4-2017

Insider versus outsider CEOs, executive compensation, and accounting manipulation

Prasart JONGJAROENKAMOL
Singapore Management University, prasartjk@smu.edu.sg

Volker LAUX

Published in Journal of Accounting and Economics, Volume 63, Issues 2–3, April–May 2017, Pages 253-261.
http://doi.org/10.1016/j.jacceco.2017.01.002

Insider versus Outsider CEOs, Executive Compensation, and Accounting Manipulation

Prasart Jongjaroenkamol and Volker Laux*

University of Texas at Austin

February 26, 2016

Abstract: This paper examines the role of the financial reporting environment in selecting a new CEO from within versus outside the organization. We show that a CEO's ability to manipulate performance information renders it more difficult for the board to detect and replace poorly performing CEOs as well as aggravates incentive contracting, and these effects are stronger when the new leader is an outsider rather than an insider. The model generates several predictions. First, boards are more likely to recruit a CEO from the outside in firms in which performance measures are harder to manipulate. Second, CEOs recruited from the outside engage in greater accounting manipulation, receive steeper incentive pay, and obtain higher expected compensation (rents) than CEOs promoted from within. Third, outside CEOs have a shorter expected tenure relative to inside CEOs when performance measures are difficult to manipulate, and the opposite holds true when performance measures are easy to manipulate.

*Corresponding author, volker.laux@mccombs.utexas.edu. We thank S.P. Kothari (editor), an anonymous reviewer, Shane Dikolli, Ben Hermalin, Christian Laux, Paul Newman, and seminar participants at the University of Texas, University of Cambridge, University of California at San Diego, and the 2014 AAA Annual Meeting for many valuable comments and suggestions.

1 Introduction

When searching for a new leader, corporate boards face an important question: Should they promote a new CEO from within the organization or recruit someone from the outside? Outsiders are typically considered to be more risky than insiders because corporate boards have less information about outsiders' strengths, experiences, and leadership style than they have about their own people, and outsiders are less familiar with the organization's unique culture and inner workings.[1] Outsiders can nevertheless be valuable to the firm because they bring new ideas and fresh perspectives and are generally more open to transformational changes than insiders. One implication of this argument is that boards tend to promote internal candidates when the continuation of the current strategy and culture is desirable, but prefer external candidates when major changes are required (e.g., Zajac 1990; Parrino 1997; Farrell and Whidbee 2003).[2]

The notion that bringing in an outsider is more risky than promoting an insider gives rise to another factor to be relevant for the selection decision – the firm's financial reporting environment. Financial reporting plays an important role because boards use earnings information not only for incentive contracting, but also for assessing how well the new leader matches the needs of the organization and deciding whether to retain or replace him. We show that incentive problems and the board's ability to assess and replace poorly performing executives influence the board's decision over what type of CEO to hire in the first place. Our model generates new

[1] See, for example, the discussions in Zajac (1990) and Zhang (2008). See also recent articles on insider versus outsider succession in the popular press, such as Battley (2012) and Miles (2009).

[2] Additional factors that influence CEO selection are the size of the firm (Dalton and Kesner 1983; Guthrie and Datta 1997) and the homogeneity of the industry (Parrino 1997; Zhang and Rajagopalan 2003). See also Zhang and Rajagopalan (2003) for an overview.

empirical predictions regarding the determinants of CEO selection and the effects of this decision on the magnitude of earnings manipulation, optimal contracting, expected CEO compensation, and the frequency of forced CEO turnover.[3]

The heightened risks associated with bringing in an outsider does not necessarily put outside candidates at a disadvantage. As Lazear (1998) and Hermalin (2005) point out, boards have an option to replace the new hire if he turns out to be the wrong person for the job and this option has value. Indeed, it is not uncommon that a CEO is fired within the first two years of his tenure.[4] Boards (representing shareholders) therefore benefit from the outsiders' upside potential and can protect themselves from their downside risk by making appropriate subsequent replacement decisions. However, this argument relies critically on the board's ability to identify and dismiss poorly performing CEOs.

Empirical evidence by Weisbach (1988) and Murphy and Zimmerman (1993) suggests that the firm's financial reporting system is an important source of information for assessing and replacing executives.[5] The problem is, if CEOs can manipulate the accounting report, the board may be unable to identify and correct a poor hiring decision. Consequently, in firms in which CEOs can more easily manipulate performance information (for example, due to weak reporting controls), the probability of CEO turnover declines and the board's option to replace the incumbent becomes less valuable. Importantly, we show that the effects of the reporting environment on

[3]Although we frame our analysis in terms of CEO selection, our results carry over to the more general question of whether to fill a senior-level job opening with an inside or outside candidate.

[4]For example, J.C. Penney replaced CEO Ron Johnson after only 17 months on the job. Using U.S. sample data from 2000 to 2007, Kaplan and Minton (2012) find an annual CEO turnover rate of 16.8%, showing that the average CEO stays in control less than 6 years.

[5]See also Armstrong, Guay, and Weber (2010) and Brickley and Zimmerman (2010) for recent overviews of research on the role of financial reporting for corporate governance.

CEO turnover and option value are stronger for CEOs hired from the outside than for those promoted from within. There are two reasons behind this result and both reasons are driven by the assumption that outsiders have a greater downside risk. First, the reduced ability to identify and replace unsuccessful CEOs due to distorted performance information is a bigger problem when the CEO is from the outside, since outsiders are more likely to fail. Second, as we discuss further below, outside CEOs have stronger incentives to manipulate the accounting report than inside CEOs, and the difference in manipulation incentives between the two types of candidates further increases as reporting controls become weaker. These effects imply that recruiting a CEO from the outside becomes relatively less attractive than promoting one from within when the CEO can more easily manipulate the accounting report. In fact, we show that for sufficiently weak reporting controls, the outsider's manipulation incentive exceeds that of the insider's by such a large margin that the risky outsider ends up being dismissed less often than the insider and also has a smaller ex ante replacement option value. Thus, the standard textbook result that uncertainty increases option value can reverse when CEOs are able to manipulate the performance measure on which the replacement decision is based.

The accounting system affects the desirability of insiders versus outsiders also through its impact on incentive contracting. To encourage the CEO to take productive but personally costly actions, the contract links CEO pay to the accounting report.[6] The outsiders' greater downside risk implies that they are less likely to succeed despite high effort. Relative to inside candidates, the board therefore has

[6]See also Dye (1988), Feltham and Xie (1994), Dutta and Gigler (2002), Goldman and Slezak (2006), and Crocker and Slemrod (2007) for models in which the CEO's pay is linked to an interim performance measure such as earnings. Assuming that the CEO also enjoys private benefits from staying in control does not change our qualitative results.

to offer outside candidates a larger bonus for high reported performance to provide them with sufficient incentives to work hard. When the CEO is unable to manipulate the report, these two effects – higher bonus but smaller probability of obtaining it – cancel each other out such that the cost of inducing high effort is exactly the same for outsiders and insiders. This is not the case when the CEO can manipulate the report. Since outsiders obtain a larger bonus than insiders, they have stronger incentives to engage in manipulation, which renders it more costly for the board to encourage productive actions. As a consequence, CEOs can extract higher rents when they are recruited from the outside than when they are promoted from within. However, the disparity between the two candidates with respect to manipulation incentives and expected compensation declines as reporting controls become stronger and vanishes when manipulation is prohibitively costly.

These arguments show that, relative to promoting a new CEO from within, appointing a CEO from the outside has advantages and disadvantages. On the one hand, outsiders have a higher replacement option value as long as reporting controls are sufficiently strong. On the other hand, the effort incentive problem is more severe for outsiders, which translates into a higher expected compensation (and CEO rents). As reporting controls improve, the ex ante option value increases, and the expected compensation decreases for both outside and inside CEOs, but these effects are stronger for the former than the latter. Thus, a move to stronger reporting controls increases the advantages and decreases the disadvantages of outside candidates relative to inside candidates, rendering boards more willing to search for a new CEO outside the firm.

The analysis generates a number of new empirical predictions. First, boards are more likely to hire outside CEOs in firms or countries with strong reporting regimes

than in those with weak regimes. Second, outside CEOs engage in greater levels of earnings manipulation, receive steeper incentive pay, and obtain higher expected compensation than inside CEOs and the difference between the two types of candidates with respect to manipulation, bonus payments, and expected compensation is greater when reporting controls are weaker. Third, externally hired CEOs have a shorter expected tenure relative to internally promoted CEOs if reporting controls are strong, and the reverse holds if reporting controls are weak.

Other analytical studies on CEO selection include Hermalin (2005), Murphy and Zábojník (2004; 2007) and Palomino and Peyrache (2013). Murphy and Zábojník (2004; 2007) argue that changes in the economic environment raise the value of general managerial skills relative to firm-specific skills, which in turn increases the desirability of outside CEOs. When competition in the managerial labor market is high, the increased demand for outsiders translates into higher executive compensation. Building on Murphy and Zábojník (2004; 2007), Palomino and Peyrache (2013) consider a setting in which outsiders have pre-contract private information about their firm-specific skills, whereas the skills of insiders are commonly known. The additional information asymmetry leads to greater expected compensation for CEOs hired externally, relative to those promoted internally. In contrast, in our setting, the difference in expected compensation between insiders and outsiders is driven by the effort incentive problem and the CEO's opportunity to manipulate performance measures. Hermalin (2005) studies the value of outsiders versus insiders in a setting in which the board engages in costly information acquisition to uncover the incumbent's ability before making the replacement decision. He demonstrates that outside candidates have an advantage over inside candidates due to their greater replacement option value. As discussed above, we show that the value of the replacement option declines when

the CEO can distort the performance measure on which the replacement decision is based and this effect is stronger for outsiders than for insiders. In fact, for sufficiently weak reporting regimes, the more risky outsider no longer has a larger but a smaller option value than the insider. Our model also differs from Hermalin (2005) in that we consider optimal incentive contracting. We show that the reporting environment has a stronger effect on agency frictions when the new CEO is an outsider rather than an insider. In sum, our paper contributes to the extant literature by studying the effects of the financial reporting environment on the desirability of appointing a new CEO from within versus outside the firm, and by examining how this decision affects the optimal incentive contract, expected compensation, the magnitude of manipulation, and the frequency of CEO replacement.

