reduces the likelihood of CEO turnover after poor performance (see Section 7 for details). Second, CEO contractual protection also partly shields a CEO from downside risk. The termination payments under the employment agreement or the standalone severance pay agreement act as a form of deferred compensation and safeguard against downside risk, thus encouraging the CEO to undertake long-term, risky projects.

In contrast, CEOs without contractual protection are subject to higher risk of losing their jobs after poor short-term performance and are more exposed to downside risk. Prior research (e.g., Dikolli et al. 2009; Mergenthaler et al. 2011) finds that failing to meet earnings targets significantly increases the likelihood of CEO turnover. Under the pressure to deliver short-term performance and to protect themselves from downside risk, these CEOs are more likely to engage in myopic behavior, provided that the board and/or investors cannot fully understand the implications of such behavior (e.g., Fudenberg and Tirole 1995; DeFond and Park 1997).

The above discussion leads to our first hypothesis:

H1: Ceteris paribus, CEOs with contractual protection are less likely to engage in myopic behavior than other CEOs.

An alternative view is that CEO contractual protection is reflective of agency problems in the firm and captures CEO's rent extraction. That is, entrenched CEOs obtain employment agreements or severance pay agreements to enrich themselves at the expense of shareholders. If this is the case, we will not find evidence consistent with H1.[5]

2.3 Cross-sectional variation

In this section, we develop predictions for the cross-sectional variation in the impact of CEO contractual protection on CEO's myopic behavior. As discussed above, the two key elements underlying H1 are (1) the protection of CEOs under the contracts and (2) the capital market pressure to deliver short-term performance. Therefore, we focus on firm characteristics that are related to the importance of CEO contractual protection and the degree of capital market pressure. Specifically, we examine the ease of finding an alternative CEO as proxied by industry homogeneity and the pressure on the CEO to deliver short-term performance as captured by shareholders' investment horizon. In addition, we predict how the impact of contractual protection on CEOs' myopic behavior varies with the effectiveness of board monitoring.

Industry homogeneity

Parrino (1997) argues that firms prefer CEO candidates with experiences in a similar industry. Because it is easier for firms in more homogeneous industries to find CEO candidates, these firms are more likely to replace CEOs. Consistent with this argument, Parrino (1997) finds that both the likelihood of forced CEO turnover and the likelihood of an intra-industry

[5] One might argue that this alternative view is more likely to be true for renegotiated contracts than for initial contracts because renegotiated contracts are more likely to be influenced by CEOs. If this is the case, the results will be weaker for renegotiated contracts than for initial contracts. To test this prediction, we classify the first employment agreement for a CEO-firm pair and the severance pay agreements (which typically have no expiration dates) as initial contracts, and the other employment agreements, including extended or amended ones, as renegotiated contracts. Among firm-years with CEO protection, about 70% are under initial contracts and the rest are under renegotiated contracts. In an untabulated analysis, we find that the results are significant for both types of contracts, but the results are weaker for renegotiated contracts than for initial contracts, consistent with CEO entrenchment playing a more important role in renegotiated contracts.

appointment (i.e., replacing the current CEO with executives from the same industry) increase with industry homogeneity.

Therefore, without contractual protection, CEOs in homogeneous industries have stronger incentives to undertake myopic behavior to meet short-term performance targets due to their job security concerns, compared to CEOs in heterogeneous industries. DeFond and Park (1997) provide evidence consistent with this argument. We thus expect CEO contractual protection to be more important in curbing CEOs' myopic behavior in homogeneous industries than in heterogeneous industries.

Our second hypothesis is thus stated as follows:

H2: Ceteris paribus, the moderating effect of CEO contractual protection on the extent of myopic behavior, as hypothesized in H1, is stronger in homogeneous industries than in heterogeneous industries.

Note that the above discussion focuses on the CEO's incentives to meet short-term performance targets due to job security concerns. At the same time, CEOs may also have incentives to meet short-term performance targets in order to move upward, i.e., moving to a larger firm with potentially higher compensation. This may be more likely to occur in homogenous industries because the CEO's skill is more valuable for similar firms. We investigate such possibilities by separately examining CEO turnovers for better performing and poorly performing CEOs in our sample. We find that for better performing CEOs, CEO turnover-performance sensitivity is insignificant and does not vary with industry homogeneity. This finding can be due to firms' efforts to retain better performing CEOs or other factors affecting CEO upward mobility (such as firms' long term strategy and CEO adaptability). In contrast, for poorly performing CEOs, we find that CEO turnover-performance sensitivity is significant and increases with industry homogeneity, consistent with Parrino (1997). We therefore infer that

CEO's job dismissal concerns, compared to CEO's incentives to move upward, are more likely to contribute to CEO's strong incentives to meet short-term performance targets in homogenous industries.

Shareholders' investment horizon

One of the underlying reasons for managerial short-termism is the fixation of capital market participants on short-term performance. For example, the Aspen Institute report of "Overcoming Short-termism" argues that the focus on short-term trading gains of fund managers and the focus on quarterly earnings of investors with short investment horizon can lead executives to pursue strategies that please these fund managers and investors but jeopardize the company's long-term value maximization. Shleifer and Vishny (1990) show analytically that shareholders with short investment horizon can induce managers to focus on short-term performance. Empirically, Bushee (1998) documents that transient institutional investors, who have short investment horizon, are more likely to induce managers' myopic behavior. Without contractual protection, CEOs in firms with higher transient institutional ownership are under greater pressure to deliver short-term performance given the extensive evidence that CEO's welfare (e.g., reputation, compensation, and job security) is positively correlated with stock market performance. Thus, we expect that CEO contractual protection is more important in curbing CEOs' myopic behavior in firms with higher transient institutional ownership. This discussion leads to our third hypothesis:

H3: Ceteris paribus, the moderating effect of CEO contractual protection on the extent of myopic behavior, as hypothesized in H1, is stronger in firms with higher transient institutional ownership than in other firms.

Board monitoring

If board monitoring and CEO contractual protection are alternative mechanisms to address managerial short-termism, CEO contractual protection will be less important in the presence of

more effective board monitoring, and vice versa.[6] Prior studies have shown that the effectiveness of board monitoring increases with board independence. For example, prior studies document that board independence can reduce managerial myopia and as a response to managerial myopia, firms increase board independence (e.g., Klein 2002; Farber 2005; Srinivasan 2005). We thus use board independence to proxy for board monitoring and our fourth hypothesis is stated as follows:

> *H4: Ceteris paribus, the moderating effect of CEO contractual protection on the extent of myopic behavior, as hypothesized in H1, is stronger in firms with lower board independence than in other firms.*

3. Sample and research design

3.1 Sample and data

Our sample includes S&P 500 firms over the period 1995-2008. The Securities and Exchange Commission (SEC) requires that companies disclose material employment agreements and severance pay agreements with top executives in the proxy statements (Regulation S-K, 17 CFR 299.601). For each firm-year, we hand collect information on such agreements for CEOs from the proxy statements. Table 1, Panel A describes our sample selection process. We start with 6,973 firm-years that have proxy statements available from EDGAR. As mentioned earlier, our main proxy for managerial myopia is whether CEOs cut R&D expenditures to avoid earnings decreases. Since this proxy is not meaningful for firms with insignificant R&D expenditures, we drop the firm-years that have missing or insignificant R&D expenditures. Specifically, we require that the firm have non-missing R&D in the current year and that the firm have R&D

[6] As reported in Section 4, we find that the likelihood of CEO contractual protection is higher in firms with lower board independence, supporting the notion that CEO contractual protection and board monitoring are substitutes in addressing managerial short-termism.

expenditures greater than 1% of sales in the prior year.[7] We exclude firm-years that do not have the data to calculate other variables. Our final sample consists of 2,027 firm-years.

Table 1, Panel B presents the sample distribution by year. On average, 70.5% of the sample firm-years have CEO contractual protection.[8] The percentage of firms with CEO protection increases steadily over time, from around 60% in the mid-1990s to more than 75% in the last several years of the sample period.[9,10]

Table 1, Panel C reports the descriptive statistics on firm characteristics, separately for firm-years with and without CEO contractual protection. The two groups of firms are not significantly different from each other except that firms without CEO protection are larger and have higher Tobin's Q, lower leverage, lower institutional ownership, higher CEO equity incentives, and lower CEO abnormal compensation. We control for all these characteristics in our analyses.

3.2 Research design

Following Baber et al. (1991) and Bushee (1998), we compare the pre-tax, pre-R&D earnings of the current year (i.e., the sum of pre-tax earnings and R&D expenditures) with that of

[7] We require significant R&D expenditures in the prior year, instead of in the current year, to allow for the possibility that the firm has cut R&D in the current year to achieve earnings goals. If we only require significant R&D in the prior year and do not impose any restriction on the current year's R&D (assuming missing R&D as zero), the sample size increases by about 2% and the results are quantitatively similar. Separately, the inferences remain qualitatively similar if we do not require that the sample firm-years have significant R&D expenditures.

[8] This percentage is higher than what is reported in prior research because prior research focuses on either employment agreements or standalone severance pay agreements, not both. About 36% of our sample firm-years have CEO employment agreements and about 34% have standalone CEO severance pay agreements. Note that the two types of contractual protection are exclusive; firms with contractual protection include those with employment agreements, which almost always include a termination/severance pay term, and those with *standalone* severance pay agreements.

[9] The results are robust to the inclusion of year fixed effects in the regressions. The percentage of firms with CEO protection varies across industries. For instance, while about 91% of the firms in the Construction Materials industry have CEO protection, only about 59% of the firms in the Computers industry have CEO protection. The results are robust to the inclusion of industry fixed effects in the regressions.

[10] We find that there is a high concentration of firms with headquarters in the state of Delaware. However, there is no significant difference in the percentage of Delaware firms between firms with and without CEO protection. Including an indicator for Delaware firms in the regressions leads to quantitatively similar results.

the prior year.[11] If there is a decrease in the pre-tax, pre-R&D earnings, but the decrease is smaller than the prior year's R&D, then the firm can potentially avoid an earnings decrease by cutting R&D. This group of firm-years is referred to as the small earnings decrease (SD) group.[12, 13] Within the SD group, myopic managers have incentives to cut R&D in order to avoid earnings decreases. Therefore, we use the likelihood of cutting R&D within the SD group to capture the extent of managerial myopia. Our hypothesis H1 predicts that CEO contractual protection helps alleviate managerial myopia and reduce managers' tendency to cut R&D in the SD group. To test this prediction, we estimate the following probit regression for the SD group:

$$\begin{aligned} Prob(RD\_Decrease_{i,t} = 1) = {} & \alpha + \beta CEO\_Protection_{i,t} + \gamma_1 \Delta RD_{i,t-1} + \gamma_2 \Delta Ind\_RD_{i,t} \\ & + \gamma_3 \Delta GDP_{i,t} + \gamma_4 Tobin\_Q_{i,t} + \gamma_5 \Delta CAPX_{i,t} + \gamma_6 \Delta Sales_{i,t} + \gamma_7 Size_{i,t} \\ & + \gamma_8 Distance\_Goal_{i,t} + \gamma_9 Leverage_{i,t} + \gamma_{10} FCF_{i,t} + \gamma_{11} INST_{i,t} \\ & + \gamma_{12} CEO\_Age_{i,t} + \gamma_{13} CEO\_Equity_{i,t} + \gamma_{14} CEO\_Abnormal\_Comp_{i,t} + \varepsilon_{i,t}, \end{aligned} \quad (1)$$

where $RD\_Decrease_{i,t}$ is an indicator for cutting R&D, 1 if R&D decreases for firm *i* in year *t* compared to the prior year, and 0 otherwise; $CEO\_Protection_{i,t}$ is an indicator for CEO contractual protection, 1 if the CEO has an employment agreement or a standalone severance pay agreement, and 0 otherwise. H1 implies that β is negative. The variable measurements are described in detail in Appendix A. The standard errors are adjusted for firm and year clustering.

Following Bushee (1998), we control for factors that may affect R&D investments and hence the likelihood of cutting R&D. Last year's change in R&D (Δ*RD*) captures the trend in

[11] Specifically, the pre-tax, pre-R&D earnings are the sum of pre-tax income (Compustat item *PI*) and R&D expenditures. According to the Compustat manual, *PI* excludes minority interest, extraordinary items, and discontinued operations. In an untabulated analysis, we calculate the pre-tax, pre-R&D earnings as the sum of income before extraordinary items, tax expenses, and R&D expenditures. The results are quantitatively similar.

[12] One potential complication is the effect of R&D tax credit. Bushee (1998) finds that the sample classification after considering the estimated R&D tax credit is highly correlated with the original sample classification. Note that the misclassification of the SD group likely biases against finding results consistent with our hypotheses. In addition, we hand-collect information on R&D tax credit from the income tax footnotes to financial statements. In untabulated analyses, we exclude either (i) firm-years with large R&D tax credit (greater than 0.25% of sales), or (ii) firm-years with any non-zero R&D tax credit. The results are quantitatively similar. A caveat is that R&D tax credit obtained from the income tax footnotes may still contain measurement errors.

[13] Note that the decrease here refers to the decrease in the pre-tax, pre-R&D earnings, not the decrease in the actual earnings. We use the same terms as in Bushee (1998) to be consistent.

