CEO LONGEVITY AND CORPORATE PERFORMANCE: THEORY AND EVIDENCE ON THE BRIGHT AND DARK SIDES OF LEADERSHIP CONTINUITY

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Abstract

This paper develops a theory to study the political economy of CEO longevity by examining how agreement between the board and the CEO over the value-maximizing choice of project-investment action influences the length of CEO tenure and who succeeds the CEO. A key element of the analysis is that the CEO’s entrenchment, rather than being taken as exogenously given, is endogenously determined in equilibrium by a tradeoff between the probability of CEO removal and firm value; higher entrenchment diminishes the probability of the CEO being removed and decreases firm value. The bright side of board-CEO agreement is that higher agreement causes the CEO to entrench less, leading to a higher firm value ex ante. However, the dark side of this agreement is that higher agreement also shields the CEO more from being fired upon bad performance ex post. Moreover, CEOs with higher agreement with their boards are more likely to be succeeded by insiders upon their departures. I find strong empirical support for these predictions of my model. This study also casts doubt on the validity of using CEO longevity as an empirical measure for managerial entrenchment, as has been routinely done in the literature.

JEL Classification: G30

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“Emerson has had only three CEOs in the past fifty years. The third, David Farr, took over in October 2000 at the age of forty-five. There is a very strong possibility, in other words, that the company will have only three CEOs during a stretch of seven decades.”


1 Introduction

CEO (Chief Executive Officer) tenure varies substantially in the cross section. At one end of the spectrum, Jacques Nasser lost his job at Ford Motor after less than three years as its CEO, James Goodwin led United Airlines for only two and a half years, and Xerox fired its former CEO Richard Thoman 13 months into the job; this is indeed a fairly long list. At the other end of the spectrum are CEOs who experienced 20 years or more at the helm. Examples are Charles Knight (27 years at Emerson), Arthur Sulzberger (24 years at The New York Times), and Jack Welch (20 years at General Electric). While some believe that longer CEO tenure reflects greater entrenchment and shorter CEO tenure greater corporate governance vigilance, others argue that longer tenure reflects leadership continuity and facilitates improved corporate performance. To the extent that CEO turnover is an event of great potential significance for a company and the impact of a CEO on the company’s performance may be correlated with the length of her tenure, it is important to understand: (1) how CEO retention/dismissal decisions are made; and (2) the factors that determine the length of CEO tenure. The first issue has been extensively investigated in the CEO-turnover literature (e.g., Coughlan and Schmidt (1985), Warner, Watts and Wruck (1988), and Weisbach (1988)). The second issue has received far less attention, and is the focus of this paper.

Although related, the issue of how and why CEOs get replaced is somewhat distinct from the issue of the determinants of CEO tenure length. The first issue is concerned with the factors that impinge on the probability of CEO dismissal in a given year that prevents a CEO from having a long tenure, while the second issue is concerned largely with CEOs who stayed in office for a long time and seeks to understand the reasons for the longevity.

1 Vancil (1987) reports that among Fortune 500 CEOs since 1960, 19 percent served for three years or less, whereas 25 percent served for ten years or more. Sebora (1996) finds that 34 percent of the CEO tenures in his sample ended by the fourth year.

2 For example, Charles Knight, former CEO of Emerson, comments on the extremely low CEO turnover at his company by pointing out that “this leadership continuity is an enormous advantage for Emerson. It reinforces the consistency we seek and limits the possibilities of our making unnecessary changes in direction or policy.” – Knight, Charles, *Performance Without Compromise*, Harvard Business School Press, 2005.
On the issue of CEO longevity, there is a “tradition” in the finance literature that equates long tenure with managerial entrenchment. In Hermalin and Weisbach (1998), an incumbent CEO with perceived ability higher than potential successors is able to retain her position for a longer period, and has more bargaining power over board selection. Since the board’s independence is the outcome of a negotiation process between the CEO and the board, the board’s independence is a decreasing function of CEO tenure, leading to accumulation of the CEO’s power over the board-selection process and weaker board monitoring over the incumbent’s tenure. That paper is often used as a theoretical basis for justifying the appropriateness of long tenure as a suitable empirical proxy for managerial entrenchment. For example, Berger, Ofek and Yermack (1997) write (p. 1412): “... whose CEOs have several characteristics of entrenchment, including a long tenure in office ...,” and Ryan and Wiggins (2004) state (p. 508) that they “expect that as a CEO’s tenure increases, he or she becomes entrenched.” Ryan and Wiggins (2004) directly use CEO tenure as an empirical measure of entrenchment (p. 505): “CEOs are considered entrenched if their tenure as CEO is greater than the sample median,” which is six years in their sample in 1997; see also Chidambaran and Prabhala (2003), and Rose and Shepard (1997). However, by joining entrenchment and long tenure at the hip, we miss out on the opportunity to examine the determinants and effects of CEO longevity in well-performing organizations where the length of CEO tenure is shaped by forces other than entrenchment (e.g., General Electric under Welch).

A departure from the view that longevity and entrenchment are one and the same thing is the starting point of my analysis. In particular, I explore the political economy of CEO longevity by analyzing the role of “philosophical alignment” or agreement between the board and the CEO as a determinant of the length of CEO tenure. My exploration is motivated by anecdotal evidence that lack of such agreement can result in the departure of the CEO. For example, Stephen Clough was named CEO of the Clearwater-based manufacturing company, Kaydon Corp., in June 1996. He established record financial results for Kaydon during his tenure. Yet he lasted only two years as CEO. His abrupt resignation in June 1998 came during a successful run for the company (earnings increased about 30 percent over comparable period in 1997) and was completely unexpected by the public. The company’s announcement said that its board and Clough “disagreed on general management philosophy and the long-term strategic direction of the company.” According to an analyst closely following Kaydon, Clough’s rather early departure was the result of a clash between him and the board over acquisition strategy: “This is a company that has been built on acquisition, and if the board and the CEO disagree on the criteria for what future acquisition might be, one of them has to go.”

A similar problem of disagreement between the board and the CEO over key strategic issues led to the early departure of James Eskridge, former CEO of the Lexington-based shoe maker, Stride Rite Corp., despite the fact that he was viewed as a “savior” of the company. In a statement, Eskridge said that he “disagreed with the board about the direction of change in the company,” which according to analysts closely following the company, was because Eskridge differed with the board over reorganization of a division of the company. Lands’ End Inc.’s former CEO William End was asked to resign from his position.

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3“Kaydon CEO Calls it Quits” reported in The Tampa Tribune on June 25, 1998.

despite the company’s sound financial performance from 1993 to 1995 during his tenure, because of disagreement with the board (especially the founder and Chairman Gary Comer) over how to manage people. In the case of the forced resignation of the former CEO of Union Pacific, Ronald Burns, analysts said: “there is no evidence of performance that would have led to the departure.” Rather, the analysts noted that it was because of disagreement over strategy, namely Burns’s “ambitious plan to focus the railroad on improving customer service were seen as too far-reaching (by the board) while Union Pacific was attempting to buy and then integrate Southern pacific.” Board-CEO disagreement thus surfaces as a potentially important factor, besides entrenchment and corporate performance, that influences the board’s decision to retain or fire the CEO.

In this paper, I formally develop the idea that agreement between the board and the CEO affects the length of CEO tenure, and that long tenure is not equivalent to managerial entrenchment. In my model, the incumbent CEO has a limited personal effort capacity (e.g., time) that must be allocated across two activities: (i) personal entrenchment and (ii) the development of a project opportunity that can potentially improve the performance of the firm under her management. Conditional on the project being available, the CEO observes a private signal about its profitability, with the signal precision depending on her unknown ability, and then decides to take an appropriate action to implement the project. However, the CEO may encounter disagreement with the board over the value-maximizing choice of project-investment action; this disagreement arises because of differences in prior beliefs that lead to different views about value-maximizing actions. This disagreement with the CEO influences the board’s posterior assessment of the CEO’s ability and hence its CEO-replacement decision \textit{ex post}, which consequently affects the CEO’s optimal \textit{ex ante} effort allocation to personal entrenchment. The effort the CEO allocates to entrenchment trades off the personal benefit to her from the increased likelihood of being retained due to greater entrenchment against the cost associated with diminished firm value due to effort being allocated away from project development.

Disagreement over the value-maximizing choice of project-investment action is modeled through the device of rational but heterogenous prior beliefs (Kurz (1994a, 1994b)) about the state of the world. These differences in priors can stem from a variety of sources, such as differences in experiences and innate attributes. Kurz (1994a, 1994b) has pointed out that when economic agents form beliefs based on their observations of past data rather than rational expectations, there can be multiple “rational beliefs,” so that heterogeneity of beliefs is consistent with rationality. Morris (1995) argues that Bayesian rationality and heterogeneous priors are compatible. Kreps (1990) asserts that the assumption of common priors has no basis in philosophy or logic, so that a heterogeneous-prior-beliefs setup is more general than a common-priors setting. A growing

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5"Union Pacific Railroads Unit Executive; President Takes Over Division After Top Management Dispute” reported in \textit{Rocky Mountain News} on November 7, 1996.

6The common-priors assumption is typically justified on the ground of learning, i.e., sufficient amount of common experiences and observations will eliminate disagreement. However, there are several reasons to believe why the assumption of disagreement between the board of directors and the CEO is a reasonable one. First, there is usually not enough time or chance for the board’s and the CEO’ beliefs to converge, given that CEO tenure is typically not sufficiently long. Second, in a recent interesting paper, Acemoglu, Chernozhukov and Yildiz (2006) show that learning does not guarantee the convergence of beliefs if individuals are uncertain about the interpretation of

The analysis generates three main results that represent testable predictions. First, the board’s posterior assessment of the CEO’s ability depends not only on her performance, but also the degree of agreement between the board and the CEO. Higher agreement results in a lower likelihood that the CEO will be fired by the board upon bad performance. This asymmetry in the board’s assessment of the CEO’s ability across the low-disagreement and high-disagreement states occurs because disagreement allows the board to learn more about the CEO’s ability from performance. This generates the prediction that controlling for all the other factors (e.g., performance and entrenchment), long-tenure CEOs are more likely to have higher agreement with their boards than short-tenure CEOs. Second, higher agreement between the board and the CEO results in less entrenchment on the part of the CEO. The reason is that entrenchment is endogenously determined by the CEO’s utility-maximization problem, and in doing this the CEO trades off the lower likelihood of being fired on the one hand against the reduction in firm value due to greater entrenchment on the other hand. That is, entrenchment and agreement are partial substitutes for the CEO. This generates the prediction that long-tenure CEOs are not necessarily more entrenched than short-tenure CEOs, and hence CEO tenure should not be used as an empirical proxy for entrenchment. Third, CEOs with higher levels of agreement with their boards are perceived to be more valuable. This result follows because higher agreement causes the CEO to invest more of her personal effort in project development rather than entrenchment, thereby resulting in higher firm value perceived by the board. To the extent that the prior belief of a manager who is an “insider” is more likely to be influenced by the CEO than is the prior belief of a manager who is an “outsider,” this result predicts that CEOs with higher levels of agreement with their boards are ceteris paribus more likely to be succeeded by insiders.

I empirically test these predictions by investigating 1010 CEOs in 429 firms that experienced CEO turnovers between 1992 and 2005. I classify each CEO in my sample into different categories based on the length of tenure, i.e., whether the CEO has a long or short tenure,\(^7\) and turnover type, i.e., whether the CEO is forced out or leaves the position voluntarily. The empirical results are broadly consistent with the predictions of my model. Using six different measures for board-CEO agreement, some of which have been used in recent empirical papers dealing with CEO-investor disagreement and others that are new, I find that, other things being equal, CEOs with higher agreement with their boards are not only more likely to enjoy long tenure rather than being forced out after short terms on average, but also are more likely to have insiders as their successors. Firm performance is better on average with long-tenure CEOs who have relatively high agreement with their boards. This highlights the bright side of CEO longevity. However, signals. Moreover, disagreement between the board and the CEO seems to be “the rule rather than the exception in practice” as suggested by the previous real-world examples.

\(^7\)I use various cutoff values to define whether a CEO has a long or short tenure in robustness checks.
when I examine those CEOs who are forced out from their positions, I find that those with long
tenure do not outperform those with short tenure on average; rather, those long-tenure CEOs
have significantly higher agreement with their boards than those short-tenure CEOs. Moreover,
I find that the sensitivity of CEO turnover to performances decreases with the level of agreement
between the board and the CEO. These findings support the prediction that CEOs with higher
agreement with their boards are less likely to be fired contingent on bad performance, which
reflects the dark side of CEO longevity. When I use the index developed by Gompers, Ishii and
Metrick (2003), board characteristics (composition and size) and CEO/chairman duality (whether
the CEO is also the chairman of the board) as proxies for managerial entrenchment, I do not find
a statistically significant difference in terms of entrenchment between the long-tenure group of
CEOs and the short-tenure group of CEOs. This casts doubt on the validity of tenure as an
empirical proxy for managerial entrenchment. Stronger support for this is found when I use the
subset of entrenchment variables identified by Bebchuk, Cohen and Ferrell (2005) as the proxy
for managerial entrenchment.