The paper also adds to the literature on CEO turnover, which includes the work by Cremer (1995), Arya et al. (1998), Almazan and Suarez (2003), Laux (2008), and Inderst and Mueller (2010). From among these studies, only Arya et al. (1998) consider how changes in the reporting system affect forced turnover.[7] They show that allowing the manager to destroy earnings information through manipulation can be optimal because it enables the board to credibly commit not to fire the incumbent at an interim stage. This move can be optimal because it reduces the compensation required to convince the CEO to join the firm ex ante. In contrast, in our model, no commitment problem arises. Manipulation is always undesirable because it leads to both less efficient replacements and higher CEO compensation. In addition, our study differs from the extant work on turnover because of our focus on the costs and benefits of appointing insider versus outsider CEOs.

[7] Models that study how the firm's information system design affects project termination decisions include Arya and Glover (2003) and Laux (2014).

The remainder of this paper proceeds as follows. In Section 2, we outline the model. In Sections 3 and 4, we analyze how the origin of the CEO (insider versus outsider) affects the optimal contract, the cost of compensation, the level of manipulation, the probability of CEO dismissal, the ex ante value of the option to replace the incumbent, and how the reporting environment interacts with these effects. In Section 5, we consider the board's optimal choice of appointing an outsider versus an insider. We discuss the empirical implications of the model in Section 6 and conclude in Section 7. All proofs are in Appendix A.

2 The Model

We consider a game with two risk-neutral players: a benevolent board of directors that acts in the best interest of shareholders, and a CEO.[8]

Timing: There are three dates. At date 0, the board hires a CEO to run the firm and offers him an incentive pay plan. After signing the contract, the CEO takes a personally costly action that increases expected output. At date 1, the CEO privately observes an accounting signal and issues a potentially distorted report. Based on the report, the CEO is paid and the board decides whether to replace the incumbent with a new CEO. Output is realized at date 2, which represents the long-run horizon of the firm.

CEO selection: At the beginning of the game, the board appoints a CEO either from inside ($n = I$) or outside ($n = O$) the organization. We refer to n as the origin of the CEO. The new leader's ability to manage the firm is uncertain: He is either a good fit for the position or a bad fit. The prior probability that he is a good fit is p^I

[8] Assuming that the CEO is risk averse does not affect the main insights of our study. A proof is available from the authors upon request.

for an inside candidate and p^O for an outside candidate. The probabilities p^O and p^I are common knowledge; however, as in Holmstrom (1999), neither the CEO nor the board initially knows whether he is a good or bad fit. A CEO of origin n generates an output of x^n that is either high, $x^n = x_H^n$, or low, $x^n = x_L^n$, with $x_H^n > x_L^n$.

To characterize the differences between inside and outside candidates, we make the following assumptions:

$$p^O < p^I \leq 1 \text{ and } x_H^O \geq x_H^I > x_L^I \geq x_L^O \geq 0. \tag{1}$$

The first part, $p^O < p^I$, implies that a CEO hired from the outside is less likely a good match for the organization than a CEO promoted from within. This assumption reflects the common notion in the academic and popular literature that bringing in a CEO from the outside involves a greater risk that the new leader will fail.[9] The reason is that corporate boards have less information about the outsiders' skills, competencies, and fit than about those of insiders, and there is also uncertainty about whether outside candidates can successfully transfer their skills to the new position. In addition, outsiders lack the institutional knowledge that insiders have. Recruiting a CEO from the outside can nevertheless be attractive to the firm because outsiders bring new ideas and fresh perspectives and are typically more willing to take corrective actions and transform the company. Thus, if the outsider's skills and experiences turn out to match the needs of the organization, he has the potential to outperform the insider, $x_H^O \geq x_H^I$. However, if the CEO turns out to be a bad fit, having the outsider in charge is worse (or at least not better) than having the insider in charge, $x_L^I \geq x_L^O \geq 0$.[10]

[9] See the literature cited in footnote 1.

[10] In Appendix B, we relax the binary nature of the model and assume that the CEO's ability,

Effort: The CEO chooses an unobservable action, $a \in \{a_L, a_H\}$, with $a_H > a_L$, that increases the probability of a high output. Action a is associated with a private cost of $k(a)$ for the CEO, with $k(a_H) = K$ and $k(a_L) = 0$. If the CEO is a bad fit for the organization, future output is low with certainty ($x^n = x_L^n$), regardless of action a. If the CEO is a good fit, output is a function of his action and is high ($x^n = x_H^n$) with probability a and low ($x^n = x_L^n$) with probability $(1 - a)$. To avoid trivial solutions, we focus on parameter constellations for which the board finds it optimal to induce the high action. This is the case, for example, if x_H^n is sufficiently high.[11] Thus, if an incumbent with origin n remains in charge (we discuss CEO replacement below), the expected output is

$$E^n = a_H p^n x_H^n + (1 - a_H p^n) x_L^n. \tag{2}$$

Accounting report: At date 1, the firm's information system generates a signal $s \in \{s_L, s_H\}$ that reflects the economic situation of the firm under the incumbent's continued leadership. The signal is perfectly informative in the sense that $s = s_H$ when the output under the incumbent's management is high, $x^n = x_H^n$, and $s = s_L$ when it is low, $x^n = x_L^n$. The CEO privately observes the signal s and issues a public report $r \in \{r_L, r_H\}$. If the manager does not intervene with the accounting system, the report is $r = r_H$ when $s = s_H$, and $r = r_L$ when $s = s_L$. However, the CEO can take unobservable manipulative actions, denoted $m \in [0, 1]$, that distort the report. Specifically, the level of manipulation m represents the probability that a low signal, $s = s_L$, is misrepresented as good news, $r = r_H$, and a high signal,

denoted v^n, is uniformly distributed between v_L^n and v_H^n, $v^n \sim U(v_L^n, v_H^n)$. To capture the increased uncertainty of outsiders relative to insiders, we assume that the variance is greater under the former than the latter; that is, $v_H^O > v_H^I > v_L^I > v_L^O$. For tractability, we focus on simple incentive contracts that pay the CEO a fixed salary and a bonus if the report lies above a certain threshold. We show that the qualitative insights of our analysis continue to hold in such a setting.

[11] For details, see conditions (18) and (19) in Appendix A.

$s = s_H$, is misrepresented as bad news, $r = r_L$. As will become clear, the CEO has an incentive to choose $m > 0$ only if the accounting signal is low, $s = s_L$. The CEO's personal cost of manipulation is $gm^2/2$, where the parameter $g \geq 0$ is exogenous and represents factors such as the strength of reporting controls, the strictness of accounting standards, and the quality of legal enforcement. To focus on interior solutions with $m \leq 1$, we assume that the manipulation cost g is sufficiently high such that[12]

$$g \geq g_{\min} \equiv \frac{2K}{p^O\left(a_H - a_L\right)}. \tag{3}$$

Contracting: The only variable available for contracting is the accounting report r.[13] After appointing a new CEO of origin n, the board offers a pay plan (w_H^n, w_L^n) where w_H^n is the bonus for a high report, and w_L^n is the bonus for a low report. Given action a, the CEO's expected compensation is:

$$C^n(a) = ap^n w_H^n + \left(1 - ap^n\right)\left(m^{n*} w_H^n + (1 - m^{n*}) w_L^n\right), \tag{4}$$

where m^{n*} is the equilibrium level of manipulation chosen by the CEO when observing a low signal. The CEO's ex ante utility if he delivers action a is therefore

$$U^n(a) = C^n(a) - (1 - ap^n) 0.5g \left(m^{n*}\right)^2 - k(a). \tag{5}$$

[12] We show in Section 3 that the board can (and will) induce productive effort even when the CEO finds it optimal to choose $m = 1$ after observing a low signal.

[13] Similar to the research referenced in footnote 6, we do not consider long-term contracts. A recent study by Dutta and Fan (2015) examines optimal contracting in a two-period model where CEO pay can be linked to the first-period as well as the second-period earnings report and first-period earnings management reverses in the second period.

