THE ACCOUNTING REVIEW
Vol. 90, No. 4
2015
pp. 1265–1306

American Accounting Association
DOI: 10.2308/accr-50971

The Influence of CEO Power on Compensation Contract Design

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ABSTRACT: We investigate whether CEO power influences a firm's decision to change its compensation system in response to regulatory and public pressure. In particular, we assess whether CEO power influences the choice of performance measures as a form of camouflage to minimize the impact of these reforms on their wealth. We examine one component of CEO pay, namely, the use of performance-vested stock option (PVSO) plans, and find that firms with powerful CEOs attach less challenging targets in the initial PVSOs granted to their CEOs. Such firms also appear to adopt PVSO plans early, and are more likely to do so when faced with public outrage over executive compensation. Our results suggest that powerful CEOs attempt to appease public outrage by quickly adopting PVSOs, but that adopting PVSOs early does not appear to be an optimal strategy for increasing shareholder value. Regulators intended that implementation of PVSOs would be beneficial to shareholders by improving the link between CEO pay and firm performance. However, our results indicate that powerful CEOs can negate some of the beneficial effect of PVSOs through their influence on adoption and choice of performance targets.

Keywords: *stock options; incentive contracts; managerial power*.

Data Availability: *All data used in this study are publicly available from the sources indicated in the paper*.

We gratefully acknowledge the insightful comments from two anonymous reviewers and Kenneth A. Merchant (editor), as well as those from numerous colleagues: Shannon Anderson, Raúl Barroso (discussant), Belén Blanco, Shuping Chen, Henri Dekker, Yanmin Gao (discussant), Wayne Guay, Michelle Hogan, Reggy Hooghiemstra, Yuping Jia, Steven Matsunaga, Valeri Nikolaev, Naomi Soderstrom, Laurence van Lent, and Sarah Zechman. We also thank conference and seminar participants at the 2013 36th Annual Congress European Accounting Association at Paris, 2013 8th Accounting Research Workshop at Basel, Erasmus University Rotterdam, University of Groningen, VU University Amsterdam, University of Amsterdam, The University of Melbourne, and University of Seville for comments on previous drafts of the paper. We also thank VU University Amsterdam and University of Amsterdam for their support for the project while Yu Flora Kuang and Bo Qin, respectively, were employed there.

Editor's note: Accepted by Kenneth A. Merchant.

Submitted: October 2013
Accepted: October 2014
Published Online: October 2014

I. INTRODUCTION

Incentive contracts are regarded as a cornerstone of good corporate governance, yet they have been widely criticized for providing inadequate incentive to promote shareholder value (Gerakos, Ittner, and Larcker 2007; Morse, Nanda, and Seru 2011). An increasing trend is for firms to attach performance targets to equity grants (such as stock options), as advocated by regulators and shareholder activists, to strengthen the association between executive compensation and firm performance (Gerakos et al. 2007; Bettis, Bizjak, Coles, and Kalpathy 2010). In this paper, we empirically examine the determinants that shape stock option plans; in particular, performance-vested stock option (PVSO) plans. One of the key differences in PVSOs is that they elevate the hurdle requirement for option vesting, making it more difficult for executives to benefit from their option compensation. We draw on managerial power theory (MPT) to explain the differences observed in firms' choices of when to adopt PVSO plans and in the choice of vesting targets included in those plans. We assess whether MPT provides an additional insight to what we would expect to observe based on optimal contracting theory (OCT).

Our empirical tests are based on a sample of firms listed on the London Stock Exchange. The U.K. was the first to implement PVSO plans[1] following the recommendations from a national inquiry into the capabilities of corporations to self-regulate executive compensation (Greenbury 1995). The goal of the regulators was to remove windfall gains in CEO compensation and, thus, better link CEO pay to firm performance. However, these recommendations were not mandatory. Firms were not required to adopt PVSO plans, nor were the choices of vesting targets mandated. Both earnings (e.g., earnings per share [EPS]) and targets linked to stock market prices (e.g., total shareholder return [TSR]) were recommended. While it is rational for most firms and their CEOs to respond to public pressure to reform their compensation system, this setting provides us with an opportunity to perform a quasi-experiment[2] and test the direct implications of CEO power on the compensation design choices a firm makes in response to regulatory reforms. What is particularly interesting in this environment is that the reforms were not mandated. Firms were able to choose when and if they adopted PVSOs, as well as the vesting targets. To examine drivers behind these choices, we required detailed data on these choices, and our setting is one of the few where the required level of detailed data is available (Carter et al. 2009).[3] We expect the implications of our findings to be of relevance to both regulators and firms in most market economies as they grapple with how to design efficient compensation contracts.

The pressure to reform CEO compensation stems from a steep rise in CEO pay over the last three decades, particularly the increase in performance-based pay (Morse et al. 2011). Optimal contracting theory (OCT) makes sense of this rise by arguing that boards expect higher returns and that CEO compensation levels simply match the demands for higher management skills and the increased risk associated with CEO responsibilities (Murphy and Zábojník 2004).[4] Models based on OCT predict that firms will design their incentive contracts to align the interests of the principal and the agent. This is viewed as an effective solution to mitigate agency problems, as incentive contracts can serve as a substitute for monitoring by the board. In other words, it is in the shareholders' interest to support the use of incentive pay in managerial compensation packages. Managerial power theory (MPT) is motivated by the absence of a link between pay and

[1] Other countries, including the U.S., have followed suit (Carter, Ittner, and Zechman 2009).

[2] It is quasi-experimental in the sense that the introduction of PVSO is an intervention that is expected to have an impact on a target population.

[3] The disclosure requirements in the U.K. require firms to include detailed reporting of managerial compensation packages in publicly audited annual reports, including performance targets associated with equity grants.

[4] Murphy (2013) views OCT as a subset of efficient contracting. However, the two terms appear to be used interchangeably in the literature. We do not distinguish between the two and, for consistency, use OCT.

performance and argues that incentive contracting is not an effective substitute for board monitoring, but rather a manifestation of CEO power (Zajac and Westphal 1994; Bebchuk and Fried 2004; Morse et al. 2011). If this is the case, then incentive contracting is a less efficient solution to agency problems when powerful CEOs can influence their own pay.

Prior research devotes considerable effort to understanding the determinants of incentive contract design. Both MPT and OCT are used to study incentive contracting, but a review of the literature suggests that neither approach alone is sufficient to explain what is observed in practice (see Frydman and Jenter [2010] for a review).[5] We contribute to the understanding of the determinants of compensation contract design by empirically assessing the implications of MPT on the choices associated with PVSOs, while controlling for explanations of these choices based on OCT. The fundamental building block of MPT is the assumption that powerful CEOs are able to gain significant influence and power over the board, its committees, and the decisions it makes, including their own compensation (Garvey and Milbourn 2006; Morse et al. 2011; van Essen, Otten, and Carberry 2015). Public pressure relating to CEO pay (or what MPT terms "outrage") is argued to constrain excessive rent-seeking behavior of powerful CEOs (Bertrand and Mullainathan 2001; Grabke-Rundell and Gomez-Mejia 2002; Bebchuk and Fried 2003, 2004, 2006). There is also evidence that powerful CEOs can respond to public pressure through "camouflage"; that is, they will "rig" the choice of performance targets in their contracts to ensure that their personal wealth is not negatively affected (Morse et al. 2011).

Our empirical tests allow us to examine the relation between CEO power and two important choices in CEO incentive contracts: (1) the choice of when to adopt PVSOs, and (2) the choice of targets included in those plans. Both choices have the potential to significantly influence CEO compensation (Carter et al. 2009). Of particular interest to accounting researchers is how targets are set in incentive contracts (e.g., Merchant and Manzoni 1989; Murphy 2001; Indjejikian and Nanda 2002; Indjejikian, Matějka, Merchant, and Van der Stede 2014a; Indjejikian, Matějka, and Schloetzer 2014b). While much of this literature examines target setting in bonus contracts, a recent review of the target-ratcheting literature calls for research to examine target setting in other compensation instruments that are contingent on meeting performance targets, such as PVSO plans (Indjejikian et al. 2014b). Performance measurement choices take on significant importance in the design of these plans (Carter et al. 2009). A widely held belief is that (overly) easy targets and those that can be manipulated do not induce high efforts from agents and, thus, are not an optimal choice when designing incentive contracts (Merchant and Manzoni 1989; Morse et al. 2011). In our setting, we expect that a powerful CEO will seek to adopt early only if he or she is able to influence the choices of vesting target. The two interrelated choices (i.e., adopting early and choosing easily attainable targets) can be effective in camouflaging rent-seeking while appearing to conform to compensation reforms (Morse et al. 2011).

All firms have a tendency to respond to regulatory demand for compensation reforms (Zajac and Westphal 1994; Gerakos et al. 2007). What is not clear is whether the timing of adoption is influenced by the level of public outrage (i.e., public concern relating to CEO compensation) facing the firm. We focus on the timing of PVSO adoption, as it allows us to separate the effect of regulatory pressure on all firms to adopt compensation reforms from the firm-specific outrage.[6] Based on MPT, we expect that public outrage will interact with CEO power to significantly affect

[5] See, also, recent empirical evidence that both MPT and OCT explain variation in pension benefits provided to CEOs (Gerakos 2010).

[6] Building on a setting in which an incentive innovation is advocated by regulators and, thus, the regulatory pressure is exogenous to all firms, we are able to design our research and disentangle the external pressure to satisfy the regulatory demand that is generic to all public firms from the pressure that is specific to each individual firm due to the public outrage over the firm's compensation practices.

the firm's choice to adopt early. Furthermore, we expect that the choice of vesting target will occur simultaneously with the timing of the adoption of PVSO plans.

Using a sample of Financial Times Stock Exchange (FTSE) 350 nonfinancial firms from 1997 to 2004, we first assess the impact of PVSO adoption on all firms in our sample. We demonstrate that the reforms increased the use of PVSOs significantly over that time period, and that, on average, PVSOs were effective in increasing pay-performance sensitivity. We then test our hypotheses and the results support our expectations, namely: (1) powerful CEOs receive initial PVSO grants that include EPS targets rather than market-based targets, and the EPS targets are less challenging for firms with powerful CEOs; (2) those firms with powerful CEOs tend to adopt PVSO plans early; (3) public outrage strengthens the association between CEO power and early adoption—that is, it is the confluence of outrage and CEO power that influences the choice to adopt early; and (4) performance choices and early adoption are simultaneous choices.[7] Although the market reacts positively to the PVSO adoption, powerful CEOs attenuate the positive market reaction. Furthermore, powerful CEOs receive compensation packages with lower pay-performance sensitivity, suggesting lower interest alignment with shareholders. We undertake a number of robustness checks to limit the potential for competing explanations.

In the executive compensation literature, one of the most severe methodology issues is endogeneity (Armstrong, Jagolinzer, and Larcker 2010). There is a possibility that certain (omitted or unobservable) factors determine both PVSO adoption and CEO power. We attempt to alleviate endogeneity concerns in several ways. First, in the analyses, we construct our variables to capture the level of managerial power and firm characteristics in the year before PVSO adoptions. Second, we model the simultaneity of a firm's choices in PVSO adoption and choose instrumental variables based on prior literature. We also support this model with results obtained using seemingly unrelated regressions (SUR). Last, we perform a propensity score matching. We follow Becker and Caliendo (2007) and check the sensitivity of our matching results to unobservable variables.

Our study contributes to prior research documenting the effect of managerial entrenchment, skimming, and CEO power on incentive contracting (Loureiro, Makhija, and Zhang 2011; Morse et al. 2011; Hamm, Jung, and Wang 2015). Specifically, we contribute to prior research that examines the effect of alternative performance measurement choices in performance-based stock option plans (Gerakos et al. 2007; Carter et al. 2009). We examine the manifestations of CEO power by investigating a firm's choice to adopt PVSOs, the choice of vesting targets in these plans, and whether "public outrage" moderates those choices. In this way, we are better able to rule out the possibility that early adoption of compensation reforms is simply good governance and/or demonstrates optimal contracting. If early adoption of compensation reforms was a choice by a strong board, then we would not observe any evidence of what Morse et al. (2011) refer to as "rigging" in the choice of vesting targets. We further determine whether the choice to adopt early is good governance (i.e., value-adding to the firm) by testing the outcome of the choices. Our results indicate that the choice to be an early adopter of compensation reforms is effective in reducing public outrage, but that the subsequent market performance of early adopters is inferior to that of the late adopters. Prior research drawing on MPT has either focused on "rigging" or examined whether "outrage" influences compensation choices; in our model, we examine both effects. This allows us to address some of the ambiguity in prior literature as to the determinants of managerial compensation. Our results indicate that when CEOs gain power, there are potential adverse consequences for the firm. This is of concern to shareholders and regulators who expect

[7] We demonstrate the economic significance of our findings. For example, for a median firm in our sample, assuming that the probability of meeting a vesting target is 50 percent, if the CEO power increases to the top quartile in our sample, keeping other things constant, then this CEO's probability of meeting the vesting target will increase to 61 percent and the probability of adopting PVSO in one of the early years will increase by 89 percent.

compensation reforms to remove "luck" and market-wide windfall gains from CEO compensation and, thus, improve the link with firm performance. We provide evidence that powerful CEOs can undermine the shareholder benefits of these reforms.

Next, Section II provides some background on PVSO grants and prior literature supporting our hypotheses. Sections III, IV, and V examine our method, results, and robustness tests. In Section VI, we offer concluding remarks.

II. BACKGROUND AND HYPOTHESES DEVELOPMENT

U.K. Corporate Governance Regulations on Stock Option Grants

In the early 1990s, a wave of corporate scandals in high-profile British companies (e.g., Polly Peck, Coloroll) shocked the U.K. and devastated public confidence regarding the self-discipline and self-regulation capabilities of their corporations. These corporate failures and the perception of a vacuum in corporate governance regulation triggered the passage of a series of regulations and governance codes. However, compliance was voluntary, although institutional investors and others placed significant pressure on firms to conform (Carter et al. 2009). The issuing of performance-vested stock options stemmed from the Greenbury Report (1995), which, together with the Cadbury Report (1992), underpinned a set of recommendations concerning governance principles and stock option plans. The Greenbury Report (1995) recommended that both total shareholder return (TSR) and earnings per share (EPS) be used as benchmarks to provide executives with incentives to promote shareholder value.

Optimal Contracting Theory and Stock Option Grants

The incentive effects of stock options have been studied from a wide range of perspectives, including the optimal structure of executive pay (Hemmer, Kim, and Verrecchia 2000; Dittmann and Maug 2007), effects in sorting and retaining managerial talent (Dutta 2003; Arya and Mittendorf 2005), and incentives for risk-taking (Coles, Daniel, and Naveen 2006). Theoretical models investigate the incentive effects of stock options with performance targets. For example, Johnson and Tian (2000) demonstrate that PVSOs may induce excessive managerial risk-taking, and Câmara (2001) discusses the incentive effects of executive stock options that condition vesting on the firm's stock price relative to their peers and illustrates the inefficiency of this self-imposed constraint. Câmara and Henderson (2005, 2009) also model the effects of managerial discretion on the value of PVSOs to managers and identify the conditions where managers benefit more than the firm.