This paper is related to the theoretical literature on boards and CEOs. Hermalin and Weis-
bach (1998) study the board-selection process that is partially controlled by the CEO. The CEO’s
bargaining power over this process stems from her perceived ability relative to potential succes-
sors, which is directly related to the effectiveness of board monitoring. They show that the CEO
accumulates her power over the board along her tenure and board-monitoring effectiveness is
consequently a decreasing function in the length of CEO tenure; see also Hermalin (2005). Hir-
shleifer and Thakor (1994, 1998) examine information aggregation through board dismissals and
takeovers. Song and Thakor (2006a) develop a model that incorporates career concerns on the
part of the board and suggest that the interaction of the CEO’s and the board’s career concerns
could render even independent directors ineffective. Adams and Ferreira (2006) study the advis-
sory and monitoring roles of the board and suggest that it may be optimal for the board to not
monitor the CEO very intensively, thereby increasing the CEO’s incentive to share information
with the board. Almazan and Suarez (2003) find that CEO entrenchment and severance pay
are substitutes for incentive compensation in motivating the CEO to expend effort to maximize
ex ante shareholders’ value. Inderst and Mueller (2006) examine the joint optimal design of the
CEO’s on-the-job compensation and severance pay to reduce the CEO’s entrenchment. Fishman,
Khurana and Rhodes-Kropf (2005) find that board entrenchment may insulate a CEO from be-
ing (wrongly) removed by (irrational) shareholders agitation, thereby suggesting a broader view
to a firm’s choice of entrenchment and governance statutes. The key differences in this paper
are that I introduce board-CEO agreement and show how agreement substitutes partially for
endogenously-determined managerial entrenchment.

Also related to my work is the large empirical literature on CEO turnover. This literature
has focused largely on the factors that affect turnover. The key findings can be briefly summa-
rized as follows (Brickley (2003) provides a critical review of that literature). First, turnover is
inversely related to firm performance (e.g., Coughlan and Schmidt (1985), and Warner, Watts
and Wruck (1988)). Moreover, this turnover-performance sensitivity is systematically affected by
the percent of outside directors on the board (Weisbach (1988)) and “homogeneity” of the indus-
try that the firm resides in (Parrino (1997)). However, as pointed out by Brickley (2003), the economic significance of the documented relation between turnover and performance is “arguably quite small” despite its statistical significance: “moving from the top to bottom decile of performance increases the probability of CEO turnover in publicly traded firms by about 4 percent.” This is somewhat surprising, given the apparently compelling logic underlying the link between performance and CEO turnover based on any ability-inference model, such as Holmstrom and Ricart i Costa (1986) for instance. The political economy of corporate governance would suggest that other factors besides performance could affect the board’s decision to fire the CEO, which may explain the empirical results. Second, upon turnover the likelihood of the new CEO being brought in from outside the firm is inversely related to firm performance under the predecessor CEO (Parrino (1997)), whereas it is positively related to the percent of outside directors on the board (Borokhovich, Parrino and Trapani (1996)) and industry homogeneity (Parrino (1997)); outside succession is also more likely when the predecessor CEO is forced out from the position. Huson, Parrino and Starks (2001) provide a long-term perspective on the influences of internal monitoring mechanism and intensity of the takeover market on the likelihood of CEO turnover and outside succession. A third strand of this literature studies the effect of CEO turnover by examining the operating performance change or abnormal stock return around the turnover event (e.g., Denis and Denis (1995), Huson, Malatesta and Parrino (2004), and Khurana and Nohria (2000)). Allgood and Farrell (2003) is an important part of this literature. Motivated by the matching theory literature in labor economics (e.g., Jovanovic (1979)), Allgood and Farrell examine the factors that influence the likelihood of observing a good match between the CEO and the firm, where they define CEOs with long tenure as having good matches with their firms and CEOs with short tenure as having bad matches with their firms. They find that a good match is more likely to occur when the CEO delivers good performance, especially when she outperforms the predecessor CEO. It then seems to suggest that performance is the driving factor determining the quality of the CEO-firm match. However, the matching process remains a black box, in which performance may be better understood as an output, rather than a driving factor, so the primitive determinant of a good match remains elusive. In particular, one does not know what determines the observed tenure differences among CEOs in the cross section. My paper seeks to address this issue.

The rest of the paper is organized as follows. Section 2 presents the model description and analysis. Section 3 derives empirical predictions of the model. In Section 4, I describe the data and define the key variables used in the empirical analysis, especially the proxies for agreement

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8 Industry homogeneity means the degree of similarity among the firms in an industry in terms of production technology and reactions to economic condition and technological innovations, etc. Parrino (1997) argues that the cost of hiring an executive from another firm in the same industry tends to be lower in homogenous industries because human capital is less firm-specific and hence easier to transfer in homogenous industries.

9 Brickley (2003) argues that “we have probably reached a point of diminishing returns in estimating logit models that focus on the relation between CEO turnover and firm performance measures.”

10 In a recent interesting study, Jenter and Kanaan (2006) find that boards only partially filter industry performance from their CEO-replacement decision, and CEOs are often fired after bad firm performance engendered by factors beyond their control.
between the board and the CEO. Empirical results are presented and discussed in Section 5. Section 6 concludes. Proofs are in the Appendix.

2 The Model and Analysis

This section first describes the model, including the agents and economic environment, and how potential disagreement between agents over the value-maximizing choice of project-investment action arises. I then analyze the model.

2.1 The Agents and Economic Environment

Consider a three-period economy with four dates \( t = 0 \ldots 3 \), universal risk neutrality, and a zero riskless interest rate. There is a firm that consists of an incumbent CEO (Chief Executive Officer) and a board (Board of Directors). The board is assumed to be a faithful representative of the shareholders, so that there is no meaningful distinction in my model between the board and the shareholders. There is also a replacement CEO, who is either inside or outside the firm, that the board can hire to replace the incumbent at \( t = 3 \) if the board finds it optimal to do so at that time.

At \( t = 0 \), it is unknown whether the firm will have a project at \( t = 1 \). The arrival probability of the project is the amount of personal effort, \( R_d \in [0, 1] \), supplied by the incumbent to develop the project at \( t = 1 \). This should be viewed comprehensively as all the activities that the incumbent needs to engage in to generate a commercially viable project, including idea generation, prototype development and market testing, etc. If the project is available at \( t = 1 \), it can be implemented by an action \( a \in \{ a_B, a_C \} \) at \( t = 2 \). The outcome of the project, which is realized and observed by all at \( t = 3 \), can be either 1 (success) or 0 (failure), depending on whether the action undertaken at \( t = 2 \) is “compatible” with the state of the world realized at \( t = 3 \). There are two possible states, namely, state \( \omega_B \) and state \( \omega_C \). Suppose the true state turns out to be \( \omega_i \in \{ \omega_B, \omega_C \} \) at \( t = 3 \). If the action undertaken at \( t = 2 \) is \( a_i \), then the project succeeds for sure at \( t = 3 \) (action is compatible with the state), whereas if the action undertaken at \( t = 2 \) is \( a_j \), where \( j \neq i \), then the project always fails at \( t = 3 \) (action is incompatible with the state). Thus, there is no action choice that is uniquely value-maximizing for the project in all circumstances. The value-maximizing action is state-contingent.

The incumbent has in total one unit of personal effort at \( t = 0 \) that she can use to entrench herself at \( t = 0 \) (entrenchment) and develop the project at \( t = 1 \) (project development).\(^{11}\) One can interpret this one unit of personal effort as the total (limited) time or capacity available to the incumbent. If the incumbent expends \( R_e \in [0, 1] \) amount of effort in entrenchment at \( t = 0 \), then the probability that she will be fired by the board at \( t = 3 \) \textit{ceteris paribus} reduces by a fraction of \( \kappa R_e \), where \( \kappa \in (0, 1) \) is a constant. This can be because entrenchment increases the

\(^{11}\)That is, the incumbent divides her effort between two different tasks (e.g., Holmstrom and Milgrom (1991)).
replacement cost to the board when it wants to fire the incumbent and hire the replacement at \( t = 3 \). For example, the incumbent can make value-depleting activities at \( t = 0 \) that increase her value to the firm via acquisition of assets that are more valuable under the incumbent’s than others’ management. The firm may have been better off had these assets not been acquired. But once they are acquired, it then becomes costly for the board to fire the incumbent.\(^{12}\) Note that the two key elements of my definition of entrenchment are that (i) it diminishes the probability of CEO removal; and (ii) it decreases firm value as it causes effort to be allocated away from project development.\(^{13}\)

2.2 Board-CEO Disagreement: Heterogenous Priors about the State

The true state is realized at \( t = 3 \). At \( t = 0 \), the board’s prior belief is that \( \Pr(\omega_B) = \theta_h \in (0.5, 1) \) and \( \Pr(\omega_C) = 1 - \theta_h \in (0, 0.5) \). The board always perceives that state \( \omega_B \) is more likely to occur. However, the incumbent may not always think so. The incumbent draws her prior beliefs about the state at \( t = 1 \).\(^{14}\) With probability \( \rho \in [0, 1] \) the incumbent agrees with the board and also believes that \( \Pr(\omega_B) = \theta_h \) and \( \Pr(\omega_C) = 1 - \theta_h \), whereas with probability \( 1 - \rho \) she disagrees with the board and believes that \( \Pr(\omega_B) = \theta_l \in (0, 0.5) \) and \( \Pr(\omega_C) = 1 - \theta_l \in (0.5, 1) \). That is, with probability \( \rho \) the incumbent believes that state \( \omega_B \) is more likely, whereas with the remaining probability \( 1 - \rho \) she believes that state \( \omega_C \) is more likely. The model thus permits the board and the incumbent to have different prior beliefs about the likelihood of the state, and these priors are common knowledge. The parameter \( \rho \) measures the degree of agreement between the board and the incumbent, with a larger \( \rho \) representing a higher level of agreement between the two. Henceforth, I label \( \rho \) as board-CEO agreement.

2.3 The Incumbent CEO’s Information Signal

At \( t = 2 \), the incumbent generates a private signal about the state of the world. The signal is \( s \in \{s_B, s_C\} \). The precision of the signal depends on the incumbent’s ability, \( \varphi \), via the following conditional probability structure:

\[
\Pr(s_j|\omega_j) = \varphi, \forall j \in \{B, C\}. \tag{1}
\]

That is, signal precision is higher for an incumbent with higher ability. Let \( g \) be the probability density of \( \varphi \) with support \([0, 1]\). Denote \( \mathbf{E}(\varphi) \equiv \bar{\varphi} \) as the expected value and \( \text{Var}(\varphi) \equiv \sigma^2 \) as

\(^{12}\)This is possible because the incumbent can make management-specific investments, requiring \( R_e \) amount of her effort, to those acquired assets so that she is the best one to operate them (Shleifer and Vishny (1989)).

\(^{13}\)This definition is broad enough to accommodate various means through which a CEO can entrench herself. For example, the CEO can shuffle the board’s structure to make the board less independent, or the CEO can push the firm to adopt anti-takeover provisions to restrict shareholder rights, etc. The key is that all these entrenchment activities diminish the probability of CEO removal and decrease shareholder value. Shleifer and Vishny (1989) stress (p. 138) that “we do not believe that a CEO can do whatever he likes solely by virtue of his position. Acquiring power takes effort, . . . ” This is also the essential of my model of entrenchment.