If the CEO rejects the contract, he can earn a utility of R^n by working elsewhere (his reservation utility). The participation constraint is therefore given by $U^n(a_H) \geq R^n$. We assume that the CEO's reservation utility R^n does not exceed $\frac{a_L}{(a_H - a_L)}K$, and that he is protected by limited liability in the sense that payments must be non-negative, $w_H^n \geq 0$ and $w_L^n \geq 0$, for $n = I, O$.[14] These two assumptions are an important source of contracting frictions in the model. Together with the incentive constraint, $U^n(a_H) \geq U^n(a_L)$, they imply that the CEO is able to earn an expected utility that exceeds his reservation level; that is, he enjoys an economic rent. Thus, as is common in settings with limited liability, the CEO's participation constraint is not binding (see Appendix A for a proof), and the cost of compensation is determined by the incentive compatibility constraint.[15]

CEO replacement: After observing the report r, the board decides whether to retain or replace the incumbent. If the board hires an alternative CEO, the expected payoff is A, which is the alternate's future output net of potential severance payments to the initial CEO, the cost of employing the alternate, and other turnover related costs. We assume that $A > x_L^I$ and $A < \min\left\{E^I, E^O\right\}$, to ensure that the report is useful for the replacement decision (in the sense that the board retains the incumbent if and only if the report is high), as we illustrate next.[16]

If the accounting report is low, the board knows that output will be low under the

[14] The term $\frac{a_L}{(a_H - a_L)}K$ is the CEO's expected utility when $g \to \infty$. For all other $g \in [g_{\min}, \infty)$, the CEO's expected utility is strictly greater than $\frac{a_L}{(a_H - a_L)}K$ (see Appendix A for a proof).

[15] Our main qualitative results continue to hold when the reservation utilities are sufficiently large such that the participation constraints for insiders and outsiders are binding. The main difference, though, is that if one candidate, say the outsider, has a significantly greater reservation utility than the other candidate, the insider, then hiring the outsider is (by assumption) relatively more costly and hence less attractive, which is intuitive. A detailed discussion of these findings and the proofs are available from the authors upon request.

[16] For the analysis it does not matter whether the replacement CEO is an insider or outsider.

incumbent's continued leadership. In this case, given the assumption $A > x_L^I \geq x_L^O$, the board will find it optimal to replace the incumbent, regardless of his origin n.

If the accounting report is high, the board is unsure whether the signal is indeed favorable or whether the manager successfully manipulated it. The expected output when the incumbent of origin n remains in control is then

$$P(s_H|r_H)x_H^n + (1 - P(s_H|r_H))x_L^n, \tag{6}$$

where $P(s_H|r_H) = \frac{a_H p^n}{a_H p^n + (1-a_H p^n)m^{n*}}$ and m^{n*} is the equilibrium level of manipulation. The assumption $\min\left\{E^I, E^O\right\} > A$ implies that in the absence of any new information, the board finds it optimal to retain the incumbent. Consequently, when observing a high report, the board optimally keeps the incumbent in charge; that is, the term in (6) exceeds A for all $m^{n*} \leq 1$. When the CEO chooses a higher level of manipulation, a low accounting signal is more likely misreported as high, and the probability of CEO dismissal declines.

3 Optimal Contract and Manipulation Incentives

In this section, we determine the optimal contract and the CEO's equilibrium manipulation choice when the board hires a new CEO of origin n. For convenience, we ignore the superscript n when we refer to an arbitrary CEO and use the superscript I or O when we refer to a particular CEO.

We start the analysis with the CEO's optimal choice of manipulation. When the accounting signal is high, the CEO has no reason to manipulate the report because in the optimal solution $w_H > w_L$ (see below). When the accounting signal is low, the

CEO chooses the level of manipulation, m, that solves

$$\max_{m} \Pi(m) \equiv mw_H + (1-m)w_L - 0.5gm^2. \tag{7}$$

Taking the first-order condition for an optimum yields

$$m^* = (w_H - w_L)/g. \tag{8}$$

The CEO's ex ante utility is a function of the effort level a and is given by

$$U(a) = apw_H + (1-ap)\Pi(m^*) - k(a).$$

To induce effort $a = a_H$, the incentive constraint $U(a_H) \geq U(a_L)$ must be satisfied, which, using (8), can be expressed as

$$(w_H - w_L) \geq \frac{K}{p\,(a_H - a_L)\,(1 - 0.5m^*)}. \tag{9}$$

In the optimal solution, (9) is binding. The wedge $(w_H - w_L)$ determines the CEO's effort as well as his manipulation choice, as demonstrated in (8). As the pay w_L increases, the pay w_H must increase by the exact same amount to maintain effort incentives. Thus, an increase in w_L has no effect on the level of manipulation but increases the cost of compensation. The optimal contract therefore sets $w_L = 0$, which is the lowest possible payment given the limited liability assumption. Solving the manipulation and effort constraints (8) and (9) leads to the results in the next proposition.

Proposition 1 *The optimal contract, expected compensation, and the level of ma-*

nipulation satisfy

$$w_H^* = \frac{K}{p\,(a_H - a_L)\,(1 - 0.5m^*)},\ w_L^* = 0, \tag{10}$$

$$C(w_H^*) = \frac{a_H K}{(a_H - a_L)} + 0.5m^* w_H^*\,(2 - a_H p)\,, \tag{11}$$

$$m^* = 1 - \sqrt{\left(1 - \frac{2K}{gp\,(a_H - a_L)}\right)}. \tag{12}$$

Recall from Section 2 that we restrict attention to values of g that satisfy $g \geq g_{\min} = \frac{2K}{p^O(a_H - a_L)}$ to ensure that the level of manipulation does not exceed one. For $g = g_{\min}$, an outside CEO chooses $m^O = 1$ when the accounting signal is low, and the optimal bonus simplifies to $w_H^O = \frac{2K}{p^O(a_H - a_L)}$.[17] Although the outsider always obtains this bonus, the effort incentive constraint (9) is still satisfied because productive effort increases the probability that the CEO can avoid the cost of manipulating the report.

As a benchmark assume for the moment that manipulation is prohibitively costly, $g \to \infty$, such that $m \to 0$. Since outside candidates are less likely a good fit for the organization than inside candidates, effort has a smaller expected impact on the success probability for outsiders than for insiders. As a consequence, outsiders must receive a larger bonus to have sufficient incentives to work, $w_H^O = \frac{K}{p^O(a_H - a_L)} > w_H^I = \frac{K}{p^I(a_H - a_L)}$, as confirmed by condition (10). However, this observation does not imply that outsiders also receive a higher expected compensation. Since outsiders are more likely to fail, they are less likely to obtain the bonus. Both the larger bonus and the smaller probability of receiving it cancel each other out such that the expected compensation and the rent the CEO can enjoy are exactly the same for both types; $C^I = C^O = \frac{a_H K}{(a_H - a_L)}$ and $U^I = U^O = \frac{a_L K}{a_H - a_L}$. Thus, if manipulation is not possible, the

[17] A CEO appointed from the inside will choose $m^I < 1$ when $g = g_{\min}$.

CEO's origin does not affect the severity of the effort control problem and hence the cost of the incentive system. The next lemma summarizes this benchmark result.

Lemma 1 *When manipulation is prohibitively costly $g \to \infty$, outsiders receive a higher bonus than insiders, $w_H^O > w_H^I$, but expected compensation and CEO rents are the same for both candidates, $C^O = C^I$ and $U^O = U^I$.*

When reporting controls cannot fully prevent manipulation, the cost of the incentive system differs for insiders and outsider. To see this, consider first how the reporting environment influences the CEO's level of manipulation. As reporting controls become weaker (g declines), the magnitude of manipulation increases for both inside and outside candidates, which is intuitive. However, since outsiders receive a larger bonus for a favorable report, the outsiders' manipulation incentives increase more quickly than those of insiders. As a result, for any level of $g < \infty$, we obtain $m^O > m^I$, and the disparity between the two candidates with respect to manipulation $(m^O - m^I)$ further increases as the cost of manipulation g declines.

Clearly, the reporting environment not only affects the magnitude of manipulation but also the cost of inducing effort. As g declines, the effort control problem gets more severe and expected CEO compensation increases. Intuitively, when the CEO can more easily disguise poor performance through manipulation, he is less eager to expend productive effort so as to increase the chances of high performance. Since outsiders have stronger incentives for manipulation than insiders, a move to weaker reporting controls has a stronger adverse effect on the effort incentive problem for the former than for the latter. Thus, the cost of the incentive system is higher for externally hired CEOs than for internally promoted CEOs, $C^O > C^I$, and the disparity $(C^O - C^I)$ further increases as reporting controls become weaker. These findings are formally stated in the next proposition.

Proposition 2 *(i) Relative to inside CEOs, outside CEOs obtain a larger bonus,* $w_H^O > w_H^I$*, choose a higher level of manipulation,* $m^O > m^I$*, and receive a higher expected compensation,* $C^O > C^I$.[18]

(ii) As the marginal cost of manipulation, g*, declines, the level of manipulation,* m*, the bonus,* w_H*, and the expected compensation,* C*, increase and these effects are stronger for outsiders than for insiders:*

$$\frac{dm^O}{dg} < \frac{dm^I}{dg} < 0;\ \frac{dw_H^O}{dg} < \frac{dw_H^I}{dg} < 0;\ \frac{dC^O}{dg} < \frac{dC^I}{dg} < 0.$$

In sum, the analysis shows that the opportunity to manipulate the report has a greater adverse effect on manipulation incentives and the effort control problem when the CEO is an outsider rather than an insider. This feature renders outside candidates less attractive relative to inside candidates. The magnitude of this disadvantage depends on the strength of the accounting controls. As manipulation becomes harder, the disparity between the two candidates with respect to manipulation, $\left(m^O - m^I\right) > 0$, and expected compensation, $\left(C^O - C^I\right) > 0$, declines and eventually disappears.