Empirical research on firms' choice of performance targets in incentive contracts draws on Holmstrom's (1979) agency model to explain the relative weights placed on accounting and market-based targets (see, e.g., Ittner, Larcker, and Rajan 1997; Indjejikian and Nanda 2002; Core, Guay, and Verrecchia 2003), and provides evidence that the choice is related to the noise inherent in the measure and/or the sensitivity of the target to managerial actions (Lambert and Larcker 1987; Jensen and Murphy 1990). This line of research documents the effect of firm-level characteristics on performance measurement choices (see, e.g., Kole 1997; Murphy 2001; Core et al. 2003). These firm-level characteristics include the economic and market determinants of incentive contract targets, such as firm size (Carter et al. 2009), growth and investment opportunities (Gerakos et al. 2007; Carter et al. 2009), firm performance (Bettis et al. 2010), noise in performance measures (Murphy 2001; Core et al. 2003; Gerakos et al. 2007), and firm-specific risk (Bettis et al. 2010). Nevertheless, empirical research examining performance-based stock option grants is somewhat ambiguous as to whether OCT predictions are sufficient in explaining performance target choices (Gerakos et al. 2007; Carter et al. 2009; Bettis et al. 2010).

We attempt to shed light on inconclusive findings from previous research by drawing on literature that recognizes the importance of social and political forces in shaping managerial

compensation (Bertrand and Mullainathan 2001; Grabke-Rundell and Gomez-Mejia 2002; Garvey and Milbourn 2006; Loureiro et al. 2011; Morse et al. 2011; Hamm et al. 2015; van Essen et al. 2015). This literature questions whether OCT is sufficient in explaining compensation contract design. We draw on MPT as an additional explanation for the incentive choices we observe in firms' responses to compensation reforms while controlling for the economic determinants of these choices. We address three specific questions in turn.

Do Powerful CEOs Influence the Choice of Performance Measures in PVSO Plans?

The importance of target setting in managerial compensation and performance evaluation has been well documented in prior literature (Merchant and Manzoni 1989; Prendergast 1999; Murphy 2001; Indjejikian and Nanda 2002; Indjejikian et al. 2014a, 2014b). The general consensus is that performance targets attached to compensation, such as bonuses, directly guide an agent's actions and this creates the potential for agents to influence the target setting, as well as manipulate the reported outcomes (Morse et al. 2011). However, few studies examine target choices in stock option grants, partially due to the limited disclosure on the use of performance targets in U.S. executive stock option contracts. Carter et al. (2009) overcome this limitation and draw on FTSE 350 firms to examine the determinants of employing specific relative vesting conditions in PVSO grants. They find no evidence that these plans are used opportunistically to increase vesting probability and/or to placate external stakeholders. The evidence based on U.S. firms is ambiguous. Gerakos et al. (2007) examine two choices that firms make in the initial adoption of performance stock option grants, namely, "premium options" (i.e., when the exercise price exceeds the stock market price on the grant date) or "performance-vested options" (i.e., when vesting is contingent on achievement of performance targets). Overall, their evidence is consistent with the idea that performance option grants are used to minimize public opposition to compensation packages rather than to improve incentives. Bettis et al. (2010) expand the Gerakos et al. (2007) database and analyze the use of performance vesting provisions. Their sample includes "contingent-vesting provisions," where one or more performance hurdles must be achieved, and "accelerated-vesting provisions," where the award can vest early if the specified performance condition is met. Overall, their results support the incentive alignment and attraction argument and reject the idea that performance stock options are used to placate external stakeholders and/or extract rent by CEOs. We differ from prior research as our focus is not on the "relative" incentive effects of such stock option plans, that is, comparing situations in which a firm makes a choice to implement a particular plan with situations in which such a method is absent (Gerakos et al. 2007; Bettis et al. 2010). Instead, we assume that the regulatory call for compensation reports is exogenous and generic to all firms, and we use MPT to develop empirical models that allow us to examine why firms choose to answer the call in specific ways.

We first assess whether performance targets in PVSO grants are different in firms with powerful CEOs. Empirical evidence indicates that incentive contracts can be used as "camouflage" by powerful CEOs, who are able to influence the choice of performance targets to ensure that their own personal wealth is protected (Loureiro et al. 2011; Hamm et al. 2015). Due to information asymmetry, a powerful CEO has the ability to meet personal preferences by avoiding putting compensation at risk (Westphal and Zajac 1994, 1998; Wade, Porac, and Pollock 1997; Bebchuk and Fried 2003, 2004; Morse et al. 2011). To minimize compensation risk, a CEO's preference will be to choose vesting targets that are easiest to achieve. Prior literature provides strong evidence that management can satisfy external demands for corporate governance reforms while avoiding any real creation of shareholder value (Westphal and Zajac 1994, 1998; Wade et al. 1997). Based on MPT, we predict that powerful CEOs will influence the target choices included in PVSO plans (Bebchuk and Fried 2003, 2004). They will prefer to set easier targets *ex ante* or targets that can be

manipulated *ex post* (Morse et al. 2011). In this way, the adoption of PVSO plans acts as a camouflage to the real intent of powerful CEOs. Stated formally, our hypothesis is as follows:

H1: *Ceteris paribus,* firms with powerful CEOs set easier targets at PVSO adoption.

Do Powerful CEOs Influence the Timing of PVSO Adoption?

Another related consequence of CEO power is in the timing of PVSO adoption. The choice to adopt early occurs almost simultaneously with the choice of vesting targets. We assume that a powerful CEO will choose to adopt early only if he or she has the ability to influence the choice of vesting target. Powerful CEOs will weigh up the costs and benefits of adopting early, because their power enables them to influence this decision. While risk-averse CEOs might defer adoption due to the risks associated with performance-contingent options, the costs of doing so are potentially greater for a powerful CEO for several reasons. First, following Bebchuk, Fried, and Walker (2002) and others (e.g., Core, Holthausen, and Larcker 1999), CEO power is associated with the amount of rent that the CEO can extract. The recommendation for firms to adopt PVSOs was deemed by regulators and the general public to address this very issue. Thus, the benefits of adopting early enable powerful CEOs to alleviate the public concern that they are rent-seeking. Second, adopting early gives these powerful CEOs the first-mover advantage, in that their costs (i.e., risk to their compensation) can be lowered by influencing the choice of the performance target. In other words, as the public grows more experienced with PVSO practices, the camouflage strategy associated with "rigging" vesting targets may be less effective. The CEOs who can influence their vesting target reduce the perceived risk associated with their performance-contingent compensation (Morse et al. 2011). Therefore, we expect that powerful CEOs will consider adopting PVSOs early as a low-cost strategy to address the demands of regulators and the public. Adopting early is a camouflage strategy, that is, it represents a symbolic response. As a result, firms with a powerful CEO will choose to adopt PVSO plans early.[8] Formally stated, our hypothesis is as follows:

H2: A positive relation exists between the power of CEOs and early adoption of PVSO plans.

We expect that the timing of PVSO adoption and the choice of vesting targets are likely to be decisions that are simultaneously determined. Simultaneity issues are particularly relevant in our setting because we predict that powerful CEOs will engage in both camouflage strategies in response to regulatory reform pressures.

CEO Power and "Outrage"—Does "Outrage" Moderate Powerful CEOs' PVSO Choices?

Managerial power theory argues that outrage constrains excessive rent-seeking behavior of powerful CEOs (Bebchuk and Fried 2003, 2004). In our setting, we expect that outrage will influence a powerful CEO's choice to adopt PVSOs early. The more a firm is confronted with public outrage over its compensation practices, the closer its public scrutiny, and the higher the probability that the rent-extraction of a powerful CEO will be revealed. Neither the firm nor the CEO will want to bear the economic and social costs of public outrage.[9] While all firms have a general tendency to answer public calls for compensation reforms (Westphal and Zajac 1994, 1998; Zajac and Westphal 1994; Gerakos et al. 2007), we do not expect that outrage will have a direct

[8] We discount the possibility that a strong board will also want to limit managerial rent-extraction by implementing PVSO plans early. *Ceteris paribus,* adopting PVSOs increases incentive risk to a CEO and can lead to higher compensation costs for the firm. Therefore, it would be rational for a strong board to not immediately adopt reforms, but seek lower-cost instruments to incentivize managers.

[9] Examples of "outrage" costs include reputational damage that managers have to bear, reduced shareholders' willingness to support incumbent directors and management in proxy fights or takeover bids, and penalty from the market for corporate control (Bebchuk and Fried 2004).

effect on a firm's choice to adopt early or on the choice of vesting targets. Prior evidence on the direct effect of media is mixed. Core, Guay, and Larcker (2008, 2) find no support that "outrage" operates as a "*catalyst or change agent for CEO compensation practices*" (italics in original), although others (e.g., Kuhnen and Nieseen 2012) provide evidence that it does affect contracting choices (e.g., avoiding the more contentious components of compensation). Meeting regulatory demands for compensation reform is not costless. Introducing performance targets into stock option plans and conditioning a CEO's personal wealth upon the firm's future performance increases the firm-specific risk that the CEO has to bear. Both economic and behavioral literatures suggest that CEOs prefer less risk in their compensation (Beatty and Zajac 1994; Westphal and Zajac 1994). CEOs will expect to be compensated for the additional risk they have to bear with the introduction of PVSOs, which, in turn, will increase a firm's compensation cost. It is likely that alternative means of addressing outrage relating to excessive CEO compensation may be less costly and, thus, enable the firm to defer the introduction of PVSOs.[10]

In contrast, powerful CEOs and their firms have incentives to take immediate action to reduce the extent of public outrage. Early adoption of PVSOs represents a symbolic gesture in response to public outrage, and this response will be stronger for firms with powerful CEOs than for firms without. In other words, the costs associated with potential reputation loss and possible regulatory actions are higher for powerful CEOs as they have more to lose. We expect a positive and significant interaction between CEO power and outrage on timing of PVSO adoption:

H3: Outrage will strengthen the association between CEO power and early adoption of PVSO plans.

It is PVSO adoption that is most likely to be affected by the interaction between outrage and CEO power as it is the key signal that the firm is responding to outrage. The choice of target is likely to be a second-order effect as it is not easily observed by external stakeholders.[11] We hypothesize only the effect on PVSO adoption; however, we recognize that the choice of vesting target is an interrelated choice, and our empirical model enables us to test the interaction between CEO power and outrage on choice of vesting target.

Do CEO Power and Early Adoption Matter?

Our assumption in developing our hypotheses is that CEO power is detrimental to the firm; that is, firms with powerful CEOs will have less efficient compensation contracts and, thus, shareholder value will be reduced. It is possible that CEO power may go hand-in-hand with optimal contracting and, thus, having a powerful CEO is value-adding to shareholders. To address this possibility, we examine the general association between CEO power and the efficiency of executive compensation contracts. An efficient contract should be in line with shareholders' best interests. We follow Coles et al. (2006) and assess whether there is interest alignment between CEO wealth and the value added to shareholders. Managerial power theory would predict that CEO power is detrimental to firm value and can lead to inefficient incentive contracts (Bebchuk et al. 2002; Bebchuk and Fried 2003, 2004, 2006). Therefore, in the context of our study, we would expect that the choice to adopt

[10] For example, Ferri and Maber (2013) document that U.K. firms responded to external pressures by removing generous severance packages and increasing the sensitivity of CEO pay to realized performance (i.e., pay-performance sensitivity, or PPS). We find that PPS in CEO compensation increases with public outrage (see Section IV).

[11] Powerful CEOs might expect negative press to mostly focus on what the public perceives to be excessive compensation and the absence of a link with firm performance, but take target setting as an issue of less importance. A good example of the myopic attention of the public is the evidence of firms adopting a $1 CEO salary as a gesture of self-sacrificing and devoted CEOs. The public does not appear concerned that what has occurred is simply a shift to other forms of compensation, leaving total compensation the same (Loureiro et al. 2011).

PVSOs early and/or the inclusion of easy vesting targets would result in these firms having lower performance than those who do not adopt early. Our expectations are summarized in H4:

H4a: CEO power is negatively related to interest alignment between the CEO and shareholders.

H4b: Early adoption (target difficulty) is negatively (positively) related to firms' future performance.

III. SAMPLE SELECTION AND RESEARCH DESIGN

Sample Selection

Our initial sample includes FTSE top 350 nonfinancial companies, based on their market capitalization in 2004.[12] To obtain a clean sample, we exclude firms that (1) entered the database after 1997 (considering the timescale of listing in the stock exchange), (2) had granted PVSOs to their CEOs before 1997, and (3) indicated a vague initial adoption date[13] for PVSOs. We tracked back to each firm's annual reports to confirm their initial PVSO grant. Thus, the final sample included 220 firms that granted PVSOs to their CEOs for the first time between 1997 and 2004.[14] Prior to 1997, the relevant data are not sufficiently available. Furthermore, following FRS 20/IFRS 2, it became mandatory for U.K. firms to expense stock option compensation based on the fair value as of the beginning of 2005. As these new accounting rules reduce the popularity of PVSO plans and, thus, introduce bias into the sample, we halted our investigation period at the end of 2004.[15] Panel A of Table 1 presents the industry composition of the PVSO adopters; manufacturing (including heavy manufacturing) is the most heavily represented industry. Panel B contains the distribution of PVSO adoptions over time, which is consistent with prior research (Carter et al. 2009; Ferri 2009); the most (41 percent) initial PVSO grants in our sample took place in 2000.

We collected data from several sources: BoardEx provides information about executive compensation, demographics, and corporate governance features; Compustat Global provides the financial data, as well as capital market information. From the firms' annual reports, we manually collected the data on actual vesting targets in PVSO plans and ownership structure. The articles on executive compensation by major British media sources were retrieved from LexisNexis Academic. All continuous variables were winsorized at the top and bottom 1 percent.

Variable Measurement

CEO Power

We follow prior literature to measure CEO power (van Essen et al. 2015). CEO power increases when corporate governance is weak. We first look at the corporate board characteristics to

[12] Financial service firms are excluded due to their unique regulatory status and leverage levels.

[13] In these cases, although the CEO had a zero holding of PVSOs in the year before the grants, performance targets attached to previous grants were discussed in annual reports.

[14] In a survival analysis, we also included 17 firms that never adopted PVSO plans during our investigation period.