\(^{14}\)I could have both the the board and the incumbent randomly draw prior beliefs at \( t = 1 \), with a pre-specified correlation structure. Since this yields qualitatively the same results, I adopt the simpler specification of stipulating a constant belief for the board.
the variance of $\varphi$, respectively. Although the probability distribution of $\varphi$ is common knowledge, nobody (including the incumbent herself) knows the true value of $\varphi$ a priori.\(^{15}\) I make the following assumption about $\tilde{\varphi}$:

**Assumption 1.**

$$\tilde{\varphi} \in (1 - \theta_l, \theta_h).$$

This assumption says that the board’s prior belief about state $\omega_B$ is sufficiently strong and the incumbent’s signal is on average informative (note that $\tilde{\varphi} > 1/2$).\(^{16}\)

First consider the case in which the incumbent agrees with the board, i.e., her prior beliefs are that $Pr(\omega_B) = \theta_h \in (0.5, 1)$ and $Pr(\omega_C) = 1 - \theta_h \in (0, 0.5)$. If she observes $s_B$, her posterior beliefs about the states are:

$$Pr(\omega_B|s_B, agree) = \frac{\tilde{\varphi}\theta_h}{\tilde{\varphi}\theta_h + [1 - \tilde{\varphi}][1 - \theta_h]}, \tag{2}$$

$$Pr(\omega_C|s_B, agree) = \frac{[1 - \tilde{\varphi}][1 - \theta_h]}{\tilde{\varphi}\theta_h + [1 - \tilde{\varphi}][1 - \theta_h]}. \tag{3}$$

It is clear that $\frac{\tilde{\varphi}\theta_h}{\tilde{\varphi}\theta_h + [1 - \tilde{\varphi}][1 - \theta_h]} > \theta_h > 0.5$ and $\frac{[1 - \tilde{\varphi}][1 - \theta_h]}{\tilde{\varphi}\theta_h + [1 - \tilde{\varphi}][1 - \theta_h]} < 1 - \theta_h < 0.5$. That is, the signal realization of $s_B$ reinforces the incumbent’s prior belief that state $\omega_B$ is more likely when she agrees with the board. If she observes $s_C$, her posterior beliefs about the states are:

$$Pr(\omega_B|s_C, agree) = \frac{[1 - \tilde{\varphi}][1 - \theta_h]}{\tilde{\varphi}\theta_h + [1 - \tilde{\varphi}][1 - \theta_h]}, \tag{4}$$

$$Pr(\omega_C|s_C, agree) = \frac{\tilde{\varphi}[1 - \theta_h]}{\tilde{\varphi}\theta_h + [1 - \tilde{\varphi}][1 - \theta_h]}. \tag{5}$$

Assumption 1 ensures that $\frac{[1 - \tilde{\varphi}][1 - \theta_h]}{\tilde{\varphi}\theta_h + [1 - \tilde{\varphi}][1 - \theta_h]} > 0.5$ and $\frac{\tilde{\varphi}[1 - \theta_h]}{\tilde{\varphi}\theta_h + [1 - \tilde{\varphi}][1 - \theta_h]} < 0.5$. That is, when the incumbent agrees with the board, her prior belief about the probability of state $\omega_B$ is high enough (i.e., sufficiently large $\theta_h$) that even an informative signal $s_C$ cannot change her prior belief that state $\omega_B$ is more likely than state $\omega_C$.

Next consider the case in which the incumbent disagrees with the board, i.e., her prior beliefs are that $Pr(\omega_B) = \theta_l \in (0, 0.5)$ and $Pr(\omega_C) = 1 - \theta_l \in (0.5, 1)$. If she observes $s_B$, her posterior beliefs about the states are:

$$Pr(\omega_B|s_B, disagree) = \frac{\tilde{\varphi}\theta_l}{\tilde{\varphi}\theta_l + [1 - \tilde{\varphi}][1 - \theta_l]}, \tag{6}$$

$$Pr(\omega_C|s_B, disagree) = \frac{[1 - \tilde{\varphi}][1 - \theta_l]}{\tilde{\varphi}\theta_l + [1 - \tilde{\varphi}][1 - \theta_l]}. \tag{7}$$

\(^{15}\)Assuming the incumbent knows the true value of $\varphi$ does not fundamentally alter my main results. This can be because the incumbent cannot credibly convey her private information about her ability to the board even if she knows the true value of $\varphi$, that is, the Revelation Principle fails for reasons similar to those in Persons (1997).

\(^{16}\)This assumption is made to bring out the key intuition of my model without too much algebraic density; see footnote 19 and the Appendix for further discussions.
Assumption 1 ensures that \( \frac{1-\bar{\phi}}{1-\bar{\phi} + \bar{\phi}[1-\theta]} \) > 0.5 and \( \frac{[1-\bar{\phi}][1-\theta]}{[1-\bar{\phi}][1-\theta]} < 0.5 \). That is, if the incumbent disagrees with the board and receives \( s_B \), she will change her prior belief and perceive state \( \omega_B \) to be more likely. If she observes \( s_C \), her posterior beliefs about the states are:

\[
\Pr(\omega_B|s_C,\text{disagree}) = \frac{[1-\bar{\phi}][1-\theta]}{1-\bar{\phi} + \bar{\phi}[1-\theta]}, \tag{8}
\]

\[
\Pr(\omega_C|s_C,\text{disagree}) = \frac{\bar{\phi}[1-\theta]}{1-\bar{\phi} + \bar{\phi}[1-\theta]} \tag{9}.
\]

It is clear that \( \frac{[1-\bar{\phi}][1-\theta]}{1-\bar{\phi} + \bar{\phi}[1-\theta]} < 0.5 \) and \( \frac{\bar{\phi}[1-\theta]}{1-\bar{\phi} + \bar{\phi}[1-\theta]} > 1-\theta > 0.5 \). That is, the signal realization of \( s_C \) reinforces the incumbent’s prior belief that state \( \omega_C \) is more likely when she disagrees with the board.

To recapitulate, I have the following setup: (i) The board’s prior belief is that state \( \omega_B \) is more likely to occur. With probability \( \rho \) the incumbent’s prior belief is the same as the board’s, whereas with probability \( 1-\rho \) the incumbent’s prior belief is that state \( \omega_C \) is more likely. (ii) If the incumbent agrees with the board, her prior belief is so strong that she will not change her prior belief that state \( \omega_B \) is more likely regardless of the signal she receives, while the incumbent’s posterior belief about the state depends on the signal realization when she disagrees with the board, that is, if she observes \( s_B \), she changes her mind and believes that state \( \omega_B \) is more likely, and she continues to believe that state \( \omega_C \) is more likely if she observes \( s_C \).

### 2.4 Preferences and the Board’s CEO-Replacement Decision

If the incumbent is replaced at \( t = 3 \), she incurs a disutility of \( F > 0 \) (e.g., reputational loss associated with being fired). Suppose the value of the firm (i.e., the expected project payoff) under the incumbent’s management (from \( t = 0 \) to \( t = 3 \)) is \( U_C \) from the incumbent’s perspective. The incumbent’s expected utility at \( t = 0 \), denoted as \( \Pi \), is assumed to be

\[
\Pi = \alpha \times U_C - \Pr(\text{fired}) \times F, \tag{10}
\]

where the constant \( \alpha > 0 \) is the incumbent’s ownership of the firm as stipulated in the compensation contract, and \( \Pr(\text{fired}) \) is the probability viewed at \( t = 0 \) that the incumbent will be fired by the board at \( t = 3 \). Thus, the incumbent cares both about the probability of being retained and the firm value under her management.

The board’s CEO-replacement decision is made as follows. At \( t = 3 \), the board updates its prior belief about the incumbent’s ability to \( E(\bar{\phi}|\mathcal{F}) \), where \( \mathcal{F} \) is the board’s information set at \( t = 3 \). The set \( \mathcal{F} = \{g(\bar{\varphi}), \{\text{agree}, 1\}, \{\text{agree}, 0\}, \{\text{disagree}, 1\}, \{\text{disagree}, 0\}, \{NO\}\} \), where \( g(\bar{\varphi}) \) is the board’s prior belief about the distribution of the incumbent’s ability, \( \{\text{agree}, 1\} \) and \( \{\text{agree}, 0\} \) mean that the incumbent agrees with the board and the project succeeds and fails, respectively, \( \{\text{disagree}, 1\} \) and \( \{\text{disagree}, 0\} \) mean that the incumbent disagrees with the board and the project succeeds and fails, respectively, and \( \{NO\} \) means that the project is unavailable (including the cases in which the incumbent agrees and disagrees with the board). The board may then decide to fire the incumbent and hire the replacement. The replacement CEO’s ability,
\( \varphi_R \) is a random variable with mean \( \bar{\varphi}_R = \bar{\varphi} \) viewed at \( t = 3 \). That is, the replacement has the same ability as the incumbent on average.\(^{17}\) The agreement between the replacement and the board, \( \rho_R \), is assumed to be the same as that between the incumbent and the board, i.e., \( \rho_R = \rho \). Thus, the board wants to fire the incumbent at \( t = 3 \) if and only if \( E(\varphi|\mathcal{F}) < \bar{\varphi} \).\(^{18}\)

### 2.5 Sequence of Events

To sum up, the sequence of events is as follows. At \( t = 0 \), the board forms its prior belief about the state of the world, always perceiving that state \( \omega_B \) is more likely. The incumbent decides on the amount of personal effort expended in entrenchment, \( R_e \). At \( t = 1 \), the arrival probability of the project is the amount of effort supplied by the incumbent in project development, \( R_d \in [0, 1 - R_e] \), which is unobservable and hence noncontractible. The incumbent forms her prior belief about the state, which can be the same as or different from the board’s prior belief. At \( t = 2 \), the incumbent observes a private signal \( s \in \{s_B, s_C\} \). The precision of that signal depends on the incumbent’s unknown ability, \( \varphi \). The incumbent updates her prior belief about the state based on the signal she receives, and chooses the action that she perceives to be value maximizing to implement the project if it is available. At \( t = 3 \), the payoff of the project is realized and observed by all. The board updates its prior belief about the incumbent’s ability, and then decides whether to fire the incumbent and hire the replacement CEO. Figure 1 pictorially summarizes the sequence of events.

[Figure 1 goes here]

### 2.6 The Analysis

I start the analysis at \( t = 3 \) by characterizing the board’s posterior beliefs about the incumbent’s ability conditional on various project outcomes. I examine the incumbent’s equilibrium action-choice strategies conditional on signal realization and whether she agrees or disagrees with the board. I then work backward to analyze the incumbent’s effort allocation between entrenchment and project development.

\(^{17}\)This assumption for \( \bar{\varphi}_R = \bar{\varphi} \) is made for algebraic simplicity without changing the main results qualitatively. Note that if the average replacement has a higher ability than the incumbent, i.e., \( \bar{\varphi}_R > \bar{\varphi} \), then the incumbent would have been fired at \( t = 0 \) even before the project outcome is realized. I assume away this possibility.

\(^{18}\)This assumption for \( \rho_R = \rho \) is made for simplicity. The incumbent and the replacement only differ in terms of ability as perceived by the board at \( t = 3 \). The implicit assumption here is that the level of agreement between the incumbent and the board remains to be \( \rho \) in the next period if the incumbent is retained at \( t = 3 \), so that the board’s CEO-replacement decision is solely based on the ability. I will analyze the case with \( \rho_R \neq \rho \) when I study CEO succession in Section 2.6.2.
2.6.1 The Board’s Equilibrium Beliefs about the Incumbent CEO’s Ability

At $t = 3$ the board observes the project outcome, i.e., whether it succeeds, fails or is unavailable. Conditional on this and knowing whether the incumbent agrees or disagrees with it regarding the state, the board updates its prior beliefs about the incumbent’s ability. These are summarized in the following proposition:

**Proposition 1.** In equilibrium the incumbent always chooses action $a_B$ regardless of the signal realization when she agrees with the board; when she disagrees with the board, she always chooses action $a_B$ when the signal realization is $s_B$, and $a_C$ when the signal realization is $s_C$. The board’s posterior beliefs about the incumbent’s ability corresponding to the different equilibrium outcomes at $t = 3$ are

\[
\begin{align*}
E(\varphi|\text{agree}, i) &= \bar{\varphi}, \forall i \in \{1, 0\}, \\
E(\varphi|\text{disagree}, 1) &= \bar{\varphi} + \frac{\sigma^2}{\bar{\varphi}}, \\
E(\varphi|\text{disagree}, 0) &= \bar{\varphi} - \frac{\sigma^2}{1 - \bar{\varphi}}, \\
E(\varphi|\text{NO}) &= \bar{\varphi}.
\end{align*}
\]

This proposition can be understood as follows. First, when the incumbent agrees with the board and has a strong prior belief that state $\omega_B$ is more likely, her value-maximizing action choice will be signal **independent** because her prior belief that state $\omega_B$ is more likely to occur is so strong that she will not change her mind regardless of the signal realization. In this case, the board learns nothing about the incumbent’s ability from project outcome and hence its posterior beliefs about the incumbent’s ability always stay at the prior, regardless of project success or failure. Given this, the incumbent’s optimal strategy in equilibrium is to always implement action $a_B$ when she agrees with board, because deviating from this action-choice strategy (i.e., making it signal dependent) does not change the board’s posterior beliefs about her ability (which is always $\bar{\varphi}$), while strictly decreases the expected project payoff from her perspective. Second, when the incumbent disagrees with the board, her posterior beliefs about the state and action choice are signal **dependent**. This allows the board to learn about the incumbent’s ability from the project outcome. In this case, project success leads the board to revise upward its belief about the incumbent’s ability from the prior $\bar{\varphi}$ to $\bar{\varphi} + \frac{\sigma^2}{\bar{\varphi}}$, while project failure causes the board to adjust downward its belief about the incumbent’s ability from the prior $\bar{\varphi}$ to $\bar{\varphi} - \frac{\sigma^2}{1 - \bar{\varphi}}$. Given this belief structure, the incumbent’s optimal strategy is to make her action choice signal contingent, and these constitute an equilibrium. Finally, when no project is available, the board learns nothing about the incumbent’s ability and hence its posterior belief stays at the prior.