R&D investments. A continuation of the trend implies a negative coefficient on this variable, whereas a reversal of the trend implies a positive coefficient. The change in industry R&D intensity (Δ*Ind_RD*) and the change in GDP (Δ*GDP*) capture the R&D investment opportunities at the industry and economy levels, respectively. Tobin's Q (*Tobin_Q*), the change in capital expenditures (Δ*CAPX*), and the change in sales (Δ*Sales*) capture the firm's growth opportunities. The investment opportunity and growth opportunity variables are predicted to be negatively associated with the likelihood of cutting R&D. Firm size (*SIZE*) captures cash constraints. Smaller firms are more likely to suffer cash shortage that can lead them to cut R&D. Thus the coefficient on size is predicted to be negative. The distance from earnings goal (*Distance_Goal*) captures the change in the pre-tax, pre-R&D earnings. The more negative this variable is, the more difficult it is for the firm to meet earnings goals by cutting R&D, and thus the less likely the firm is going to cut R&D. This implies a positive coefficient on *Distance_Goal*. Leverage (*Leverage*) captures the firm's incentives to increase earnings to reduce debt contracting costs and is predicted to be positively correlated with the likelihood of cutting R&D. Free cash flows (*FCF*) captures fund availability and is predicted to be negatively correlated with the likelihood of cutting R&D. Institutional ownership (*INST*) captures the monitoring by institutional investors and is predicted to have a negative coefficient.

We also control for three variables related to CEO incentives. First, Dechow and Sloan (1991) find that CEOs who are closer to retirement are more myopic and are thus more likely to cut R&D. Accordingly, we include an indicator for CEOs who are 63 or older (*CEO_Age*). Second, prior research (e.g., Dechow and Sloan 1991; Cheng 2004) find that equity incentives can reduce managers' tendency to engage in myopic behavior. Thus we control for CEO's equity incentives (*CEO_Equity*). Lastly, more capable CEOs may be less likely to resort to cutting

R&D to achieve earnings targets because they are more confident in improving firm performance and/or less concerned with being replaced. Following Gillan et al. (2009), we use CEO's abnormal compensation (*CEO_Abnormal_Comp*) to proxy for CEO's ability.

Apart from the SD group, the rest of the sample falls into two groups: the large earnings decrease (LD) group and the earnings increase (IN) group. The LD group includes the firm-years whose pre-tax, pre-R&D earnings fall short of the prior year's by an amount greater than the prior year's R&D. Firms in this group will not be able to avoid earnings declines by cutting R&D. The IN group includes the firm-years whose pre-tax, pre-R&D earnings exceed the prior year's. Firms in this group do not need to cut R&D to report an increase in earnings. Therefore, managers in these two groups do not have incentives to cut R&D to achieve short-term earnings goals, although they might cut R&D for other reasons (e.g., due to lack of economic resources in the case of the LD group). If, as we hypothesize, CEO contractual protection affects the likelihood of cutting R&D through its impact on managerial myopia, we expect the CEO protection indicator to have an insignificant coefficient in the regressions using these two groups. Accordingly, we use them as our comparison groups. Not finding results for the comparison groups can help alleviate the concern that our findings for the SD group are driven by omitted firm or CEO characteristics that affect both R&D investments and CEO protection.

Panel D of Table 1 provides descriptive statistics on the regression variables, separately for the three groups of firms, as well as the p-values of the differences in means between the SD group and the other two groups. For almost all the variables, the mean for the SD group lies between the LD and IN groups, consistent with the performance ranking of the three groups. Note that we control for all these variables in the regressions.

4. Determinants of CEO contractual protection and controlling for endogeneity

4.1 Determinants of CEO contractual protection

Whether a firm has CEO contractual protection is not random. In this section, we build on prior research and investigate why some firm-years have CEO contractual protection and others do not. In the next section, we discuss how we address this endogeneity issue.

We follow prior research in choosing the explanatory variables for CEO contractual protection. First, we consider the impact of state contracting laws. Prior research indicates that the design of employment contracts is influenced by state laws on exceptions to employment at will (e.g., Muhl 2001; Autor et al. 2004). The states can adopt one or more of the three commonly used exceptions that limit employers' ability to fire employees at will: public policy, implied contract, and good faith and fair dealing. Under the "public policy" exception, the employer may not fire the employee if the dismissal violates the state's public policy. Under the "implied contract" policy, the employer may not fire the employee if an implied contract is formed between the two parties. The "good faith and fair dealing" exception means that employers cannot fire employees in bad faith, such as to deprive employees of their benefits. With these exceptions, employees are better protected from dismissals and as such, the importance of CEO contractual protection is lower, leading to a lower likelihood of CEO protection.[14]

We also consider two other state policies: anti-takeover regulations and the enforcement of non-competition agreements. In states with anti-takeover regulations, firms are less likely to be acquired and CEOs are thus protected from takeover pressure (e.g., Bertrand and Mullainathan 1999). Garmaise (2011) finds that in states where non-competition agreements are better

[14] This discussion suggests that even for CEOs without contractual protection, they may have implicit protection, for example, from state contracting laws. Therefore what we capture in this study is the differential effect of explicit CEO contractual protection.

enforced, executive stability increases. Thus both anti-takeover regulations and enforcement of non-competition agreements reduce the importance of CEO contractual protection, leading to a lower likelihood of CEO protection.

Second, we rely on prior research to identify variables that capture firms' and CEOs' incentives to have CEO protection (Knoeber 1986; Almazan and Suarez 2003; Rusticus 2006; Yermack 2006; Gillan et al. 2009; Rau and Xu 2013):

1) Uncertainty of the firm-CEO fit. The uncertainty of the firm-CEO fit is higher for firms with uncertain business environment or CEOs with limited experiences of running the firm. In such cases, CEOs are more likely to be replaced and as a result, are more likely to demand contractual protection. Following prior research, we use R&D intensity, growth opportunities (proxied by the market-to-book ratio), and poor performance (performance proxied for by market-adjusted returns and ROA) to capture uncertainty in the business environment; we use an indicator for outside CEOs to capture CEOs' lack of experience of running the firm. We expect positive coefficients on R&D intensity, the market-to-book ratio, and the indicator for outside CEOs, and negative coefficients on market-adjusted returns and ROA.
2) CEOs' potential monetary loss from being replaced. CEO contractual protection is more important if the CEO has more to lose when being replaced. The CEO has more to lose when the CEO has more years until retirement, higher compensation, or more incentive-based compensation (unvested options/stocks will be foregone upon being replaced). Thus, we expect the use of CEO contractual protection to decrease with CEO age, but to increase with CEO's abnormal compensation and incentive-based compensation.

3) Alternative mechanisms to address CEO short-termism.[15] As discussed above, CEO contractual protection can address short-termism. Such benefits are lower when there are alternative ways to do so or when CEOs are less likely to be myopic. Prior research shows that CEOs in firms with more independent boards and founder CEOs are less likely to be myopic (e.g., Chen et al. 2008; Duchin et al. 2010). As such, we expect that the use of CEO contractual protection is lower when board independence is higher and when the CEO is a founder.

In addition, we control for leverage and firm size (proxied by total assets); we do not have signed predictions for these two variables.[16]

To investigate the determinants of CEO protection, we estimate a probit regression of the likelihood of CEO contractual protection on the above variables. Table 2 provides the detailed variable measurements and the regression results. Because there is a significant variation in the use of CEO contractual protection across industries, we estimate the regressions by industry to improve the goodness of fit of the model. Table 2 reports the average coefficients across the industries and the p-values based on the coefficients across industries.[17]

The results are generally consistent with the predictions. Column (1) examines the state policy variables. As shown in the table, the likelihood of CEO contractual protection is lower in states that provide better protection to employees, have anti-takeover regulations, and better

[15] How firms choose among alternative mechanisms to address CEO short-termism (including different forms of CEO contracts – CEO employment agreements or standalone severance pay agreements) likely depends on the benefits and costs of various mechanisms. We leave this for future exploration.

[16] Note that the above list includes the most important determinants of CEO contractual protection based on prior studies. It is by no means a complete list. Also note that some predicted associations may be consistent with alternative interpretations. For example, the predicted negative association between CEO protection and board independence and the predicted positive association between CEO protection and CEO compensation are also consistent with CEO extracting rents through contractual protection (e.g., Bebchuk and Fried 2004). We refer readers to prior studies for more detailed discussions.

[17] The sample used in this table includes 2,977 firm-years. The number of firm-years is larger than that in the main analyses because we do not need to require that R&D is non-missing and of significant amount. We drop the firm-years in industries with too few observations to estimate the regressions.

enforce non-competition agreements. Column (2) examines the firm and CEO characteristics. The likelihood of CEO contractual protection increases with R&D intensity and the market to-book ratio and decreases with performance; CEO contractual protection is less likely for older CEOs and is more likely for CEOs with higher abnormal compensation and incentive-based compensation; CEO contractual protection is less likely when board independence is higher and when the CEO is a founder; and CEO contractual protection is less likely for larger firms. Column (3) reports the regression results and the corresponding marginal effects when all the variables are included. The inferences remain similar. The marginal effects indicate that these variables have economically significant impact on the use of CEO contractual protection.

Overall, the above results indicate that the use of CEO contractual protection is systematically affected by state laws, the uncertainty in business environment, CEO's potential loss from being replaced, and alternative mechanisms used to address managerial short-termism.

4.2 Controlling for the endogeneity of CEO contractual protection

Since certain firm and CEO characteristics can be correlated with both the use of CEO protection and managerial short-termism (as proxied by the likelihood of cutting R&D to meet earnings targets), we use two approaches to address the potential endogeneity of CEO contractual protection. First, in regression (1), we replace the CEO protection indicator with its predicted value estimated from the model of determinants of CEO protection (the full model in Table 2). Second, we add to regression (1) the Inverse Mills Ratio estimated from the determinants model (Heckman 1979). Both approaches have been widely used in the literature to address endogeneity (e.g., Doidge et al. 2004). Note that the state policy variables are *exogenous* instrument variables. While they affect the use of CEO contractual protection, there are no convincing arguments why they should directly affect individual firms' decisions to cut R&D to

meet short-term earnings targets. In addition, we conduct the tests recommended in Larcker and Rusticus (2010) and find that these state policy variables are valid and effective instruments.[18]

5. Main analyses and cross-sectional tests

5.1 CEO contractual protection and managerial short-termism – univariate analyses

Table 3 reports the univariate analysis results. H1 predicts that CEO contractual protection will reduce CEOs' incentives to engage in myopic behavior, specifically, cutting R&D to avoid earnings decreases. This implies a negative correlation between CEO protection and the likelihood of cutting R&D for the small earnings decrease (SD) group. The results reported in Panel A are consistent with this prediction. While 65% of the firm-years without CEO protection cut R&D, only 45% of the firm-years with CEO protection do so. The difference of 20 percentage points is both economically and statistically significant (p-value of the Chi-Square test is 0.001).

As discussed earlier, we do not expect the likelihood of cutting R&D to be systematically related to CEO contractual protection for the large earnings decrease (LD) group and the earnings increase (IN) group. The results, as reported in Panel B of Table 3, are consistent with our prediction. In the LD group, the likelihood of cutting R&D is 68 and 71 percent for firms with and without CEO protection, respectively (p-value for the difference = 0.645).[19] In the IN group, the likelihood of cutting R&D is the same, 24 percent, for firms with and without CEO

[18] First, the F-test rejects the null hypothesis that the state policy variables are not correlated with the use of CEO protection at the 0.001 level (the F-statistic is 24.21, higher than the recommended critical value of 15.09 in the case of five instruments). This suggests that the instruments are effective. Second, the over-identification test fails to reject the null hypothesis that the instruments are not correlated with the second stage regression residuals. The J-statistic is 1.45, while the critical value for the 10% significance level is 7.78 (chi-squared distribution with a degree of freedom of 4; degree of freedom is the number of instrument variables minus the number of endogenous variables). This indicates that the instruments are valid (i.e., exogenous). See Larcker and Rusticus (2010) for more detailed discussions of these tests.

[19] The higher likelihood of cutting R&D in the LD group is likely driven by these firms' poor performance and lack of economic resources.

protection. The findings for the LD and IN groups help alleviate the concern that the finding for the SD group is driven by omitted firm or CEO characteristics that are correlated with both R&D investments and CEO contractual protection. For example, if CEOs with contractual protection tend to invest more in R&D and if this general tendency drives the lower likelihood of cutting R&D for firms with CEO protection in the SD group, then we should observe similar results in the comparison groups.

In sum, the univariate analyses provide evidence consistent with H1. We now turn to multivariate analyses that control for potential confounding factors and the endogeneity of CEO contractual protection.

5.2 CEO contractual protection and managerial short-termism – multivariate analyses

In this section, we use regression analyses to examine the impact of CEO contractual protection on the likelihood of cutting R&D in the SD group. Table 4, Panel A reports the results. We first report the probit regression without controlling for endogeneity (Column (1)). We then replace the CEO protection indicator with its predicted value estimated from the first-stage regression (Column (2)). In Column (3), we use the Heckman approach and include the Inverse Mills Ratio estimated from the first-stage regression.

Panel A, Column (1) shows that in the SD group, CEO contractual protection significantly reduces the likelihood of cutting R&D (p-value = 0.001). The marginal effect of CEO protection is -20.4 percent. This impact is economically significant given that the probability of cutting R&D in the SD group is 52 percent (Table 1, Panel D). In Column (2) where we use the predicted value for the probability of having CEO protection, the coefficient on CEO protection remains significantly negative. The p-value is 0.001 and the marginal effect is -21.7 percent. In the last column where we include the Inverse Mills Ratio, the result for CEO protection is

similar; the p-value is 0.001 and the marginal effect is -24.6 percent. Judged by the marginal effect, CEO protection appears to be among the most important variables in explaining the likelihood of cutting R&D.