[15] Before the implementation of FRS 20/IFRS 2, firms were required to recognize the stock option compensation expense only if the exercise price was below the market price at the grant date. The general practice was to set the exercise price at the market price at the time options were granted (i.e., at-the-money options). As a result, firms rarely recorded compensation expenses when stock options were granted; not expensing stock option compensation significantly contributed to the popularity of this type of pay in executive compensation packages. Since accounting rule changes forced companies to record options as expenses, companies are rapidly replacing stock grants with restricted stock, which is a simpler form of compensation, subject to fewer accounting and tax complexities, and creates less risk for executives and less share dilution (see Chasan 2013).

TABLE 1

Sample Distribution

Panel A: By Industry

Industry	# of Obs.
Mining and construction	29
Manufacturing	36
Manufacturing (Heavy)	39
Transportation and public utility	29
Wholesale and retail trade	32
Communication	5
Business services	43
Social services and public administration	2
Others	5
Total	220

Panel B: By Year, *DEPS,* and *DIFF_SET*

	# of Obs.				
Year	*DEPS* = 0	*DEPS* = 1	Total	Proportion of Firms Using EPS Targets (%)	Mean *DIFF_SET*
1997	1	7	8	87.50	1.92
1998	4	8	12	66.67	2.77
1999	3	32	35	91.43	3.01
2000	18	72	90	80.00	3.10
2001	10	28	38	73.68	3.26
2002	6	11	17	64.71	3.42
2003	5	7	12	58.33	4.11
2004	4	4	8	50.00	2.88
Total	51	169	220		

DEPS is an indicator equal to 1 if PVSO vesting targets are based on earnings per share (EPS), and 0 otherwise. *DIFF_SET* is PVSO adoption year's EPS growth target for option vesting, presented as a percentage.

assess the power of the CEO relative to the board. We count the number of board committees on which the CEO has a role. When a CEO is on numerous board committees, this creates a concentration of decision-making rights in one person and will increase that individual's power and ability to influence the board's key decisions (Finkelstein 1992; Finkelstein and D'Aveni 1994). In addition, we measure the length of the CEO's tenure because the ability to influence company decisions likely increases with greater tenure (Bebchuk and Fried 2003, 2004; van Essen et al. 2015). Power stems partly from expertise and partly from gaining support or confidence of directors and others within the firm (Finkelstein 1992). This takes time to develop, enabling long-tenured CEOs to have more influence over board decisions (Gilson and Vetsuypens 1993; Farrell and Whidbee 2003). Board size may also influence the execution of managerial power. Prior literature suggests that the board's efficiency in constraining managerial power and generating cohesive decisions is lower when it is too large (Zahra and Pearce 1989; Jensen 1993; Yermack 1996;

Westphal and Zajac 1998).[16] Finally, the composition of the board in terms of its proportion of independent directors should affect managerial power. Independent directors lack economic bonds or prior employment experience with the firm and, thus, are less vulnerable to conflicts of interest with corporate insiders or other board members, which, *a priori,* should limit managerial rent-skimming behaviors (Boyd 1994; Bebchuk and Fried 2003, 2004). CEO power should decline with a greater proportion of independent directors on the board.

Van Essen et al. (2015) propose that a firm's ownership structure influences managerial power. Large owners can nominate board members, monitor managerial compensation plans more closely, and influence other board decisions (Smith 1996; Shleifer and Vishny 1997). Therefore, ownership concentration, measured by the fraction of shares owned by the largest outside owner of the firm, likely constrains CEO power. The presence of institutional ownership also indicates a higher degree of monitoring of executive compensation practices (Hartzell and Starks 2003). The idea is that institutional investors maintain substantial investment stakes and have fiduciary obligations to improve investment returns to their clients (McConnell and Servaes 1990). As a result, they are more active in scrutinizing managers' behavior and constraining managerial power.

We follow prior literature and use exploratory factor analysis to determine whether the six items reflect a unidimensional construct.[17] Having established that all six items load onto one factor, we employ principal component analysis (PCA) and create a factor score that weighs each of the observed items (*POWER*). Our method enables us to test whether all items identified in prior literature do indeed reflect a unidimensional scale and allows for the relative importance of each item to be captured in the factor score. The value of the composite measure increases with the level of CEO power.

Public Outrage

We follow Core et al. (2008) and measure firm-specific outrage on executive compensation by quantifying the negative tone of press articles on the focal firm's CEO compensation. These articles were published in mainstream newspapers, business journals and magazines, newswires, and press releases. Using an event study-type analysis, we focus on a window of six months after a fiscal year-end. Normally, during this period of time, the vast majority of U.K. firms disclose their remuneration reports for the last fiscal year and put their compensation plans to a vote at the annual general meeting. The media tend to (intensively) discuss a firm's executive pay issues during this period.[18]

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[16] Arguing from different premises, Harris and Raviv (2008) present a model in which corporate boards trade off the benefit of extra monitoring with the cost of monitoring, and they predict that optimal boards will be larger in overall size when the opportunities for managers to extract private benefits are greater. Furthermore, Boone, Field, Karpoff, and Raheja (2007) provide empirical evidence in support of Harris and Raviv's (2008) predictions.

[17] Exploratory factor analysis imposes no preconceived structure on the data (Child 2006). We confirm the one-factor solution using three methods. First, we adopt Cattell's (1966) approach and obtain the scree plot; there is a noticeable bend after the first factor. Second, following Keeling (2000), we approximate the expected eigenvalues for a random sample with the same sample size and the same number of observed items; only one factor has an eigenvalue that is greater than the random eigenvalue. Third, we run a maximum likelihood test, which assesses the null hypothesis that a model with a given number of factors explains the covariance or correlation structure of the observed variables. The results support the one-factor model. Hence, we retain the one-factor structure. We undertake a robustness test by constructing an alternate scale that includes the items that have the highest loadings on our single factor (i.e., CEO tenure, proportion of independent directors on board, and largest outside ownership). Using these three items, we conduct another factor analysis, create a new factor score with these three items, and rerun the main analysis. The results are consistent. We also follow Carter et al. (2009) and Rogers, Van Buskirk, and Zechman (2011) and construct an alternative power measure that combines equally weighted standardized values of each individual item. This alternative measure does not impact our main inferences in a material way.

[18] In the second six months, media attention is likely to switch to compensation practices related to the new fiscal year. Nevertheless, we obtained consistent findings when using a 12-month window to capture media attention.

We searched articles published in all daily newspapers and Sunday newspapers in the U.K. with circulations of more than 100,000 copies in January 2009, according to the Audit Bureau of Circulations, as well as articles published in all business magazines, journals, newswires, and press releases in the U.K.[19] Our media sources included 25 newspapers, 25 magazines and journals, and 14 newswires and press releases. Only articles that focused on CEO pay were included.[20] Our search yielded 1,045 articles (excluding duplicates) published in 21 mainstream newspapers, three business magazines, and two newswires. Next, two postgraduate research assistants read the articles independently to code the negativity (0/1) expressed in each article. Subsequent coding disagreements (i.e., approximately 5 percent of the total number of articles) were resolved through further review of the documents by two of the authors. As a robustness check, we use Linguistic Inquiry and Word Count (LIWC), a text-analysis software program designed by psycholinguists (Pennebaker, Mehl, and Niederhoffer 2003), to find texts containing negative words. Following Li (2008) and Bednar (2012), we assign the program's default negative word list, which includes 499 words, and measure the negative tone in the text. This alternative measure does not affect our main conclusions in a material way.

Our measure, *NEGMC,* is the count of the number of negative-toned articles in the media, published in a window of six months after the end of the fiscal year. We expect the degree of public outrage to increase with the negative publicity in the media. Descriptive statistics in Table 2 show that, on average, our sample firms received more than one newspaper article containing a negative tone relating to compensation practices before the initial grant of PVSOs.[21]

Target Difficulty in PVSO Adoption

For reliability, we include six measures of vesting targets in our empirical model. First, a dummy variable (*DEPS*) indicates the use of accounting performance-based vesting targets (i.e., EPS growth), as opposed to stock price performance-based targets (i.e., TSR), in the initial PVSO grants. Managers have much more discretion in the process of achieving accounting-based targets than market-based targets (Healy and Wahlen 1999; Leone and Rock 2002).[22] *A priori,* we expect EPS targets to be preferred to market-based targets by a CEO. Second, we focus on EPS growth targets and measure target difficulty in five ways.[23] *DIFF_SET* gives the annualized EPS growth target in excess of the retail price index (RPI) as stated in the annual report. While the vesting target in the first year of adoption may not be representative of target difficulty in subsequent years, *DIFF_AVG* is the average annualized EPS growth target for options granted over three years after the initial PVSO grant (including the initial grant).[24] When setting performance targets, it is not

[19] We searched articles in all newspapers. Regarding articles published in magazines, journals, newswires, and press releases, we focused on business sections and included the following categories of LexisNexis Academic: business and management, company information, economics, and organizations and associations.

[20] Similar to Core et al. (2008), we use a restriction (i.e., "w/20") that locates words within 20 words of the CEO's name. We used the following search string: (Company name) and (CEO name) w/20 (compensation or remuneration or salary or bonus or (option w/10 grant) or (option w/10 exercise) or (option w/10 receive) or restricted stock or (pay w/5 00) OR (was paid w/5 00) or (pay w/5 million) OR (was paid w/5 million) or (pay w/5 millions) or (was paid w/5 millions).

[21] Note that 38.64 percent of firms in our sample received negative publicity from the media.

[22] Compared with stock price measures, earnings measures shield managers from "uncontrollable market forces" (Sloan 1993; Core et al. 2003) and, thus, are better under managerial control.

[23] The Greenbury (1995) Code recommends the inclusion of challenging performance targets in option plans while leaving firms with considerable freedom to choose the performance targets. Prior literature documents that EPS targets are most widely used in PVSO plans, followed by TSR targets (Conyon, Peck, Read, and Sadler 2000). In our sample, 161 firms employed solely EPS targets, 51 firms used TSR targets alone, and eight firms attached both TSR and EPS targets to options vesting at their initial grants.

[24] We obtain consistent results when using the average targets in five years after the initial grant.

TABLE 2

Descriptive Statistics

Variable	Mean	SD	Q1	Median	Q3
POWER	0.000	1.000	−0.688	−0.017	0.683
DEPS	0.768	0.423	1.000	1.000	1.000
DIFF_SET	3.060	1.605	2.000	3.000	3.000
DIFF_AVG	3.263	1.204	2.907	3.000	3.000
DIFF_EXP	2.681	1.627	1.712	2.590	3.256
DIFF_AVGEXP	2.899	1.421	2.043	2.716	3.340
MEET	0.922	0.270	1.000	1.000	1.000
EARLY	−7.741	2.914	−9.000	−7.000	−6.000
EARLY_SURV	0.175	0.381	0.000	0.000	0.000
NEGMC	1.406	4.039	0.000	0.000	1.000
%BONUS	0.373	0.330	0.129	0.320	0.501
%EQUITY	0.239	0.320	0.000	0.002	0.475
LTIP	0.021	0.000	0.000	0.000	0.000
LNMV	6.476	1.434	5.466	6.349	7.344
LNTA	6.709	1.579	5.576	6.608	7.824
MTB	2.148	5.688	1.205	2.110	3.548
TSR	0.126	0.376	−0.087	0.119	0.350
DEBT	0.581	0.182	0.446	0.576	0.698
AGE	52.654	7.520	47.500	53.000	57.500
QUALITY	0.698	1.563	0.000	0.000	1.000
VOLATILITY	0.359	0.100	0.297	0.362	0.415
FAMILY	0.241	0.428	0.000	0.000	0.000
NOISE	1.418	1.454	0.537	1.109	1.707

Variable Definitions:
POWER = composite construct measuring CEO power based on PCA;
DEPS = an indicator equal to 1 if PVSO vesting targets are based on earnings per share, and 0 otherwise;
DIFF_SET = PVSO adoption year's EPS growth target for option vesting, presented as a percentage;
DIFF_AVG = average annualized EPS growth target for options granted over three years after the initial PVSO grant, presented as a percentage;
DIFF_EXP = PVSO adoption year's EPS growth target for option minus estimated EPS growth, presented as a percentage;
DIFF_AVGEXP = *DIFF_AVG* minus estimated EPS growth, presented as a percentage;
MEET = an indicator equal to 1 if EPS growth targets are met by the end of the option vesting period, and 0 otherwise;
EARLY = a discrete variable that measures the timing of adoption of PVSO plans;
EARLY_SURV = an indicator variable equal to 1 if a firm adopted PVSO plans in 1997, 1998, or 1999, and 0 otherwise;
NEGMC = a count of articles published in the six months after the end of the fiscal year that contain a negative tone on CEO compensation of a firm;
%BONUS = ratio of bonus to salary, presented as a decimal;
%EQUITY = proportion of equity compensation in total compensation, presented as a decimal; equity compensation is the sum of long-term incentive plan (LTIP) pay outs, value of restricted stock grants, and value of option grants during the year; total compensation is the sum of salary, bonus, equity compensation, and any other annual pay;
LTIP = an indicator for the presence of long-term incentive plans in a CEO's compensation package;
LNMV = natural logarithm of market value of equity;
LNTA = natural logarithm of total assets;
MTB = market value of the firm divided by its book value;
TSR = total shareholder return (dividend-adjusted);
DEBT = ratio of total liabilities to total assets, presented as a decimal;
AGE = age of a CEO in years;
QUALITY = a count of qualifications held by a CEO;
VOLATILITY = standard deviation of the monthly stock returns during the year;
FAMILY = an indicator for the presence of major family/individual owners (>50 percent ownership) in the firm; and
NOISE = standard deviation of stock returns divided by the standard deviation of $(EPS_t - EPS_{t-1})/EPS_{t-1}$, where the standard deviation of stock returns and the change in accounting earnings are both measured using ten years' time-series data.

uncommon for firms to take account of the "fuel" for growth and predict future performance. Therefore, we construct a model to estimate expected EPS growth based on firm size, capital structure, sales growth, and research and development (R&D) investment in the past five years.[25] *DIFF_EXP* gives the difference between the annualized EPS growth target at the initial PVSO grant and the expected EPS growth and, hence, measures target difficulty in "relative" terms. *DIFF_AVGEXP* is the difference between the average annualized EPS growth target over three years after PVSO adoption and the expected EPS growth and, thus, measures target difficulty over multiple years and, at the same time, adjusts for expected growth. For these four proxies, the higher the value, the more difficult the targets. In addition, *MEET* is an indicator variable equal to 1 if the EPS growth target is realized by the end of the option vesting period, and 0 otherwise, which is expected to have a negative relationship with target difficulty.