4 Economic Output and Option Value

Having analyzed the effects of the reporting environment on manipulation and the cost of executive compensation, we now focus on how the accounting environment affects the firm's expected output. Section 5 then considers both expected output

[18] The optimal ex ante level of manipulation, denoted m_{EA}, is given by

$$m_{EA} \equiv (1 - a_H p) \cdot m,$$

which is the product of the probability that the accounting signal is low, $(1 - a_H p)$, and the level of manipulation, m, when the signal is low. Since $m^O > m^I$ and $p^O < p^I$, we obtain $m_{EA}^O > m_{EA}^I$.

and compensation and determines the optimal CEO choice. Expected firm output is given by

$$E + Y, \tag{13}$$

where the term E is the output when the board cannot replace the incumbent (defined in (2)) and

$$Y \equiv (1 - a_H p)(1 - m^*)\,(A - x_L)\,, \tag{14}$$

is the ex ante value of the replacement option. The value of the replacement option consists of two parts. The first part

$$\pi \equiv (1 - a_H p)(1 - m^*), \tag{15}$$

is the probability that the report is unfavorable, which triggers the replacement of the incumbent. The second part, $(A - x_L) > 0$, is the marginal increase in firm value when the board replaces the incumbent after observing a low report.

Consider again the benchmark in which manipulation is prohibitively costly, $g \to \infty$, such that $m \to 0$. In this case, the board can perfectly identify poorly performing CEOs and make an appropriate replacement decision. The probability of CEO dismissal π and the value of the option to replace the incumbent Y are both higher for external candidates than for internal candidates. This result follows because outsiders have a greater downside risk than insiders, that is, outsiders are more likely to end up being the wrong person for the job ($p^I > p^O$) and a disappointing outsider is worse (or at least no better) than a disappointing insider ($x_L^I \geq x_L^O$). The next lemma summarizes this benchmark result.

Lemma 2 *When manipulation is prohibitively costly $g \to \infty$,*

(i) the probability of a low report ($r = r_L$) and, thus, forced CEO turnover is higher for outsiders than for insiders, $\pi^O > \pi^I$;

(ii) the ex ante value of the replacement option is higher for outsiders than for insiders, $Y^O > Y^I$.

Lemma 2 is consistent with the standard textbook result that uncertainty increases the value of real options (e.g., Dixit and Pindyck, 1994). However, the board's ability to make appropriate replacement decisions depends critically on the accuracy of the accounting report. In environments with weaker reporting controls (lower g), the CEO engages in a higher level of manipulation and the board is less likely to identify and dismiss poorly performing CEOs, which reduces the value of the replacement option Y. Importantly, the adverse effect of weak reporting controls on the option value is stronger when the CEO is an outsider rather than an insider. There are two forces that drive this result: First, the inability to identify and dismiss poorly performing CEOs due to distorted information is a bigger concern when the CEO is from the outside since outsiders have a greater downside risk. That is, outsiders are more likely to be the wrong person for the job and hence are more likely to end up in a situation where they engage in manipulation, $p^I > p^O$, and the cost of retaining a poorly performing outsider is higher (or at least not lower) than the cost of retaining a poorly performing insider $x_L^I \geq x_L^O$. Second, from Proposition 2, weaker reporting controls increase manipulation incentives faster when the CEO is an outsider rather than an insider, $dm^O/dg < dm^I/dg < 0$. The next proposition summarizes these results.[19]

[19]The results in Proposition 3 hold even when the magnitude of manipulation is exactly the same for both candidates, $m^I = m^O$, such that $dm^O/dg = dm^I/dg < 0$. This is the case, for example, if there is no moral hazard problem (and hence no bonus) but the CEO enjoys private benefits of control when he is retained. See Appendix B for details.

Proposition 3 *When the marginal cost of manipulation, g, decreases, the frequency of CEO turnover, π, and the ex ante value of the replacement option, Y, decline. Both of these effects are stronger for outsiders than for insiders:*

$$\frac{d\pi^O}{dg} > \frac{d\pi^I}{dg} > 0 \text{ and } \frac{dY^O}{dg} > \frac{dY^I}{dg} > 0.$$

As long as reporting controls are sufficiently strong, the frequency of CEO turnover and the replacement option value are larger for outside candidates than for inside candidates since outsiders have a greater downside risk (see Lemma 2). However, as just discussed, the turnover probability and the replacement option value decline as reporting controls become weaker and these effects are stronger for CEOs hired from the outside than for those promoted from within. Thus, the advantage of outsiders relative to insiders in term of option value declines as it becomes easier to manipulate the performance measure. In fact, we find that when reporting controls are sufficiently weak, the outsider's manipulation incentive is significantly stronger than that of the insider, such that the outsider ends up being dismissed less often than the insider, $\pi^O < \pi^I$, and also has a smaller ex ante option value, $Y^O < Y^I$. Thus, the standard textbook result that uncertainty increases option value can flip when the cost of manipulating the report is relatively low. These results are formally stated in the next proposition.

Proposition 4 *There are two unique thresholds, denoted g_π and g_Y, that satisfy $g_\pi \geq g_Y > g_{\min}$, such that relative to inside CEOs:*[20]

(i) outside CEOs are more likely to be dismissed, $\pi^O > \pi^I$, if $g > g_\pi$, and are less likely to be dismissed, $\pi^O < \pi^I$, if $g < g_\pi$;

[20] The thresholds are determined in Appendix A. We obtain $g_\pi > g_Y$ if $x_L^I - x_L^O > 0$, and $g_\pi = g_Y$ if $x_L^I - x_L^O = 0$.

(ii) outside CEOs have a greater replacement option value, $Y^O > Y^I$, if $g > g_Y$, and have a smaller option value, $Y^O < Y^I$, if $g < g_Y$.

In sum, outside candidates have an advantage relative to inside candidates in terms of higher option values but only if the reporting controls are relatively strong. As it becomes easier to manipulate the performance measure, the relative advantage declines and, for sufficiently weak reporting controls, the result flips and insiders have a greater option value than outsiders.

5 Insider versus Outsider

We are now ready to study the conditions under which the board prefers an outside candidate over an inside candidate. Expected firm value is the difference of the expected output given in (13) and the cost of CEO compensation $C(g)$ given in (11):

$$V = E + Y(g) - C(g). \tag{16}$$

Shareholders prefer the external candidate over the internal candidate if and only if $V^O \geq V^I$, which can be rewritten in terms of the outsider's output potential:

$$x_H^O \geq \widehat{x}_H^O \equiv \frac{E^I + \left(Y^I - Y^O\right) - \left(C^I - C^O\right) - (1 - a_H p^O) x_L^O}{a_H p^O}. \tag{17}$$

Holding x_H^I, x_L^I, and x_L^O constant, there exists a threshold, denoted $\widehat{x}_H^O$, such that appointing the outsider is optimal if $x_H^O \geq \widehat{x}_H^O$ and appointing the insider is optimal if $x_H^O < \widehat{x}_H^O$.

The outside candidate becomes relatively more attractive, and hence has to clear a lower hurdle $\widehat{x}_H^O$, when manipulating the report becomes more costly (g increases).

The reason for this result is twofold. First, the outsider has a disadvantage relative to the insider because contracting frictions lead to pay differences between the two candidates, $C^O > C^I$ (Proposition 2). However, the magnitude of this relative disadvantage, $C^O - C^I$, declines as reporting controls become stronger and vanishes $(C^O - C^I) \to 0$ when $g \to \infty$. Second, as long as reporting controls are sufficiently strong, the outsider has an advantage relative to the insider because he has a greater replacement option value (Proposition 4). This advantage further increases when the accounting report is more difficult to manipulate. These effects reinforce each other and imply that outsiders become more desirable relative to insiders when reporting controls are stronger. The next proposition confirms this intuition.

Proposition 5 *Holding x_H^I, x_L^I, and x_L^O constant, there is a threshold $\widehat{x}_H^O$ such that the board hires the outsider if $x_H^O \geq \widehat{x}_H^O$, and the insider if $x_H^O < \widehat{x}_H^O$. The outsider becomes more attractive – that is, the hurdle $\widehat{x}_H^O$ decreases – as the marginal cost of manipulation, g, increases.*

6 Empirical Implications

Determinants of CEO selection. A number of empirical studies have looked at factors that are associated with the selection of insider versus outsider CEOs. For example, evidence suggests that boards are more likely to recruit CEOs from the outside when changes in the direction of the firm are desirable (Parrino 1997; Farrell and Whidbee 2003), when the industry is more homogenous (Parrino 1997; Zhang and Rajagopalan 2003), when the proportion of outside directors sitting on the board is greater (Borokhovich et al. 1996), and when the firm is smaller (Dalton and Kesner 1983; Guthrie and Datta 1997). Our model offers another factor that can contribute

to the CEO selection choice: the firm's financial reporting environment. Financial reporting plays an important role because the board relies on accounting information for incentive contracting as well as for deciding whether to replace or retain the incumbent. Stronger reporting controls make it harder to manipulate performance information, which increases the board's ability to assess executives and replace them if necessary. The board's ability to detect and undue a poor hiring decision, in turn, increases its willingness to take risks by appointing an outside candidate. The model therefore predicts that boards are more likely to recruit a CEO from the outside when the performance measures with which the new leader is assessed are harder to manipulate. The CEO's cost of manipulating financial reporting is likely to differ from country to country due to differences in accounting standards and legal enforcement. The model therefore suggests a higher percentage of outsider CEOs in countries in which it is harder to manipulate accounting information due to stricter accounting standards and stronger legal enforcement.

Effects of CEO selection. Our second set of predictions relates CEO origin (insider versus outsider) to accounting manipulation and CEO compensation. Specifically, the model predicts that CEOs appointed from the outside (i) engage in higher levels of manipulation, (ii) obtain steeper incentive pay, and (iii) receive greater expected compensation than those promoted from within. The prediction that CEO compensation is greater for outsiders than for insiders is consistent with empirical evidence by Harris and Helfat (1997) and Murphy and Zábojník (2007). To the best of our knowledge, the other two predictions have not yet been tested. Given the many potential explanations for why outsiders receive higher compensation than insiders, our third set of predictions can help to distinguish our theory from alternative explanations. Our model predicts that the differences in terms of manipulation, the size of the bonus,

and expected compensation between insiders and outsiders are greater in environments in which managers can more easily manipulate performance information than in those in which manipulation is more difficult.