Thus, the board’s posterior assessment about the incumbent’s ability is **asymmetric** between the case in which the incumbent agrees with the board and the case in which the two disagree; this assessment is more **outcome-sensitive** when the incumbent disagrees with the board than when the two agree. This ability-assessment asymmetry on the part of the board arises in my model because disagreement allows the board to learn more about the incumbent’s ability from the
project outcome. This asymmetry affects the incumbent’s equilibrium effort allocation between entrenchment and project development in a significant manner, as will be analyzed below.

2.6.2 The Incumbent CEO’s Effort Allocation between Entrenchment and Project Development

Suppose the incumbent expends $R_e$ and $R_d$ amount of her personal effort in entrenchment and project development, respectively. At $t = 1$ if the project is not available, the incumbent’s utility is, $-\Pr(fired|NO, R_e) \times F$. If the project is available, with probability $\rho$ she agrees with the board and implements action $a_B$ regardless of signal realization. In this case, she perceives that with probability $\theta_h$ the project succeeds and her utility is, $\alpha - \Pr(fired|agree, 1, R_e) \times F$; with probability $1 - \theta_h$ the project fails and her utility is, $-\Pr(fired|agree, 0, R_e) \times F$. Consider the case in which the incumbent disagrees with the board, which occurs with probability $1 - \rho$. In this case, her action choice is signal contingent. With probability $\bar{\varphi}$ she correctly identifies the state and the project succeeds, in which case her utility is, $\alpha - \Pr(fired|disagree, 1, R_e) \times F$; with probability $1 - \bar{\varphi}$ she fails to make her action choice compatible to the state and the project fails, in which case her utility is, $-\Pr(fired|disagree, 0, R_e) \times F$.

Thus, the incumbent chooses $R_e$ and $R_d$ to maximize her expected utility at $t = 0$:

$$II = R_d[1 - \rho]\left[\bar{\varphi}\left[\alpha - \Pr(fired|disagree, 1, R_e)F\right] - [1 - \bar{\varphi}]\Pr(fired|disagree, 0, R_e)F\right]$$

$$+ R_d\rho\left[\theta_h\left[\alpha - \Pr(fired|agree, 1, R_e)F\right] - [1 - \theta_h]\Pr(fired|agree, 0, R_e)F\right]$$

$$- [1 - R_d]\Pr(fired|NO, R_e)F,$$  \hspace{1cm} (15)

subject to the capacity of her personal effort:

$$R_e + R_d \leq 1.$$  \hspace{1cm} (16)

The solution is characterized in the following proposition:

**Proposition 2.** The incumbent’s optimal degree of entrenchment ($R_e$) is decreasing, whereas her optimal effort allocation to project development ($R_d$) is increasing in board-CEO agreement, i.e., $\partial R_e / \partial \rho < 0$ and $\partial R_d / \partial \rho > 0$. Moreover, the expected project payoff under the incumbent’s management is increasing in board-CEO agreement.

---

19In the current setup of the model, the board’s posterior assessment of the incumbent’s ability is outcome independent when the incumbent agrees with the board (see (11)). This is because the incumbent’s action choice is signal independent when she agrees with the board (ensured by Assumption 1). Moreover, the board’s posterior assessment is always revised downward to a constant level $\bar{\varphi} - \frac{\sigma^2}{1 - \bar{\varphi}}$ when the project fails, and upward to a constant level $\bar{\varphi} + \frac{\sigma^2}{\bar{\varphi}}$ when the project succeeds, which are independent of the degree of prior-belief-heterogeneity between the board and the incumbent, $\theta_h - \theta_l$. This model structure is chosen for algebraic simplicity without sacrificing economic intuition. In the Appendix, I show that the key intuition of Proposition 1 can be obtained without Assumption 1 in a more complex setup, in which the board’s posterior assessment of the incumbent’s ability can be dependent on the degree of prior-belief-heterogeneity. I also show in the Appendix that the main result of the model can be sustained when disagreement between the board and the incumbent is realized after the incumbent receives her private signal and updates her prior.
The incumbent’s effort allocation to entrenchment diminishes the probability for her to be fired by the board at $t = 3$ when the board wants to fire her. However, this leaves the incumbent less effort to allocate to project development, leading to lower project availability and hence a reduction in firm value. Thus, entrenchment is a double-edged sword to the incumbent. Note that the incumbent is only fired when the project fails and she disagrees with the board, i.e., $\mathcal{F} = \{\text{disagree}, 0\}$, but not when she agrees with the board. This ability-assessment asymmetry on the part of the board causes the marginal value of entrenchment to the incumbent to be lower when the agreement between the board and her is higher (larger $\rho$). That is, agreement and entrenchment are partial substitutes for the incumbent. This leads the incumbent to expend less personal effort in entrenchment and more in project development when she has a higher agreement with the board. It then follows that higher agreement results in an increase in firm value under the incumbent’s management.

I now analyze the effect of board-CEO agreement on the likelihood for the incumbent to be fired by the board. This is given by the following result:

**Proposition 3.** Conditional on project failure, an incumbent with higher board-CEO agreement is less likely to be fired than an incumbent with lower board-CEO agreement.

To understand this result, note that when the incumbent agrees with the board and has a strong prior belief about state $\omega_B$, her action choice is signal independent and hence even project failure does not allow the board to update its prior belief about the incumbent’s ability. In this case, the incumbent is always retained by the board since the board’s posterior belief about her ability is no lower than the ability of the average replacement CEO. However, when the incumbent disagrees with the board, her project-investment action choice is signal dependent, and hence project failure always causes the board to adjust downward its belief about the incumbent’s ability, leading the incumbent to be fired. Hence, ceteris paribus an incumbent with lower agreement with the board is more likely to be fired when the project fails. Although the incumbent’s personal effort allocation in entrenchment, which is higher for an incumbent with lower board-CEO agreement, decreases the likelihood for her to be fired when the board wants to fire her, that effect is partial and of second order.

I now examine the board’s choice between an inside and outside successor in the CEO-succe$$\text{si}$$ssion process. Suppose the agreement between the board and the predecessor CEO (who is leaving the position) is $\rho$. I assume that

\[
\begin{align*}
\Pr(\text{insider agrees with the board} \mid \text{predecessor agrees with the board}) &= \lambda_i, \\
\Pr(\text{outsider agrees with the board} \mid \text{predecessor agrees with the board}) &= \lambda_o,
\end{align*}
\]

where $\lambda_i > \lambda_o$. That is, an inside CEO candidate’s prior belief about the state of the world (and hence the value-maximizing choice of project-investment action) is more likely to be influenced by the predecessor CEO than an outside candidate. The board’s preference of the origin of the successor CEO is then characterized by the following proposition:
Proposition 4. In the CEO-succession process, ceteris paribus the board prefers an inside candidate if its agreement with the predecessor CEO is sufficiently high, while the board prefers an outside candidate if its agreement with the predecessor CEO is sufficiently low.

This result is readily interpretable. Proposition 2 says that, viewed by the board, the expected value of the firm is increasing in board-CEO agreement. When the predecessor CEO has a low agreement with the board, and to the extent that an outsider’s prior belief about the state is less likely to be influenced by the predecessor CEO than an insider, the potential agreement between the board and an outside CEO candidate is higher than that between the board and an inside candidate. Hence, an outsider is more likely to be selected by the board in this case. In contrast, when the agreement between the board and the predecessor CEO is high, the board prefers an inside candidate since the prior belief of an insider is closer to the predecessor’s, which means that the potential agreement between the board and an inside candidate is higher in this case.

3 Empirical Predictions

The analysis above yields numerous empirical predictions of the model, none of which has been derived by the existing theoretical models in the literature.

Prediction 1. CEOs with long tenure are not necessarily associated with greater entrenchment. Tenure cannot be used as a measure of managerial entrenchment.

This prediction follows from Propositions 2 and 3. We know from Proposition 2 that an incumbent with sufficiently high agreement with the board optimally shifts her effort away from entrenchment to project development. When combined with Proposition 3, this results in a situation in which long-tenure CEOs may be less entrenched than short-tenure CEOs with low board-CEO agreement. The key message of this prediction is that long tenure is not equivalent to entrenchment and hence tenure cannot be used as an empirical measure of managerial entrenchment. Conventional wisdom may suggest that long tenure CEOs are most likely to be entrenched because entrenchment enables them to insulate from the threat of being dismissed. As mentioned in the Introduction, there is also a tradition in the finance literature that equates long tenure with entrenchment, something that this prediction says is not appropriate.

Prediction 2a. Controlling for entrenchment and other factors, long tenure CEOs are more likely to have higher levels of board-CEO agreement and deliver better financial performance than short tenure CEOs who are forced out from their positions.

Prediction 2b. CEOs with higher levels agreement with their boards are more likely to enjoy longer tenure despite bad financial performance.

These predictions also follow from Propositions 2 and 3. Prediction 2a says that agreement between the board and the CEO has incremental power even after controlling for entrenchment and other factors (e.g., performance) in explaining CEO tenure differential in the cross section. This
is somewhat related to the research in the management literature about the role of demographic similarity in the CEO/board selection process. According to Zajac and Westphal (1996), people with similar functional background (i.e., primary working experience in a particular functional area, say, manufacturing or electronics), age, educational background are more likely to have similar personalities, attitudes and philosophies, share similar viewpoints, attitudes and belief structures relevant to strategic decision making, and exhibit similar leadership and communication styles. They examine the influence of demographic similarity in the choice of new CEOs, and find that social psychological and sociopolitical factors lead the incumbent CEOs to prefer to choose their successors who are demographically similar to themselves. Westphal and Zajac (1995) study the effect of demographic similarity in the board selection process, and find that the board is also prone to select new directors who have similar demographic profiles as the old directors. If we assume that demographically similar people are more likely to agree with each other, then we can interpret Prediction 2a as saying that, controlling for other factors, those CEOs who are demographically more similar to their boards are more likely to have long tenure. Thus, measures of board-CEO demographic similarity (i.e., functional background similarity and age similarity) can serve as useful proxies for board-CEO agreement. Importantly, we focus on explaining CEO tenure differences in the cross section, while their focus is on succession. Also, this prediction says that firm performance is better for long-tenure CEOs than for short-tenure CEOs who are forced out from their positions, which highlights the bright side of leadership continuity. This is also consistent with the finding of the inverse relationship between turnover and firm performance in the turnover literature. Prediction 2b follows from Proposition 3, and highlights the dark side of board-CEO agreement. This arises from the board’s asymmetric assessment of the CEO’s ability, controlling for firm performance.

Prediction 3. After their departures, CEOs with high levels of board-CEO agreement are ceteris paribus more likely to be succeeded by insiders, while CEOs with low levels of board-CEO agreement are more likely to be succeeded by outsiders.

This prediction comes from Proposition 4. An inside successor is more likely to agree with the predecessor CEO, because she has been with the firm for a relatively long time and is deeply influenced by the predecessor CEO and hence is more likely to maintain status quo whereas less likely to shift the firm’s existing strategy. In contrast, an outside successor is less likely to be influenced by her predecessor and hence is more likely to change the firm’s existing strategy. Thus, following the departure of the predecessor CEO, if there is high agreement between the board and the predecessor CEO, there is also likely to be high agreement between the board and the inside candidate and hence an insider is more likely than an outsider to be hired by the board to succeed the predecessor CEO. In contrast, if there is low agreement between the board and the predecessor CEO, there is also likely to be low agreement between the board and the inside candidate, and hence ceteris paribus an outsider is more likely than an insider to be chosen as the successor CEO. The link between board-CEO agreement for the predecessor CEO and the source of the successor CEO is a novel aspect of this prediction. In particular, my theory predicts that, even after controlling for all the factors included in the empirical CEO succession literature
such as prior firm performance, percent of outside directors, etc. – the prior CEO’s agreement with the board has incremental explanatory power.