With respect to firm-level control variables, we find that change in capital expenditures and change in sales are negatively correlated with the likelihood of cutting R&D, suggesting that the likelihood of cutting R&D is lower when there are more investment and growth opportunities. The prior year's change in R&D has a positive impact, consistent with mean reversion in R&D investments. With respect to CEO characteristics, we find that the CEO age dummy has a positive coefficient, consistent with the finding in prior research (e.g., Dechow and Sloan 1991) that CEOs closer to retirement are more myopic. We also find that CEO equity incentives and abnormal compensation are negatively correlated with the likelihood of cutting R&D. These results suggest that CEOs whose interest is better aligned with shareholders' and who are more capable are less likely to engage in myopic behavior (e.g., Cheng 2004).[20] The other control variables have insignificant coefficients.[21]

In Table 4, Panel B, we report the regression results for the comparison groups. As expected, the coefficient on CEO contractual protection is insignificant for both groups, regardless of the model specifications.[22] The results on the control variables for these two groups

[20] The result on CEO equity incentives is robust to the exclusion of CEO contractual protection and CEO age variables, which are positively correlated with CEO equity incentives. While there is mixed evidence in the literature on whether equity incentives help alleviate managerial short-termism (e.g., Cheng and Warfield 2005; Erickson et al. 2006; Efendi et al. 2007; Armstrong et al. 2010), the negative coefficient on CEO equity incentives here is consistent with equity compensation helping address managerial myopia.

[21] As in Bushee (1998), the coefficient on *Distance_Goal* (distance from earnings goal) is insignificant, but it becomes significantly positive, as predicted, when we use total assets as the scalar for *Distance_Goal*. This result indicates that firms are more likely to cut R&D when the decrease in the pre-tax, pre-R&D earnings is of smaller magnitude and thus it is easier to meet earnings targets by cutting R&D. The results on the variables of interest remain the same when we use this alternative definition of *Distance_Goal*.

[22] In an untabulated sensitivity test, we also estimate the regressions for the firm-years with small earnings increases in order to ensure that our results for the small earnings decrease (SD) group are not driven by the small magnitude of the change in earnings. Specifically, we examine the firm-years with the change in earnings in the bottom tercile

are similar to those for the SD group and are not tabulated to save space.

In an alternative design, we include all the firm-years in the same regression by expanding regression (1). We include an indicator for the SD group (*SD*), which is 1 for firm-years in the SD group and 0 otherwise, and the interaction of *CEO_Protection* and *SD*. Under this specification, the coefficient on *CEO_Protection* captures the impact of CEO contractual protection on the likelihood of cutting R&D for the comparison groups (i.e., the LD and IN groups) and the coefficient on the interaction term, *CEO_Protection* × *SD*, captures the incremental impact of CEO contractual protection for the SD group. To save space we do not tabulate the results. We find that the coefficient on *CEO_Protection* is insignificant, indicating that CEO contractual protection does not affect the likelihood of cutting R&D for the comparison groups. More importantly, we find a significantly negative coefficient on *CEO_Protection* × *SD*, indicating that the incremental effect of CEO contractual protection on the likelihood of cutting R&D is significantly negative for the SD group. The inferences remain the same (1) if we separate the LD and IN groups (by adding an indicator for the IN group and its interaction with *CEO_Protection*); and (2) if we add to the regression the interactions of *SD* and the control variables (i.e., allowing the control variables to have different coefficients for the SD group).

We conduct a series of sensitivity tests and find quantitatively similar results. We do not tabulate the results for the sake of brevity.

(i) We find quantitatively similar results when we use the average R&D expenditures in the prior three years to determine whether there is a R&D cut in the current year. This indicates that our inferences are not driven by unusually high R&D expenditures in the prior year for firms without CEO protection.

(ii) Mergers and acquisitions (M&As) can lead to noises in classifying the firm-years into the different groups. Hence we exclude the firm-years with M&As or the firm-years with major M&As (i.e., M&As with a deal value greater than 10% of the firm's

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within the earnings increase (IN) group. We find that the coefficient on CEO protection is insignificant for these firm-years across all the three specifications.

beginning-of-year total assets). The results are quantitatively similar.[23]

(iii) It is unclear whether the last year's R&D expenditures and earnings are the right benchmarks when a new CEO joins the firm. We find quantitatively similar results after excluding the firm-years when the CEO first joins the firm.

(iv) In the main analyses, we follow Bushee (1998) and assume that the earnings target is the prior year's earnings. Alternatively, we assume that managers wish to avoid losses and use zero as the earnings target by focusing on those firm-years where the pre-tax, pre-R&D earnings exceed zero by an amount smaller than the prior year's R&D; these firms can avoid losses by cutting R&D. The inferences remain the same. Note that as in Bushee (1998), we do not use analyst forecast as the earnings target because using analyst forecast requires an estimate of analysts' expectation of the current year's R&D expenditures and tax expenses in order to calculate the pre-tax, pre-R&D earnings target. Further complications arise if analysts anticipate a cut in R&D.

(v) Our inferences remain the same after controlling for additional variables. First, one might argue that the different results for the three groups are driven by different levels of R&D across these groups. We find that these three groups do not differ significantly in the level of R&D. Also, controlling for the level of R&D in the regressions does not affect our inferences; the coefficient on the level of R&D is insignificant. Second, we obtain similar results on CEO protection after controlling for corporate governance (board independence and G-score), accrual earnings management (proxied by abnormal accruals), a founder CEO indicator, and industry fixed effects. We do not include these variables in the main analyses in order to make the model specifications tractable and comparable with prior research.

(vi) While some firms consistently use or do not use CEO protection throughout the sample period, other firms switch back and forth (i.e., having it in some years but not in other years). To ensure that our results are not driven by the firms that consistently use or do not use CEO protection and to further alleviate the endogeneity concern (by using the same firm as control), we examine whether our results hold for the group of switch firms. The untabulated analysis indicates that the results are similar.

(vii) In the main analyses, we combine employment agreements and severance pay agreements together because both types of agreements protect CEOs from short-term performance swing and downside risk. In an untabulated analysis, we investigate whether the results apply to both types. For this purpose, we construct two separate indicator variables for employment agreements and standalone severance pay agreements. We find that in the SD group, both indicators have significantly negative coefficients, indicating that both employment agreements and standalone severance pay agreements can reduce CEOs' incentives to engage in myopic behavior.

Overall, we find that firms with CEO contractual protection are less likely to cut R&D to avoid earnings decreases, compared to those without CEO contractual protection. This finding indicates that CEO contractual protection can reduce managerial short-termism. This inference is

[23] We acknowledge that we cannot fully address the noises in identifying the SD group related to some accounting problems. While such noises should bias against finding results consistent with our predictions, we would like to remind readers to keep this caveat in mind when interpreting the results.

reinforced by our findings that CEO contractual protection has no impact on the likelihood of cutting R&D in the comparison groups, where managerial short-termism is not expected.

5.3 CEO contractual protection and managerial short-termism – the duration and strength of protection

To reinforce the main inference, in this section, we utilize the contract details and examine how the effect of CEO contractual protection on managerial myopia varies with the extent of CEO protection, specifically, the duration and monetary strength of CEO protection. We expect the effect to increase with both the duration and strength of CEO protection. To save space, hereafter we only tabulate the results for the SD group using the Heckman approach, while noting that (i) running the probit regressions without the Inverse Mills Ratio or using the predicted value of the probability of CEO protection in the regressions leads to qualitatively similar results, and (ii) the results on the variables of interest are insignificant for the comparison groups.

First, we construct three indicator variables, *Duration0, Duration1, and Duration2*, to capture the duration of CEO contractual protection. Standalone severance pay agreements typically do not have an expiration date and hence can offer CEOs protection over the foreseeable future. While employment agreements are for a fixed period, some can be automatically renewed. *Duration2* equals 1 for CEOs with standalone severance pay agreements and for CEOs with employment agreements with an automatic renewal clause, and 0 otherwise. Among CEOs with employment agreements without an automatic renewal clause, the ones in the earlier stage of employment agreements should be less concerned with contract renewal than those in the later stage. Accordingly, we use *Duration1* and *Duration0* to separately indicate the two groups; *Duration1* (*Duration0*) equals 1 for firm-years in the earlier (later) stage of CEO

employment agreements without an automatic renewal clause, and 0 otherwise.[24] Note that these three indicator variables are mutually exclusive and collectively cover all the firm-years with CEO contractual protection. As such, we do not include the indicator for CEO contractual protection in the regression.

Column (1) of Table 5 reports the regression results. The results are consistent with our prediction. The coefficients on the three duration indicator variables are all negative. However, the coefficient on *Duration0* is only marginally significantly different from zero (p-value is 0.149), indicating that CEOs in the later stage of their employment agreements are only marginally less myopic than those without any contractual protection. In contrast, the coefficients on *Duration1* and *Duration2* are significantly different from zero at the 0.003 and 0.001 levels, respectively. F-tests (untabulated) indicate that the coefficients on *Duration1* and *Duration2*, while insignificantly different from each other, are significantly different from the coefficient on *Duration0* (p-value is 0.045 and 0.031, respectively). These results indicate that the moderating effect of CEO contractual protection on the extent of myopic behavior increases with the duration of the protection.

Second, the monetary strength of CEO protection also varies. To quantify the monetary strength, we rely on the amount of pre-determined severance pay in either the employment agreement or the standalone severance pay agreement. The agreements usually specify the severance pay as a multiple of the basic salary and also allow the unexercisable options (unvested stocks) to become immediately exercisable (vested). Because the latter portion is difficult to quantify ex ante, we follow Rau and Xu (2013) and code the severance pay multiple,

[24] We use the sample median of the remaining contract years to distinguish between the earlier and later stage of employment agreements. Among the firm-years with CEO contractual protection, *Duration2* is 1 for 60% of the firm-years, *Duration1* is 1 for 20% of the firm-years, and *Duration0* is 1 for 20% of the firm-years. Note that *Duration2, Duration1,* and *Duration0* are all zero for firm-years without CEO contractual protection.

i.e., the number of times the severance pay is relative to the basic salary. We construct an ordinal variable, *Strength*, to capture the monetary strength of the protection. If the multiple is above three, we code *Strength* as 2; if the multiple is between two and three, we code *Strength* as 1; and if the multiple is below two, we code *Strength* as 0. Firm-years with CEO contractual protection but without information on severance pay are excluded from this analysis.[25]

Column (2) of Table 5 reports the regression results. The regression includes both the CEO contractual protection indicator and the strength variable. As such, the coefficient on *CEO_Protection* captures the difference between firm-years with low severance pay multiple and those without CEO contractual protection, and the coefficient on *Strength* captures the incremental effect of the monetary strength of the protection. The results are consistent with our prediction. The coefficients on both *CEO_Protection* and *Strength* are significantly negative, indicating that CEO contractual protection can reduce the extent of myopic behavior and the effect further increases with the monetary strength of the protection.

In sum, we find that the effect of CEO contractual protection in reducing myopic behavior increases with the duration and monetary strength of the protection. These findings reinforce the inference from the main analyses.

5.4 CEO protection and managerial short-termism – cross-sectional analyses

In this section, we report cross-sectional analyses that test hypotheses H2, H3, and H4. We add to the regressions the main effect of the conditional variable and its interaction with the CEO protection indicator. The regression model is as follows:

$$Prob(RD\_Decrease_{i,t} = 1) = \alpha + \beta_1 CEO\_Protection_{i,t} + \beta_2 Conditional\_Var_{i,t} + \beta_3 CEO\_Protection_{i,t} \times Conditional\_Var_{i,t} + \gamma_1 \Delta RD_{i,t-1} + \gamma_2 \Delta Ind\_RD_{i,t} + \gamma_3 \Delta GDP_{i,t} + \gamma_4 Tobin\_Q_{i,t} + \gamma_5 \Delta CAPX_{i,t} + \gamma_6 \Delta Sales_{i,t} + \gamma_7 Size_{i,t}$$

[25] Among the firm-years with CEO contractual protection and information on severance pay, 32% have a severance pay multiple above three, 38% have a severance pay multiple between two and three, and 30% have a severance pay multiple below two. *Strength* is 0 for firm-years without CEO contractual protection.

$$+\gamma_8 Distance\_Goal_{i,t} + \gamma_9 Leverage_{i,t} + \gamma_{10} FCF_{i,t} + \gamma_{11} INST_{i,t}$$
$$+\gamma_{12} CEO\_Age_{i,t} + \gamma_{13} CEO\_Equity_{i,t} + \gamma_{14} CEO\_Abnormal\_Comp_{i,t} + \varepsilon_{i,t} . \quad (3)$$

The conditional variable, *Conditional_Var*, is one of the following three indicator variables: *Industry_Homogeneity*, *Transient_Inst*, and *Low_Board_Independence*.[26] They correspond to our hypotheses H2-H4. *Industry_Homogeneity* is one if the firm operates in an industry that is more homogeneous than the sample median, and zero otherwise. Following Parrino (1997), for each firm in the industry (based on two-digit SICs), we first calculate the percentage of the variation in monthly stock returns that is explained by an equal-weighted industry index over the previous ten years. We then measure industry homogeneity as the median across all firms in the industry. The assumption is that the more the stock prices of firms in the industry move together, the more homogeneous the industry is. *Transient_Inst* is one if the ownership of transient institutional investors in the firm is higher than the sample median, and zero otherwise.[27] *Low_Board_Independence* is one if the percentage of independent directors is lower than the sample median, and zero otherwise. H2, H3, and H4 predict that the effect of CEO protection on the likelihood of cutting R&D in the SD group is more negative for firms in more homogenous industries, for firms with higher transient institutional ownership, and for firms with lower board independence. That is, the coefficient on the interaction term, β_3, is expected to be negative for the SD group.

Table 6 reports the regression results for the SD group. We first include the conditional variables one at a time and then include all of them together in the last column. The first column reports the results when *Industry_Homogeneity* and its interaction with CEO protection are included. The main effect of industry homogeneity is significantly positive (p-value is 0.012),

[26] We use indicator variables to facilitate the interpretation of the results and to allow for non-linearity. In an untabulated sensitivity analysis, we also use the standardized decile ranks for the conditional variables and the inferences remain the same.