Panel B of Table 1 depicts the development of PVSO targets (i.e., *DIFF_SET*) during the observation period. Mean *DIFF_SET* increased over the test period, except for the last year, which is generally consistent with the assertion that firms have increased the target difficulty of PVSO plans over the years (Balsam, Kuang, and Qin 2011). Approximately 77 percent of the sample firms attach EPS growth targets to their first PVSO awards. This proportion peaked in 1999 and started to decline afterward, as was the case in prior research (Carter et al. 2009). Table 2 provides the descriptive statistics of the variables. On average, EPS targets for option vesting require 3 percent annual growth net of inflation, ranging from merely matching RPI (i.e., 0 percent EPS growth in excess of RPI) to 10 percent EPS annual growth above RPI. If we extend the time horizon to three years, then we observe that firms tend to increase vesting targets over time. Targets attached to initial PVSO grants are generally more challenging than expected, based on past performance. Less than 10 percent of the firms failed to realize the EPS growth targets attached to their initial PVSO grants.

The Timing of PVSO Adoption

We follow prior literature (Gompers, Ishii, and Metrick 2003; Djankov, La Porta, Lopez-de-Silanes, and Shleifer 2008) to construct a multi-dimensional score, *EARLY,* to capture when a firm adopts PVSO plans for the first time. This score is based on a two-stage process. First, we pool all observations and rank them by adoption year, from 1997 to 2004. The earliest adopters earn a score of 1, and then the score increases discretely year by year, to a maximum of 8 for late adopters. Second, we conduct the ranking within each industry, as defined by two-digit standard industrial classification (SIC) codes, using the same scoring process.[26] We aggregate the values from the two stages into an overall score to measure the timing of PVSO adoption. We multiply by −1 for ease of interpretation. Thus, the higher the score, the earlier the firm introduced PVSO plans. We also construct an indicator variable, *EARLY_SURV,* equal to 1 if a firm adopted PVSO plans in 1997, 1998, or 1999, and 0 otherwise.[27]

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[25] We regress EPS growth on firm size in total assets (*LNTA*), debt ratio (*DEBT*), growth in sales (*SALESGROW*), and the ratio of R&D expenditure to total assets. In the regression, we also control for industry and year fixed effects. We find that higher EPS growth is associated with greater sales growth and inversely related with firm size. Firms often set earnings targets based on past performance (Indjejikian et al. 2014a). As a robustness check, we use prior-year EPS growth to proxy for expected growth and obtain qualitatively similar results.

[26] Anecdotal evidence reveals that some industries have distinctive needs and unique schedules for adopting PVSO plans, in part due to the screening effects associated with stock option compensation (Arya and Mittendorf 2005). Considering industry heterogeneity, we incorporate this industry ranking into the measure of the timing of PVSO adoption. As a robustness test, we use the score by industry alone to measure the timescale of PVSO adoption without identifying significant changes (not tabulated).

[27] Consider Firms A and B, for example. Firm A adopted PVSO plans in 1998. So *EARLY_SURV* for this firm is 0 in 1997 and equal to 1 in 1998, and then Firm A is excluded from our sample in 1999; Firm B did not grant any PVSOs during 1997–1999, so *EARLY_SURV* is equal to 0 in all three years for the firm.

Other Variables

We capture the economic determinants of target choices as predicted by OCT. Based on prior literature, we control for firm size (*LNMV*), as this captures several potential omitted variables, such as organizational complexity, CEO talent, external monitoring, and shareholder concerns about performance sensitivity (Carter et al. 2009). We also control for the need for the firm to take risks, measured by the ratio of market value to book value of the firm (*MTB*) (Gerakos et al. 2007), and firm performance based on total shareholder return (*TSR*) (Bettis et al. 2010). Other relevant variables include the monitoring of debt holders by *DEBT* (Jensen and Meckling 1976; Jensen 1986), and CEO's age (*AGE*), as it often reflects their risk-aversion and experience in management and operations (Dechow and Sloan 1991; Cheng 2004). Furthermore, we include the number of qualifications held by a CEO (*QUALITY*), indicating the skills mastered, such as CPA or M.B.A., an indicator (*FAMILY*) for the presence of major family/individual owners in the firm, and the volatility of stock returns relative to the volatility of earnings (*NOISE*) (Sloan 1993; Core et al. 2003).

When investigating the association between managerial power and the timing of PVSO adoption, we use the determinants included in OCT research (Gerakos et al. 2007). We control for the structure of other components of managerial compensation (*%BONUS* and *%EQUITY*) (Jensen and Meckling 1976), and the presence of long-term incentive plans in CEO compensation (*LTIP*) that require a performance target to be met before realization of the award (Carter et al. 2009). We also control for firm size (*LNMV*) (Carter et al. 2009; Bettis et al. 2010); growth opportunities in the form of the market-to-book ratio (*MTB*) (Gerakos et al. 2007; Carter et al. 2009); firm performance (*TSR*) (Gerakos et al. 2007; Bettis et al. 2010); a CEO's age (*AGE*); the number of qualifications (*QUALITY*); risk in the volatility of monthly shareholder returns (*VOLATILITY*) (Gerakos et al. 2007; Bettis et al. 2010); and whether the firm is a family firm (*FAMILY*).

All right-hand-side variables are lagged by one year. Industry fixed effects, using industry dummies defined by two-digit SIC code, are included in all model specifications.

Descriptive Statistics and Bivariate Correlations

Table 2 includes the descriptive statistics relating to our sample and the variables included in our empirical models. Cash bonuses constitute approximately 37 percent of the annual salary paid to CEOs; equity-based compensation represents a modest part ($<$ 24 percent) of total CEO pay, consistent with prior research (Balsam et al. 2011). Furthermore, the use of long-term incentive plans (LTIPs) is rare (approximately 2 percent). An average CEO in our sample is about 53 years old and holds one certificate, such as a CPA or M.B.A. Twenty-four percent of our sample firms are family-owned or -controlled. Descriptive statistics of other controls are consistent with prior literature.

Table 3 reports the bivariate correlations among the test variables, and indicates that firms with powerful CEOs tend to attach less challenging targets and such firms adopt PVSO plans early in our test period. Early adopters are correlated with easier targets.

IV. EMPIRICAL MODELS AND REGRESSION RESULTS

Compensation Design Pre- and Post-Adoption of PVSOs

The Greenbury Report (1995) assumed that the redesign of stock option plans would remove the "luck" associated with the granting of options while increasing incentives for CEOs to act in the shareholders' best interests. Prior to describing the empirical results associated with our hypotheses, we demonstrate that the introduction of PVSOs "matters" in the design of CEO compensation packages. In Table 4, Panel A we provide descriptive statistics relating to the change in different components of CEO pay before and after PVSO adoption. Wealth delta (the sensitivity of CEO wealth to stock price) is often used to capture the interest alignment between CEO and shareholders

TABLE 3

Correlations

Variable	*POWER*	*DEPS*	*DIFF_SET*	*DIFF_AVG*	*DIFF_EXP*	*DIFF_AVGEXP*	*MEET*	*EARLY*	*EARLY_SURV*	*NEGMC*
POWER		**0.134**	**−0.139**	**−0.134**	**−0.530**	**−0.506**	0.036	**0.184**	−0.040	**0.259**
DEPS	**0.136**		−0.116	−0.058	−0.145	−0.107	−0.064	**0.141**	−0.037	0.073
DIFF_SET	**−0.186**	0.017		**0.840**	**0.778**	**0.617**	**0.118**	**−0.211**	−0.114	−0.009
DIFF_AVG	**−0.176**	0.072	**0.822**		**0.651**	**0.714**	**0.138**	**−0.174**	−0.086	0.074
DIFF_EXP	**−0.432**	−0.049	**0.912**	**0.743**		**0.900**	0.077	**−0.332**	−0.096	**−0.231**
DIFF_AVGEXP	**−0.457**	−0.012	**0.749**	**0.882**	**0.870**		0.078	**−0.288**	−0.066	0.120
MEET	0.028	−0.064	**0.119**	**0.124**	0.079	0.060		−0.018	**0.241**	−0.051
EARLY	**0.199**	**0.175**	**−0.137**	**−0.148**	**−0.259**	**−0.302**	−0.034		0.027	0.100
EARLY_SURV	**0.712**	−0.037	−0.094	−0.036	−0.069	−0.053	**0.241**	0.006		−0.052
NEGMC	0.076	0.010	0.043	**0.211**	−0.014	**−0.170**	0.010	−0.067	0.072	

The table shows Spearman (Pearson) correlation matrix above (below) diagonal for variables of interest. Correlations with p-value less than 0.10 are in bold.

Variable Definitions:
POWER = a composite construct measuring CEO power based on PCA;
DEPS = an indicator equal to 1 if PVSO vesting targets are based on earnings per share, and 0 otherwise;
DIFF_SET = PVSO adoption year's EPS growth target for option vesting;
DIFF_AVG = average annualized EPS growth target for options granted over three years after the initial PVSO grant;
DIFF_EXP = PVSO adoption year's EPS growth target for option minus estimated EPS growth;
DIFF_AVGEXP = *DIFF_AVG* minus estimated EPS growth;
MEET = an indicator equal to 1 if EPS growth targets are met by the end of the option vesting period, and 0 otherwise;
EARLY = a discrete variable that measures the timing of adoption of PVSO plans;
EARLY_SURV = an indicator variable equal to 1 if a firm adopted PVSO plans in 1997, 1998, or 1999, and 0 otherwise; and
NEGMC = a count of articles published in the six months after the end of the fiscal year that contain a negative tone on CEO compensation of a firm.

(Coles et al. 2006).[28] We notice that wealth delta (i.e., *LNDELTA*) has significantly increased after the adoption, also compared with non-adopters, suggesting that PVSO adoptions, on average, improve interest alignment.[29] Indeed, Kuang and Qin (2009) document that PVSOs outperform time-vested stock options and that they are associated with greater interest alignment. We then assess whether firms adopting PVSO plans replace traditional stock options (TSOs) that vest solely

[28] Although higher delta can better align managerial incentive and shareholders' interest, higher delta may also induce (risk-averse) managers to avoid risky projects, even with positive net present values (Smith and Stulz 1985; Coles et al. 2006). Hence, the relation between delta and shareholder value is not monotonically positive. Also, it should be noted that the conventional method to estimate delta may misrepresent the true delta for PVSOs due to different estimation of parameters (e.g., the realization of performance-related vesting targets). We are fully aware of the drawbacks of this approach and note the limitations in the concluding remarks.

[29] It is possible to argue that the adoption of PVSOs may represent a strong time trend in equity pay as another way to enrich executives regardless of CEO power. If this is the case, then we would expect to observe significant differences in compensation changes between PVSO adopters and non-adopters. However, the results in Panel A of Table 4 show that relative to non-adopters, PVSO adopters do not experience significant increases in various compensation components, whereas adopters do have a higher increase in wealth delta compared to non-adopters. Note that we consider significant differences in those components of compensation where *both* the mean and the median are significant. We also find that CEOs of PVSO firms receive significantly higher fixed salaries than CEOs with non-PVSO firms; this might be explained by the increased uncertainty associated with PVSO plans. Furthermore, adopters and non-adopters do not differ significantly in size or growth, i.e., *LNMV, MTB* (not tabulated).

TABLE 4

CEO Pay and PVSO Adoption

Panel A: Mean (Median) [SD] of CEO Pay Pre- and Post-Adoption for Adopters and Non-Adopters

CEO Pay ('000 GBP)	Adopter Pre-Adoption (n = 220) (1)	Adopter Post-Adoption (n = 220) (2)	Adopter Changes [(2) − (1)] (n = 220) (3)	Non-Adopter Changes in the Same Period (n = 466) (4)	Difference [(3) −(4)] (5)
Annual total	611.24	1,435.56	824.32***	416.15	408.18
	(394.00)	(684.00)	(279.00***)	(52.50***)	(226.50***)
	[813.07]	[3,921.63]	[3,893.84]	[8,410.88]	
Salary	273.70	338.68	64.98***	26.74***	38.24***
	(236.00)	(312.00)	(35.00***)	(20.00***)	(15.00***)
	[187.10]	[173.43]	[107.76]	[59.95]	
Bonus	102.10	149.02	46.92**	38.07***	8.85
	(75.00)	(92.00)	(5.00***)	(17.50***)	(−12.50)
	[226.38]	[203.86]	[207.01]	[235.24]	
Equity linked	146.09	847.77	701.68***	345.34	356.34
	(0.00)	(272.00)	(201.00***)	(0.00***)	(201.00***)
	[829.95]	[3,862.31]	[3,902.55]	[8,455.32]	
Total wealth	4,583.11	4,912.89	329.78	565.58	−235.80
	(899.00)	(1,493.00)	(318.00***)	(85.00***)	(233.00*)
	[15,808.77]	[12,151.13]	[8,731.89]	[16,932.06]	
LNDELTA	2.36	3.08	0.72***	0.07**	0.65***
	(12.00)	(19.00)	(5.00***)	(0.13***)	(4.87***)
	[1.40]	[1.30]	[1.21]	[0.74]	

Columns (3) and (4) are based on paired t-tests to test the differences in means and Wilcoxon matched pairs signed-rank tests to test differences in medians. Column (5) is based on two-sample t-tests (for means) and Wilcoxon two-sample rank-sum tests (for medians). *LNDELTA* is the natural logarithm of a CEO's wealth delta; wealth delta is the change in a CEO's wealth in the company for each 1 percent change in the stock price, where CEO wealth is referred to as the value of cumulative holdings of stock, options, and LTIPs for the CEO.

Panel B: Mean (Median) [SD] of Option Grants Pre- and Post-Adoption

Option Grants	Pre-Adoption TSO Grants (n = 61) (1)	Post-Adoption PVSO Grants (n = 61) (2)	Difference [(2) − (1)] (n = 61) (3)
Volume	134,335.09	208,396.80	74,061.71*
	(21,735.00)	(128,575.00)	(106,840*)
	[202,028.72]	[271,151.51]	[293,174.37]
Exercise price	4.20	4.34	0.14
	(3.34)	(3.22)	(−0.12)
	[3.16]	[3.98]	[3.07]

Column (3) is based on paired t-tests to test the differences in means and Wilcoxon matched pairs signed-rank tests to test differences in medians.