4 Data and Empirical Proxies for Board-CEO Agreement

This section first describes the data sources and sample construction process. I then discuss the empirical measures used to proxy for my key variable: board-CEO agreement. Summary statistics are presented at the end.

4.1 Data Sources and Sample Construction

I build my turnover sample by identifying all CEO turnover events occurring between 1992 and 2004 from Standard and Poor’s Executive Compensation database (ExecuComp), which records the information on the top executives in over 2,500 U.S. firms included in S&P 500, S&P MidCap and S&P SmallCap indices starting from 1992. A turnover event at a year for each firm is recognized if the CEO identification in the ExecuComp database changes. I then further check whether the last CEO identified by ExecuComp (who survived until the end of 2004) is still in office until the end of 2005. This augments my sample by about 2%, meaning that about 2% of the CEOs in my sample left their positions between 2004 and 2005. I then use various media sources, including Factiva news search, company proxy statements and SEC filings, Forbes people search, and various internet resources (e.g., company websites and Google Finance), to hand-collect data on board, CEO and turnover characteristics that are essential to my empirical analysis. The information collected includes age and functional background for board members and CEO, insider/outsider status for board members, origin (insider or outsider) and tenure for CEO, and the nature of turnover. I explain them in details below.

4.2 Variable Definitions and Descriptions

4.2.1 The Nature of Turnover

For my empirical analysis, it is important to know why a specific turnover occurs. Following the standard approach in the literature (e.g., Huson, Malatesta and Parrino (2004), Huson, Parrino and Starks (2001), and Parrino (1997)), I classify each turnover into either “forced” or “voluntary” based on the information I hand-collect from the above media sources. First, all turnovers for which the news media reports that the CEO is fired, forced out from the position, departs due to unspecified policy differences or performance related reasons are classified as forced. Second,
all other turnovers in which the departing CEOs are above and including age 60 are classified as voluntary. Third, all the remaining turnovers in which the departing CEO is under age 60 without health related problems or the acceptance of another position (else where or within the firm, including the chairmanship of the board), or the media press reports that the CEO is retiring but does not announce the retirement at least six months before the turnover are classified as forced; they are classified as voluntary otherwise. Finally, I further check the media sources around the turnover events for those cases classified as forced in the third step. Those turnovers (classified as forced in the third step) are reclassified as voluntary if press reports explain unambiguously that they are due to previously undisclosed personal or business reasons that are unrelated to the firm’s activities.22

After identifying the turnover type, I further clean the sample by undertaking the following two steps. First, I exclude from the sample any turnover resulting from an interim CEO being replaced, or turnovers resulting in co-CEOs. Interim CEOs are appointed to the position when unexpected turnover events occur, and are usually associated with very short tenure. The selection process of an interim CEO is quite different from the selection process of a permanent CEO, and the factors influencing the tenure of an interim CEO could be dramatically different from the factors influencing the tenure of a CEO appointed under the normal circumstances (for example, interim CEOs, almost by definition, usually leave their positions after very short terms). Also, since my empirical predictions focus on agreement between the board and a single CEO, the cases with co-CEOs are irrelevant and hence excluded from the sample. Second, I exclude turnovers due to mergers and acquisitions, spinoffs, reorganizations, or bankruptcy, since the economic factors underlying these turnovers can be fundamentally different from the economic factors underlying the turnovers in those surviving firms.

4.2.2 CEO Characteristics

Following the standard practice in the literature (e.g., Parrino (1997)), a new CEO assuming the position within (including) one year of joining the firm is classified as an outside CEO, and a new CEO who has been with the firm for more than one year when appointed to the position is classified as an inside CEO. CEO age is her or his age when assuming the position. Tenure is the total number of years the CEO has been in office from the time assuming the position.

22It is useful to talk about the potential specification error here, i.e., a turnover that is actually “forced” may be wrongly classified as “voluntary,” and vice versa. There is no such specification error in the first step of classification. In the second step, it is possible that a forced turnover is wrongly classified as voluntary, while it is possible for a voluntary turnover to be wrongly classified as forced in the third step. The procedure implemented in the last step attenuates the potential specification error in the third step. However, since Prediction 2a focuses on the comparison between CEOs with long tenure and CEOs with short tenure who are forced out, in which the former category is predicted to have higher board-CEO agreement and better performance than the latter category, whereas such relationship is not expected to exist between CEOs with long tenure and CEOs with short tenure who voluntarily leave their positions, the results will be strengthened if such agreement and performance differentials between CEOs with long tenure and CEOs with short tenure who are forced out are found based on the turnover classification methodology here. Moreover, the universe of short tenure CEOs is independent of the turnover classification, and hence Prediction 1 will not be affected by the potential specification error.
until leaving the position or the year end of 2005 if the CEO is still in office at that time. The CEO’s functional background is the professional area of the CEO’s specialization (e.g., marketing, finance, manufacturing, etc); I will say more about this when I introduce one of the proxies for board-CEO agreement: functional background similarity. Finally, I check whether a CEO is also the chairman of the board, and whether she or he is a founder/co-founder or a member of the founder’s family of the firm.

4.2.3 Board Composition

I collect data on board composition from the Investor Responsibility Research Center (IRRC)’s Directors dataset. I then double check that data using the proxy statements; information missing from that dataset is supplemented by the proxy statements. Consistent with the standard practice in the literature (e.g., Borokhovich, Parrino and Tranani (1996)), directors who are officers of the firm are classified as inside directors; directors who have a close business relationship with the firm (e.g., lawyers, investment bankers, commercial bankers, and other advisory personnel) are classified as grey directors; all others are classified as outside directors. Proxy statements are used to determine the functional background and age for each board member.

4.2.4 Entrenchment

As a first measure of entrenchment, I employ the index introduced by Gompers, Ishii and Metrick (2003), denoted in this paper as GIM index. GIM index is constructed from surveys conducted by the Investor Responsibility Research Center (IRRC) in 1990, 1993, 1995, 1998, 2000, 2002 and 2004. These surveys track 24 anti-takeover provisions across 5 broad anti-takeover categories that increase the managerial power and restrict shareholder rights: delaying hostile takeover bidders, voting rights, officer protection, state laws and other takeover defenses. Gompers, Ishii and Metrick (2003) compute the GIM index by adding one point for every present defensive provision in the corporate charter, so that higher GIM index (varying between 0 and 24) means greater managerial entrenchment.

An alternative measure of entrenchment is introduced by Bebchuk, Cohen and Ferrell (2005), denoted in this paper as BCF index. BCF index is also based on the same surveys conducted by IRRC. However, instead of incorporating all the 24 anti-takeover provisions as in the GIM index, BCF index is constructed based only on 6 provisions: staggered boards, limits to shareholder bylaw amendments, super-majority requirements for mergers, super-majority requirements for charter amendments, poison pills and golden parachutes. Bebchuk, Cohen and Ferrell (2005) demonstrate that these 6 provisions are more likely than others in driving the documented correlation between IRRC provisions and shareholder value in aggregate.

It appears that these two indices are the best available measures for managerial entrenchment; they have been used in many other empirical studies (e.g., Dittmar and Mahrt-Smith (2006), Fisman, Khurana and Rhodes-Kropf (2005), Harford, Mansi and Maxwell (2004), and Klock,
Mansi and Maxwell (2005)). Since the values of the GIM index and the BCF index are slow moving across years, following the standard practice in the literature I assume the indices to be the same as the previous year for the years between surveys.\footnote{My results are robust to alternative ways of dealing with the missing years (e.g., using data from the closest year for the years between surveys).} Moreover, I also use board composition (i.e., percent of outside directors) and size as well as CEO/chairman duality (i.e., whether the CEO is also the chairman of the board), which have been used in the literature to measure board independence, as alternative measures for managerial entrenchment.

4.2.5 Financial Variables and Others

Accounting and stock return data are collected from Compustat and CRSP for each year that a CEO is in office. Although the turnover sample starts from 1992 (because ExecuComp database starts at that year), accounting and stock return data are collected over a CEO’s entire tenure as much as they are available from Compustat and CRSP. For example, suppose a CEO assumes the position in 1980 and leaves in 1995. She is covered in my turnover sample. I collect the financial data from 1980 to 1995 for her over her entire tenure as long as those data are available. Accounting data are used to calculate financial performance variables. In particular, I calculate return on assets (ROA) as the ratio of operating income before depreciation (Compustat #13) over lagged book value of assets (Compustat #6). Following the standard practice in the literature, for each year I further adjust each firm’s ROA by subtracting the median value of the ROA for the industry that the firm is active in that year, where the industry is defined by using the primary two-digit SIC code for that firm.\footnote{Clarke (1989) finds that industry definition based on three- or four-digit SIC code does not capture similar economic characteristics of the firms better than the two-digit definition. This method of obtaining industry-adjusted return on assets based on two-digit SIC code has been widely used in the literature, including Allgood and Farrell (2003) and Parrino (1997).} Tobin’s Q is calculated as the book value of assets (Compustat #6) plus market value of equity (price times total shares outstanding at the year end from CRSP) less the sum of book value of equity (Compustat #60) and balance sheet deferred taxes (Compustat #74) all over book value of assets (Compustat #6). I obtain annual stock return data from CRSP.

4.2.6 CEO Classification based on Tenure and Turnover Type

I assign each CEO to one of the six categories: long-forced, long-voluntary, long-NA, short-forced, short-voluntary and short-NA. A CEO is assigned to the long-forced category if her or his tenure is longer than or equal to the sample median of those CEOs who have completed their tenure before the end of the sample period (which is 7.84 years as will be described below\footnote{The median tenure including those CEOs who haven’t completed their tenure (i.e., those who are still in office at the year end of 2005) is 6.46 years. I use other cutoff values to categorize the CEOs as a robustness check.}) and is forced out from the position; a CEO is categorized as long-voluntary if she or he has a long tenure and leaves the position voluntarily, and as long-NA if she or he is still in office at the year end of 2005 (and hence information on turnover type is not available). For a CEO with tenure less than
the sample median (7.84 years), she or he is assigned to the short-forced category if the turnover type is classified as forced, to the short-voluntary category if the turnover type is classified as voluntary, and to the short-NA category if she or he is still in office at the year end of 2005 (and hence information on turnover type is not available).

4.3 Empirical Proxies for Board-CEO Agreement

Since board-CEO agreement is central to my model and its predictions, it is important to come up with good proxies for this variable. Here, I rely on previous research in organizational behavior (e.g., Westphal and Zajac (1995), and Zajac and Westphal (1996)) and select two primary empirical proxies for board-CEO agreement, namely, functional background similarity and age similarity between the CEO and the board members. As a robustness check, I also employ four alternative proxies for board-CEO agreement used earlier in the literature (e.g., Dittmar and Thakor (2005), Faulkender, Milbourn and Thakor (2006), and Smith (2006)) that rely on analyst EPS forecast and mutual fund holding data. I obtain analyst EPS forecast data from the I/B/E/S database, and quarterly mutual fund holding data from Thompson Financial Network database. I believe that if taken together all the six proxies point to the same direction in the empirical test, it becomes difficult to refute the role played by agreement in the board-CEO setting because the intersection of the six proxies at least captures some variation of agreement though each may have information content for other variables outside my model.

4.3.1 Proxy 1: Board-CEO Functional Background Similarity

Numerous empirical studies in organizational behavior have established a positive link between agents’ functional background similarity and their belief-structure and behavior-tendency similarities (see, for example, Westphal and Zajac (1995), Zajac and Westphal (1996), and references

26Educational background similarity can also be used to measure board-CEO similarity. For example, two executives both with MBA degrees are more likely to hold shared viewpoints than two executives with one holding an MBA degree whereas the other a high school diploma; two executives both with Ivy Leagure degrees are also likely to share common belief structures. This has been used in, among others, Massa and Simonov (2006), Westphal and Zajac (1995), and Zajac and Westphal (1996). I am in the process of collecting data on educational background information for CEOs and board members to construct this measure.