[27] We thank Brian Bushee for providing data on the classification of institutional investors.

suggesting that without CEO protection, industry homogeneity can induce myopic behavior, likely due to the higher threat of CEO dismissal in more homogeneous industries (e.g., DeFond and Park 1997). More importantly, consistent with H2, the impact of CEO protection on managerial myopia is greater in more homogeneous industries; the coefficient on the interaction of CEO protection and industry homogeneity is significantly negative (p-value is 0.004 and the marginal effect is -29.0 percent).[28]

The second column of Table 6 presents a similar picture with respect to transient institutional ownership. The main effect of transient institutional ownership is significantly positive (p-value is 0.052), consistent with transient institutional investors' short horizon incentivizing managers to deliver short-run performance (Bushee 1998). More importantly, consistent with H3, the impact of CEO protection on managerial myopia is greater in firms with higher transient institutional ownership; the coefficient on the interaction of CEO protection and transient institutional ownership is significantly negative (p-value is 0.028 and the marginal effect is -21.1 percent).

The third column presents the results with respect to board independence. The main effect of low board independence is significantly positive (p-value is 0.015), consistent with the role of board monitoring in alleviating managerial myopia. Consistent with H4, the interactive effect is significantly negative (p-value is 0.019 and the marginal effect is -24.8 percent). This finding suggests that the incremental effect of CEO protection is stronger when board independence is lower. CEO protection and board monitoring appear to be alternative mechanisms in alleviating managerial myopia. In an untabulated analysis, we also find that the effect of CEO protection is

[28] In an untabulated additional analysis, we examine another industry characteristic, the degree of competition. Giroud and Mueller (2010) find that competition in the product market can reduce managerial slack and myopia. It follows that the impact of CEO protection on managerial myopia should become smaller in more competitive industries. We find results consistent with this prediction.

stronger when CEO incentive compensation is lower, consistent with the view that CEO protection and incentive compensation are alternative ways of addressing short-termism (Rau and Xu 2013).

The last column of Table 6 reports the regression results when all of the three conditional variables and their interactions with CEO protection are included. The results are similar.

In sum, consistent with our hypotheses, the impact of CEO protection on managerial myopia is greater for firms in more homogeneous industries, for firms with higher transient institutional ownership, and for firms with lower board independence. These results suggest that the impact of CEO protection on managerial myopia is stronger when CEOs have stronger incentives to engage in myopic behavior and when the alternative mechanisms to curb myopic behavior are less effective.

6. Alternative proxies for managerial short-termism

6.1 The likelihood of cutting R&D and advertising expenditures

Like R&D expenditures, advertising expenditures are also subject to managerial discretion and are expensed in the period when they occur. In this section, we use the likelihood of cutting total R&D and advertising expenditures as the proxy for managerial short-termism and examine whether our inferences still hold. The methodology is very similar to the main analyses except that we use the sum of R&D and advertising expenditures in place of R&D expenditures for sample selection and research design. For example, the small earnings decrease (SD) group refers to firm-years where there is a decrease in the pre-tax, pre-R&D & advertising earnings and the decrease is smaller than the prior year's R&D and advertising expenditures.

Table 7 reports the regression results for the SD group, first for H1and then for H2-H4. The

results are consistent with all the hypotheses. As reported in Column (1), the coefficient on the CEO protection indicator is significantly negative, indicating that firms with CEO contractual protection are less likely to cut R&D and advertising expenditures to meet earnings targets. The results in columns (2), (3), and (4) show that the coefficients on the interactions between the CEO protection indicator and the conditional variables are significantly negative, as predicted. The last column of the table shows that the results hold when all the conditional variables and the associated interactions are included at the same time. These results indicate that the negative impact of CEO contractual protection on the likelihood of cutting R&D and advertising expenditures is stronger for firms in more homogeneous industries, for firms with higher transient institutional ownership, and for firms with lower board independence.[29]

6.2 Real earnings management as an alternative proxy for managerial short-termism

In this section, we investigate how CEO contractual protection affects the extent of real earnings management, an alternative proxy for managerial short-termism. Following Roychowdhury (2006), we measure the extent of real earnings management using abnormal production costs and abnormal discretionary expenditures. Following Zang (2012), we combine these two measures to capture the overall extent of real earnings management (abnormal production costs minus abnormal discretionary expenditures, both scaled by lagged assets).[30] As in Roychowdhury (2006), we focus on the suspect firm-years, those that meet or just beat earnings benchmarks, in order to increase the power of the tests. Compared to the non-suspect firm-years, the suspect firm-years are more likely to have engaged in real earnings management to meet short-term earnings targets. The earnings benchmarks here include zero, last year's

[29] As in the main analyses, we do not find any significant results for the variables of interest for the comparison groups.

[30] We do not use the abnormal level of operating cash flows in the analysis because both Roychowdhury (2006) and Zang (2012) argue that real earnings management activities have an ambiguous effect on operating cash flows.

earnings, and analysts' consensus forecasts.

We follow prior studies in choosing the control variables and run the following regression for the suspect firm-years:

$$\begin{aligned} Real\ EM_{i,t} = {} & \alpha + \beta_1 CEO\_Protection_{i,t} + \beta_2 Conditional\_Var_{i,t} \\ & + \beta_3 CEO\_Protection_{i,t} \times Conditional\_Var_{i,t} + \gamma_1 Tobin\_Q_{i,t} + \gamma_2 \Delta Sales_{i,t} \\ & + \gamma_3 Size_{i,t} + \gamma_4 Leverage_{i,t} + \gamma_5 FCF_{i,t} + \gamma_6 ROA_{i,t} + \gamma_7 INST_{i,t} \\ & + \gamma_8 CEO\_Age_{i,t} + \gamma_9 CEO\_Equity_{i,t} + \gamma_{14} CEO\_Abnormal\_Comp_{i,t} + \varepsilon_{i,t}\ , \end{aligned} \quad (5)$$

$Real\ EM$ measures the extent of real earnings management. The conditional variable, *Conditional_Var*, is one of the following three indicator variables: *Industry_Homogeneity*, *Transient_Inst*, and *Low_Board_Independence*, as in Section 5.4. Table 8 reports the regression results, first for H1 and then for H2-H4. The results are consistent with all the hypotheses. As reported in Column (1), the coefficient on the CEO protection indicator is significantly negative, indicating that firms with CEO contractual protection are less likely to engage in real earnings management. The results in columns (2), (3), (4), and (5) show that the coefficients on the interactions between the CEO protection indicator and the conditional variables are significantly negative, as predicted. These results indicate that the impact of CEO contractual protection on real earnings management is stronger for firms in more homogeneous industries, for firms with higher transient institutional ownership, and for firms with lower board independence.

As expected, we do not find significant results on the variables of interest for the non-suspect firm-years (untabulated). We also use an alternative research design – using the full sample of firm-years in the regressions and adding the interaction between the CEO protection indicator and the suspect firm indicator. This leads to the same inferences. We do not report the results using this alternative design because the model specifications for H2-H4 become very cumbersome under this design and because we want to use a similar research design as the analyses in Section 5.

In sum, the analyses of the likelihood of cutting R&D and advertising expenditures and the extent of real earnings management complement the main analyses and reinforce the inference that CEO contractual protection can mitigate managerial myopic behavior.

7. Additional analyses to substantiate the assumptions and to address alternative explanations

7.1 Does cutting R&D lead to poorer performance in the future for the SD group?

As in prior research (e.g., Bushee 1998; Roychowdhury 2006), one of our maintained assumptions is that cutting R&D to achieve short-term earnings targets reduces long-run firm performance and is therefore a manifestation of managerial myopia. However, one might argue that cutting R&D in such situations can be an optimal decision. While the managerial myopia argument implies that within the small earnings decrease (SD) group, firms that cut R&D have poorer performance in the future than those that do not, the optimal decision argument does not imply such performance differences. To provide support for the myopia argument, we examine whether within the SD group, firms that cut R&D experience poorer performance in the future than those that do not cut R&D.

Table 9 reports the regression results. The dependent variable is the average industry-adjusted ROA (return on assets) or CFO (cash flows from operations scaled by lagged assets) in the next three years. The independent variables include an indicator for the small earnings decrease (SD) group, an indicator for cutting R&D in the SD group, and an indicator for cutting R&D in the other groups (i.e., the LD and IN groups).[31] The choice of the control variables (including the current year's performance) follows prior research. Not surprisingly, the current

[31] For simplicity we combine the LD and IN groups together for this analysis. Separating them leads to qualitatively similar results.

year's performance is the most important determinant of performance in the future. With respect to the impact of cutting R&D on performance in the future, cutting R&D does not lead to poorer performance for firms in the other groups (p-value = 0.269 and 0.418, respectively, for analyses of future ROA and CFO), consistent with the notion that cutting R&D on average is not driven by opportunistic considerations in these groups. Consistent with the myopia argument, within the SD group, cutting R&D is associated with significantly poorer performance in the future; on average, firms that cut R&D experience a 0.7 (1.8) percentage point lower ROA (CFO) in the next three years than those that do not. F-tests (untabulated) indicate that the impact of cutting R&D on performance in the future is significantly different between the SD group and the other groups. The findings are consistent with our argument that cutting R&D to achieve short-term earnings targets hurts long-run performance and thus captures managerial myopia.

7.2 Does CEO contractual protection reduce CEO turnover?

Another key assumption underlying our argument is that CEO employment agreements and severance pay agreements protect CEOs from short-term performance swing and downside risk and thus reduce the likelihood of CEO turnovers upon poor short-term performance. While prior research provides supportive evidence for this assumption, in this section, we directly test whether CEO contractual protection reduces CEO turnover-performance sensitivity in our sample.

For this purpose, we regress the likelihood of CEO turnover in the next year on the current year's performance, its interaction with the CEO protection indicator, and control variables. The research design closely follows prior CEO turnover studies (e.g., Denis et al. 1997; Parrino 1997; DeFond and Park 1999). We measure performance in two ways: market-adjusted stock returns and industry-adjusted ROA. The results are reported in Table 10. We find that consistent with

prior research, CEO turnover-performance sensitivity is significantly negative, implying that CEOs of firms experiencing poor performance are more likely to be replaced. More importantly, we find that the interaction between firm performance and the CEO protection indicator is significantly positive. That is, CEOs with contractual protection are less likely to be replaced after poor performance, compared to those without protection. This is consistent with our assumption that CEO contracts can protect CEOs from short-term performance swing.[32] We also find that the main effect of CEO protection on CEO turnover is significantly negative.

In an untabulated analysis, we use an indicator for earnings decrease as an alternative measure of firm performance. We find that firms with an earnings decrease are more likely to experience CEO turnover in the next year. However, this effect is significantly weaker in the presence of CEO contractual protection, again confirming our assumption.

In sum, the above analyses substantiate the assumption that CEO employment agreements and severance pay agreements can protect CEOs from short-term performance swing, thus reducing CEOs' incentives to engage in myopic behavior.

7.3 Alternative explanation: differential investment opportunities

One might argue that our results can be explained by differential investment opportunities: firms without CEO contractual protection have fewer investment opportunities than those with CEO contractual protection, and therefore the former are more likely to cut R&D than the latter. If this is the case, we should find similar results for the comparison groups. However, we do not find that firms without CEO protection are more likely to cut R&D than those with CEO protection within the comparison groups, inconsistent with this alternative explanation.

Furthermore, we conduct an additional analysis to test this alternative explanation. Under

[32] In an untabulated analysis, we separately examine CEO employment agreements and severance pay agreements and find that both reduce the likelihood of CEO turnover after poor performance.

the alternative explanation, firms without CEO protection have fewer investment opportunities and therefore they should be more likely to cut other long-term investments as well, such as capital expenditures (CAPX). However, unlike cutting R&D, cutting CAPX does not help improve reported earnings in the same period. Thus under the myopia argument, we do not expect firms with and without CEO protection to differ in the likelihood of cutting CAPX. For this test, we replace the indicator for cutting R&D in Equation (1) with an indicator for cutting CAPX and replicate the analysis. (The model specification remains the same except that we replace the change in CAPX on the right-hand side with the lagged change in CAPX.) The untabulated analysis indicates that the coefficient on the CEO protection indicator is insignificant across all the model specifications for the SD group. (The results are also insignificant for the comparison groups.) This finding indicates that our results on cutting R&D are unlikely to be driven by differential investment opportunities between firms with and without CEO protection.

7.4 Alternative explanation: the quiet life story

Another potential alternative explanation for our results is that CEOs with contractual protection enjoy a quiet life and do not bother to cut R&D. Bertrand and Mullainathan (2003) argue that without takeover pressure, CEOs will enjoy a quiet life by avoiding activities that involve "difficult decisions and costly efforts." Consistent with this argument, Zhao and Chen (2008) find that firms with staggered boards, which reduce takeover pressure, are less likely to engage in accrual earnings management. One might argue that like CEOs without takeover pressure, CEOs with contractual protection enjoy a quiet life and do not undertake actions to cut R&D.

There are several problems with this alternative explanation in our setting. First, in general, the findings in prior research are not consistent with CEOs with contractual protection enjoying a

quiet life. If anything, the implication is opposite. CEOs with contractual protection are shown to take on more risks (Huang 2010; Xu 2011). Second, the quiet life story should apply to the comparison groups as well, but we do not find similar results in the comparison groups. Lastly, not cutting R&D implies actively managing the current higher level of R&D activities and do not necessarily constitute a quiet life. Because of the above reasons, we do not believe that the quiet life story explains our results.