Our model also relates the origin of the CEO to the likelihood of early dismissal. Specifically, the model predicts that, as long as reporting controls are sufficiently strong, externally recruited CEOs have a shorter expected tenure than internally promoted CEOs. This relation becomes stronger when the cost of manipulation further increases. In contrast, when reporting controls are relatively weak, the model suggests that outsiders have a longer expected tenure than insiders. Shen and Cannella (2002) and Zhang (2008) provide empirical evidence that outside CEOs are more likely to be dismissed, and thus have a shorter tenure than inside CEOs. This finding is not inconsistent with our model because these studies do not distinguish between firms with weak and strong reporting controls. A test of our model therefore requires the partitioning of the data into firms with strong reporting controls, where the effects documented by Shen and Cannella (2002) and Zhang (2008) should be strong, and firms with weak reporting controls, where the effects should be weaker or even reversed.

7 Conclusion

In this paper, we study how the financial reporting environment affects the benefits and costs of appointing a new CEO from within versus outside the organization. Although we frame our analysis in terms of CEO selection, the results carry over to the more general question of whether to fill a senior-level job opening (e.g., department or store manager, vice president, college dean) by hiring externally or promoting

internally. Going outside is typically viewed as more risky because employers know less about external candidates than they do about their own people. As Lazear (1998) points out, the uncertainty about outsiders' abilities provides option value because employers can dismiss a new hire who turns out to be a poor match for the organization. However, for this argument to hold, superiors need to be able to accurately assess the new hire's performance. We show that when managers can manipulate the measures with which their performance is assessed, the standard real option view does not necessarily hold, and the more risky outsider can end up having a lower, not higher, replacement option value.

Our model generates a number of new empirical predictions. First, managers recruited from the outside receive steeper incentive pay, obtain higher expected compensation (rents), and engage in greater levels of manipulation than those promoted from within. Outsiders therefore have a disadvantage relative to insiders in terms of higher manipulation incentives and compensation costs, but this disadvantage is smaller when performance measures are harder to manipulate. Second, externally hired managers have a shorter expected tenure relative to those promoted internally when performance measures are difficult to manipulate, and the opposite holds when performance measures can easily be manipulated. Finally, the model predicts that firms are more likely to fill an empty position with an outsider when the measures with which the new hire is assessed are harder to manipulate.

8 Appendix A - Proofs

Conditions for which inducing high effort is optimal.

In this appendix, we derive the conditions under which the board prefers to induce high effort, a_H, rather than low effort, a_L. When the board implements a_H, firm value is given by (see (16)):

$$V(a_H) = E + Y(g) - C(g).$$

When the board implements a_L, the optimal contract is $w_H = w_L = 0$, and the CEO does not engage in manipulation, $m = 0$. Firm value is then given by

$$V(a_L) = a_L p x_H + (1 - a_L p)A.$$

Inducing effort is optimal if $V(a_H) \geq V(a_L)$. Note that $V(a_H)$ is increasing in g because we know from Propositions 2 and 3 that $dC/dg < 0$ and $dY/dg > 0$. However, $V(a_L)$ is independent of g.

To focus on interior solutions with $m \leq 1$, we assume that $g \geq g_{\min} \equiv \frac{2K}{p^O(a_H - a_L)}$ (which is condition (3) in Section 2). If $V(a_H) \geq V(a_L)$ is satisfied for $g = g_{\min}$, $V(a_H) \geq V(a_L)$ is satisfied for all $g \geq g_{\min}$.

Consider first an outsider CEO. For $g = g_{\min}$, we obtain $m^O = 1$, and

$$C^O(g_{\min}) = \frac{2K}{p^O\,(a_H - a_L)} \text{ and } Y^O(g_{\min}) = 0.$$

Consequently, for $g = g_{\min}$, $V^O(a_H) \geq V^O(a_L)$ is satisfied if $E^O - \frac{2K}{p^O(a_H - a_L)} \geq V^O(a_L)$, which, after some rearranging, leads to

$$x_H^O \geq x_{\min}^O \equiv \frac{(1 - a_H p^O)\left(A - x_L^O\right) + \frac{2K}{p^O(a_H - a_L)}}{(a_H - a_L)\,p^O} + A. \tag{18}$$

Consider now an insider CEO. For $g = g_{\min}$, we obtain $m^I = 1 - \sqrt{\left(1 - \frac{p^O}{p^I}\right)} < 1$. $V^I(a_H) \geq V^I(a_L)$ is satisfied if $E^I + Y(g_{\min}) - C(g_{\min}) \geq V^O(a_L)$, which, after some rearranging, yields

$$x_H^I \geq x_{\min}^I \equiv \frac{(1 - a_H p^I)\left(A - x_L^I\right) + C^I(g_{\min}) - Y^I(g_{\min})}{(a_H - a_L)\, p^I} + A. \tag{19}$$

Given $C^I(g_{\min}) < C^O(g_{\min}) = \frac{2K}{p^O(a_H - a_L)}$, from Proposition 2, $Y^I(g_{\min}) > 0$, $p^I > p^O$, and $x_L^I \geq x_L^O$, we obtain $x_{\min}^I < x_{\min}^O$. Thus, as long as conditions (18) and (19) are satisfied, the board finds it optimal to provide effort incentives to both insiders and outsiders.

Proof of Lemma 1.

When $g \to \infty$, we obtain $m \to 0$. Substituting $m = 0$ into (10), (11), and (5) gives

$$w_H = \frac{K}{p\,(a_H - a_L)},\ C = \frac{a_H K}{(a_H - a_L)},\ \text{and}\ U = \frac{a_L K}{(a_H - a_L)}.$$

Since $p^I > p^O$, it follows that $w_H^O > w_H^I$.

Proof of Proposition 2.

Part (i). Given $p^O < p^I$, (12) implies $m^O > m^I$. Given $p^O < p^I$ and $m^O > m^I$, (10) implies $w_H^O > w_H^I$.

Substituting $w_L = 0$ and $a = a_H$ into the compensation cost function (4), yields

$$C = (a_H p + (1 - a_H p)m)\, w_H. \tag{20}$$

Using the incentive constraint, $U(a_H) = U(a_L)$, we can write the bonus as

$$w_H(m,g) = \frac{\left(\frac{K}{p(a_H - a_L)} - 0.5gm^2\right)}{(1-m)}. \tag{21}$$

Using (21) and (8) we obtain

$$C = a_H \frac{K}{(a_H - a_L)} + 0.5gm^2\left(2 - a_H p\right), \tag{22}$$

and hence

$$C^O - C^I = 0.5g\left(\left(m^O\right)^2\left(2 - a_H p^O\right) - \left(m^I\right)^2\left(2 - a_H p^I\right)\right) > 0, \tag{23}$$

which is positive due to $p^O < p^I$ and $m^O > m^I$.

Part (ii). Taking the first derivative of (21) yields

$$\frac{dw_H(m,g)}{dg} = \frac{\partial w_H(m,g)}{\partial g} + \frac{dm}{dg}\frac{\partial w_H(m,g)}{\partial m} = \frac{-0.5m^2}{(1-m)} < 0, \tag{24}$$

because $\frac{\partial w_H(m,g)}{\partial m} = \frac{w_H(m,g) - gm}{(1-m)} = 0$ due to condition (8). Given that $m^O > m^I$, (24) implies $\frac{dw_H^O}{dg} < \frac{dw_H^I}{dg} < 0$.

Using (8) we obtain

$$\frac{dm}{dg} = -\frac{w_H}{g^2} + \frac{dw_H}{dg}\frac{1}{g}. \tag{25}$$

Given that $\frac{dw_H^O}{dg} < \frac{dw_H^I}{dg} < 0$ (as just established) and $w_H^O > w_H^I$, (25) implies $\frac{dm^O}{dg} < \frac{dm^I}{dg} < 0$.

Taking the first derivative of (20) yields

$$\frac{dC}{dg} = \left(a_H p + (1 - a_H p)m\right)\frac{dw_H}{dg} + (1 - a_H p)\frac{dm}{dg}w_H < 0, \tag{26}$$

which is negative because $\frac{dw_H}{dg} < 0$ and $\frac{dm}{dg} < 0$. Using (21) and (12), we can write (26) as

$$\frac{dC}{dg} = \frac{dm}{dg} w_H \left(\frac{2 - a_H p}{2 - m} \right). \tag{27}$$

Condition (27) implies $\frac{dC^O}{dg} < \frac{dC^I}{dg} < 0$ because $p^I > p^O$, $\frac{dm^O}{dg} < \frac{dm^I}{dg} < 0$ (as just established), $m^O > m^I$, and $w_H^O > w_H^I$.■

Proof of Proposition 3.

Using (15) we obtain

$$\frac{d\pi}{dg} = -\left(1 - a_H p\right) \frac{dm}{dg} > 0,$$

which is positive because $\frac{dm}{dg} < 0$. Further, since $\frac{dm^O}{dg} < \frac{dm^I}{dg} < 0$ from Proposition 2 and $\left(1 - a_H p^O\right) > \left(1 - a_H p^I\right)$, we obtain $\frac{d\pi^O}{dg} > \frac{d\pi^I}{dg} > 0$.