27Dittmar and Thakor (2005) also use two other proxies for agreement: control premium for dual-class stock and the cumulative abnormal return (CAR) from the firm’s most recent mergers and acquisitions. The idea is that dual-class control premium, calculated as the difference between the price of the superior stock with voting rights and the price of the inferior stock without voting rights, measures the value attached by investors to the endogenously determined control rights. Because control rights are more valuable when disagreement is more likely, higher premium signifies higher disagreement. Their argument for the use of announcement CAR as a proxy is as follows. To the extent that higher agreement between the investors and the manager leads to more positive stock price reaction to management decisions, and due to the fact that little incremental private information will be released prior to an acquisition announcement, the acquisition announcement CAR should be positively related to the level of agreement between the investors and the manager. Due to the small number of observations associated with the two proxies (for example, my sample is downsized to about 80 CEO observations with only 18 are in the short-forced group if I use dual-class control premium), I choose to not employ them in my empirical analysis.
It has been shown that functional background can influence a decision-maker’s belief structure and affect her opinion toward strategic decision making. Executives with similar professional experiences in a particular functional area tend to hold similar viewpoints; for example, it is more likely for two executives both with primary experiences in manufacturing industry to develop common belief structures relevant to decision making than two executives with one from manufacturing industry whereas the other from the banking area. Following Westphal and Zajac (1995) and Zajac and Westphal (1996), I consolidate various functional backgrounds into three broad categories: (1) output functions, including marketing and sales; (2) throughput functions, including operations, R&D, and engineering; and (3) peripheral functions, including law, finance, and accounting. I measure board-CEO functional background similarity, denoted as $\text{Funcsim}$, as follows:

$$\text{Funcsim} = \left( \frac{\text{number of CEO-board-member dyads sharing same category}}{\text{total number of CEO-board-member dyads}} \right)^2,$$

with higher $\text{Funcsim}$ meaning higher functional background similarity between the CEO and the board members and hence higher board-CEO agreement (higher $\rho$). Following the standard approach in the literature, I assess an individual’s functional background primarily based on her current and most recent job titles, while also taking into account her career path and organizations she worked for. This information comes from the company’s proxy statement.

### 4.3.2 Proxy 2: Board-CEO Age Similarity

Age similarity has also been commonly used in research on organizational demography to measure work group homogeneity, including board-CEO similarity (e.g., Westphal and Zajac (1995), Zajac and Westphal (1996), and references therein). The intuition is that people within the same age cohort may have been exposed to similar fads and cultures and hold common work-related or non-work-related experiences that lead them to share similar viewpoints, attitudes and belief structures. In the finance literature, age similarity has been used in Massa and Simonov (2006) to measure the degree of homogeneity among shareholders. Following the standard practice in the organizational demography literature, I measure (the inverse of) age similarity between the board and the CEO, denoted as $\text{Agedissim}$, with an analog of the Euclidean distance measure:

$$\text{Agedissim} = \sqrt{\frac{\sum_{i=1}^{n} (S_{\text{board} i} - S_{\text{CEO}})^2}{n}},$$

where $S_{\text{board} i}$ is the age of board member $i$, $S_{\text{CEO}}$ is the CEO’s age, and $n$ is the total number of directors on the board. Lower $\text{Agedissim}$ means higher age similarity between board members and the CEO, and hence higher board-CEO agreement (higher $\rho$).

### 4.3.3 Proxy 3: Analyst EPS Forecast Dispersion

For each CEO in the sample, I use the standard deviation of analyst forecast for the current period’s EPS (earnings per share) normalized by the absolute value of mean forecast in the month...
of each fiscal year end during the CEO’s entire tenure as an alternative proxy for board-CEO
agreement. The idea is as follows. To the extent that different analysts have access to similar
information regarding the firm’s future performance, higher analyst forecast dispersion means
greater differences of opinions among analysts in interpreting that similar piece of information
about the firm. That is, the information about the firm is likely to subject to heterogeneous inter-
pretations among different agents if the dispersion of analyst forecast is high. Then, if analysts
have similar information access as shareholders and hence board of directors about the firm’s
prospect, there is also a greater potential for disagreement between the board and the manager
(CEO). I denote this proxy as Dispersion. I exclude those observations with only one analyst fol-
lowing the firm, because Dispersion equals to zero by definition in that case. Therefore, according
the argument above, higher Dispersion means lower board-CEO agreement (lower $\rho$). I believe
that Dispersion is a more reasonable proxy for disagreement than for information asymmetry,
because it makes more sense to argue that analysts have differential interpretation to the similar
information about the firm’s future performance due to heterogeneous beliefs than to argue that
they have differential information access. This proxy for disagreement is also used in Dittmar and
Thakor (2005).

### 4.3.4 Proxy 4: Analyst EPS Forecast Error

Following Dittmar and Thakor (2005), I define analyst EPS forecast error in a year for each CEO
as the difference between a firm’s actual EPS at the fiscal year end and the mean analyst forecast
of that EPS, normalized by the actual EPS. I denote it as Forecast error. The idea is that the
greater the CEO’s ability to beat analyst forecast to deliver better EPS than expected, the less
likely the board will question the CEO’s decisions, resulting in higher board-CEO agreement.
Therefore, higher Forecast error means higher board-CEO agreement (higher $\rho$).

### 4.3.5 Proxy 5: Change in the Breadth of Ownership by Mutual Funds

This measure of agreement (also used in Smith (2006)) is based on the argument advanced by
Miller (1977) and the empirical results in Chen, Hong and Stein (2002). According to Miller
(1977), different investors can have different opinions about a stock’s fundamental value even
when looking at the same information set: there are pessimistic as well as optimistic investors.
When there are short-selling constraints, the stock price will only reflect the valuation attached
by the optimists but not the pessimists, because the pessimists are constrained from selling short
and thus have to simply sit out of the market. The prediction is that in the presence of short-
selling constraints the greater the divergence of opinions in the valuations of the stock among
investors, the higher the equilibrium stock price and hence the lower the subsequent returns.
Chen, Hong and Stein (2002) test this prediction using data on the changes in the breadth of
mutual fund holdings. Mutual funds are prohibited from taking short positions and hence appear
to be a natural set up for their empirical test. For each firm at a particular quarter $t$, they look
at those mutual funds that exist in both the quarter $t$ and the previous quarter $t - 1$. From
this group of mutual funds, they use the number of funds taking a long position in the firm’s stock at quarter $t$ minus the number of funds taking a long position in the firm’s stock at quarter $t - 1$ and then divide by the total number of mutual funds in that group. They define that ratio as the change in the breadth of mutual fund holdings at quarter $t$. They find that reduction in the breadth of mutual fund holdings forecasts lower future stock returns, and according to Miller’s argument, is associated with greater differences of opinions among investors regarding the fundamental value of the firm’s stock. Thus, I interpret a reduction in the breadth of mutual fund holdings as implying that the information about the firm is more likely to be subject to different interpretations, resulting in a lower agreement between the board and the CEO. I add up the changes in the breadth of mutual fund holdings across the four quarters for every year for each firm in the sample, and denote it as $\Delta Breadth$. Based on the above argument, higher $\Delta Breadth$ is associated with higher board-CEO agreement (higher $\rho$).

4.3.6 Proxy 6: Change in the Percent of Outstanding Shares Held by Mutual Funds

Mutual funds are more likely to take a long position in a firm’s stock when they are likely to agree with the manager about the firm’s prospect; otherwise they simply sit out of the market and do not hold the firm’s stock. To that extent, it seems reasonable to construct the following proxy for agreement (also used in Smith (2006)). I define for each firm at a particular quarter the percent of shares held by mutual funds as the ratio of the number of outstanding shares held by mutual funds over the total number of outstanding shares at that quarter. I calculate the change in that ratio between consecutive quarters, and for each year I then aggregate the changes in the four quarters to get yearly change in the percent of outstanding shares held by mutual funds, and denote it as $\Delta Held$. The idea is that higher $\Delta Held$ means higher agreement (higher $\rho$).

4.4 Descriptive Statistics

The previous studies in the turnover literature look at the likelihood of turnover in each year, and hence for each CEO they have multiple observations keeping track of her entire tenure, i.e., the unit of observation there is firm-CEO-year. In contrast, the objective of my study is to explain the length of tenure, but not the likelihood of turnover in a particular year. Hence, the unit of observation in my study is firm-CEO. For each CEO of a firm, I construct the unit of observation as follows. I define for each CEO the six proxies for agreement ($Funcsim$, $Forecast error$, $\Delta Breadth$, $\Delta Held$, $Agedissim$ and $Dispersion$), financial characteristics (sales, Tobin’s Q, ROA and stock return), governance characteristics (GIM index, BCF index, board characteristics and CEO/chairman duality) as the average value of each corresponding variable over that CEO’s entire tenure when I test Predictions 1 and 2. For example, AMR corporation experienced two turnovers from 1992 to 2005: Robert Crandall became CEO on March 1, 1985 and left on May 19, 1998; Donald Carty assumed that position on May 20, 1998 and departed on April 23, 2003; Gerald Arpey took over the reign on April 24, 2003 and has been the company’s CEO since then. Let me use ROA for illustration. I define ROA for each of the three CEOs as the average ROA
over his entire tenure. Ideally, I should calculate the average ROA for Robert Crandall from March 1, 1985 to May 19, 1998, Donald Carty from May 20, 1998 to April 23, 2003, and Gerald Arpey from April 24, 2003 until end of the sample period. The problem with this is that it is difficult to know whether the ROA should be assigned to the predecessor CEO or the successor CEO during the transition year since both contribute to that variable; it is also difficult to pin down exactly how much fraction of the variable should be attributed to each CEO during that period. Thus, I simply assign any fractional year to the CEO at the end of the fiscal year end, i.e., for the ROA case I calculate the average ROA for Robert Crandall from 1985 to 1997, for Donald Carty from 1998 to 2002, and for Gerald Arpey from 2003 to 2005. To be consistent, I apply the same method for all the other variables. Finally, I have three units of observations for the AMR corporation: AMR-Crandall, AMR-Carty and AMR-Arpey.

The reason why I use average values across a CEO’s entire tenure instead of the values just at the turn over year (or a short horizon prior to turnover) as practiced in the turnover literature in testing Predictions 1 and 2 is that average values capture the cumulative characteristics of these variables better than the values at the turnover year. For example, consider two CEOs with one having a tenure of only two years whereas the other twenty years. It is likely that both CEOs experience decline of board-CEO agreement within a short period prior to their departures (possibly declining to a similar level). However, the second CEO may have enjoyed much higher agreement with the board during her earlier period of tenure than the first CEO, and her agreement with the board is higher on average. Thus, using average values is more suitable in my empirical test for Predictions 1 and 2. However, when I test Prediction 3 about the impact of the predecessor CEO’s agreement with the board on whether the successor CEO is an insider or an outsider, I use the variables at the turnover year, which is more appropriate than using average values.

The final sample consists of 1010 such firm-CEO observations with 679 turnovers in 429 firms between 1992 to 2005. Among the 679 turnovers, 153 (22.53%) are forced and 526 (77.47%) are voluntary. The average CEO holds the position about 10 years, with a median of 7.84 years. The average CEO assumes the position around the age of 49. Among the 1010 CEOs, 775 (76.73%) are insiders and 235 (23.27%) are outsiders; 110 (10.89%) are founders or co-founders and 144 (14.26%) are members of the founder’s family of their firms. I classify those CEOs with tenure longer than or equal to the sample median (7.84 years) as having long tenure (long) and those with tenure less than 7.84 years as having short tenure (short). For CEOs within each tenure

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28 I also tried dropping the data during the transition year, and my estimation are qualitatively unchanged.

29 The turnover literature widely applies the multiperiod logit model that is estimated with the data on each CEO in each year of her tenure as if each CEO-year observation were independent. The dependent variable takes the value one in each year if a turnover occurs, and zero otherwise. After that the terminated CEO drops out from the logit program. As pointed out by Shumway (2001), this is equivalent to estimating a discrete hazard model in which each turnover contributes one failure observation to the logit program.

30 In robustness checks (Section 5.3.2), I also use the variables at the initial period of the CEO’s tenure.

31 This median is larger than those reported in the previous studies (e.g, the sample median in Ryan and Wiggins (2004) is 6 years). This is because I exclude those CEOs still in office at the year end of 2005 who have not completed their tenures in calculating tenure statistics. If I include those CEOs, the sample mean and median are 8.752 years and 6.46 years, respectively, which are comparable to previous studies.
category (long or short), I further classify them into three categories based on turnover type: long-forced and short-forced (forced out from the position), long-voluntary and short-voluntary (voluntarily leave the position), and long-NA and short-NA (still in office at the end of 2005). This classification categorizes 399 CEOs into the long group (22 in the long-forced group, 319 in the long-voluntary group, and the remaining 58 in the long-NA group), and 611 CEOs into the short group (131 in the short-forced group, 207 in the short-voluntary group, and the remaining 273 in the short-NA group). The average firm in my sample has about $4943 millions annual net sales, Tobin’s Q about 2.032, industry-adjusted ROA about 3.3%, and annual size-adjusted stock return about 4.79%. Regarding the governance characteristics, the average firm has about 9.433 out of the 24 anti-takeover provisions defined in Gompers, Ishii and Metrick (2003), 2.428 out of the 6 narrowly defined provisions in Bebchuk, Cohen and Ferrell (2005), 9.638 directors on the board among whom around 66% are outsiders, and about 69% of the CEOs also chair their boards. These are summarized in Table 1.