8. Conclusion

In this paper, we examine whether CEO contractual protection, in the form of employment agreements and standalone severance pay agreements, helps reduce managerial short-termism. Managers have incentives to boost short-term performance to increase their welfare, potentially at the expense of long-term firm value. However, CEOs with contractual protection are protected from short-term performance swing and downside risk and as a result, such CEOs have weaker incentives to engage in myopic behavior.

To test this prediction, we hand collect CEO employment agreement and severance pay agreement information from the proxy statements. Our main proxy for managerial myopia is cutting R&D to avoid earnings decreases. The sample includes 2,027 firm-years from S&P 500 firms over the 1995-2008 period that have proxy statements and significant R&D expenditures. Our test group, the small earnings decrease (SD) group, includes firm-years where there is a decrease in the pre-tax, pre-R&D earnings compared to the prior year but the decease is smaller than the prior year's R&D. The incentive to cut R&D to avoid earnings declines is most salient in this group and hence we predict that CEO contractual protection can lower the likelihood of cutting R&D in the SD group. Other firm-years serve as the comparison groups. For the

comparison groups, firms do not have incentives to cut R&D to avoid earnings decreases because it is not feasible (for those with large earnings decreases) or necessary (for those with earnings increases); therefore we do not expect CEO protection to be associated with the likelihood of cutting R&D for the comparison groups.

The results are consistent with our prediction. For the SD group, the impact of CEO contractual protection on the likelihood of cutting R&D is both statistically and economically significant. We also find that the impact of CEO contractual protection increases with the duration and monetary strength of the contractual protection. For the cross-sectional tests, we predict and find that the impact of CEO protection is greater for firms in more homogenous industries, for firms with higher transient institutional ownership, and for firms with lower board independence. These results indicate that the impact of CEO protection on managerial myopia is stronger when CEOs have stronger incentives to engage in myopic behavior or when alternative mechanisms to curb myopic behavior are weaker.

With respect to the comparison groups, as expected, the impact of CEO contractual protection on the likelihood of cutting R&D is insignificant. This finding helps address the concern that the results for the SD group may be driven by omitted firm or CEO characteristics that are correlated with both the use of CEO contracts and R&D investments.

In an additional test, we use the extent of real earnings management to proxy for managerial myopia and the inferences are the same. We also conduct analyses to substantiate our assumptions and to address alternative explanations. First, we find that within the SD group, cutting R&D is associated with poorer performance in the future, lending support to our argument that cutting R&D to achieve short-term earnings targets is a manifestation of managerial myopia. Second, we find that CEOs with contractual protection are less likely to be

replaced after poor performance, consistent with the notion that CEO contracts protect CEOs from short-term performance swing. Lastly, we conduct tests to rule out alternative explanations (such as differential investment opportunities or a quiet life story).

Our paper contributes to the literature by examining how CEO contracts affect managerial short-termism. The findings suggest that CEO contractual protection reduces managers' incentives to engage in myopic behavior. Therefore, our study complements prior studies that investigate how board monitoring and CEO equity incentives address managerial short-termism and advances an emerging literature that examines the impact of CEO contracts on corporate decisions.

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Appendix A
Variable measurements

$RD\_Decrease_{i,t}$	=	indicator for cutting R&D, 1 if R&D decreases compared to the prior year, and 0 otherwise;
$CEO\_Protection_{i,t}$	=	indicator for CEO contractual protection, 1 if the CEO has an employment agreement or a severance pay agreement, and 0 otherwise;
$\Delta RD_{i,t-1}$	=	prior year's change in R&D, calculated as the difference in the natural logarithm of R&D between the prior year and the year before;
$\Delta Ind\_RD_{i,t}$	=	change in industry R&D intensity, calculated as the difference in the ratio of total industry R&D over total industry sales between the current year and the prior year, where the industry measures are based on all the firms with the same 4-digit SICs as firm i (excluding firm i);
$\Delta GDP_{i,t}$	=	change in GDP, calculated as the difference in the natural logarithm of GDP between the current year and the prior year;
$Tobin\_Q_{i,t}$	=	Tobin's Q, calculated as the sum of market value of common equity, book value of preferred stocks, and book value of debt divided by total assets;
$\Delta CAPX_{i,t}$	=	change in capital expenditures, calculated as the difference in the natural logarithm of capital expenditures between the current year and the prior year;
$\Delta Sales_{i,t}$	=	change in sales, calculated as the difference in the natural logarithm of sales between the current year and the prior year;
$Size_{i,t}$	=	natural logarithm of market value of equity (in millions);
$Distance\_Goal_{i,t}$	=	distance from earnings goal, calculated as the difference in the pre-tax, pre-R&D earnings between the current year and the prior year, scaled by the prior year's R&D;
$Leverage_{i,t}$	=	leverage, calculated as total debt divided by total assets;
$FCF_{i,t}$	=	free cash flows, calculated as cash flows from operations minus capital expenditures, scaled by total assets;
$INST_{i,t}$	=	institutional ownership, measured as the percentage of outstanding shares held by institutional investors;
$CEO\_Age_{i,t}$	=	indicator for CEOs who are close to retirement, 1 for CEOs who are 63 and older and 0 otherwise;
$CEO\_Equity_{i,t}$	=	CEO's equity incentives, measured as CEO's share and option holdings scaled by total number of shares outstanding;
$CEO\_Abnormal\_Comp_{i,t}$	=	CEO's abnormal cash compensation, measured as the residual from the regression of the natural logarithm of CEO cash compensation on the natural logarithm of firm assets, ROA, the market-to-book ratio, CEO tenure, and industry and year indicators (Gillan et al. 2009);
i,t	=	firm i, year t subscripts.

TABLE 1
Sample selection, composition and descriptive statistics

This table reports the sample selection, composition, and descriptive statistics for our sample of 2,027 firm-years from S&P 500 firms in the period 1995-2008.

Panel A: Sample selection

Restriction		Sample size
Firm-years with proxy statements available from EDGAR for S&P 500 firms in the period 1995-2008		6,973
Less:		
Firm-years with missing R&D data in the current year	3,119	
Firm-years with missing or insignificant R&D in the prior year (i.e., R&D/sales <1%)	1,169	
Firm-years without the data to calculate the regression variables	658	
Final sample		2,027

Panel B: Yearly distribution

				Type of CEO protection	
Year	# of obs.	# of obs. with CEO protection	Percentage of obs. with CEO protection	# of obs. with employment agreements	# of obs. with *standalone* severance pay agreements
1995	108	71	65.74%	30	41
1996	122	75	61.48%	34	41
1997	127	73	57.48%	32	41
1998	141	87	61.70%	43	44
1999	149	92	61.74%	52	40
2000	150	102	68.00%	54	48
2001	154	110	71.43%	63	47
2002	154	112	72.73%	63	49
2003	159	116	72.96%	60	56
2004	158	117	74.05%	67	50
2005	154	118	76.62%	67	51
2006	149	117	78.52%	58	59
2007	156	124	79.49%	58	66
2008	146	115	78.77%	55	60
Total	2,027	1,429	70.50%	736	693

TABLE 1 (Cont'd)

Panel C: Descriptive statistics on firm characteristics: Separately for firm-years with and without CEO protection

This panel reports descriptive statistics for our sample of 2,027 firm-years from S&P 500 firms in the period 1995-2008, separately for firm-years with and without CEO protection. Please see Appendix A for variable measurement. *, ** denote a significant difference in mean/median between firm-years with and without CEO protection at the 0.05 and 0.01 levels, respectively.

	N	Mean	Std. Dev.	Q1	Median	Q3
The sample with CEO protection						
Indicator for cutting R&D	1,429	0.365	0.482	0	0	1
Prior year's change in R&D	1,429	0.011	0.294	-0.079	0.054	0.148
Change in industry R&D intensity	1,429	0.003	0.147	-0.070	-0.004	0.075
Change in GDP	1,429	0.026	0.018	0.014	0.029	0.037
Tobin's Q	1,429	2.457	1.733	1.286	1.878	2.998
Change in capital expenditures	1,429	-0.004	0.431	-0.119	0.010	0.127
Change in sales	1,429	0.014	0.263	-0.017	0.033	0.083
Firm size	1,429	8.906	1.146	8.011	8.818	9.626
Distance from earnings goal	1,429	0.144	1.680	-0.658	0.304	0.982
Leverage	1,429	0.210	0.143	0.100	0.208	0.301
Free cash flows	1,429	0.280	0.212	0.157	0.262	0.391
Institutional ownership	1429	0.709	0.157	0.625	0.732	0.820
CEO age dummy	1,429	0.110	0.313	0.000	0.000	0.000
CEO equity incentives	1,429	0.016	0.022	0.004	0.009	0.018
CEO abnormal compensation	1,429	0.095	0.456	-0.192	0.101	0.389
The sample without CEO protection						
Indicator for cutting R&D	598	0.426	0.495	0	0	1
Prior year's change in R&D	598	0.006	0.316	-0.113	0.055	0.154
Change in industry R&D intensity	598	0.012	0.147	-0.060	0.000	0.080
Change in GDP	598	0.030**	0.019	0.019	0.030**	0.040
Tobin's Q	598	3.190**	2.012	1.664	2.658**	4.019
Change in capital expenditures	598	-0.014	0.460	-0.149	0.008	0.132
Change in sales	598	-0.007	0.302	-0.059	0.030	0.087
Firm size	598	9.526**	1.334	8.440	9.454**	10.573
Distance from earnings goal	598	0.073	1.457	-0.630	0.221	0.831
Leverage	598	0.188**	0.166	0.019	0.178**	0.296
Free cash flows	598	0.301	0.217	0.178	0.307**	0.418
Institutional ownership	598	0.638**	0.162	0.532	0.657**	0.761
CEO age dummy	598	0.144	0.351	0.000	0.000	0.000
CEO equity incentives	598	0.026**	0.056	0.003	0.007**	0.018
CEO abnormal compensation	598	-0.102**	0.603	-0.315	0.021**	0.234

TABLE 1 (Cont'd)

Panel D: Descriptive statistics on firm characteristics: Separately for the small earnings decrease (SD), large earnings decrease (LD), and earnings increase (IN) groups

This panel reports descriptive statistics for our sample of 2,027 firm-years from S&P 500 firms in the period 1995-2008, separately for the three groups. The small earnings decrease (SD) group includes firm-years where there is a decrease in the pre-tax, pre-R&D earnings from the prior year to the current year and the decrease is smaller than the prior year's R&D. The large earnings decrease (LD) group includes firm-years where there is a decrease in the pre-tax, pre-R&D earnings from the prior year to the current year and the decrease is greater than the prior year's R&D. The earnings increase (IN) group includes firm-years where there is an increase in the pre-tax, pre-R&D earnings from the prior year to the current year. The last two columns report the p-value for the differences in means between the SD and LD groups and between the SD and IN groups. Please see Appendix A for variable measurement.

	Mean			P-value for the difference in means	
	SD	LD	IN	SD vs. LD	SD vs. IN
Indicator for cutting R&D	0.517	0.690	0.237	0.001	0.001
Prior year's change in R&D	0.038	0.024	-0.005	0.505	0.011
Change in industry R&D intensity	0.013	0.023	-0.003	0.329	0.052
Change in GDP	0.027	0.027	0.027	0.596	0.684
Tobin's Q	2.695	2.436	2.742	0.071	0.678
Change in capital expenditures	-0.063	-0.187	0.070	0.001	0.001
Change in sales	-0.062	-0.202	0.100	0.001	0.001
Firm size	9.061	8.987	9.132	0.399	0.309
Distance from earnings goal	-0.438	-2.317	1.104	0.001	0.001
Leverage	0.190	0.228	0.200	0.001	0.198
Free cash flows	0.245	0.242	0.315	0.835	0.001
Institutional ownership	0.680	0.657	0.700	0.051	0.032
CEO age dummy	0.123	0.132	0.115	0.707	0.658
CEO equity incentives	0.022	0.019	0.018	0.215	0.023
CEO abnormal compensation	0.003	-0.027	0.070	0.298	0.023

TABLE 2
Determinants of the use of CEO contractual protection

This table reports the results from probit regressions that explain the likelihood of a firm having CEO contractual protection (i.e., having an employment agreement or a standalone severance pay agreement with the CEO). The sample includes 2,977 firm-years from S&P 500 firms in the period 1995-2008. We require that the proxy statement is available from EDGAR and there is available data to calculate the regression variables. (The sample size is larger than in the main analyses because here we do not require that R&D is non-missing and of a significant amount in the current or prior year). The probit regressions are run by industry (based on Fama and French (1997) industry definitions). We report the average coefficients and marginal effects across the industries and the p-values based on the coefficient estimates across the industries. P-values are one-sided for variables with predicted signs and two-sided otherwise. The marginal effect is calculated as the change in the probability of having CEO contractual protection, when there is a change of one standard deviation in the continuous explanatory variables (or a change from 0 to 1 in the indicator variables), with other explanatory variables taking the value of the sample means. The variables are measured as follows:

Public policy =	1 for firms with headquarters in the states that have a public policy exception to employment at will , and 0 otherwise;
Implied contract =	1 for firms with headquarters in the states that have an implied contract exception to employment at will, and 0 otherwise;
Good faith and fair dealing =	1 for firms with headquarters in the states that have a good faith and fair dealing exception to employment at will, and 0 otherwise;
Anti-takeover regulations =	1 for firms with headquarters in the states that have business combination laws (Bertrand and Mullainathan 1999), and 0 otherwise;
Garmaise index =	the state level enforcement index of non-competition agreements as constructed by Garmaise (2011);
R&D Intensity =	R&D expenditures divided by sales, and set as zero for missing values;
Market-to-book ratio =	market value of equity divided by book value of equity;
Market-adjusted returns =	market-adjusted cumulative stock returns over the year;
ROA =	return on assets, measured as net income over total assets;
Outside CEO =	1 if the CEO was appointed to the CEO position within one year after joining the firm, and 0 otherwise;
Old CEO =	1 if the CEO is 63 years or older, and 0 otherwise;
Abnormal compensation =	abnormal CEO cash compensation, measured as the residual from a model that regresses the logarithm of CEO cash compensation on the logarithm of firm assets, ROA, the market-to-book ratio, CEO tenure, and industry and year indicators, as in Gillan et al. (2009);
Incentive-based compensation =	the ratio of the value of the CEO's stock and option grants to the CEO's total compensation;
Board independence =	1 if the percentage of independent directors sitting on the board is higher than sample median, and 0 otherwise;
Founder CEO =	1 if the CEO is one of the founders of the firm, and 0 otherwise;
Leverage =	total debt divided by total assets;
Assets =	logarithm of total assets (in millions);