Similarly, using (14) we obtain

$$\frac{dY}{dg} = -\left(1 - a_H p\right) \frac{dm}{dg} \left(A - x_L\right) > 0,$$

which is positive because $\frac{dm}{dg} < 0$. Further, since $\frac{dm^O}{dg} < \frac{dm^I}{dg} < 0$ from Proposition 2, $\left(1 - a_H p^O\right) > \left(1 - a_H p^I\right)$, and $\left(A - x_L^O\right) \geq \left(A - x_L^I\right)$, we obtain $\frac{dY^O}{dg} > \frac{dY^I}{dg} > 0$.■

Proof of Proposition 4.

Using (15), the outsider is more likely to be dismissed than the insider if and only if

$$\pi^I = (1 - a_H p^I)(1 - m^I) < \pi^O = (1 - a_H p^O)(1 - m^O). \tag{28}$$

Substituting (12) into (28), yields after some rearranging

$$g > g_\pi \equiv \frac{\left(p^I (1 - a_H p^O)^2 - p^O (1 - a_H p^I)^2\right) 2K}{\left((1 - a_H p^O)^2 - (1 - a_H p^I)^2\right) (a_H - a_L) p^O p^I}.$$

Given $p^I > p^O$, direct computations show that $g_\pi > g_{\min} = \frac{2K}{p^O(a_H - a_L)}$ ($g_{\min}$ is the lowest level of g as discussed in Section 2). Thus, for all $g \in [g_{\min}, g_\pi)$ we obtain $\pi_I > \pi_O$ and for all $g \in (g_\pi, \infty)$ we obtain $\pi^I < \pi^O$.

Using (14), the outsider has a greater option value than the insider if and only if

$$\begin{aligned} Y^I &= (1 - a_H p^I)(1 - m^I)(A - x_L^I) \\ &< Y^O = (1 - a_H p^O)(1 - m^I)(A - x_L^O). \end{aligned} \tag{29}$$

Substituting (12) into (29) yields after some rearranging:

$$g > g_Y \equiv \frac{\left(p^I(1 - a_H p^O)^2(A - x_L^O)^2 - p^O(1 - a_H p^I)^2(A - x_L^I)^2\right) 2K}{\left((1 - a_H p^O)^2(A - x_L^O)^2 - (1 - a_H p^I)^2(A - x_L^I)^2\right)(a_H - a_L)p^O p^I}.$$

Given $p^I > p^O$, direct computations show that $g_Y > g_{\min} = \frac{2K}{p^O(a_H - a_L)}$. Thus, for all $g \in [g_{\min}, g_Y)$, we obtain $Y^O < Y^I$ and for all $g \in (g_Y, \infty)$, we obtain $Y^O > Y^I$.

Further, direct computations show that $g_\pi > g_Y$ if $x_L^I - x_L^O > 0$, and $g_\pi = g_Y$ if $x_L^I - x_L^O = 0$.■

Proof of Proposition 5.

Using (17), we obtain

$$\frac{d\widehat{x}^O}{dg} = \frac{\left(\frac{dY^I}{dg} - \frac{dY^O}{dg}\right) - \left(\frac{dC^I}{dg} - \frac{dC^O}{dg}\right)}{a_H p^O} < 0,$$

which is negative because $\frac{dY^O}{dg} > \frac{dY^I}{dg} > 0$ from Proposition 3 and $\frac{dC^O}{dg} < \frac{dC^I}{dg} < 0$ from Proposition 2.■

Participation constraint is non-binding.

We now prove that the incentive constraint, $U(a_H) \geq U(a_L)$, implies satisfaction of the participation constraint, $U(a_H) \geq R$, if the CEO's reservation utility R does not exceed $\frac{a_L}{(a_H - a_L)}K$. In this case, the participation constraint is non-binding and the expected compensation is determined by the incentive constraint, allowing the CEO to enjoy an economic rent (that is, a utility that exceeds his reservation utility). We start the analysis by determining the CEO's utility given the optimal contract in Proposition 1. The CEO receives an expected utility of

$$U(a_H) = C - (1 - a_H p)0.5gm^2 - K, \tag{30}$$

which, after substitution of (22), can be written as

$$U(a_H) = \frac{a_L}{(a_H - a_L)}K + 0.5gm^2. \tag{31}$$

Condition (31) shows that $U^O > U^I > 0$ since $m^O > m^I$ from Proposition 2. Taking the first derivative of (31) with respect to g, and using (12), yields

$$\frac{dU(a_H)}{dg} = -0.5\frac{m^2}{(1-m)} < 0. \tag{32}$$

Condition (32) implies $\frac{dU^O}{dg} < \frac{dU^I}{dg} < 0$ because $m^O > m^I$ from Proposition 2.

Since the CEO's utility declines with g, his utility is minimized when $g \to \infty$, which implies $m = 0$. In this case, the bonus for success, given in (10), and the CEO's expected utility, given in (31), simplify to

$$w_H^* = \frac{K}{p\,(a_H - a_L)} \text{ and } U(a_H) = \frac{a_L}{(a_H - a_L)}K.$$

Recall from assumption (3) that we focus on values of g that satisfy $g \geq g_{\min} \equiv \frac{2K}{p^O(a_H - a_L)}$ to ensure an interior solution for m. The CEO's utility is therefore maximized when $g = g_{\min}$. In this case, the outsider chooses $m^O = 1$ and the insider chooses $m^I = \left(1 - \sqrt{\frac{p^I - p^O}{p^I}}\right)$ (see (12)), and their utilities (31) simplify to

$$U^O(a_H) = U^O_{\max} \equiv \frac{K}{(a_H - a_L)}\left(a_L + \frac{1}{p^O}\right), \tag{33}$$

and

$$U^I(a_H) = U^I_{\max} \equiv \frac{K}{(a_H - a_L)}\left(a_L + \frac{1}{p^O}\left(1 - \sqrt{1 - \frac{p^O}{p^I}}\right)^2\right), \tag{34}$$

respectively. This establishes that the CEO's participation constraint is non-binding for all $g \in [g_{\min}, \infty)$ as long as his reservation utility does not exceed $\frac{a_L}{(a_H - a_L)}K$.

9 Appendix B - Continuous CEO Ability and Output

In this Appendix, we relax the assumptions that output, CEO ability, and the report are binary and show that the key forces developed in the main body of the paper continue to hold. In particular, we consider a setting with the following modifications. A CEO of origin n has an ability of v^n, which is uniformly distributed between v^n_L and v^n_H, $v^n \sim U\left(v^n_L, v^n_H\right)$. As in Hermalin (2005), the expected output equals the CEO's ability v^n if the CEO stays in charge. To capture the increased uncertainty of outsiders, we assume that $v^O_H > v^I_H > v^I_L > v^O_L$ so that the variance of the output generated by an outsider is greater than that of an insider. The ex ante expected ability of a CEO is $\mu = (v^n_H + v^n_L)/2$ regardless of whether he is an insider or outsider

and regardless of whether he is hired at date 0 or date 1. However, replacing the incumbent at date 1 involves a cost of $\psi > 0$ for the firm such that CEO turnover leads to an expected payoff of $A \equiv (\mu - \psi)$. Thus, it is first-best optimal to replace the incumbent if and only if $v^n < A$. As in the main text, we ignore the superscript n when we refer to an arbitrary incumbent and use the superscript I or O when we refer to a particular incumbent.

For simplicity, we abstract away from effort control problems for now and assume that the CEO enjoys a private benefit of control $B > 0$ if he remains in charge until date 2. We extend this setting further below to introduce moral hazard concerns. After the CEO privately observes v, he chooses to engage in manipulation $m \in [0, 1]$ at a personal cost of $0.5gm^2$. To ensure that the level of manipulation does not exceed 1, we assume that $g \geq B$. With probability m, the CEO overrides the accounting system and can choose any report r, and with probability $(1 - m)$, the report r must be truthful, $r = v$. Similar to our original model, manipulation is detrimental because it increases the probability that low-ability CEOs remain in charge.[21]

An equilibrium consists of action choices for the CEO and the board such that:

(i) given the CEO's manipulation strategy and given the observed report r, the board replaces the incumbent if and only if the expected output under the incumbent's management lies below A;

(ii) given the board's replacement strategy and the CEO's private information about v, the CEO makes a manipulation decision that maximizes his expected payoff.

We focus on equilibria with pure strategies. If there exists an equilibrium (we

[21] If we assumed instead that manipulation results in a biased report of the form $r = v + m$, the board can perfectly infer the true ability v from the report. In such an environment, the CEO's manipulation does not mislead the board and hence does not distort the CEO turnover decision.

establish existence below), the equilibrium is such that the board replaces the incumbent if and only if the CEO's report r is below a replacement threshold, denoted v_{RT}, with $v_{RT} = A$. The proof is by contradiction. Suppose there exists a report $r = v_U \in (A, v_H)$ such that the board finds it optimal to dismiss the CEO when $r = v_U$. Thus, if the CEO's manipulation is successful (with probability m), the CEO will not report $r = v_U$, implying that $r = v_U$ must be truthful. Since $v_U > A$, the board optimally retains the incumbent for $r = v_U$, which contradicts the initial strategy to dismiss him. Suppose now that there exists a report $r = v_D \in (v_L, A)$ such that that the board finds it optimal to retain the incumbent when $r = v_D$. The CEO will then optimally not manipulate the report when he observes $v = v_D$ and when he observes $v \in (v_L, A), v \neq v_D$ he may report $r = v_D$ if manipulation is successful. This implies that the report $r = v_D$ may be truthful or may have been manipulated, but the expected output conditional on the report $r = v_D$ is always lower than v_A. The board therefore optimally dismisses the CEO when $r = v_D$, which contradicts the initial strategy to retain him.