Although my sample is smaller than that in Jenter and Kanaan (2006), it is comparable to most other studies in the literature. Jenter and Kanann (2006) include 1590 turnovers from 1993 to 2001 in their study. The reasons why my sample is smaller than theirs are as follows. First, in order for a firm to be included in my sample, it has to have at least two consecutive CEOs with the data for the previous turnover being available. This is because one objective of my study is to test the influence of the predecessor CEO’s characteristics (e.g., agreement with the board) on the origin of the successor CEO (Prediction 3). It also allows me to directly compare two individual CEOs in the same firm. Second, I require sufficient financial data to be available for each CEO over her or his entire tenure. For example, the results could be biased if the financial data are available for only two years for a CEO with a total ten-years tenure in office. Finally, I also need data on entrenchment (e.g., GIM and BCF indices) and board of directors while they do not.

5 Empirical Results

This section tests the predictions outlined before and presents the main empirical results.

5.1 Testing Predictions 1 and 2

Note that my model has no prediction for those with short tenure who voluntarily leave their positions: there could well be some other factors outside my model that affect those CEOs’ decisions to leave. Thus, I focus on the long (including long-forced, long-voluntary and long-NA)

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32For example, Allgood and Farrell (2003) have 392 firm-CEO units of observations between 1981 and 1993 in their sample. Mine is larger than theirs and covers a different time period.
and short-forced groups in my tests. However, I also present results for the short-voluntary group. The short-NA group includes CEOs with short tenure but still in office at the end of the sample period, and hence it is impossible for me to determine when and how they will depart from their positions. Thus, I exclude this group of CEOs from this step of analysis; however, they will be used in testing Prediction 3.

I start by presenting summary statistics of the variables for each of the three groups of CEOs: long, short-forced and short-voluntary in Table 2. According to Prediction 2a, the long group should have higher $Funcsim$, $Forecast\ error$, $ΔBreadth$ and $ΔHeld$, and lower $Agedissim$ and $Dispersion$ than the short-forced group. This is confirmed by the results reported in Panel A of Table 2. The results on the six empirical proxies are all consistent with Prediction 2a that CEOs with long tenure have higher agreement with their boards than CEOs with short tenure who are forced out. Differences between the two groups are statistically significant at least at the 10% level for all the six measures. In contrast, there is no statistically significant difference between the long group and the short-voluntary group in terms of board-CEO agreement based on the four alternative proxies employed: $Forecast\ error$, $ΔBreadth$, $ΔHeld$ and $Dispersion$. This is not surprising, since my model does not say anything about the direction of the comparison in terms of board-CEO agreement between the long and short-voluntary groups. CEOs who voluntarily leave their positions after a short term instead of being forced out could have higher or lower agreement with the board as compared to the long group. In fact, comparisons using $Funcsim$ and $Agedissim$ suggest that CEOs with long tenure are more likely to share similar functional background and belong to the same age cohort with their board members than CEOs with short tenure who voluntarily leave their positions; however, the differences are less significant than those between the long and short-forced groups (the differences between the long and short-forced groups in terms of $Funcsim$ and $Agedissim$ are both significant at the 1% level, while the differences between the long and short-voluntary groups in terms of $Funcsim$ and $Agedissim$ are significant at the 5% and 10% levels, respectively). Panel B of Table 2 provides comparisons across the different groups in terms of CEO characteristics. Not surprisingly, younger CEOs (when assuming their positions), inside CEOs, founders/co-founders or members of the founder’s family are more likely to have long tenure. Again, these results are all statistically significant at the 1% level. Panel C shows that CEOs with long tenure on average deliver better financial performance than CEOs with short tenure who are forced out, with all the differences being statistically significant at least at the 5% level. CEOs in the long group also appear to outperform those in the short-voluntary group, although the differences are not as significant as those between the long group and the short-forced group. This is consistent with Prediction 2a and is consistent with the bright side of CEO longevity predicted by my theory.

The results reported in Table 3 are largely consistent with Prediction 1. Panel A of Table 3 examines the differences in terms of governance characteristics (GIM index, BCF index, board size, percent of outside directors and CEO/chairman duality) between the long group and the
short-forced group, and between the long group and the short-voluntary group. First, consider the GIM index. Column IV shows that the average firm in the long group does have a higher GIM index than the average firm in the short-forced group, but the difference is not statistically significant at the 10% level; the Wilcoxon rank-sum test does not yield statistically significant difference between the two groups either ($z$ value of 0.308). Moreover, when comparing the long group with the short-voluntary group, the latter has a higher GIM index than the former group on average, which is inconsistent with the notion that long tenure is associated with greater entrenchment although the difference is statistically insignificant using $t$–test (it is, however, significant under Wilcoxon rank-sum test ($z$ value of 1.960)). The comparison in terms of BCF index is more supportive to Prediction 1. The average firm in the long group has a BCF index of 2.314, which is lower than (though statistically indistinguishable from) the 2.364 average BCF index for the short-forced group. The average BCF index for the short-voluntary group is 2.608, which is higher than that of the long group. The difference is statistically significant at the 5% level using both $t$–test and Wilcoxon rank-sum test. This suggests that CEOs in the short-voluntary group are more entrenched than CEOs in the long group on average when entrenchment is measured by BCF index, which is inconsistent with the notion that long tenure is associated with greater entrenchment. Moreover, although the long group has on average a larger board than the short-forced group, the board size is not statistically different between the long group and the short-voluntary group. There is no statistically significant difference between the long group and the short-forced group in terms of the percentage of outside directors on the board, which is inconsistent the notion that equates long tenure with entrenchment if one is willing to accept the interpretation that having a higher percent of outside directors on the board is an evidence of greater board independence and less managerial entrenchment. Also, the difference between the long and short-voluntary groups in terms of percentage of outside directors is statistically insignificant either. Finally, the long group does have more CEOs chairing their boards on average than the short-forced and short-voluntary groups, but the differences are not statistically significant.

Panel B of Table 3 pools the short-forced and short-voluntary groups together, which I denote as the short group. The comparison between the long group and the short group is more directly related to the test of the notion that long tenure is associated with greater entrenchment. The results reported in Panel B are inconsistent with that notion. The two groups are not statistically different in terms of GIM index, board size, percent of outside directors and CEO/chairman duality. Interestingly, the short group has higher BCF index on average than the long group, and the difference is statistically significant at the 10% level both under $t$–test and Wilcoxon rank-sum test.

I now examine the relation between tenure and board-CEO agreement and entrenchment using multinomial logit regressions, which allow me to control for other factors that might affect the length of tenure. In the multinomial logit analysis, I assign each firm-CEO observation into one of the three categories: long, short-forced and short-voluntary. I specify long as the
base category for comparison. Thus, the multinomial logit regressions yield the ratio of the probability that a firm-CEO observation belongs to the short-forced category over the probability that it belongs to the long category, and the ratio of the probability that a firm-CEO observation belongs to the short-voluntary category over the probability that it belongs to the long category. The explanatory variables of my regressions are agreement (the six empirical proxies: Funcsim, Forecast error, ΔBreadth, ΔHeld, Agedissim and Dispersion), financial performance (ROA), CEO characteristics (age, origin, and whether the CEO is a member of the founder’s family) and governance characteristics (GIM index or BCF index, and board characteristics), controlling for the firm size (logarithm value of the net sales).

The regression results are reported in Table 4. Panels A and B report the estimation results by comparing the short-forced group with the long group, and the short-voluntary group with the long group, respectively. Within each panel, columns I and VIII provide the results for the baseline regressions without board-CEO agreement, using the GIM index and the BCF index as the measure for entrenchment, respectively; columns II through VII, using the GIM index as the measure for entrenchment, present the results based on Funcsim, Forecast error, ΔBreadth, ΔHeld, Agedissim and Dispersion as the measures for board-CEO agreement, respectively; Columns IX through XIV use the BCF index as the measure for entrenchment.

Consider the baseline regressions in columns I and VIII in Panel A. The coefficient estimates on the control variables are intuitive. CEOs who deliver better financial performances (higher ROA), who are younger when assuming the position, who are insiders, or who are members of the founder’s family are more likely to have long tenure than to have short tenure ended being forced out. These results are not surprising and all statistically significant at least at the 10% level. The estimation result on age is intuitive in that a younger CEO obviously has better odds of serving longer. The negative coefficient estimates on the family dummy are consistent with the notion that family members are more likely to retain their positions because their relatively large blocks of stock ownership insulate them from being removed (e.g., Morck, Shleifer and Vishny (1989) find that turnover rate is lower among CEOs who are founding family members). The negative coefficient estimates on ROA are consistent with the standard result in the turnover literature: worse financial performance leads to higher turnover and hence shorter tenure. The negative coefficient estimates on the insider dummy also make sense. Outside succession is more likely to occur following bad firm performance under the predecessor CEO (as will be shown in Table 8 when I test Prediction 3), and to the extent that previous bad performance puts more pressure on the successor CEO (who is more likely to be an outsider) to deliver quick financial results, an outsider is ceteris paribus more likely to be removed from the position.

33Using the stock return as the measure of firm performance yields qualitatively the same results and hence are not reported.

34My results do not change qualitatively when using the information regarding whether the CEO is the founder in the regressions.

35One may argue that regressing on age is mechanical. I have also tried excluding age from the regressions; the coefficient estimates on the other control variables are qualitatively unchanged.
I then add board-CEO agreement to the regressions. Consider first Panel A. The coefficient estimates on all the control variables used in the baseline regressions are qualitatively unchanged. The results from the augmented regressions strongly support Prediction 2a. Regardless of the proxy used for agreement, CEOs with higher agreement with their boards are more likely to have long tenure than to have short tenure ended being forced out from their positions. The results are all statistically significant at least at the 10% level. They are also economically significant.

Take the proxy \textit{Agedissim} as an example. The coefficient of 0.376 (column VI in Panel A) translates into an odds ratio of 1.456. If the variable \textit{Agedissim} increases from the 25\textsuperscript{th} percentile (6.837 years) to the 75\textsuperscript{th} percentile (11.500 years) of its distribution – the board-CEO agreement decreases as the CEO and board members are more likely to belong to different age cohorts – the chance of a CEO being forced out from the position in less than 7.84 years (i.e., in the short-forced category) instead of serving beyond 7.84 years (i.e., in the long category) increases from 7% to 37% (approximately by 30%), when other control variables are valued at their mean values.

Finally, the coefficient estimates on the GIM index are statistically insignificant (although negative) both in the baseline and the augmented regressions, suggesting that entrenchment does not significantly increase the probability for a CEO to enjoy long tenure as compared to short tenure. This seems surprising in light of the conventional wisdom that long tenure is associated with greater entrenchment. The estimates using the BCF index in columns IX through XIV are qualitatively the same. The results for the comparison between the long category and the short-voluntary category are provided in Panel B. Note that none of the coefficients on the four empirical proxies for agreement (\textit{Forecast error}, \textit{ΔBreadth}, \textit{ΔHeld} and \textit{Dispersion}) is statistically significant, suggesting that board-CEO agreement is irrelevant in determining whether a CEO has a long tenure or leaves the position voluntarily after a short term.\textsuperscript{36} The coefficient estimates on the GIM and BCF indices are statistically insignificant regardless of the proxy used for agreement. Thus, similar to the results presented in Table 3, the regression results reported here again are inconsistent with the notion that long tenure is necessarily associated with greater entrenchment.

Prediction 2b highlights the dark side of board-CEO agreement, in which board-CEO agreement shields CEOs with bad performance from being fired by the board. If this is the case, then we should observe that among the CEOs who are forced out from their positions, those with higher agreement with their boards are more likely to enjoy longer tenure despite bad performance. This is supported by the results presented in Table 5, in which I compare board-CEO agreement, financial performance and governance characteristics between CEOs in the long-forced group and CEOs in the short-forced group. The result show that the long-forced group has higher board-CEO agreement than the short-forced group on average, although the two groups are not significantly different in terms of financial performance and governance characteristics.