TABLE 2 (Cont'd)

	Pred. signs	(1) Coef.	(1) P-value	(2) Coef.	(2) P-value	(3) Coef.	(3) P-value	(3) Average marginal effect
Intercept		-0.268	0.770	6.988	0.109	18.864	0.028	
State policy variables								
Public policy	–	-0.110	0.436			1.602	0.917	0.088
Implied contract	–	-0.851	0.043			-2.356	0.015	-0.142
Good faith and fair dealing	–	-1.693	0.011			-2.623	0.022	-0.159
Anti-takeover regulations	–	-1.352	0.016			-1.031	0.048	-0.076
Garmaise index	–	-0.597	0.001			-0.607	0.063	-0.051
Firm and CEO characteristics								
R&D intensity	+			10.104	0.113	9.091	0.040	0.068
Market-to-book ratio	+			1.618	0.159	2.530	0.179	0.044
Market-adjusted returns	–			0.277	0.569	0.961	0.862	0.030
ROA	–			-14.862	0.091	-17.790	0.025	-0.085
Outside CEO	+			-0.645	0.475	-1.130	0.871	-0.080
Old CEO	–			-1.496	0.004	-2.556	0.005	-0.152
Abnormal compensation	+			3.061	0.007	2.788	0.001	0.094
Incentive-based compensation	+			2.981	0.015	2.528	0.014	0.076
Board independence	–			-0.554	0.104	-0.857	0.028	-0.066
Founder CEO	–			-3.318	0.001	-2.697	0.001	-0.177
Leverage	?			0.653	0.696	2.909	0.115	0.041
Assets	?			-0.860	0.046	-0.820	0.205	-0.036
# of observations		2,977		2,977		2,977		
# of industries		30		30		30		
Average pseudo R^2		0.368		0.491		0.595		

TABLE 3
CEO contractual protection and managerial short-termism – Univariate analysis

The sample includes 2,027 firm-years from S&P 500 firms over the period 1995-2008. CEO protection refers to CEO contracts in the form of employment agreements or severance pay agreements. The sample is split into three groups. The small earnings decrease (SD) group is the test group. It includes firm-years where there is a decrease in the pre-tax, pre-R&D earnings from the prior year to the current year and the decrease is smaller than the prior year's R&D. The comparison groups include the large earnings decrease (LD) group and the earnings increase (IN) group. The LD group includes firm-years where there is a decrease in the pre-tax, pre-R&D earnings from the prior year to the current year and the decrease is greater than the prior year's R&D. The IN group includes firm-years where there is an increase in the pre-tax, pre-R&D earnings from the prior year to the current year.

Panel A: The test group: the small earnings decrease (SD) group (N=431)

	Without CEO protection	With CEO protection	Total
Cut R&D	97	126	223
(% of firms cutting R&D)	(65%)	(45%)	(52%)
Increase R&D	52	156	208
(% of firms increasing R&D)	(35%)	(55%)	(48%)
P-value of Chi-square test		0.001	

Panel B: The comparison groups

	Without CEO protection	With CEO protection	Total
The large earnings decrease (LD) group (N=387)			
Cut R&D	75	192	267
(% of firms cutting R&D)	(71%)	(68%)	(69%)
Increase R&D	31	89	120
(% of firms increasing R&D)	(29%)	(32%)	(31%)
P-value of Chi-square test		0.645	
The earnings increase (IN) group (N=1,209)			
Cut R&D	83	204	287
(% of firms cutting R&D)	(24%)	(24%)	(24%)
Increase R&D	260	662	922
(% of firms increasing R&D)	(76%)	(76%)	(76%)
P-value of Chi-square test		0.813	

TABLE 4
CEO contractual protection and managerial short-termism – Regression analyses

The sample includes 2,027 firm-years from S&P 500 firms over the period 1995-2008. CEO protection refers to CEO contracts in the form of employment agreements or severance pay agreements. The sample is split into three groups. The small earnings decrease (SD) group is the test group. It includes firm-years where there is a decrease in the pre-tax, pre-R&D earnings from the prior year to the current year and the decrease is smaller than the prior year's R&D. The comparison groups include the large earnings decrease (LD) group and the earnings increase (IN) group. The LD group includes firm-years where there is a decrease in the pre-tax, pre-R&D earnings from the prior year to the current year and the decrease is greater than the prior year's R&D. The IN group includes firm-years where there is an increase in the pre-tax, pre-R&D earnings from the prior year to the current year. The following probit regression is run separately for the three groups:

$$Prob(RD\_Decrease_{i,t} = 1) = \alpha + \beta CEO\_Protection_{i,t} + \gamma_1 \Delta RD_{i,t-1} + \gamma_2 \Delta Ind\_RD_{i,t} + \gamma_3 \Delta GDP_{i,t} + \gamma_4 Tobin\_Q_{i,t} + \gamma_5 \Delta CAPX_{i,t} + \gamma_6 \Delta Sales_{i,t} + \gamma_7 Size_{i,t} + \gamma_8 Distance\_Goal_{i,t} + \gamma_9 Leverage_{i,t} + \gamma_{10} FCF_{i,t} + \gamma_{11} INST_{i,t} + \gamma_{12} CEO\_Age_{i,t} + \gamma_{13} CEO\_Equity_{i,t} + \gamma_{14} CEO\_Abnormal\_Comp_{i,t} + \varepsilon_{i,t}\ , \quad (1)$$

where *RD_Decrease* is an indicator for cutting R&D; it is 1 if the firm cuts R&D compared to the prior year and 0 otherwise. *CEO_Protection* is an indicator for CEO contractual protection; it is 1 if the CEO has an employment agreement or a severance pay agreement and 0 otherwise. See Appendix A for the measurement of the control variables. The results for the test group, the SD group, are reported in Panel A. The results for the comparison groups, the LD and IN groups, are reported in Panel B. To save space, the results on the control variables are omitted from Panel B. For each panel, in column (1), we report the probit regression results. In column (2), we replace *CEO_Protection* with its predicted value from the first-stage regression. In column (3), we add to the regressions the Inverse Mills Ratio estimated from the first-stage regression. See Table 2, Column (3) for details on the first-stage regression. The p-values are based on standard errors adjusted for firm and year clustering. The p-values are one-sided for *CEO_Protection* in Panel A and two-sided otherwise. The marginal effect is calculated as the change in the probability of cutting R&D, when there is a change of one standard deviation in the continuous explanatory variables (or a change from 0 to 1 in the indicator variables), with other explanatory variables taking the value of the sample means.

TABLE 4 (Cont'd)

Panel A: The test group: the small earnings decrease (SD) group

	(1) Probit regression			(2) Two-stage regression (using the predicted value of CEO protection)			(3) Two-stage regression (using the Heckman approach)		
	Coef.	P-value	Marginal effect	Coef.	P-value	Marginal effect	Coef.	P-value	Marginal effect
Intercept	0.984	0.236		1.464	0.077		1.502	0.070	
CEO_Protection	**-0.527**	**0.001**	**-0.204**	**-0.554**	**0.001**	**-0.217**	**-0.638**	**0.001**	**-0.246**
Prior year's change in R&D	0.789	0.001	0.096	0.880	0.001	0.108	0.854	0.001	0.105
Change in industry R&D intensity	-0.754	0.130	-0.043	-0.752	0.148	-0.043	-0.727	0.167	-0.042
Change in GDP	-3.345	0.373	-0.025	-3.371	0.404	-0.025	-3.566	0.375	-0.027
Tobin's Q	0.071	0.094	0.060	0.055	0.232	0.045	0.057	0.217	0.047
Change in capital expenditures	-0.466	0.009	-0.077	-0.470	0.013	-0.077	-0.463	0.015	-0.076
Change in sales	-0.796	0.001	-0.162	-0.833	0.001	-0.171	-0.802	0.001	-0.165
Firm size	-0.094	0.142	-0.046	-0.109	0.096	-0.054	-0.114	0.078	-0.057
Distance from earnings goal	-0.036	0.879	-0.004	-0.021	0.936	-0.002	-0.031	0.904	-0.004
Leverage	0.120	0.804	0.007	-0.358	0.472	-0.022	-0.309	0.535	-0.019
Free cash flows	0.110	0.764	0.009	0.255	0.515	0.020	0.277	0.479	0.022
Institutional ownership	0.068	0.889	0.005	-0.381	0.466	-0.026	-0.294	0.567	-0.020
CEO age dummy	0.525	0.020	0.197	0.484	0.037	0.184	0.479	0.038	0.182
CEO equity incentives	-4.726	0.022	-0.071	-4.148	0.041	-0.058	-4.168	0.038	-0.059
CEO abnormal compensation	-0.344	0.076	-0.053	-0.353	0.095	-0.055	-0.373	0.075	-0.058
Inverse Mills Ratio							0.240	0.144	0.048
N	431			385			385		
Pseudo R^2	0.165			0.163			0.168		

TABLE 4 (Cont'd)

Panel B: The comparison groups

	(1) Probit regression			(2) Two-stage regression (using the predicted value of CEO protection)			(3) Two-stage regression (using the Heckman approach)		
	Coef.	P-value	Marginal effect	Coef.	P-value	Marginal effect	Coef.	P-value	Marginal effect
The large earnings decrease (LD) group									
CEO_Protection	-0.229	0.198	-0.067	-0.092	0.659	-0.027	-0.118	0.570	-0.034
Inverse Mills Ratio							Yes		
Control variables	Yes			Yes			Yes		
N	387			335			335		
Pseudo R^2	0.344			0.348			0.356		
The earnings increase (IN) group									
CEO_Protection	-0.129	0.211	-0.039	-0.052	0.676	-0.015	-0.073	0.561	-0.021
Inverse Mills Ratio							Yes		
Control variables	Yes			Yes			Yes		
N	1,209			1,041			1,041		
Pseudo R^2	0.104			0.103			0.105		

TABLE 5
CEO contractual protection and managerial short-termism –
The incremental effect of the duration and strength of CEO protection for the small earnings decrease (SD) group

The sample includes 2,027 firm-years from S&P 500 firms over the period 1995-2008. CEO protection refers to CEO contracts in the form of employment agreements or severance pay agreements. The sample is split into three groups. The small earnings decrease (SD) group is the test group. It includes firm-years where there is a decrease in the pre-tax, pre-R&D earnings from the prior year to the current year and the decrease is smaller than the prior year's R&D. The comparison groups include the large earnings decrease (LD) group and the earnings increase (IN) group. The results for the comparison groups are omitted to save space. The following probit regressions are estimated:

$$Prob(RD\_Decrease_{i,t} = 1) = \alpha + \beta_1 Duration0_{i,t} + \beta_2 Duration1_{i,t} + \beta_3 Duration2_{i,t} + \gamma_1 \Delta RD_{i,t-1} + \gamma_2 \Delta Ind\_RD_{i,t} + \gamma_3 \Delta GDP_{i,t} + \gamma_4 Tobin\_Q_{i,t} + \gamma_5 \Delta CAPX_{i,t} + \gamma_6 \Delta Sales_{i,t} + \gamma_7 Size_{i,t} + \gamma_8 Distance\_Goal_{i,t} + \gamma_9 Leverage_{i,t} + \gamma_{10} FCF_{i,t} + \gamma_{11} INST_{i,t} + \gamma_{12} CEO\_Age_{i,t} + \gamma_{13} CEO\_Equity_{i,t} + \gamma_{14} CEO\_Abnormal\_Comp_{i,t} + \varepsilon_{i,t}, \quad (2a)$$

$$Prob(RD\_Decrease_{i,t} = 1) = \alpha + \beta_1 CEO\_Protection_{i,t} + \beta_2 Strength_{i,t} + \gamma_1 \Delta RD_{i,t-1} + \gamma_2 \Delta Ind\_RD_{i,t} + \gamma_3 \Delta GDP_{i,t} + \gamma_4 Tobin\_Q_{i,t} + \gamma_5 \Delta CAPX_{i,t} + \gamma_6 \Delta Sales_{i,t} + \gamma_7 Size_{i,t} + \gamma_8 Distance\_Goal_{i,t} + \gamma_9 Leverage_{i,t} + \gamma_{10} FCF_{i,t} + \gamma_{11} INST_{i,t} + \gamma_{12} CEO\_Age_{i,t} + \gamma_{13} CEO\_Equity_{i,t} + \gamma_{14} CEO\_Abnormal\_Comp_{i,t} + \varepsilon_{i,t}, \quad (2b)$$

where *RD_Decrease* is an indicator for cutting R&D; it is 1 if the firm cuts R&D compared to the prior year and 0 otherwise. In regression (2a), there are three indicator variables related to the duration of CEO protection. *Duration2* is 1 for CEOs with standalone severance pay agreements or CEOs with automatically renewable employment agreements, and 0 otherwise. *Duration1* is 1 for CEOs in the earlier stage of employment agreements without an automatic renewal clause, and 0 otherwise. *Duration0* is 1 for CEOs in the later stage of employment agreements without an automatic renewal clause, and 0 otherwise. *Duration2, Duration1,* and *Duration0* are zero for CEOs without contractual protection. In regression (2b), *CEO_Protection* is an indicator for CEO contractual protection; it is 1 if the CEO has an employment agreement or a severance pay agreement, and 0 otherwise. *Strength* is an ordinal variable for the strength of the protection; it is 2 if the severance pay multiple – how many times the severance pay is relative to the basic salary – is above three, 1 if the multiple is between two and three, and 0 if the multiple is below two. *CEO_Protection* and *Strength* are zero for CEOs without contractual protection. Firm-years with CEO contractual protection but without information on severance pay are excluded from regression (2b). See Appendix A for the measurement of control variables. We add to the regressions the Inverse Mills Ratio from the first-stage regression. See Table 2, Column (3) for details on the first-stage regression. The p-values are based on standard errors adjusted for firm and year clustering. The p-values are one-sided for *CEO_Protection* and the duration and strength variables, and two-sided otherwise. The marginal effect is calculated as the change in the probability of cutting R&D, when there is a change of one standard deviation in the continuous explanatory variables (or a change from 0 to 1 in the indicator variables), with other explanatory variables taking the value of the sample means.