Given the board's replacement strategy, the CEO chooses $m = 0$ if he observes $v \geq A$ and chooses the level of m that maximizes $mB - 0.5gm^2$ if he observes $v < A$. Since the benefit B is the same for insiders and outsiders, we obtain $m^O = m^I = B/g$. Further, to satisfy condition (i) that the expected output conditional on the report $r \geq A$ is greater than A, a CEO who successfully manipulates the accounting system (with probability m) randomly issues a report that lies in the range $(\widehat{v}, v_H)$, where $\widehat{v}$ is defined by:

$$\widehat{v} \equiv \frac{(v_H + A) - \sqrt{(v_H - A)^2 - 2(A - v_L)^2}}{2}. \tag{35}$$

To ensure that the square root term in (35) is nonnegative, we assume that the

replacement cost is not too low, that is, $\psi \geq \psi_{\min} \equiv \left(\mu - \frac{v_H^O + \sqrt{2} v_L^O}{1+\sqrt{2}}\right)$. Note that rearranging condition (35) shows that $\widehat{v} > A$.

The CEO's misreporting strategy to randomly issue a report that lies in the range $(\widehat{v}, v_H)$ ensures that the board will indeed find it optimal to retain the incumbent when the CEO's report exceeds or equals A. Intuitively, given the CEO's reporting strategy, a report that lies in the range $(A, \widehat{v})$ is truthful and the board optimally retains the incumbent (note that $\widehat{v} > A$). When the report lies in the range $(\widehat{v}, v_H)$, the board knows that the report might have been manipulated and updates its beliefs about the incumbent's expected ability. The value $\widehat{v}$ in expression (35) ensures that, conditional on observing the report $r \in (\widehat{v}, v_H)$, the expected ability of the incumbent is greater than A such that it is optimal to retain him. To prove this result, note that the CEO's expected ability given the report r is strictly increasing in r. Thus, to show that retaining the incumbent is optimal for all $r \in (\widehat{v}, v_H)$, it suffices to show that the CEO's expected ability is greater than A if $r = \widehat{v}$:

$$\begin{aligned} E\left[v | r \in (\widehat{v}, \widehat{v}+\varepsilon)\right] &= \frac{\left(\frac{\varepsilon}{v_H - v_L}\right)\left(\frac{\widehat{v}+\widehat{v}+\varepsilon}{2}\right) + m\left(\frac{A-v_L}{v_H-v_L}\right)\left(\frac{\varepsilon}{v_H-\widehat{v}}\right)\left(\frac{v_L+A}{2}\right)}{\left(\frac{\varepsilon}{v_H-v_L}\right) + m\left(\frac{A-v_L}{v_H-v_L}\right)\left(\frac{\varepsilon}{v_H-\widehat{v}}\right)} \\ &= \frac{\left(\frac{\widehat{v}+\widehat{v}+\varepsilon}{2}\right) + m\left(\frac{A-v_L}{v_H-\widehat{v}}\right)\left(\frac{v_L+A}{2}\right)}{1 + m\left(\frac{A-v_L}{v_H-\widehat{v}}\right)} > \frac{\left(\frac{\widehat{v}+\widehat{v}+\varepsilon}{2}\right) + \left(\frac{A-v_L}{v_H-\widehat{v}}\right)\left(\frac{v_L+A}{2}\right)}{1 + \left(\frac{A-v_L}{v_H-\widehat{v}}\right)}; \end{aligned}$$

$$\lim_{\varepsilon \to 0} E\left[v | r \in (\widehat{v}, \widehat{v}+\varepsilon)\right] > \frac{\widehat{v} + \left(\frac{A-v_L}{v_H-\widehat{v}}\right)\left(\frac{v_L+A}{2}\right)}{1 + \left(\frac{A-v_L}{v_H-\widehat{v}}\right)}. \tag{36}$$

Substituting (35) into (36), we obtain

$$\lim_{\varepsilon \to 0} E\left[v | r \in (\widehat{v}, \widehat{v} + \varepsilon)\right] > A.$$

Note that the CEO's strategy to send a report that lies in the range $(\widehat{v}, v_H)$ is not the only possible equilibrium strategy – but it is a relatively simple one. To elaborate, one might wonder why the CEO does not pursue an even simpler misreporting strategy such as (i) randomly sending a report that lies in the range $[A, v_H]$ or (ii) always sending the highest possible report $r = v_H$. The problem is that in both cases the board would no longer find it optimal to retain the incumbent for all $r \in [A, v_H]$. Specifically, in case (i), the board would prefer to fire a CEO who sends a report that only marginally exceeds A (that is, $r = A + \varepsilon$, with ε being small) because if the report is unmanipulated the incumbent's ability is only marginally higher than the replacement's ability, but if the report has been manipulated, the incumbent's expected ability is much lower than the replacement's ability. In case of (ii), the board knows that a report $r = v_H$ has most likely been manipulated such that it optimally replaces the incumbent.

In sum, if $\psi \geq \psi_{\min}$, there exists an equilibrium in which the board replaces the CEO if and only if $r \leq A$ and the CEO chooses $m = 0$ if he observes $v \geq A$ and chooses the level of m that maximizes $mB - 0.5gm^2$ if he observes $v < A$. If manipulation is successful, the CEO randomly issues a report that lies in the range $(\widehat{v}, v_H)$, where $\widehat{v}$ is defined in (35) and satisfies $\widehat{v} > A$.

Dismissal and option value: Given the CEO's and the board's strategies, the

probability of CEO dismissal and the value of the replacement option are

$$\pi \equiv (1-m)\Pr(v<A) \text{ and} \tag{37}$$

$$Y \equiv (1-m)\Pr(v<A)\left(A-E\left(v|v<A\right)\right), \tag{38}$$

respectively, where $m^O = m^I = B/g$. Since outsiders have a greater downside risk than insiders ($v_H^O - v_L^O > v_H^I - v_L^I$ and $v_L^O < v_L^I$), an outsider is more likely to have an ability below A, that is,

$$\Pr(v^O < A) > \Pr(v^I < A), \tag{39}$$

where $\Pr(v<A) = \frac{A-v_L}{v_H-v_L} = 0.5 - \frac{\psi}{v_H-v_L}$. Clearly, condition (39) implies that the turnover probability is higher when the incumbent is an outsider rather than an insider, $\pi^O > \pi^I$. Further, due to the higher downside risk of outsiders, the average ability of a dismissed outsider is lower than the average ability of a dismissed insider, that is,

$$E\left(v^O|v^O<A\right) < E\left(v^I|v^I<A\right), \tag{40}$$

where $E\left(v|v<A\right) = \frac{v_L+A}{2}$. Conditions (39) and (40) now imply that the value of the replacement option is higher for outsiders than for insiders, $Y^O > Y^I$.

As reporting controls improve (g increases), the board is more likely to identify disappointing CEOs, which increases both the frequency of CEO turnover, π, and the value of the replacement option, Y. Using (37) and (38) we obtain

$$\begin{aligned}
\frac{d\pi}{dg} &= -\Pr(v<A)\frac{dm}{dg} > 0, \text{ and} \\
\frac{dY}{dg} &= -\Pr(v<A)\frac{dm}{dg}\left(A-E\left(v|v<A\right)\right) > 0.
\end{aligned}$$

Given (39) and (40), these effects are both stronger for outsiders than for insiders:

$$\frac{d\pi^O}{dg} > \frac{d\pi^I}{dg} > 0 \text{ and } \frac{dY^O}{dg} > \frac{dY^I}{dg} > 0. \tag{41}$$

As a consequence, outsiders become more attractive relative to insiders when it is harder to manipulate the report.

Effort: We now extend the analysis by assuming that the expected output generated by the CEO is a function of his ability and effort. If the CEO works hard, output v follows the uniform distribution outlined above, but if he shirks, output is uniformly distributed between v_L and A, implying that a shirking CEO should be replaced. The CEO's personal cost of working is $K > 0$ and the cost of shirking is zero. We assume that K is sufficiently small such that the board finds it optimal to induce effort. Similar to the base model we assume here that the manager does not receive any private benefits of control.

We focus on simple incentive contracts that pay the CEO a fixed salary, denoted F, and a bonus, denoted b, if the report r lies above a certain threshold, denoted v_{BT}. In a proof that is available upon request, we show that the optimal fixed salary is $F = 0$ and the optimal bonus threshold is $v_{BT} = A$.

The board's and the CEO's equilibrium strategies are similar to the case with private benefits. The only difference is that the level of manipulation is now determined by $m = b/g$, where b is an endogenous bonus (rather than an exogenous private benefit of control). Since the bonus b will differ for insiders and outsiders, so will m.