(continued on next page)

TABLE 4 (continued)

Panel C: Target Choices and Wealth Delta

	Dependent Variable					
Independent Variable	***LNDELTA* (1)**	***LNDELTA* (2)**	***LNDELTA* (3)**	***LNDELTA* (4)**	***LNDELTA* (5)**	***LNDELTA* (6)**
DEPS	−0.338					
	(−1.48)					
DIFF_SET		0.140*				
		(1.82)				
DIFF_AVG			0.154*			
			(1.81)			
DIFF_EXP				0.142*		
				(1.83)		
DIFF_AVGEXP					0.156*	
					(1.84)	
MEET						−0.894**
						(−2.22)
LNTA	0.202***	0.190***	0.204***	0.136*	0.144*	0.235***
	(2.75)	(2.60)	(2.80)	(1.70)	(1.83)	(3.10)
MTB	0.041**	0.043**	0.042**	0.043**	0.041**	0.047***
	(2.39)	(2.54)	(2.46)	(2.51)	(2.43)	(2.63)
TSR	0.318*	0.310*	0.326*	0.311*	0.327*	0.403**
	(1.70)	(1.66)	(1.75)	(1.67)	(1.75)	(2.02)
DEBT	−0.553	−0.740	−0.675	−0.754	−0.679	−0.898
	(−0.88)	(−1.19)	(−1.09)	(−1.21)	(−1.09)	(−1.39)
AGE	−0.006	−0.009	−0.009	−0.008	−0.008	0.002
	(−0.45)	(−0.70)	(−0.73)	(−0.65)	(−0.66)	(0.18)
QUALITY	0.084*	0.076*	0.074*	0.075*	0.073*	0.069
	(1.90)	(1.72)	(1.67)	(1.69)	(1.64)	(1.54)
FAMILY	0.447*	0.401*	0.394*	0.403*	0.396*	0.480*
	(1.89)	(1.72)	(1.69)	(1.72)	(1.70)	(1.92)
YEAR	Yes	Yes	Yes	Yes	Yes	Yes
INDUSTRY	Yes	Yes	Yes	Yes	Yes	Yes
# of Obs.	220	169	169	162	162	169
Adj. R^2	0.13	0.14	0.14	0.14	0.07	0.17

***, **, * Indicate significance at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.
Columns (1)–(6) contain the results of OLS models. The t-statistics shown in parentheses are based on standard errors adjusted for heteroscedasticity.

Variable Definitions:
LNDELTA = natural logarithm of a CEO's wealth delta;
DEPS = an indicator equal to 1 if PVSO vesting targets are based on earnings per share, and 0 otherwise;
DIFF_SET = PVSO adoption year's EPS growth target for option vesting;
DIFF_AVG = average annualized EPS growth target for options granted over three years after the initial PVSO grant;
DIFF_EXP = PVSO adoption year's EPS growth target for option minus estimated EPS growth;
DIFF_AVGEXP = *DIFF_AVG* minus estimated EPS growth;
MEET = an indicator equal to 1 if EPS growth targets are met by the end of the option vesting period, and 0 otherwise;
LNTA = natural logarithm of total assets;
MTB = market value of the firm divided by its book value;
TSR = total shareholder return;
DEBT = ratio of total liabilities to total assets;

(continued on next page)

TABLE 4 (continued)

AGE = age of a CEO in years;
QUALITY = a count of qualifications held by a CEO;
FAMILY = an indicator for the presence of major family/individual owners in the firm;
YEAR = year dummies; and
INDUSTRY = industry dummies.

based on elapsed time and whether the targets differ. We compare the grant volume and the exercise price of two types of options. The results of the mean (median) comparisons in Panel B show that the volume of the average PVSO grant is significantly higher than that of TSOs granted in the pre-adoption year ($p < 0.10$), whereas the exercise price remains unchanged.[30]

Next, we examine how pay-performance sensitivity (PPS) in CEO compensation (measured by wealth delta) changes with PVSO adoptions; in particular, how it is associated with vesting target choices. Panel C of Table 4 reports the regression results, which show that wealth delta increases with target difficulty in initial grants and that a lower wealth delta is associated with the choice of less challenging vesting targets (e.g., choosing EPS targets with a higher expectation of realization). Finally, we assess whether target choices influence the level of total compensation. Untabulated results show that target difficulty measures are not significantly related to total compensation. Taken together, our findings suggest that PVSO adoption indeed matters to some firms. Having established the importance of PVSOs as part of a CEO compensation package, we proceed to report our empirical results relating to CEO power.

Main Results

Managerial Power and Target Choices in PVSO Adoption

H1 focuses on the association between managerial power and choice of performance targets. Recall that we examine two choices—the choice between EPS and TSR (i.e., *DEPS*)—as well as the difficulty in EPS targets[31] (*DIFF_SET, DIFF_AVG, DIFF_EXP, DIFF_AVGEXP,* and *MEET*). When a dummy variable (i.e., *DEPS* or *MEET*) is used as the dependent variable, we use a logit model in the regression. We use ordinary least square (OLS) regression models when *DIFF_SET, DIFF_AVG, DIFF_EXP,* or *DIFF_AVGEXP* is the dependent variable.

The results presented in Table 5 illustrate how managerial power influences the setting of vesting targets in initial PVSO grants. *POWER* is significant in explaining a firm's vesting target choices. In particular, in Column (1), the coefficient on *POWER* is 0.683 ($p < 0.01$), suggesting that, holding other factors constant, the odds ratio is 1.613 for an inter-quartile change (i.e., from

[30] We focus on 61 PVSO firms that grant TSOs in the year prior to PVSO adoption. The results stay robust when taking into account the influences of inflation.

[31] We examine EPS difficulty because firms tend to use a generic benchmark when setting EPS targets; this yields a common reference point against which to evaluate target difficulty. For instance, firms generally state in their directors' remuneration reports that PVSO grants will start vesting when the performance as annualized EPS growth exceeds RPI + *x* percent over the last three years. Therefore, EPS growth vesting targets are comparable across firms. In contrast, the vesting of PVSO with TSR targets depends on firm performance relative to either a pre-specified peer group, an industry/sector index, a standard market index (i.e., FTSE 100 or FTSE 250), or other comparator groups; the vesting usually starts at the median performance of the comparator group and is capped at the top performance. We exclude the firms with TSR targets from the analysis of target difficulty due to the variety in the composition of comparator groups and, hence, the lack of a common benchmark to evaluate target difficulty. We do so as it is not clear how to assess the relative difficulty of the comparator group.

TABLE 5

Managerial Power, Public Outrage, and the Vesting Target Choices

	Dependent Variable					
Independent Variable	***DEPS*** **(1)**	***DIFF_SET*** **(2)**	***DIFF_AVG*** **(3)**	***DIFF_EXP*** **(4)**	***DIFF_AVGEXP*** **(5)**	***MEET*** **(6)**
POWER	0.683***	−0.557***	−0.425***	−0.658***	−0.524***	0.662*
	(3.06)	(−2.95)	(−2.79)	(−3.29)	(−3.19)	(1.67)
NEGMC	−0.060	0.006	0.031**	0.005	0.030**	0.013
	(−1.43)	(0.38)	(2.50)	(0.32)	(2.27)	(0.19)
LNMV	0.288*	0.271**	0.181*	−0.041	−0.130	0.296
	(1.73)	(2.01)	(1.66)	(−0.29)	(−1.11)	(1.07)
MTB	−0.029	0.019	0.013	0.040*	0.033*	0.089
	(−0.73)	(0.87)	(0.75)	(1.69)	(1.71)	(0.98)
TSR	1.126**	−0.277	−0.025	−0.403	−0.143	−0.967
	(2.16)	(−0.84)	(−0.09)	(−1.16)	(−0.50)	(−1.13)
DEBT	2.688**	0.786	0.062	0.009	−0.666	−1.227
	(2.20)	(1.03)	(0.10)	(0.01)	(−1.00)	(−0.59)
AGE	−0.001	−0.020	−0.022*	−0.020	−0.022	0.015
	(−0.02)	(−1.22)	(−1.67)	(−1.14)	(−1.53)	(0.31)
QUALITY	0.104	−0.065	−0.067	−0.066	−0.069	0.188
	(0.67)	(−1.04)	(−1.34)	(−1.00)	(−1.28)	(0.54)
FAMILY	−0.253	0.108	0.056	0.305	0.245	−0.796
	(−0.57)	(0.37)	(0.24)	(1.00)	(0.98)	(−1.16)
NOISE	0.026					
	(0.34)					
INDUSTRY	Yes	Yes	Yes	Yes	Yes	Yes
# of Obs.	192	169	169	162	162	169
Pseudo R^2	0.10					0.11
Adj. R^2		0.10	0.14	0.22	0.29	

***, **, * Indicate significance at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.
Columns (1) and (6) contain the results of logit models. Columns (2)–(5) report results of OLS models. The t-statistics and z-statistics in parentheses are based on standard errors adjusted for heteroscedasticity.

Variable Definitions:
DEPS = an indicator equal to 1 if PVSO vesting targets are based on earnings per share, and 0 otherwise;
DIFF_SET = PVSO adoption year's EPS growth target for option vesting;
DIFF_AVG = average annualized EPS growth target for options granted over three years after the initial PVSO grant;
DIFF_EXP = PVSO adoption year's EPS growth target for option minus estimated EPS growth;
DIFF_AVGEXP = *DIFF_AVG* minus estimated EPS growth;
MEET = an indicator equal to 1 if EPS growth targets are met by the end of the option vesting period, and 0 otherwise;
POWER = a composite construct measuring CEO power based on PCA;
NEGMC = a count of articles published in the six months after the end of the fiscal year that contain a negative tone on CEO compensation of a firm;
LNMV = natural logarithm of market value of equity;
MTB = market value of the firm divided by its book value;
TSR = total shareholder return;
DEBT = ratio of total liabilities to total assets;
AGE = age of a CEO in years;
QUALITY = a count of qualifications held by a CEO;
FAMILY = an indicator for the presence of major family/individual owners in the firm;
NOISE = standard deviation of stock returns divided by the standard deviation of the change in accounting earnings; and
INDUSTRY = industry dummies.

the median to the 75th percentile) in *POWER*.[32] The level of target difficulty increases monotonically with four *DIFF* measures, namely, *DIFF_SET, DIFF_AVG, DIFF_EXP,* and *DIFF_AVGEXP*. The significant and negative coefficient on *POWER* ($p < 0.01$) on all four measures of target difficulty (Table 5, Columns (2)–(5)) suggests that easier performance hurdles will be attached to PVSO vesting when the CEO has stronger influence over board decisions regarding compensation design and target choices. Furthermore, the results of control variables demonstrate that our target measures likely capture various dimensions of target difficulty, as larger firms appear to set more challenging targets at initial grants. However, once we control for expected growth, target difficulty is no longer significantly associated with firm size. This suggests that expected growth explains the association between firm size and vesting targets and also speaks to the importance of controlling for expected growth when measuring target difficulty.[33]

MEET measures target difficulty in terms of achievability or realization. A lower level of realization indicates more challenging targets. Results are reported in Column (6) of Table 5. Consistent with our expectation, *POWER* is positive and significant ($p < 0.10$), suggesting that when a CEO exhibits significant power over compensation design, the performance targets attached to initial PVSO grants are more easily achievable. In particular, the coefficient on *POWER* is 0.662. If a CEO ranks at the median *POWER* and assuming his or her probability of meeting the vesting target is 50 percent, then, *ceteris paribus,* the effect of an inter-quartile increase in *POWER* increases the probability to 61 percent.[34]

To summarize, the findings are consistent with H1 that powerful CEOs exert influence over compensation design to ensure relatively easy and achievable performance hurdles.

Managerial Power and the Timing of PVSO Adoption

Recall that we employ two measures to capture PVSO adoption timing. When *EARLY_SURV* is used as the dependent variable, we perform a survival analysis and a hazard model is employed. The survival analysis concentrates on the early years of our observation period (i.e., 1997, 1998, and 1999), and the sample includes 55 firms that adopted PVSO plans in one of the early years, 122 firms that adopted PVSO plans in one of the later years (i.e., after 1999),[35] and 17 firms that did not adopt PVSO plans throughout our test period. For the dependent variable *EARLY,* we use OLS models to estimate the influence of managerial power on PVSO plans, and focus on the 220 firms that adopted PVSO plans between 1997 and 2004.

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[32] Here, the odds ratio is equal to: $\frac{p_1/(1-p_1)}{p_0/(1-p_0)} = \exp(\hat{\beta} * [75th - median]) = \exp(0.683 * [0.683 - (-0.017)]) = 1.613$. Note that the impact on the probability of using an EPS growth target depends on the baseline probability p_0 used to measure change (Ge and Whitmore, 2010). If a median power CEO has a 50% probability of using EPS target ($p_0 = 0.50$), then the probability (p_1) will increase to 62 percent for an inter-quartile change in CEO power. Substituting 0.50 for p_0 in the equation above and solving for p_1 gives $p_1 = 0.617$.

[33] We do not find that the economic determinants of vesting targets feature strongly in our results. Prior research has found similarly ambiguous findings (see, e.g., Gerakos et al. 2007; Carter et al. 2009; Bettis et al. 2010). It is also possible, as Locke and Latham (2002) argue, that the lack of explanatory power is due to the fact that other factors are at work; in our case, CEO power. We also recognize that OLS can provide inefficient (or possibly biased) estimates, as such models do not take into account simultaneity in decisions; in our case, the decision to adopt PVSOs and the vesting targets. Results of simultaneous equation modeling and seemingly unrelated regression estimations show that apart from CEO power, OCT variables, e.g., firm size, growth opportunities, capital structure, and noise in performance measures, play a significant role in explaining a firm's target choices.

[34] Here, the odds ratio is equal to: $\frac{p_1/(1-p_1)}{p_0/(1-p_0)} = \exp(\hat{\beta} * [75th - median]) = \exp(0.662 * [0.683 - (-0.017)]) = 1.589$. Substituting 0.50 for p_0 in the equation and solving for p_1 gives $p_1 = 0.614$.

[35] For the other 43 firms that adopted PVSOs from 2000 until 2004, the data on their early years are not sufficiently available. Therefore, we dropped these observations in the survival analysis.

Table 6 presents the effects of CEO power on the adoption decision; *POWER* is significant in explaining the variance in adoption timing across various model specifications. In particular, the significant positive coefficient on *POWER* in Column (1) ($p < 0.01$) suggests that firms that are more likely to be exposed to managerial influence over their boards tend to adopt PVSO plans earlier, in line with our expectation. Columns (2) and (3) in Table 6 provide the hazard model estimations when *EARLY_SURV* is employed as the dependent variable. In particular, we employ the Cox (1972) proportional hazard model. The hazard rate corresponds to the likelihood of early PVSO adoption during year *t*, conditional upon the firm not adopting PVSO plans until year *t*. Survival analysis is distinguished from other statistical analysis in its handling of censored data. Our early PVSO adoption data are right-censored, as some firms adopted PVSO plans while other firms did not at the end of our test period (i.e., 1997–1999). Standard statistical methods usually do not account for the censoring issue and, hence, introduce biases into the results (Cox and Oakes 1984; Singer and Willett 2003). Column (2) reports the results, including both PVSO adopters (i.e., early and late adopters, depending on whether they granted PVSO plans to their CEO during the early adoption period of 1997–1999, or in the late period of 2000–2004) and non-adopters (i.e., no adoption in either the early or late period), whereas in Column (3), only adopters are included. The significant positive coefficient on *POWER* ($p < 0.01$) suggests that the likelihood of early PVSO adoption increases with CEOs' managerial power over their boards. In particular, the coefficient on *POWER* is 0.906 in Column (2), suggesting that, all else being equal, an inter-quartile increase in *POWER* is associated with an 89 percent increase in the probability of adopting a PVSO plan in one of the early years.[36]

The results on control variables show that firms tend to adopt PVSOs early when they (1) granted less equity and/or bonus to their CEOs in the prior year; hence, the equity grants can be used to manage desired incentive levels (Core and Guay 1999); and (2) already have long-term incentive plans (i.e., LTIPs) in place, which may indicate that when a vehicle for performance equity has already been developed, firms tend to become an earlier adopter of PVSO plans. We also find that larger firms and those with a higher market return and/or an older CEO adopt PVSOs early. This is consistent with prior evidence that firms design incentive contracts to address managerial risk-aversion and horizon problems (Dechow and Sloan 1991; Cheng 2004).