TABLE 5 (Cont'd)

	(1) Duration of CEO protection			(2) Strength of CEO protection		
	Coef.	P-value	Marginal effect	Coef.	P-value	Marginal effect
Intercept	1.453	0.085		1.524	0.086	
Protection_Level: Duration0	**-0.271**	**0.149**	**-0.108**			
Protection_Level: Duration1	**-0.696**	**0.003**	**-0.269**			
Protection_Level: Duration2	**-0.697**	**0.001**	**-0.272**			
CEO_Protection				**-0.457**	**0.013**	**-0.179**
Protection_Level: Strength				**-0.199**	**0.056**	**-0.062**
Prior year's change in R&D	0.820	0.001	0.101	0.960	0.001	0.118
Change in industry R&D intensity	-0.796	0.131	-0.046	-0.687	0.173	-0.040
Change in GDP	-3.430	0.391	-0.026	-5.145	0.236	-0.038
Tobin's Q	0.062	0.192	0.051	0.033	0.512	0.027
Change in capital expenditures	-0.463	0.018	-0.076	-0.384	0.069	-0.063
Change in sales	-0.822	0.001	-0.169	-0.807	0.001	-0.171
Firm size	-0.117	0.076	-0.058	-0.109	0.118	-0.055
Distance from earnings goal	-0.073	0.775	-0.009	0.080	0.778	0.009
Leverage	-0.263	0.605	-0.016	-0.430	0.425	-0.027
Free cash flows	0.308	0.439	0.025	0.306	0.462	0.025
Institutional ownership	-0.263	0.619	-0.018	-0.164	0.765	-0.011
CEO age dummy	0.449	0.055	0.172	0.508	0.034	0.191
CEO equity incentives	-4.222	0.042	-0.059	-3.281	0.091	-0.049
CEO abnormal compensation	-0.345	0.108	-0.053	-0.397	0.073	-0.061
Inverse Mills Ratio	0.223	0.175	0.044	0.211	0.249	0.041
N	385			338		
Pseudo R^2	0.169			0.175		

TABLE 6
CEO contractual protection and managerial short-termism –
Cross-sectional tests for the small earnings decrease (SD) group

The sample includes 2,027 firm-years from S&P 500 firms over the period 1995-2008. CEO protection refers to CEO contracts in the form of employment agreements or severance pay agreements. The sample is split into three groups. The small earnings decrease (SD) group is the test group. It includes firm-years where there is a decrease in the pre-tax, pre-R&D earnings from the prior year to the current year and the decrease is smaller than the prior year's R&D. The comparison groups include the large earnings decrease (LD) group and the earnings increase (IN) group. The results for the comparison groups are omitted to save space. The following probit regression is run:

$$\begin{aligned} Prob(RD\_Decrease_{i,t} = 1) = \; & \alpha + \beta_1 CEO\_Protection_{i,t} + \beta_2 Conditional\_Var_{i,t} + \beta_3 CEO\_Protection_{i,t} \times Conditional\_Var_{i,t} \\ & + \gamma_1 \Delta RD_{i,t-1} + \gamma_2 \Delta Ind\_RD_{i,t} + \gamma_3 \Delta GDP_{i,t} + \gamma_4 Tobin\_Q_{i,t} + \gamma_5 \Delta CAPX_{i,t} + \gamma_6 \Delta Sales_{i,t} + \gamma_7 Size_{i,t} \\ & + \gamma_8 Distance\_Goal_{i,t} + \gamma_9 Leverage_{i,t} + \gamma_{10} FCF_{i,t} + \gamma_{11} INST_{i,t} + \\ & \gamma_{12} CEO\_Age_{i,t} + \gamma_{13} CEO\_Equity_{i,t} + \gamma_{14} CEO\_Abnormal\_Comp_{i,t} + \varepsilon_{i,t} \,, \end{aligned} \quad (3)$$

where *RD_Decrease* is an indicator for cutting R&D; it is 1 if the firm cuts R&D compared to the prior year and 0 otherwise. *CEO_Protection* is an indicator for CEO contractual protection; it is 1 if the CEO has an employment agreement or a severance pay agreement and 0 otherwise. *Conditional_Var* is one of the following three indicator variables: *Industry_Homogeneity*, *Transient_Inst*, and *Low_Board_Independence. Industry_Homogeneity* is 1 if the firm operates in an industry that is more homogeneous than the sample median, and 0 otherwise. For each firm in the industry (based on two-digit SICs), we first calculate the percentage of the variation in monthly stock returns that is explained by an equal-weighted industry index over the previous ten years. We then measure industry homogeneity as the median across all firms in the industry. *Transient_Inst* is 1 if the ownership of transient institutional investors in the firm is higher than the sample median, and 0 otherwise. *Low_Board_Independence* is 1 if less than 75% of the directors (sample median) are independent, and 0 otherwise. See Appendix A for the measurement of control variables. We add to the regressions the Inverse Mills Ratio from the first-stage regression. See Table 2, Column (3) for details on the first-stage regression. The p-values are based on standard errors adjusted for firm and year clustering. The p-values are one-sided for *CEO_Protection*, the conditional variables, the interaction terms, and two-sided otherwise. The marginal effect is calculated as the change in the probability of cutting R&D, when there is a change of one standard deviation in the continuous explanatory variables (or a change from 0 to 1 in the indicator variables), with other explanatory variables taking the value of the sample means. The calculation of the marginal effect for the interaction terms follows Norton et al. (2004).

TABLE 6 (Cont'd)

	(1) Industry Homogeneity			(2) Transient Inst. Ownership			(3) Low Board Independence			(4) All included		
	Coef.	P-value	Marginal effect	Coef.	P-value	Marginal effect	Coef.	P-value	Marginal effect	Coef.	P-value	Marginal effect
Intercept	1.438	0.087		1.196	0.158		0.956	0.268		0.559	0.538	
CEO_Protection	**-0.342**	**0.048**	**-0.134**	**-0.390**	**0.049**	**-0.153**	**-0.293**	**0.123**	**-0.115**	**0.335**	**0.837**	**0.133**
CEO_Protection × Industry_Homogeneity	**-0.744**	**0.004**	**-0.290**							**-0.857**	**0.002**	**-0.331**
CEO_Protection × Transient_Inst				**-0.534**	**0.028**	**-0.211**				**-0.501**	**0.037**	**-0.198**
CEO_Protection × Low_Board_Independence							**-0.633**	**0.019**	**-0.248**	**-0.732**	**0.013**	**-0.285**
Industry_Homogeneity	**0.556**	**0.012**	**0.218**							**0.644**	**0.006**	**0.250**
Transient_Inst				**0.423**	**0.052**	**0.167**				**0.385**	**0.071**	**0.152**
Low_Board_Independence							**0.562**	**0.015**	**0.220**	**0.645**	**0.010**	**0.251**
Prior year's change in R&D	0.936	0.001	0.115	0.826	0.001	0.101	0.818	0.001	0.100	0.887	0.001	0.109
Change in industry R&D intensity	-0.648	0.231	-0.037	-0.730	0.168	-0.042	-0.813	0.114	-0.047	-0.750	0.157	-0.043
Change in GDP	-2.271	0.578	-0.017	-4.248	0.288	-0.032	-3.894	0.340	-0.029	-3.165	0.444	-0.024
Tobin's Q	0.062	0.174	0.051	0.045	0.356	0.037	0.062	0.204	0.051	0.060	0.240	0.049
Change in capital expenditures	-0.457	0.017	-0.075	-0.471	0.012	-0.077	-0.439	0.021	-0.072	-0.442	0.021	-0.073
Change in sales	-0.791	0.001	-0.163	-0.774	0.001	-0.159	-0.799	0.001	-0.164	-0.762	0.001	-0.157
Firm size	-0.133	0.041	-0.066	-0.098	0.141	-0.049	-0.102	0.120	-0.051	-0.111	0.096	-0.055
Distance from earnings goal	-0.025	0.923	-0.003	-0.054	0.835	-0.006	-0.018	0.944	-0.002	-0.030	0.910	-0.004
Leverage	-0.332	0.523	-0.020	-0.327	0.526	-0.020	-0.204	0.681	-0.012	-0.255	0.634	-0.015
Free cash flows	0.223	0.568	0.018	0.286	0.473	0.023	0.217	0.585	0.017	0.148	0.714	0.012
Institutional ownership	-0.314	0.550	-0.021	-0.293	0.575	-0.020	-0.123	0.814	-0.008	-0.120	0.824	-0.008
CEO age dummy	0.484	0.034	0.184	0.416	0.074	0.159	0.445	0.058	0.170	0.386	0.097	0.148
CEO equity incentives	-4.762	0.018	-0.067	-3.757	0.088	-0.053	-4.375	0.028	-0.061	-4.666	0.025	-0.065
CEO abnormal compensation	-0.404	0.056	-0.063	-0.402	0.063	-0.062	-0.402	0.056	-0.062	-0.478	0.030	-0.074
Inverse Mills Ratio	0.299	0.074	0.059	0.232	0.163	0.046	0.250	0.135	0.050	0.311	0.073	0.061
N	385			385			385			385		
Pseudo R^2	0.179			0.174			0.177			0.196		

TABLE 7
CEO contractual protection and managerial short-termism –
Analysis of cutting R&D and advertising expenditures

The sample includes 2,782 firm-years from S&P 500 firms over the period 1995-2008. CEO protection refers to CEO contracts in the form of employment agreements or severance pay agreements. The sample is split into three groups. The small earnings decrease (SD) group is the test group. It includes 488 firm-years where there is a decrease in the pre-tax, pre-R&D & advertising earnings from the prior year to the current year and the decrease is smaller than the prior year's R&D and advertising expenditures. The comparison groups include the large earnings decrease group and the earnings increase group. The results for the comparison groups are omitted to save space. The following probit regression is estimated:

$$\begin{aligned} Prob(RD\&AD\_Decrease_{i,t} = 1) = {} & \alpha + \beta_1 CEO\_Protection_{i,t} + \beta_2 Conditional\_Var_{i,t} + \beta_3 CEO\_Protection_{i,t} \times Conditional\_Var_{i,t} \\ & + \gamma_1 \Delta RD\&AD_{i,t-1} + \gamma_2 \Delta Ind\_RD\&AD_{i,t} + \gamma_3 \Delta GDP_{i,t} + \gamma_4 Tobin\_Q_{i,t} + \gamma_5 \Delta CAPX_{i,t} + \gamma_6 \Delta Sales_{i,t} + \gamma_7 Size_{i,t} \\ & + \gamma_8 Distance\_Goal_{i,t} + \gamma_9 Leverage_{i,t} + \gamma_{10} FCF_{i,t} + \gamma_{11} INST_{i,t} + \\ & \gamma_{12} CEO\_Age_{i,t} + \gamma_{13} CEO\_Equity_{i,t} + \gamma_{14} CEO\_Abnormal\_Comp_{i,t} + \varepsilon_{i,t} , \end{aligned} \quad (4)$$

where *RD&AD_Decrease* is an indicator for cutting the R&D and advertising expenditures; it is 1 if the firm cuts R&D and advertising expenditures compared to the prior year and 0 otherwise. *CEO_Protection* is an indicator for CEO contractual protection; it is 1 if the CEO has an employment agreement or a severance pay agreement and 0 otherwise. *Conditional_Var* is one of the following three indicator variables: *Industry_Homogeneity*, *Transient_Inst*, and *Low_Board_Independence. Industry_Homogeneity* is 1 if the firm operates in an industry that is more homogeneous than the sample median, and 0 otherwise. For each firm in the industry (based on two-digit SICs), we first calculate the percentage of the variation in monthly stock returns that is explained by an equal-weighted industry index over the previous ten years. We then measure industry homogeneity as the median across all firms in the industry. *Transient_Inst* is 1 if the ownership of transient institutional investors in the firm is higher than the sample median, and 0 otherwise. *Low_Board_Independence* is 1 if less than 75% of the directors (sample median) are independent, and 0 otherwise. See Appendix A for the measurement of control variables, except the following three variables.

$\Delta RD\&AD_{i,t-1}$ = prior year's change in R&D and advertising expenditures, calculated as the difference in the natural logarithm of R&D and advertising expenditures between the prior year and the year before;

$\Delta Ind\_RD\&AD_{i,t}$ = change in industry R&D and advertising intensity, calculated as the difference in the ratio of total industry R&D and advertising expenditures over total industry sales between the current year and the prior year, where the industry measures are based on all the firms in the same 4-digit SIC industry as firm i (excluding firm i);

$Distance\_Goal_{i,t}$ = distance from earnings goal, calculated as the difference in the pre-tax, pre-R&D & advertising earnings between the current year and the prior year, scaled by the prior year's R&D and advertising expenditures.