To implement effort, b has to be sufficiently high to satisfy the incentive constraint

$$\Pr(v < A)\left(mb - 0.5gm^2\right) + (1 - \Pr(v < A))b - K \geq \left(mb - 0.5gm^2\right).$$

The optimal bonus, the level of manipulation, and the expected compensation are characterized by:

$$\begin{aligned} b &= \frac{K}{(1-\Pr(v<A))\,(1-0.5m)}, \\ m &= \left(1-\sqrt{1-\frac{2K}{g\,(1-\Pr(v<A))}}\right), \\ C &= (\Pr(v<A)mb+(1-\Pr(v<A))b) \\ &= \frac{\left(1+\frac{\Pr(v<A)}{(1-\Pr(v<A))}m\right)}{(1-0.5m)}K. \end{aligned}$$

To ensure that $m^O \leq 1$ we assume $g \geq g_{\min} \equiv \frac{2K}{(1-\Pr(v^O<A))}$, similar to the base model (note that $g \geq g_{\min}$ also implies $m^I < 1$). Taking the first derivative of b, m, and C with respect to g yields

$$\begin{aligned} \frac{db}{dg} &= \frac{0.5\frac{dm}{dg}K}{(1-\Pr(v<A))\,(1-0.5m)^2} < 0, \\ \frac{dm}{dg} &= -0.5\frac{\frac{2K}{g^2(1-\Pr(v<A))}}{\sqrt{\left(1-\frac{2K}{g(1-\Pr(v<A))}\right)}} < 0, \\ \frac{dC}{dg} &= \frac{dm}{dg}\left(\frac{\frac{\Pr(v<A)}{(1-\Pr(v<A))}+0.5}{(1-0.5m)^2}\right)K < 0, \end{aligned}$$

Given (39), we obtain

$$m^O > m^I;\ b^O > b^I;\ C^O > C^I, \text{ and} \tag{42}$$

$$\frac{dm^O}{dg} < \frac{dm^I}{dg} < 0;\ \frac{db^O}{dg} < \frac{db^I}{dg} < 0;\ \frac{dC^O}{dg} < \frac{dC^I}{dg} < 0. \tag{43}$$

These results replicate the results presented in Lemma 1 and Proposition 2 in the main body of the paper.

Further, the discrepancy in manipulation incentives, $m^O > m^I$, reinforces the results in (41) and we continue to obtain:

$$\frac{d\pi^O}{dg} > \frac{d\pi^I}{dg} > 0 \text{ and } \frac{dY^O}{dg} > \frac{dY^I}{dg} > 0. \tag{44}$$

Since $\frac{dm^O}{dg} < \frac{dm^I}{dg} < 0$ there are two threshold levels, denoted g_π and g_Y, such that $\pi^O > \pi^I$ and $Y^O > Y^I$ for all $g > g_\pi$ and $g > g_Y$, respectively, and $\pi^O < \pi^I$ and $Y^O < Y^I$ for all $g < g_\pi$ and $g < g_Y$, respectively. These results replicate the results in Lemma 2 and Propositions 3 and 4 in the main body of the paper.

The expected firm value is now $V = \mu + Y - C$ and the board hires the outsider if and only if

$$V^O = \mu + Y^O - C^O \geq V^I = \mu + Y^I - C^I.$$

Since

$$\begin{aligned} \frac{dC^O}{dg} &< \frac{dC^I}{dg} < 0,\ \frac{dY^O}{dg} > \frac{dY^I}{dg} > 0, \\ C^O(g_{\min}) &> C^I(g_{\min}),\ C^I(g \to \infty) = C^O(g \to \infty) = K, \\ Y^O(g &\to \infty) > Y^I(g \to \infty),\ Y^O(g_{\min}) = 0 < Y^I(g_{\min}), \end{aligned}$$

there is an interior threshold, $\widehat{g}$, such that the board optimally hires the outsider if manipulation is costly, $g > \widehat{g}$, and optimally promotes the insider otherwise. Although this result is presented in a slightly different fashion than the result in Proposition 5, its implication –that the board is more likely to promote an outsider as g increases– is the same.

References

1. Almazan, A. and J. Suarez. 2003. Entrenchment and Severance Pay in Optimal Governance Structures. *The Journal of Finance* 58 (2), 519–547.

2. Armstrong, C., W. Guay, and J. Weber. 2010. The Role of Information and Financial Reporting in Corporate Governance and Debt Contracting. *Journal of Accounting and Economics* 50, 179–234.

3. Arya, A., J. Glover, and S. Sunder. 1998. Earnings Management and the Revelation Principle. *Review of Accounting Studies* 3, 7–34.

4. Arya, A. and J. Glover. 2003. Abandonment Options and Information System Design. *Review of Accounting Studies* 8, 29–45.

5. Battley, S. 2012. Outsider or Insider CEO: Why Yahoo and Citigroup Leaders Have Different Success Odds. http://www.huffingtonpost.com/susan-battley/outsider-or-insider-ceo-w_b_2193928.html.

6. Borokhovich, K., R. Parrino, and T. Trapani. 1996. Outside Directors and CEO Selection. *Journal of Financial and Qualitative Analysis* 31, 337–355.

7. Brickley, J., and J. Zimmerman. 2010. Corporate Governance Myths: Comments on Armstrong, Guay, and Weber. *Journal of Accounting and Economics* 50, 234–245.

8. Cremer, J. 1995. Arm's Length Relationships. *The Quarterly Journal of Economics* 110 (2), 275–295.

9. Crocker, K. and J. Slemrod. 2007. The Economics of Earnings Manipulation and Managerial Compensation. *RAND Journal of Economics* 38 (3), 698–713.

10. Dalton D., and I. Kesner. 1983. Inside/Outside Succession and Organizational Size: The Pragmatics of Executive Replacement. *Academy of Management Journal* 26 (4), 736–742.

11. Dixit, A., and R. Pindyck. 1994. Investment Under Uncertainty, Princeton University Press, Princeton, NJ.

12. Dutta, S., and F. Gigler. 2002. The Effect of Earnings Forecasts on Earnings Management. *Journal of Accounting Research* 40 (3), 631–655.

13. Dutta, S., and Q. Fan. 2015. Earnings Management and Dynamic Incentives. Working Paper, University of California, Berkeley.

14. Dye, R. 1988. Earnings Management in an Overlapping Generations Model. *Journal of Accounting Research* 26 (2), 195–235.

15. Farrell, K. A., and D. A. Whidbee. 2003. Impact of Firm Performance Expectations on CEO Turnover and Replacement Decisions. *Journal of Accounting and Economics* 36, 165–196.

16. Feltham, G. A., and J. Xie. 1994. Performance Measure Congruity and Diversity in Multi-Task Principal/Agent Relations. *The Accounting Review* 69 (3), 429–453.

17. Goldman, E. and S. L. Slezak. 2006. An Equilibrium Model of Incentive Contracts in the Presence of Information Manipulation. *Journal of Financial Economics* 80, 603–626.

18. Guthrie, J. and D. Datta. 1997. Contextual Influences on Executive Selection: Firm Characteristics and CEO Experience. *Journal of Management Studies* 34

(4), 537–560.

19. Harris, D. and C. Helfat. 1997. Specificity of CEO Human Capital and Compensation. *Strategic Management Journal* 18, 895–920.

20. Hermalin, B. 2005. Trends in Corporate Governance. *The Journal of Finance* 60 (5), 2351–2384.

21. Holmstrom, B. 1999. Managerial Incentive Problems: A Dynamic Perspective. *Review of Economic Studies* 66, 169–182.

22. Inderst, R. and H. M. Mueller. 2010. CEO Replacement Under Private Information. *The Review of Financial Studies* 23 (8), 2935–2969.

23. Kaplan, S. N. and B. A. Minton. 2012. How Has CEO Turnover Changed? *International Review of Finance* 12 (1), 57–87.

24. Laux, V. 2008. Board Independence and CEO Turnover. *Journal of Accounting Research* 46 (1), 137–171.

25. Laux, V. 2014. Pay Convexity, Earnings Manipulation, and Project Continuation. *The Accounting Review* 89, 2233–2259.

26. Lazear, E. 1998. Hiring Risky Workers. In Isao Ohashi, and Toshiaki Tachibanaki, eds.: *Internal Labour Markets, Incentives, and Employment,* St. Martins Press, New York.

27. Miles, S. 2009. Succession Planning: How Everyone Does It Wrong. http://www.forbes.com/2009/07/30/succession-planning-failures-leadership-governance-ceos.html.

28. Murphy, K. J. and J. L. Zimmerman. 1993. Financial Performance Surrounding CEO Turnover. *Journal of Accounting and Economics* 16, 273–315.

29. Murphy, K. and J. Zabojnik. 2004. CEO Pay and Appointments: A Market-Based Explanation for Recent Trends. *American Economic Review Papers and Proceedings* 94, 192–196.

30. Murphy, K. and J. Zabojnik. 2007. Managerial Capital and the Market for CEOs. Working Paper, University of Southern California.

31. Palomino, F. and E. Peyrache. 2013. Internal versus External CEO Choice and the Structure of Compensation Contracts. *Journal of Financial and Qualitative Analysis* 48 (4), 1301–1331.

32. Parrino, R. 1997. CEO Turnover and Outside Succession: A Cross-Sectional Analysis. *Journal of Financial Economics* 46, 165–197.

33. Shen W. and A. Cannella. 2002. Power Dynamics Within Top Management and Their Impacts on CEO Dismissal Followed By Inside Succession. *Academy of Management Journal* 45, 1195–1206.

34. Weisbach, M.S. 1988. Outside Directors and CEO Turnover. *Journal of Financial Economics* 20 (1/2), 431–460.

35. Zajac, E. J. 1990. CEO Selection, Succession, Compensation and Firm Performance: A Theoretical Integration and Empirical Analysis. *Strategic Management Journal* 11, 217–230.

36. Zhang, Y. 2008. Information Asymmetry and the Dismissal of Newly Appointed CEOs: An Empirical Investigation. *Strategic Management Journal* 29, 859–872.

37. Zhang, Y., and N. Rajagopalan. 2003. Explaining New CEO Origin: Firm versus Industry Antecedents. *Academy of Management Journal* 46 (3), 327–338.