In summary, we find significant support for H2, which states that firms under the control of powerful CEOs are more likely to adopt PVSO plans early.

Simultaneous Tests of the Timing and Target Choice of PVSO Grants

Our prior tests relating CEO power to PVSO timing choice and target choice use separate regressions. However, if these are simultaneous choices, then the separate regression results could be biased (Coles, Lemmon, and Meschke 2012). Therefore, we simultaneously model the choices relating to the timing of PVSO adoption and target difficulty. We assume that CEO pay structure (i.e., *%BONUS* and *%EQUITY*), use of long-term incentive plans (i.e., *LTIP*), and firm-specific risk (i.e., *VOLATILITY*) are related to the initial grants of PVSOs (Westphal and Zajac 1994), but have little influence on the choice of vesting targets. Therefore, we use these variables as the instruments for *EARLY* in the regressions of *DEPS*, *DIFF_EXP*, and *DIFF_AVGEXP*. Likewise, we expect capital structure (i.e., *DEBT*) and performance measurement noise (i.e., *NOISE*) to affect the choice of PVSO vesting targets (Core et al. 2003; Sloan 1993). However, as these factors are less likely to

[36] In this case, the hazard ratio is equal to:
$exp(\hat{\beta} * [75th - median]) = exp(0.906 * [0.683 - (-0.017)]) = 1.886$.
So the probability of an early adoption for a CEO ranking the 25th most powerful is 1.886 times the probability for the median powerful CEO.

TABLE 6

Managerial Power, Public Outrage, and the Timing of PVSO Adoption

	Dependent Variable		
Independent Variable	***EARLY*** **(1)**	***EARLY_SURV*** **(2)**	**(3)**
POWER	0.618***	0.906***	1.185***
	(2.98)	(6.76)	(9.72)
NEGMC	−0.010	−0.013	−0.015
	(−0.39)	(−1.18)	(−1.13)
%BONUS	−1.955***	−1.566**	−1.485**
	(−3.53)	(−2.19)	(−2.00)
%EQUITY	−0.903	−2.042***	−1.491***
	(−1.49)	(−2.88)	(−2.83)
LTIP	0.377	1.707***	1.286**
	(0.75)	(3.85)	(2.40)
LNMV	0.336**	0.280**	0.037
	(2.05)	(2.42)	(0.34)
MTB	0.071**	−0.003	−0.006
	(2.15)	(−0.40)	(−0.70)
TSR	1.012**	4.304***	3.009*
	(2.11)	(2.89)	(1.83)
AGE	0.069***	0.041*	0.020
	(2.88)	(1.65)	(1.03)
QUALITY	−0.128	0.056	0.104
	(−1.30)	(0.58)	(1.23)
VOLATILITY	5.083***	3.018	0.270
	(2.62)	(1.18)	(0.10)
FAMILY	−0.371	−0.256	−0.472
	(−0.88)	(−0.83)	(−1.61)
INDUSTRY	Yes	Yes	Yes
# of Obs.	220	313	283
Wald Chi-square		210.29***	300.88***
Adj. R^2	0.21		

***, **, * Indicate significance at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.
Column (1) contains the results of OLS models using a sample of 220 firms that adopted PVSO plans between 1997 and 2004. Columns (2)–(3) contain the results of hazard models using observations during the early adoption period (i.e., 1997–1999). Column (2) uses a dataset of 313 firm-year observations including 55 PVSO adopters and 139 non-adopters (depending on whether they adopted PVSO plans between 1997–1999), among which non-adopters' 122 firms finally adopted PVSO plans between 2000 and 2004, whereas 17 firms did not; firm-year observations for PVSO adopters were excluded from the sample for years subsequent to the adoption. Column (3) includes 283 firm-year observations between 1997 and 1999; the sample includes 55 early adopters that granted PVSO plans to their CEO between 1997 and 1999, and 122 late adopters that did so between 2000 and 2004; firm-year observations for PVSO adopters were excluded from the sample for years subsequent to the adoption. In Column (1), the t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. In Columns (2) and (3), the z-statistics in parentheses are based on standard errors adjusted for autocorrelation and heteroscedasticity, and clustered at firm level.

Variable Definitions:
EARLY = a discrete variable that measures the timing of adoption of PVSO plans;
EARLY_SURV = an indicator variable equal to 1 if a firm adopted PVSO plans in 1997, 1998, or 1999, and 0 otherwise;
POWER = a composite construct measuring CEO power based on PCA;

(continued on next page)

TABLE 6 (continued)

NEGMC = a count of articles published in the six months after the end of the fiscal year that contain a negative tone on CEO compensation of a firm;
%BONUS = ratio of bonus to salary;
%EQUITY = proportion of equity compensation in total compensation;
LTIP = an indicator for the presence of long-term incentive plans in a CEO's compensation package;
LNMV = natural logarithm of market value of equity;
MTB = market value of the firm divided by its book value;
TSR = total shareholder return;
AGE = age of a CEO in years;
QUALITY = a count of qualifications held by a CEO;
VOLATILITY = standard deviation of the monthly stock returns during the year;
FAMILY = an indicator for the presence of major family/individual owners in the firm; and
INDUSTRY = industry dummies.

determine the timing of PVSO adoption, we use them as instrumental variables for *DEPS, DIFF_EXP,* and *DIFF_AVGEXP* in the estimation of *EARLY*. We also note that a violation of the assumption on instrumental variables can lead to biased estimates.[37]

In Table 7, we report the results of three simultaneous equations model systems, and make two observations. First, after controlling the simultaneity in the two choices, namely, performance targets and adoption timing, the results indicate the significant influence of managerial power on both choices. Second, in the simultaneous system, firms adopting PVSO plans earlier tend to choose less challenging performance targets (i.e., EPS targets), although the evidence is less strong *vice versa*.

Managerial Power and "Outrage"—Does Outrage Moderate the Behavior of Powerful CEOs?

H3 predicts that the relation between CEO power and PVSO choices will be exacerbated in the presence of public outrage. Our model assesses the interaction between CEO power and outrage on the decision to adopt early, as well as the impact of this interaction on target choices. Table 8 reports the results; in Column (1), *EARLY* is used as the dependent variable; *DEPS* is the dependent variable in Column (2);[38] and *DIFF_EXP* is the dependent variable in Column (3). The interaction term between "outrage" and "power" captures the moderating effects of outrage on PVSO adoptions in firms with a powerful CEO. The positive and significant coefficients on the interaction term between *NEGMC* and *POWER* in Column (1) ($p < 0.10$) support our expectation that the effect of power on the choice to adopt early will be stronger for those powerful CEOs facing more intense outrage (i.e., negative press) than those who face less negative press. Powerful CEOs will choose to adopt PVSO plans earlier as the pressure from external outrage over the CEO pay

[37] Given the debate on the appropriateness of instrumental variable methods in empirical accounting research (Larcker and Rusticus 2010), we also employ the seemingly unrelated regression (SUR) approach to estimate the determinants of adoption timing and target setting in a regression system with the error terms assumed to be correlated across the equations. Using the SUR model does not affect our main inferences. We are indebted to one of the reviewers for suggesting this alternative method.

[38] Column (2) reports results of a logit model. Hoetker (2007) argues that in nonlinear estimation models, the sign and significance of interaction coefficients differ across observations. Nevertheless, we find consistent results when using an OLS model.

TABLE 7

Simultaneous Equations Models of Timing of PVSO Adoption and Vesting Target Choices

	Dependent Variable					
	System I		System II		System III	
Independent Variable	***EARLY*** **(1)**	***DEPS*** **(2)**	***EARLY*** **(3)**	***DIFF_EXP*** **(4)**	***EARLY*** **(5)**	***DIFF_AVGEXP*** **(6)**
DEPS	0.656					
	(1.47)					
EARLY		0.021*		−0.142***		−0.137***
		(1.82)		(−3.95)		(−3.93)
DIFF_EXP			−0.392***			
			(−2.80)			
DIFF_AVGEXP					−0.489***	
					(−2.94)	
POWER	0.456**	0.098***	0.566***	−0.104***	0.578***	−0.281*
	(2.10)	(2.75)	(2.69)	(2.94)	(2.75)	(−1.93)
NEGMC	0.015	−0.011	0.001	−0.017	0.012	−0.021
	(0.32)	(−1.37)	(0.03)	(−0.71)	(0.25)	(−0.86)
%BONUS	−2.098***		−1.785***		−1.659***	
	(−3.42)		(−2.89)		(−2.66)	
%EQUITY	−0.389		−0.490		−0.495	
	(−0.62)		(−0.80)		(−0.81)	
LTIP	0.846*		0.740		−0.762	
	(1.67)		(1.48)		(−1.53)	
LNMV	0.277	0.045*	0.178	−0.342***	0.145	−0.232**
	(1.61)	(1.68)	(1.02)	(−4.12)	(0.82)	(−2.21)
MTB	0.080**	−0.008	0.103***	0.080***	0.100***	0.076***
	(2.35)	(−1.30)	(2.99)	(4.21)	(2.94)	(3.98)
TSR	1.086**	0.155*	1.050**	−0.136	1.056**	−0.162
	(2.20)	(1.92)	(2.18)	(−0.54)	(2.20)	(−0.65)
DEBT		0.494**		−1.134*		−0.975
		(2.49)		(−1.84)		(−1.58)
AGE	0.063**	−0.001	0.050*	−0.025*	0.051**	−0.020
	(2.46)	(−0.25)	(1.95)	(−1.88)	(1.99)	(−1.56)
QUALITY	0.034	0.010	0.010	−0.049	−0.015	−0.057
	(0.28)	(0.50)	(0.09)	(−0.79)	(−0.12)	(−0.92)
VOLATILITY	4.243**		3.563*		0.361*	
	(2.09)		(1.77)		(1.80)	
FAMILY	−0.738*	−0.018	−0.742*	−0.067	−0.727*	−0.092
	(−1.65)	(−0.24)	(−1.69)	(−0.29)	(−1.66)	(−0.40)
NOISE		0.006		−0.095**		−0.095**
		(0.45)		(−2.45)		(−2.46)
INDUSTRY	Yes	Yes	Yes	Yes	Yes	Yes
# of Obs.	192	192	162	162	162	162
F-statistics	5.09***	2.11**	5.65***	7.18***	5.73***	7.53***

(continued on next page)

TABLE 7 (continued)

***, **, * Indicate significance at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.
Columns (1)–(6) are the three simultaneous equations model systems. The t-statistics shown in parentheses are based on standard errors adjusted for heteroscedasticity.

Variable Definitions:
EARLY = a discrete variable that measures the timing of adoption of PVSO plans;
DEPS = an indicator equal to 1 if PVSO vesting targets are based on earnings per share, and 0 otherwise;
DIFF_EXP = PVSO adoption year's EPS growth target for option minus estimated EPS growth;
DIFF_AVGEXP = average annualized EPS growth target for options granted over three years after the initial PVSO grant minus estimated EPS growth;
POWER = a composite construct measuring CEO power based on PCA;
NEGMC = a count of articles published in the six months after the end of the fiscal year that contain a negative tone on CEO compensation of a firm;
%BONUS = ratio of bonus to salary;
%EQUITY = proportion of equity compensation in total compensation;
LTIP = an indicator for the presence of long-term incentive plans in a CEO's compensation package;
LNMV = natural logarithm of market value of equity;
MTB = market value of the firm divided by its book value;
TSR = total shareholder return;
DEBT = ratio of total liabilities to total assets;
AGE = age of a CEO in years;
QUALITY = a count of qualifications held by a CEO;
VOLATILITY = standard deviation of the monthly stock returns during the year;
FAMILY = an indicator for the presence of major family/individual owners in the firm;
NOISE = standard deviation of stock returns divided by the standard deviation of the change in accounting earnings; and
INDUSTRY = industry dummies.

intensifies. However, we do not find significant empirical support that public outrage will moderate target choices in PVSO plans for powerful CEOs.

Next, we examine the main effect of public outrage on PVSO choices. Table 5 presents the results on the role of the media in shaping a firm's target choices in PVSO adoption, where the target choices are measured by *DEPS, DIFF_SET, DIFF_AVG, DIFF_EXP, DIFF_AVGEXP,* and *MEET*. There is no significant influence of negative media on vesting targets except in the model specification using *DIFF_AVG* or *DIFF_AVGEXP* as the dependent variable. Recall that both *DIFF_AVG* and *DIFF_AVGEXP* relate to EPS growth targets over a longer period of time, i.e., averaged over three years after the initial grants. The significant positive sign on *NEGMC* in Columns (3) and (5) ($p < 0.05$) suggests that firms facing public outrage tend to increase target difficulty gradually over a longer time frame rather than to set challenging targets in the initial grants. Table 6 reports the results on the association between outrage and adoption timing. *NEGMC* is not significant in any model specification, which suggests that media negativity in itself is not sufficiently strong to prompt PVSO adoption, consistent with prior evidence that firms will not adjust compensation policies to negative media (Core et al. 2008).

Do Managerial Power and Early Adoption Matter?