We add to the regressions the Inverse Mills Ratio from the first-stage regression. See Table 2, Column (3) for detail on the first-stage regression. The p-values are based on standard errors adjusted for firm and year clustering. The p-values are one-sided for *CEO_Protection*, the conditional variables, the interaction terms, and two-sided otherwise.

TABLE 7 (Cont'd)

	(1) Test of H1		(2) Test of H2		(3) Test of H3		(4) Test of H4		(5) The full model	
	Coef.	P-value	Coef.	P-value	Coef.	P-value	Coef.	P-value	Coef.	P-value
Intercept	-0.269	0.731	-0.464	0.541	-0.731	0.364	-0.589	0.465	-1.132	0.177
CEO_Protection	**-0.396**	**0.009**	**-0.190**	**0.178**	**-0.144**	**0.249**	**-0.074**	**0.380**	**0.407**	**0.898**
CEO_Protection × Industry_Homogeneity			**-0.461**	**0.058**					**-0.543**	**0.032**
CEO_Protection × Transient_Inst					**-0.441**	**0.048**			**-0.472**	**0.045**
CEO_Protection × Low_Board_Independence							**-0.529**	**0.038**	**-0.534**	**0.047**
Industry_Homogeneity			**0.607**	**0.012**					**0.669**	**0.006**
Transient_Inst					**0.487**	**0.014**			**0.503**	**0.018**
Low_Board_Independence							**0.388**	**0.065**	**0.402**	**0.076**
Prior year's change in R&D and advertising	0.739	0.035	0.622	0.056	0.478	0.153	0.561	0.087	0.543	0.107
Change in industry R&D and advertising intensity	0.010	0.979	-0.084	0.825	-0.044	0.907	-0.053	0.886	-0.075	0.842
Change in GDP	4.284	0.193	7.120	0.036	4.405	0.177	5.011	0.132	7.041	0.038
Tobin's Q	-0.113	0.037	-0.135	0.007	-0.147	0.007	-0.139	0.010	-0.148	0.005
Change in capital expenditures	-0.465	0.023	-0.481	0.007	-0.452	0.010	-0.451	0.010	-0.470	0.009
Change in sales	-2.333	0.001	-0.641	0.015	-0.695	0.009	-0.658	0.014	-0.618	0.018
Firm size	0.051	0.408	0.047	0.441	0.080	0.206	0.064	0.305	0.061	0.337
Distance from earnings goal	0.102	0.655	0.084	0.719	0.118	0.608	0.094	0.681	0.101	0.669
Leverage	0.034	0.939	-0.066	0.880	-0.104	0.816	-0.156	0.724	-0.024	0.956
Free cash flows	0.555	0.073	0.649	0.030	0.662	0.026	0.577	0.065	0.646	0.032
Institutional ownership	0.140	0.729	0.088	0.832	0.219	0.592	0.200	0.624	0.116	0.781
CEO age dummy	0.507	0.013	0.501	0.013	0.507	0.017	0.515	0.014	0.489	0.020
CEO equity incentives	-4.841	0.010	-5.256	0.022	-4.605	0.008	-5.147	0.008	-5.697	0.011
CEO abnormal compensation	-0.192	0.138	-0.185	0.149	-0.235	0.073	-0.226	0.086	-0.229	0.087
Inverse Mills Ratio	-0.021	0.895	-0.070	0.670	-0.097	0.543	-0.080	0.616	-0.063	0.704
N	488		488		488		488		488	
Pseudo R^2	0.113		0.113		0.119		0.118		0.126	

TABLE 8
CEO contractual protection and managerial short-termism –
Analysis of real earnings management for the suspect firm-years

The sample includes 719 firm-years from S&P 500 firms over the period 1995-2008 that have required data and meet or just beat earnings benchmarks (i.e., zero, last year's earnings, or analysts' consensus forecasts). CEO protection refers to CEO contracts in the form of employment agreements or severance pay agreements. The following OLS regression is estimated:

$$\begin{aligned} Real\ EM_{i,t} = \ & \alpha + \beta_1 CEO\_Protection_{i,t} + \beta_2 Conditional\_Var_{i,t} + \beta_3 CEO\_Protection_{i,t} \times Conditional\_Var_{i,t} \\ & + \gamma_1 Tobin\_Q_{i,t} + \gamma_2 \Delta Sales_{i,t} + \gamma_3 Size_{i,t} + \gamma_4 Leverage_{i,t} + \gamma_5 FCF_{i,t} + \gamma_6 ROA_{i,t} + \\ & + \gamma_7 INST_{i,t} + \gamma_8 CEO\_Age_{i,t} + \gamma_9 CEO\_Equity_{i,t} + \gamma_{10} CEO\_Abnormal\_Com_{i,t} + \varepsilon_{i,t}\ , \end{aligned} \quad (5)$$

where *Real_EM* is the extent of real earnings management; it is measured as abnormal production costs minus abnormal discretionary expenditures, both scaled by lagged assets. *CEO_Protection* is an indicator for CEO contractual protection; it is 1 if the CEO has an employment agreement or a severance pay agreement and 0 otherwise. *Conditional_Var* is one of the following three indicator variables: *Industry_Homogeneity*, *Transient_Inst*, and *Low_Board_Independence*. *Industry_Homogeneity* is 1 if the firm operates in an industry that is more homogeneous than the sample median, and 0 otherwise. For each firm in the industry (based on two-digit SICs), we first calculate the percentage of the variation in monthly stock returns that is explained by an equal-weighted industry index over the previous ten years. We then measure industry homogeneity as the median across all firms in the industry. *Transient_Inst* is 1 if the ownership of transient institutional investors in the firm is higher than the sample median, and 0 otherwise. *Low_Board_Independence* is 1 if less than 75% of the directors (sample median) are independent, and 0 otherwise. *ROA*, return on assets, is measured as operating income divided by total assets. See Appendix A for the measurement of the other control variables. We add to the regressions the Inverse Mills Ratio from the first-stage regression. See Table 2, Column (3) for detail on the first-stage regression. The p-values are based on standard errors adjusted for firm and year clustering. The p-values are one-sided for *CEO_Protection*, the conditional variables, the interaction terms, and two-sided otherwise.

TABLE 8 (Cont'd)

	(1) Test of H1		(2) Test of H2		(3) Test of H3		(4) Test of H4		(5) The full model	
	Coef.	P-value	Coef.	P-value	Coef.	P-value	Coef.	P-value	Coef.	P-value
Intercept	0.237	0.132	0.195	0.182	0.157	0.294	0.225	0.176	0.103	0.511
CEO_Protection	**-0.088**	**0.013**	**-0.017**	**0.346**	**-0.044**	**0.147**	**-0.044**	**0.131**	**0.076**	**0.905**
CEO_Protection × Industry_Homogeneity			**-0.169**	**0.004**					**-0.142**	**0.007**
CEO_Protection × Transient_Inst					**-0.141**	**0.018**			**-0.143**	**0.014**
CEO_Protection × Low_Board_Independence							**-0.122**	**0.019**	**-0.143**	**0.006**
Industry_Homogeneity			**0.133**	**0.005**					**0.094**	**0.018**
Transient_Inst					**0.157**	**0.002**			**0.156**	**0.001**
Low_Board_Independence							**0.072**	**0.072**	**0.086**	**0.035**
Tobin's Q	-0.064	0.001	-0.061	0.001	-0.066	0.001	-0.063	0.001	-0.063	0.001
Change in sales	-0.071	0.122	-0.084	0.069	-0.066	0.157	-0.071	0.134	-0.074	0.121
Firm size	0.016	0.351	0.012	0.493	0.022	0.207	0.012	0.491	0.015	0.399
Leverage	-0.187	0.205	-0.154	0.302	-0.176	0.229	-0.145	0.337	-0.120	0.435
Free cash flows	-0.035	0.259	-0.025	0.421	-0.028	0.358	-0.044	0.171	-0.031	0.311
ROA	-1.228	0.001	-1.225	0.001	-1.260	0.001	-1.102	0.001	-1.139	0.001
Institutional ownership	-0.034	0.693	-0.028	0.737	-0.075	0.394	-0.036	0.676	-0.063	0.458
CEO age dummy	0.121	0.015	0.117	0.013	0.105	0.026	0.106	0.028	0.089	0.051
CEO equity incentives	-0.381	0.492	-0.535	0.325	-0.298	0.588	-0.316	0.555	-0.376	0.491
CEO abnormal compensation	-0.053	0.072	-0.050	0.079	-0.050	0.088	-0.044	0.140	-0.042	0.149
Inverse Mills Ratio	0.069	0.069	0.083	0.040	0.075	0.055	0.090	0.024	0.107	0.012
N	719		719		719		693		693	
Pseudo R^2	0.229		0.244		0.245		0.235		0.261	

TABLE 9
Cutting R&D and future firm performance

This table presents the OLS regression results of a firm's performance in the future on its determinants. The regression is estimated using 2,017 firm-years from S&P 500 firms over the period 1995-2008 with required data. The dependent variable is the average industry-adjusted *ROA* or *CFO* in the next three years. *ROA* is return on assets and *CFO* is cash flows from operations scaled by lagged assets. *D_SD* is an indicator for the small earnings decrease (SD) group. *RD_Decrease_SD* is an indicator for firms in the SD group that cut R&D; it is 1 if the firm is in the SD group and cuts R&D compared with the prior year and 0 otherwise. *RD_Decrease_Others* is an indicator for firms in the other groups (including the large earnings decrease (LD) group and the earnings increase (IN) group) that cut R&D; it is 1 if the firm is in the other groups and cuts R&D compared with the prior year and 0 otherwise. The other variables are defined in Appendix A. The p-values are based on standard errors adjusted for firm and year clustering. The p-values are one-sided for *RD_Decrease_SD* and two-sided otherwise.

	Future ROA		Future CFO	
	Coef.	P-value	Coef.	P-value
Intercept	-0.079	0.003	-0.079	0.000
D_SD	-0.007	0.213	0.001	0.831
RD_Decrease_SD	**-0.007**	**0.017**	**-0.018**	**0.002**
RD_Decrease_Others	0.005	0.269	0.003	0.418
Tobin's Q	0.005	0.027	0.009	0.001
Change in capital expenditures	-0.019	0.003	-0.014	0.001
Change in sales	0.023	0.001	0.010	0.021
Firm size	0.006	0.009	0.003	0.102
Leverage	-0.032	0.103	-0.014	0.362
Institutional ownership	0.016	0.193	0.028	0.033
ROA	0.268	0.001		
CFO			0.238	0.001
Year fixed effects	Yes		Yes	
N	2,017		2,017	
Adjusted R^2	0.264		0.337	

TABLE 10
CEO contractual protection and CEO turnovers

This table reports the results from the following probit regressions:

$$Pr(CEO\_Turnover = 1) = \alpha_0 + \alpha_1 Performance + \alpha_2 Performance \times CEO\_Protection + \alpha_3 CEO\_Protection + \boldsymbol{\beta}\, Control Variables + \varepsilon$$

The sample includes 3,715 firm-years from S&P 500 firms over the period 1995-2008. The sample size is larger than in the main analyses because we do not need to require that the firm-years have significant R&D and the list of control variables is different. *CEO_Turnover* is 1 for firm-years with CEO turnover in the next year and 0 otherwise. *Performance* is annual market-adjusted stock returns or industry-adjusted return on assets. *CEO_Protection* is an indicator for CEO contractual protection; it is 1 if the CEO has an employment agreement or a severance pay agreement and 0 otherwise. The control variables include the following: *CEO_Ownership* is the percentage of outstanding shares owned by the CEO; *CEO_Age_Year* is CEO's age in years; *CEO_Tenure* is the number of years the CEO has been at the current position; *Assets* is the natural logarithm of total assets (in millions); *Herfindahl_Index* is the sum of the squared market share (based on sales) of all the firms in the industry; *Blockholder* is an indicator for outside blockholder ownership being higher than the sample median; and *CEO_Chair_Duality* is an indicator variable for cases where the CEO is also the chairman of the board of directors. All the explanatory variables are measured in the year before CEO turnover is measured. The p-values are based on standard errors adjusted for firm and year clustering. The p-values are one-sided for *Performance* and its interaction with *CEO_Protection* and two-sided otherwise. The marginal effect is calculated as the change in the probability of CEO turnover, when there is a change of one standard deviation in the continuous explanatory variables (or a change from 0 to 1 in the indicator variables), with other explanatory variables taking the value of the sample means. The calculation of the marginal effect for the interaction terms follows Norton et al. (2004).

	Performance = stock return			Performance = ROA		
	Coef.	P-value	Marginal effect	Coef.	P-value	Marginal effect
Intercept	-8.018	0.001		-8.038	0.001	
Performance	**-0.955**	**0.001**	**-0.080**	**-0.301**	**0.001**	**-0.027**
Performance × CEO_Protection	**0.756**	**0.005**	**0.084**	**0.289**	**0.001**	**0.026**
CEO_Protection	-0.224	0.030	-0.020	-0.224	0.065	-0.019
CEO_Ownership	-0.063	0.079	-0.016	-0.070	0.061	-0.017
CEO_Age_Year	0.111	0.001	0.061	0.111	0.001	0.059
CEO_Tenure	0.004	0.602	0.003	0.002	0.763	0.001
Assets	-0.027	0.489	-0.003	-0.020	0.597	-0.002
Herfindahl_Index	-0.217	0.544	-0.003	-0.216	0.547	-0.002
Blockholder	0.056	0.645	0.005	0.089	0.485	0.007
CEO_Chair_Duality	0.071	0.634	0.006	0.055	0.675	0.004
N	3,715			3,715		
Pseudo R^2	0.072			0.070		