We test H4 by first assessing whether and how CEO power influences the efficiency of CEO compensation contracts. We then assess the implications of early adoption and/or easy vesting targets on firm performance. We follow Coles et al. (2006) and measure interest alignment by CEO wealth delta (i.e., *LNDELTA*) and use delta to capture contract efficiency. The results are presented in Table 9. We find that *POWER* is negatively and significantly associated with *LNDELTA* ($p < 0.01$), implying that CEO power is indeed detrimental to firm value and relates

TABLE 8

Managerial Power, Public Outrage, the Timing of PVSO Adoption, and Target Choices

	Dependent Variable		
Independent Variable	***EARLY*** **(1)**	***DEPS*** **(2)**	***DIFF_EXP*** **(3)**
POWER	0.503**	0.562**	−0.132*
	(2.32)	(2.34)	(−1.78)
NEGMC	0.020	−0.044	−0.017
	(0.67)	(−0.67)	(−0.87)
*POWER * NEGMC*	0.081*	0.068	−0.071
	(1.75)	(1.13)	(−1.15)
%BONUS	−1.839***		
	(−3.31)		
%EQUITY	−0.976		
	(−1.62)		
LTIP	0.492		
	(0.97)		
LNMV	0.333**	0.298*	−0.338***
	(2.04)	(1.77)	(−2.90)
MTB	0.075**	−0.026	0.043*
	(2.25)	(−0.65)	(1.78)
TSR	0.980**	1.098**	−0.320
	(2.05)	(2.11)	(−0.90)
DEBT		2.673**	−0.387
		(2.18)	(−0.46)
AGE	0.068***	−0.002	−0.028
	(2.85)	(−0.06)	(−1.53)
QUALITY	−0.117	0.133	−0.052
	(−1.19)	(0.81)	(−0.77)
VOLATILITY	5.084***		
	(2.63)		
FAMILY	−0.406	−0.287	0.468
	(−0.97)	(−0.64)	(1.50)
NOISE		0.004	
		(0.05)	
INDUSTRY	Yes	Yes	Yes
# of Obs.	220	192	162
Pseudo R^2		0.11	
Adj. R^2	0.22		0.18

***, **, * Indicate significance at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively. Columns (1) and (3) report results of OLS models. Column (2) contains the results of logit models. The t-statistics and z-statistics in parentheses are based on standard errors adjusted for heteroscedasticity.

Variable Definitions:
EARLY = a discrete variable that measures the timing of adoption of PVSO plans;
DEPS = an indicator equal to 1 if PVSO vesting targets are based on earnings per share, and 0 otherwise;
DIFF_SET = PVSO adoption year's EPS growth target for option vesting;
DIFF_EXP = PVSO adoption year's EPS growth target for option minus estimated EPS growth;
POWER = a composite construct measuring CEO power based on PCA;

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TABLE 8 (continued)

NEGMC = a count of articles published in the six months after the end of the fiscal year that contain a negative tone on CEO compensation of a firm;
%BONUS = ratio of bonus to salary;
%EQUITY = proportion of equity compensation in total compensation;
LTIP = an indicator for the presence of long-term incentive plans in a CEO's compensation package;
LNMV = natural logarithm of market value of equity;
MTB = market value of the firm divided by its book value;
TSR = total shareholder return;
DEBT = ratio of total liabilities to total assets;
AGE = age of a CEO in years;
QUALITY = a count of qualifications held by a CEO;
VOLATILITY = standard deviation of the monthly stock returns during the year;
FAMILY = an indicator for the presence of major family/individual owners in the firm;
NOISE = standard deviation of stock returns divided by the standard deviation of the change in accounting earnings; and
INDUSTRY = industry dummies.

to inefficient incentive contracts. The significant and positive sign on *NEGMC* ($p < 0.05$) suggests that firms, when confronted with public outrage, will improve the sensitivity of CEO wealth to firm performance. This is in line with prior literature's observation that firms choose to enhance managerial compensation efficiency to address external pressures (Ferri and Maber 2013).[39]

We then assess firms' performances after initial PVSO grants. In particular, we examine whether performance differs for those firms that adopt PVSOs early/attach easier targets compared to those firms that do not. If the early adopters or those that adopt easy targets underperform, then this would be consistent with our conjecture that powerful CEOs consider early PVSO adoption with easy targets as a low-cost strategy to satisfy regulatory demands and advance their own personal benefit. We measure firm performance by a firm's *TSR* in t+1 (i.e., TSR_{t+1}) and in years from t+1 to t+3 (i.e., TSR_{t+3}), where t is the year of PVSO adoption. Panel A of Table 10 presents the results. Consistent with our expectation, *EARLY* loads negatively and significantly ($p < 0.10$) after controlling for the influence of firm size, growth, and risk on market return. *DIFF_EXP* is significant and positively related to subsequent firm performance ($p < 0.05$), but the choice of using EPS targets does not significantly explain performance. The results suggest that early PVSO adoption and/or easy targets have a negative impact on the firm's subsequent performance. Hence, early adoption with easy targets does not appear to be an optimal strategy to improve firm value.[40]

[39] In addition, we compare contracting efficiency between early and late adopters and examine whether the adoption of PVSO plans is associated with lower pay-performance sensitivity in the early years of our investigation period (i.e., 1997–1999). Untabulated results show that PPS is significantly lower for early adopters than for late adopters, suggesting that strong boards (or late adopters) focus on other mechanisms to improve the pay-for-performance link and promote shareholder value. We also investigate the association between CEO power and firm risk subsequent to initial PVSO grants, which is measured by monthly stock return volatility averaged over t+1 to t+3, but find no significant results.

[40] For completeness, we also investigate firms' subsequent accounting-based performance, as measured by *ROA* and *EPS* in t+1 and t+3 after initial grants. The untabulated results show that adoption timing and target choices do not significantly explain the variation in accounting performance in years following PVSO adoption. Given managerial discretion in financial reporting, accounting performance measures may provide a less reliable proxy for firm performance and, therefore, contribute to the insignificance.

TABLE 9

Managerial Power, Public Outrage, and Wealth Delta

Independent Variable	Dependent Variable *LNDELTA* (1)
NEGMC	0.052**
	(2.53)
POWER	−0.507***
	(−4.37)
LNTA	0.302***
	(3.76)
MTB	0.059***
	(3.59)
TSR	0.311*
	(1.79)
DEBT	−1.097*
	(−1.88)
AGE	−0.016
	(−1.30)
QUALITY	0.050
	(1.21)
FAMILY	0.261
	(1.15)
YEAR	Yes
INDUSTRY	Yes
# of Obs.	220
Adj. R^2	0.27

***, **, * Indicate significance at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.
Column (1) contains the results of OLS models. The t-statistics shown in parentheses are based on standard errors adjusted for heteroscedasticity.

Variable Definitions:
LNDELTA = natural logarithm of a CEO's wealth delta;
NEGMC = a count of articles published in the six months after the end of the fiscal year that contain a negative tone on CEO compensation of a firm;
POWER = a composite construct measuring CEO power based on PCA;
LNTA = natural logarithm of total assets;
MTB = market value of the firm divided by its book value;
TSR = total shareholder return;
DEBT = ratio of total liabilities to total assets;
AGE = age of a CEO in years;
QUALITY = a count of qualifications held by a CEO;
FAMILY = an indicator for the presence of major family/individual owners in the firm;
YEAR = year dummies; and
INDUSTRY = industry dummies.

TABLE 10

Change of Firm Performance and Negative Publicity between the Pre- and Post-Adoption Years in Relation to the Timing of PVSO Adoption

Panel A: Subsequent Firm Performance

	Dependent Variable							
Independent Variable	TSR_{t+1} **(1)**	TSR_{t+1} **(2)**	TSR_{t+1} **(3)**	TSR_{t+1} **(4)**	TSR_{t+3} **(5)**	TSR_{t+3} **(6)**	TSR_{t+3} **(7)**	TSR_{t+3} **(8)**
EARLY	−0.037*				−0.014*			
	(−1.93)				(−1.70)			
DEPS		−0.167				−0.063		
		(−1.47)				(−1.00)		
DIFF_EXP			0.085**				0.023***	
			(2.04)				(3.38)	
DIFF_AVGEXP				0.093**				0.014
				(2.08)				(0.73)
LNTA	0.105***	0.109***	0.124***	0.146***	−0.002	−0.001	0.010	0.013
	(4.00)	(4.18)	(3.35)	(4.34)	(−0.09)	(−0.05)	(0.61)	(0.51)
SALESGROW	0.086	0.069	0.106*	0.076	−0.057*	−0.062*	−0.026	−0.056
	(1.53)	(1.29)	(1.82)	(1.42)	(−1.73)	(−1.89)	(−0.60)	(−1.62)
VOLATILITY	−0.134	−0.401	−0.375	−0.039	−0.334	−0.433	−0.187	−0.043*
	(−0.27)	(−0.73)	(−0.70)	(−0.69)	(−1.24)	(−1.56)	(−0.63)	(−1.64)
INDUSTRY	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of Obs.	220	220	162	162	218	218	162	162
Adj. R^2	0.10	0.09	0.12	0.11	0.04	0.04	0.02	0.03

(continued on next page)

TABLE 10 (continued)

Panel B: Change of Negative Publicity from the Media

	Dependent Variable							
Independent Variable	**Δ *NEGMC* (1)**	**Δ *NEGMC* (2)**	**Δ *NEGMC* (3)**	**Δ *NEGMC* (4)**	**Δ *ADJNEGMC* (5)**	**Δ *ADJNEGMC* (6)**	**Δ *ADJNEGMC* (7)**	**Δ *ADJNEGMC* (8)**
EARLY	−0.069*				−0.351**			
	(−1.82)				(−2.07)			
DEPS		0.441*				0.342		
		(1.66)				(0.29)		
DIFF_EXP			−0.601*				−0.610*	
			(−1.76)				(−1.78)	
DIFF_AVGEXP				−1.715***				−1.736***
				(−4.54)				(−4.58)
Δ*TSR*	0.029	0.032	0.022	0.020	0.036	0.020	0.023	0.021
	(0.77)	(0.86)	(0.13)	(0.12)	(0.22)	(0.12)	(0.14)	(0.13)
Δ*EPS*	−0.177***	−0.176***	−0.318	−0.351*	−0.319	−0.305	−0.321	−0.364*
	(−3.54)	(−3.50)	(−1.44)	(−1.69)	(−1.44)	(−1.36)	(−1.44)	(−1.70)
Δ*SALESGROW*	−0.303***	−0.317***	−0.582*	−0.944***	−0.303	−0.324	−0.570*	−0.937***
	(−4.30)	(−4.48)	(−1.70)	(−2.88)	(−0.97)	(−1.02)	(−1.66)	(−2.84)
Δ*LNTA*	−0.026	−0.025	−0.144	−0.128	−0.163	−0.141	−0.138	−0.121
	(−0.97)	(−0.94)	(−1.24)	(−1.14)	(−1.39)	(−1.19)	(−1.18)	(−1.08)
INDUSTRY	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of Obs.	220	220	162	162	220	220	162	162
Adj. R^2	0.14	0.14	0.04	0.11	0.04	0.02	0.04	0.11

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TABLE 10 (continued)

***, **, * Indicate significance at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.
Columns (1)–(8) contain the results of OLS models. The t-statistics shown in parentheses are based on standard errors adjusted for heteroscedasticity.

Variable Definitions:
TSR_{t+1} = total shareholder return in the first year subsequent to PVSO adoption;
TSR_{t+3} = average total shareholder returns in three years subsequent to the adoption;
EARLY = a discrete variable that measures the timing of adoption of PVSO plans;
DEPS = an indicator equal to 1 if PVSO vesting targets are based on earnings per share, and 0 otherwise;
DIFF_EXP = PVSO adoption year's EPS growth target for option minus estimated EPS growth;
DIFF_AVGEXP = average annualized EPS growth target for options granted over three years after the initial PVSO grant minus estimated EPS growth;
LNTA = natural logarithm of total assets;
SALESGROW = sales growth rate;
VOLATILITY = standard deviation of the monthly stock returns during the year;
$\Delta NEGMC$ = change of negative publicity in the media surrounding PVSO adoption year *t*, i.e., $NEGMC_t - NEGMC_{t-1}$, where *NEGMC* is a count of articles published in the six months after the end of the fiscal year that contain a negative tone on CEO compensation of a firm;
$\Delta ADJNEGMC = ADJNEGMC_t - ADJNEGMC_{t-1}$, where *ADJNEGMC* is time-trend-adjusted negative publicity in the media, calculated as *NEGMC* minus the mean *NEGMC* from all media articles about CEO pay for all sample firms during the year;
$\Delta TSR = TSR_t - TSR_{t-1}$, where *TSR* is total shareholder return;
$\Delta EPS = EPS_t - EPS_{t-1}$, where *EPS* is earnings per share;
$\Delta SALESGROW = SALESGROW_t - SALESGROW_{t-1}$, where *SALESGROW* is sales growth rate;
$\Delta LNTA = LNTA_t - LNTA_{t-1}$, where *LNTA* is the natural logarithm of total assets; and
INDUSTRY = industry dummies.

In addition, we examine market reaction to PVSO adoption by performing an event study and calculating cumulative abnormal return (CAR) over a short window when the adoption becomes publicly known.[41] The consistent results are based on various event windows (i.e., [−1, 1], [0, 2], and [−1, 10]) show that the adoption of PVSO plans is, on average, accompanied by significant positive market reaction ($p < 0.01$), in line with prior studies and our findings on the general value-enhancing effects of adopting PVSOs. Next, we regress CAR on the measures of CEO power and find that powerful CEOs will attenuate the positive market reaction to the adoption ($p < 0.01$), suggesting that investors (at least partially) anticipate possible manipulation by powerful CEOs in their compensation plans and, in turn, discount the beneficial effect of PVSO adoption on firm value.

Further Analysis

Do Firms with Powerful CEOs Opt for Vague Disclosure to "Camouflage" Vesting Targets?

In our prior analyses, we provide evidence that firms with powerful CEOs opt for less challenging targets in their initial PVSO grants. We argue that this is a form of camouflage. If the public, however, comprehends the detailed descriptions of PVSO vesting targets, then this camouflage strategy will become less effective.[42] In our reading of remuneration reports, we notice that most firms highlight in the reports that their executive pay is strongly based on firm performance, particularly for PVSOs. With regard to the disclosure of PVSO targets, however, some firms report the vesting targets in the main body of the remuneration report, whereas others choose to disclose in a footnote to the report or in a note in financial statements. Presumably, such disclosure strategy makes the PVSO vesting targets less noticeable.[43] To test whether CEO power, the timing of PVSO adoption, and target choices are related to disclosure, we fit a logit model where the dependent variable, *D_FOOTNOTE,* is an indicator equal to 1 if a firm discloses PVSO performance targets in a footnote to the remuneration report or a note in financial statements, and 0 if the targets are reported in the main body of remuneration report. We regress *D_FOOTNOTE* on *POWER, NEGMC, EARLY,* and *DEPS,* respectively, as well as a number of controls.[44] Untabulated results show that firms with a powerful CEO ($p < 0.10$), early adopters ($p < 0.01$), and/or firms attaching EPS targets ($p < 0.10$) are more inclined to disclose target details in a less noticeable manner. Taken together, this evidence supports our assumption that powerful CEOs can and will "camouflage" vesting targets in PVSOs.

Are Powerful CEOs Successful with Their Camouflage Strategy?

We predict and find that powerful managers have a stronger incentive to adopt PVSO plans earlier when confronted with public outrage. However, the general public may or may not be

[41] The estimation period is [−100, −10]. We assume that PVSO adoption becomes publicly known when firms file their annual reports and, hence, use the reporting date as the event date. The reporting date is retrieved via the London Stock Exchange Aggregated Regulatory News Service. The disclosure of the exact grant date for PVSO adoption is subject to managerial discretion and firms often choose to only disclose the month when the grant is made (rather than the exact date), which limits our sample size if we define events by the disclosed exact dates. Nevertheless, we acknowledge that the reporting date is less accurate than the initial grant date.

[42] Conyon et al. (2000) show the complexity of compensation contracts and their implementation in Britain's largest companies. Furthermore, evidence reveals that investors do not fully comprehend the detailed descriptions of CEO compensation contained in annual reports, and they often do "box-ticking" when evaluating a firm's degree of compliance to corporate governance codes (Shleifer 2000; Hirshleifer and Teoh 2003; Li 2008).

[43] The text in a footnote is often in a smaller font than the main text; financial statement notes are usually placed apart from the remuneration report.

[44] Including *LNMV, MTB, TSR, DEBT, AGE, QUALITY, FAMILY,* and industry dummies.

susceptible to such a managerial strategy. Thus, we examine whether the change of negative publicity in the media between the pre- and post-adoption years is related to the target choices and the timing of PVSO adoption. To illustrate the change in media coverage due to adoption, we take the first-order differences in *NEGMC* between the adoption year t and the pre-adoption year $t-1$. Following prior literature, we adjust time trends in media coverage by subtracting yearly average market-wide negative publicity from *NEGMC* (Kuhnen and Niessen 2012). We measure the average market-wide negative media attention as the average number of articles containing a negative tone about CEO pay for all sample firms for a given year. Next, we regress the change of *NEGMC* (*ADJNEGMC*) on *EARLY* and target difficulty (i.e., *DEPS, DIFF_EXP,* and *DIFF_AVGEXP,* respectively)[45] while controlling firm performance, growth, and size in their change specifications. Panel B in Table 10 contains the results.

The significant and negative coefficient on *EARLY* in Table 10, Panel B ($p < 0.10$) suggests that the reduction in the negative publicity in the media after PVSO adoption is significantly larger for firms that adopt PVSOs earlier. We find similar results for the vesting targets. Attaching EPS targets tends to provoke greater negative publicity from the media ($p < 0.10$), albeit insignificant after adjusting for time trends; more challenging EPS targets also reduce negative press ($p < 0.10$). The results presented in Table 10 and those in Table 5 demonstrate a complex relationship between a firm's compensation practices and the media. As Table 10 indicates, the media are efficient *ex post* in reflecting firms' responses to regulatory reforms; that is, negative media attention reduces once a firm adopts PVSOs and as target difficulty (relative to expectations) increases. Similar to Core et al. (2008), we find no direct effect of negative media on the firm's choice to adopt PVSOs or the choice of vesting target (see Table 5). In other words, firms do not appear to change their compensation plans in response to media attention (except if they have a powerful CEO), but the media respond positively when they perceive improvements in compensation design.

V. ADDITIONAL ANALYSIS AND ROBUSTNESS CHECKS

Propensity Score Matching

One general concern in executive compensation literature is the potential endogeneity problem (Armstrong et al. 2010; Coles et al. 2012). It is possible that certain (unobservable) factors omitted from our regression models may determine both CEO power and PVSO adoption. A multi-dimensional matching method is often employed to randomize the endogenous treatment and address this concern (Rosenbaum and Rubin 1983). In the spirit of Armstrong et al. (2010), we follow a propensity score matching (PSM) procedure.[46] The details of this procedure and the results are presented in Table 11. The results yield two major observations consistent with our prior findings. First, firms with a powerful CEO at the helm will choose less challenging targets compared with firms led by a less powerful CEO and, second, powerful CEOs tend to adopt PVSO plans earlier.

[45] Although not reported, we also estimate models including both *EARLY* and any of the three target difficulty measures and find similar results.

[46] We test the Balance Hypothesis on the propensity scores of treatment and control firms. Satisfaction of the balanced property suggests that observations with the same propensity score are expected to have the same distribution of observable characteristics regardless of the treatment status. We find that absolute bias < 5 percent, and t-tests show that all covariates do not significantly differ between treatment and control groups after matching, both indicating a successful matching (Leuven and Sianesi 2003).

TABLE 11

Robustness Tests
The Propensity to Have a Powerful CEO

	***HP* = 1 (n = 101)**			***HP* = 0 (n = 110)**			**Difference (1 − 0)**	
Variables	**Mean**	**Median**	**SD**	**Mean**	**Median**	**SD**	**Mean**	**Median**
EARLY	−7.386	−7.000	2.642	−8.173	−7.000	3.182	0.787**	0.000*
DEPS	0.822	1.000	0.385	0.727	1.000	0.447	0.095*	0.000*
DIFF_SET	2.963	3.000	1.106	3.172	3.000	1.703	−0.208	0.000
DIFF_AVG	3.222	3.000	1.194	3.384	3.000	1.568	−0.162	0.000
DIFF_EXP	2.384	2.289	1.339	2.999	2.787	1.885	−0.615***	−0.498***
DIFF_AVGEXP	2.666	2.400	1.376	3.147	2.937	1.482	−0.481**	−0.537***
MEET	0.981	1.000	0.130	0.944	1.000	0.220	0.037	0.000*

***, **, * Indicate significance at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.
We first construct a high-power indicator, *HP,* for observations with *POWER* greater than the sample median, i.e., *HP* = 1 (0) if CEO power measured by *POWER* is higher (lower) than the sample median. Then we estimate a logistic regression where the dependent variable is *HP*. The explanatory variables include media coverage (*NEGMC*), firm size (*LNMV*), performance (*TSR*), growth (*MTB*), performance volatility (*VOLATILITY*), structure of CEO compensation (*%BONUS, %EQUITY,* and *LTIP*), CEO characteristics (*AGE* and *QUALITY*), and industry dummies (*INDUSTRY*). We find that the likelihood of having a powerful CEO is positively associated with the CEO's age and firm performance volatility, whereas it is negatively associated with firm size ($p < 0.05$).
Using the estimates from the logit model, we derive a propensity score for each firm and match powerful CEO observations (*HP* = 1) with less powerful CEOs (*HP* = 0) by propensity scores, such that the propensity scores of each matched pair are similar (i.e., using Kernel matching with the counterfactual outcome constructed by the weighted average of five observations in the control group with a propensity score closest to the treated subject; the weights depend on the distance between each individual from the control group and the treated subject for which the counterfactual is estimated). Within each matched pair, the two firms exhibit similar probabilities of being managed by a powerful CEO, but, in fact, one is headed by a powerful CEO and the other by a less powerful CEO. Next, we run covariate imbalance testing. Results of t-tests show that after matching, equality of means in the treated and control groups cannot be rejected at $p < 0.10$; further, after matching, the average standardized bias is below 5 percent (Rosenbaum and Rubin 1983). Therefore, the overall matching is satisfactory. After satisfying the Balancing Hypothesis, we compare the target difficulty and adoption timing between the high-power CEO group and matched low-power group. The table above includes comparison results when the match is performed using the 220 PVSO adoption sample; some observations were dropped to satisfy the matching criteria. Two-sample t-tests are used to test the differences in means, and Wilcoxon two-sample rank-sum tests are used to test differences in medians.

Variable Definitions:
POWER = a composite construct measuring CEO power based on PCA;
EARLY = a discrete variable that measures the timing of adoption of PVSO plans;
DEPS = an indicator equal to 1 if PVSO vesting targets are based on earnings per share, and 0 otherwise;
DIFF_SET = PVSO adoption year's EPS growth target for option vesting;
DIFF_AVG = average annualized EPS growth target for options granted over three years after the initial PVSO grant (including the first grant);
DIFF_EXP = PVSO adoption year's EPS growth target for option minus estimated EPS growth;
DIFF_AVGEXP = *DIFF_AVG* minus estimated EPS growth; and
MEET = an indicator equal to 1 if EPS growth targets are met by the end of the option vesting period, and 0 otherwise.

It is argued that a hidden bias might emerge when there are unobserved variables that affect treatment and outcome variables simultaneously. Following Becker and Caliendo (2007), we check the sensitivity of the average treatment effects to omitted variables.[47] We employ the bounding approach to investigate the potential threats (Rosenbaum 2002). The assumption of overestimation (or underestimation) of treatment effect has been rejected when varying the odds of differential assignment due to unobserved factors from $\Gamma = 1$ to 8 ($p < 0.001$).

Firms Dropping PVSO Plans

In the sample, 24 firms eventually abandoned PVSO plans in our test period. Such temporary use of PVSO plans might reflect some unusual factors related to the initial PVSO grants. To investigate the determinants of a firm's decision to halt PVSO plans, we regress an indicator for halted versus persistent PVSO users on CEO power and target difficulty at the initial grants, alongside an array of firm characteristics. Untabulated results show that early adopters are more likely to drop PVSO plans. CEO power does not play a significant role in explaining the termination decision. Furthermore, we examine and find that negative publicity from the media increases significantly at the termination. We also investigate the changes in the level of total CEO compensation and various pay components. The results show that total pay remains statistically unchanged, as does cash compensation (e.g., salary, bonus) and equity-linked compensation; firms tend to replace PVSOs with long-term incentive plans (LTIPs).

Other Robustness Tests

In 2002, the U.K. passed say-on-pay regulation, which mandates a non-binding shareholder vote on a firm's remuneration report. Say-on-pay votes may affect a firm's preference for PVSO adoption and target setting, so we drop observations from 2002 onward. Managerial aggressive equity exercises might trigger negative media. Thus, we include a dummy indicating that a CEO exercises equity-based compensation during the year. Furthermore, it is possible that time trends in our variables of interest provide an alternative explanation to our findings. To address this concern, we rank power measures, target difficulty measures, and media negativity by year and replicate our prior analyses using the rank measures. None of these tests affect our conclusions in a material way.

VI. CONCLUSIONS

This paper examines the influence of CEO power on compensation contract design. We contribute to the debate concerning whether managerial compensation contracts are designed in response to market forces and simply represent good governance, or whether they represent a form of camouflage to avoid public outrage over excessive compensation by powerful CEOs. Our empirical model includes the economic determinants of incentive contracts as predicted by optimal contracting theory. This allows us to test the incremental predictive ability of managerial power theory on the design of compensation contracts. We have an ideal setting in which to test the impact of MPT on contract design, as the introduction of PVSOs in the U.K. provides us with a quasi-experiment in the sense that it is an intervention that is expected to have an impact on a target population. We examine two design features of PVSO plans; namely, the choice of when to adopt PVSOs and the choice of vesting targets.

[47] One of the advantages of using PSM is that "propensity-score methods also enable the researcher to explicitly quantify the sensitivity of the results for the primary causal variable to unobserved correlated omitted variables" (Armstrong et al. 2010, 228).

Our findings demonstrate that firms with powerful CEOs respond differently to regulatory reforms designed to improve the pay-for-performance link. We find support for prior research that managerial power allows CEOs to camouflage components of their pay to ensure that responses to regulatory reforms do not affect their personal wealth (Morse et al. 2011). In particular, we find that firms with powerful CEOs adopt regulatory reforms relating to PVSOs early and that the PVSO grants adopted have easier vesting targets. The two choices occur simultaneously. Firms with powerful CEOs influence the choice to adopt PVSOs early only when they know they can influence the choice of vesting targets. Given that the choice and difficulty of vesting targets are not easily observed by the external public, the early adoption of PVSOs serves as a "camouflage" for good governance. Our results also support MPT's predictions concerning the role of outrage in compensation contract design. Outrage, however, is a necessary, but not sufficient, condition to prompt the change in compensation design. Outrage, combined with a powerful CEO, provides the conditions for this to occur.

We also provide evidence that powerful CEOs can undermine the intention of regulators to improve the pay-for-performance link through these camouflage activities. Early adoption with easy targets is not optimal for the firm. While the adoption of PVSOs is accompanied by a positive market reaction, powerful CEOs attenuate that reaction. One explanation for shareholders discounting the benefits of PVSO adoption is that they might assume that powerful CEOs have the ability to engage in earnings manipulation to meet PVSO vesting targets. Another explanation is that easily achievable targets for powerful CEOs make the pay arrangement inefficient and, hence, provide suboptimal incentives to induce their effort.

Our results also have implications for those interested in the determinants of performance measurement choices. This research typically falls into two research streams: one using economic models of incentive contracts and examining the effect of sensitivity, noise, or congruency in the choice of measures; and a second stream adopting a psychological approach examining how information overload and cognitive biases influence the choice and emphasis placed on performance measures (see, e.g., Ittner, Larcker, and Meyer 2003). Few studies integrate the two perspectives (Merchant, Van der Stede, and Zheng 2003), and they generally ignore the role of power or other social influences in determining performance targets. This study demonstrates the importance of including alternative theoretical perspectives to explain the choice of performance targets. Furthermore, we answer the recent call to explore target setting in equity-based "compensation instruments that are contingent on performance targets, such as performance-vested restricted stock grants" (Indjejikian et al. 2014b, 1265).

While contributing to the academic literature, we also believe that our findings have implications for regulators wanting to influence corporate governance practices. First, we speak to the effectiveness of reforms designed to improve the link between pay and performance. While it is possible to mandate changes in the composition of CEO pay, it is important to recognize that CEOs do not necessarily have arm's-length relationships with their boards. Powerful CEOs can influence the choices that are made by the board when determining their compensation. Our results indicate that strong corporate governance as represented by the board is what matters in creating the appropriate incentives for behavior that adds value to a firm.

This study has several potential limitations. First, while care has been taken to mitigate endogeneity problems (by fitting our models with lagged predictors, by constructing simultaneous equations model systems, and by randomizing the occurrence of a powerful CEO by propensity score matching), the effectiveness of these approaches is still open to debate. Second, we follow prior studies and use wealth delta (sensitivity of CEO wealth to stock price) to measure the efficiency of compensation contracts. We find increased delta subsequent to PVSO adoption and assume that this is value adding for the firm. However, we recognize that (overly) high delta can expose managers to more risk and, in turn, induce risk-averse managers to forgo risky projects that

have positive net present values (NPVs). Hence, it is possible that increased delta can reduce firm value. Notwithstanding, we rely on delta as it is generally considered a measure for pay-for-performance link. Third, we focus on large firms because of their importance and relevance, whereas the rationale for adoption of PVSOs might be different for small and medium-sized enterprises. We also use firms listed on the London Stock Exchange; however, it is reasonable to assume that the results would be generalizable to firms listed on other exchanges. Fourth, due to data availability, our investigation begins two year after the publication of the Greenbury Report (1995). Despite these potential limitations, this study demonstrates the importance of CEO power on CEO compensation and, thus, contributes to other studies attempting to explain the choices that firms make in the design of their incentive contracts.

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