\textsuperscript{36}However, the coefficient estimates on \textit{Funcsim} and \textit{Agedissim} are statistically significant.
To further test Prediction 2b, I run the multiperiod logit regression commonly used in the turnover literature by pooling the firm-year observations together. The dependent variable takes the value 1 if there is a forced-out turnover and 0 if there is no turnover. The primary explanatory variables are board-CEO agreement at the year before turnover (measured by the six proxies: $Funcsim_{-1}$, $Forecast\ error_{-1}$, $\Delta Breadth_{-1}$, $\Delta Held_{-1}$, $Agedissim_{-1}$ and $Dispersion_{-1}$), and the interaction between board-CEO agreement and financial performance at the year prior to turnover ($ROA_{-1}$). The other explanatory variables include firm performance ($ROA_{-1}$), percent of outside directors, GIM index, CEO age, family dummy (whether the CEO is a member of the founder’s family) and firm size as measured by the logarithm value of net sales at the year prior to turnover. If, other things being equal, board-CEO agreement shields CEOs from being fired by the board, then one would predict that the coefficient estimate on the interaction between board-CEO agreement and firm performance is positive, i.e., the sensitivity of turnover to performance decreases with the level of board-CEO agreement. The results, reported in Table 6, are consistent with Prediction 2b (note that the estimate coefficients on $Agedissim_{-1} \times ROA_{-1}$ and $Dispersion_{-1} \times ROA_{-1}$ are negative, because higher $Agedissim$ and higher $Dispersion$ mean lower board-CEO agreement).

To further test Prediction 2b, I run the multiperiod logit regression commonly used in the turnover literature by pooling the firm-year observations together. The dependent variable takes the value 1 if there is a forced-out turnover and 0 if there is no turnover. The primary explanatory variables are board-CEO agreement at the year before turnover (measured by the six proxies: $Funcsim_{-1}$, $Forecast\ error_{-1}$, $\Delta Breadth_{-1}$, $\Delta Held_{-1}$, $Agedissim_{-1}$ and $Dispersion_{-1}$), and the interaction between board-CEO agreement and financial performance at the year prior to turnover ($ROA_{-1}$). The other explanatory variables include firm performance ($ROA_{-1}$), percent of outside directors, GIM index, CEO age, family dummy (whether the CEO is a member of the founder’s family) and firm size as measured by the logarithm value of net sales at the year prior to turnover. If, other things being equal, board-CEO agreement shields CEOs from being fired by the board, then one would predict that the coefficient estimate on the interaction between board-CEO agreement and firm performance is positive, i.e., the sensitivity of turnover to performance decreases with the level of board-CEO agreement. The results, reported in Table 6, are consistent with Prediction 2b (note that the estimate coefficients on $Agedissim_{-1} \times ROA_{-1}$ and $Dispersion_{-1} \times ROA_{-1}$ are negative, because higher $Agedissim$ and higher $Dispersion$ mean lower board-CEO agreement).

| Table 6 goes here |

5.2 Testing Prediction 3

I now test Prediction 3, which states that, controlling for other factors, agreement between the board and the predecessor CEO has incremental explanatory power in predicting whether the successor CEO will be an insider or an outsider, with higher predecessor CEO-board agreement leading to a higher likelihood for the successor CEO to be an insider. I now bring the short-NA group (excluded in testing Predictions 1 and 2) back to the analysis. I pair each CEO in a firm with her or his predecessor to form a basic unit of observation. Consider AMR corporation to illustrate this procedure. AMR had three CEOs from 1992 to 2005: first Robert Crandall from 1985 to 1998, then Donald Carty from 1998 to 2003, and finally Gerald Arpey ever since 2003. I form two pairs for AMR: Crandall-Carty (with Crandall being the predecessor and Carty being the successor) and Carty-Arpey (with Carty being the predecessor and Arpey being the successor). This procedure yields 581 predecessor-successor pairs in total. I then classify each pair into one of the two categories based on the successor’s origin: inside succession if the successor is an insider, and outside succession if the successor is an outsider.

I exclude those voluntary turnovers to perform a sharper test of Prediction 2b. Note that the estimation results in my regressions are not directly comparable with those in the turnover literature. This is because I do not include those firms without turnover and hence my sample is smaller than those in the turnover literature (see the number of firm-year observations in Table 6). The reason is that collecting data on board and CEO characteristics to construct the board-CEO agreement measures is costly if I enlarge my sample to include those firms without turnover. To partially mitigate the problem, I run a baseline regression without adding board-CEO agreement as a benchmark; see column I in Table 6.

31
As done previously, I start by presenting summary statistics of the six proxies of agreement for the two categories in Table 7. The results are consistent with Prediction 3 that agreement between the board and the predecessor CEO is higher for inside successions than outside successions. The differences are statistically significant at least at the 5% level for all the six proxies.

[Table 7 goes here]

Of course, whether the successor CEO is an insider or an outsider can be affected by other factors that have been investigated in the literature. I perform logit regression analysis to control for those factors. The dependent variable of the logit regression takes the value 1 for inside succession and 0 for outside succession. The primary explanatory variables are listed and discussed below. First, the most important explanatory variable for Prediction 3 is agreement between the board and the predecessor CEO, measured by the six proxies: \( L(\text{Funcsim}) \), \( L(\text{Forecast error}) \), \( L(\Delta \text{Breadth}) \), \( L(\Delta \text{Held}) \), \( L(\text{Agedissim}) \) and \( L(\text{Dispersion}) \), which are values of \( \text{Funcsim} \), \( \text{Forecast error} \), \( \Delta \text{Breadth} \), \( \Delta \text{Held} \), \( \text{Agedissim} \) and \( \text{Dispersion} \) for the predecessor CEO at the turnover year, respectively. Second, Borokhovich, Parrino and Trapani (1996) and Parrino (1997) document a strong positive relation between the percent of outside directors on the board and the likelihood of outside succession for both forced and voluntary departures. Thus, I include the percent of outside directors at the turnover year, \( L(\text{Outboard}) \), as a primary explanatory variable. I also control for the entrenchment of the predecessor CEO, measured by either the GIM index (\( L(\text{GIM index}) \), with results being presented in columns I to VII in Table 8) or the BCF index (\( L(\text{BCF index}) \), with results being presented in columns VIII to XIV in Table 8). Third, there is likely to be more organizational disruption in a forced than a voluntary departure created by the turnover of the predecessor CEO, and hence the potential for organizational change following the departure of the predecessor CEO is more demanding in the case with forced turnover than voluntary turnover. Outsiders are usually more likely and more capable than insiders to push forward such organizational change. Moreover, the incumbent internal management of the firm is more likely to realize the necessity of organizational change and hence is more supportive to an outside successor in implementing the change following a forced turnover than a voluntary turnover. That is, following a forced turnover the firm both demands and supports an organizational change, leading to a higher likelihood for outside succession than in the case with voluntary turnover. This is discussed in detail in Khurana and Nohria (2000) and Shen and Cannella (2002). Thus, I include the predecessor CEO’s turnover type into the regression by introducing a dummy variable, \( L(\text{Forced}) \), which takes the value 1 if the predecessor CEO is forced out from the position and 0 if the predecessor leaves voluntarily. Fourth, the demand for strategic and organizational changes may be higher following a worse firm performance under the predecessor CEO’s management, thereby increasing the likelihood of outside succession. I include the predecessor CEO’s ROA at the turnover year, \( L(\text{ROA}) \), as an explanatory variable following the standard practice in the literature. Fifth, if the predecessor CEO is a member of the founder’s family, it is possible that the predecessor wants to retain the power within the family and an inside succession is more likely to occur. However, it is also possible that the predecessor wants to “outsourcing” to seek outside talent for the management team (Burkart, Panunzi and Shleifer (2003)). This is controlled in the
regression analysis by the dummy variable, $L(\text{Family})$, which equals 1 if the predecessor CEO is a member of the founder’s family and 0 otherwise. Finally, logarithm of the net sales is included as a control for firm size.

First consider the baseline regressions in columns I and VIII in Table 8 without adding board-CEO agreement. The coefficient estimates are all intuitive and consistent with previous findings. The coefficient estimates on $L(\text{Outboard})$ are negative and statistically significant, confirming the positive relation between the percent of outside directors and the frequency of outside succession documented in Borokhovich, Parrino and Trapani (1996) and Parrino (1997). The positive and statistically significant coefficient estimates on $L(\text{Log(sales)})$ show that firms that appoint outsiders are on average smaller than firms that appoint insiders. This is also found in Dalton and Kesner (1983), Parrino (1997) and Reinganum (1985). Dalton and Kesner (1985) explain their findings on the negative relationship between the frequency of outside succession and firm size by arguing that large firms may be difficult to turn around due to their relative organizational complexities even if an outsider were chosen, or larger firms may have greater managerial depth that allows them to be more likely than smaller firms to be able to discover suitable successors inside the organization. Reinganum (1985) argues that the more complex control structures in large firms may prevent outsiders from exercising control. Also, the worse the financial performance under the predecessor CEO’s management, the greater is the likelihood that the successor is selected outside the firm. This is confirmed by the positive and statistically significant coefficient estimates on $L(\text{ROA})$. The negative and statistically significant coefficients on $L(\text{Forced})$ show that outside succession is more likely following a forced departure. This result is well documented in the literature (e.g., Parrino (1997)), and is consistent with the argument that outside succession is used as a means to implement policy changes in face of the organizational disruptions created by the predecessor CEO’s forced departure. Whether the predecessor is a member of the founder’s family does not seem to have a significant impact on the successor’s origin, since the coefficients on $L(\text{Family})$ are statistically insignificant (although negative). The negative coefficient estimates on $L(\text{Family})$ suggest that there is a tendency for founder or founder-family managed firms to go outside for talents when it comes to the moment that the founder or the family no longer wants to manage the firm. This is also found in Agrawal, Knoeber and Tsoulouhas (2006), and is consistent with the prediction of the theoretical model developed by Burkart, Panuzni and Shleifer (2003) in which founders in governance regimes with the strongest legal protection of minority shareholders (e.g., the U.S. sample used in this paper) are more likely to hire outside professional managers as successor CEOs.

Including board-CEO agreement to the regressions (columns II through VII for the GIM index, and columns IX through XIV for the BCF index) strongly support Prediction 3. Regressions using the six proxies of agreement all support the hypothesis that higher agreement between the board and the predecessor CEO leads to higher frequency of inside succession. The results are all statistically and economically significant. For example, in column II the coefficient 1.177 on $L(\text{Funcsim})$ translates into an odds ratio of 3.245. If the proxy $L(\text{Funcsim})$ increases from the 25th percentile (0.250) to the 75th percentile (0.529) of its distribution, i.e., agreement between the board and the predecessor CEO increases as more board members share the similar functional
background as the predecessor CEO, the likelihood for inside succession would increase approximately 12% (from 66% to 78%), when other control variables are valued at their mean values. Overall, the regression results in Table 8 corroborate Prediction 3, confirming that agreement plays important economic roles not only in determining the length of a CEO’s tenure, but also whether her successor is an insider or an outsider.

[Table 8 goes here]

5.3 Robustness Checks

5.3.1 Variable Definitions

In the above analysis, a CEO is defined as having long tenure if her or his tenure is longer than the sample median, which is 7.84 years. Thus, two CEOs with very similar length of tenure can be categorized into different groups. For example, consider two CEOs with one having a tenure of 7.8 years and the other 7.9 years. According to my definition, the first CEO is categorized into the short group, whereas the second is categorized into the long group, although there is really no significant difference between the two in terms of tenure. To determine whether the empirical results can be qualitatively affected by such tenure classification, as a robustness check I define a CEO as having long tenure if her or his tenure belongs to the highest quartile (equal to or greater than 13.17 years) and a CEO having short tenure if her or his tenure belongs to the lowest quartile (equal to or smaller than 4.6 years), so that long-tenure CEOs and short-tenure CEOs are sufficiently different in terms of the length of tenure. For the same reason, I also split my sample into terciles based on the GIM index (or the BCF index), and only keep those in the highest and lowest terciles of entrenchment indices. My empirical results are robust to these alternative specifications.

5.3.2 Causality and Differentiation with Hermalin and Weisbach (1998)

I propose in this paper that higher board-CEO agreement ceteris paribus leads to longer CEO tenure. However, one might argue that the causality runs from tenure to board-CEO agreement in that a CEO with longer tenure is more likely to select board members that are philosophically aligned with her. The intuition behind this argument is closely related to the central idea of Hermalin and Weisbach (1998), in which the CEO accumulates her power over the board selection process and as a result the board is gradually captured by the CEO along the CEO’s tenure. First note that from a theoretical point of view, the notion of board-CEO agreement is different from the notion that the board is captured by the CEO. The former stems from the fundamental disagreement between the board and the CEO regarding the value-maximizing choice of project-investment action, whereas the latter is a direct result of the agency problem between the two. My model shies away from the agency perspective of board-CEO relationship that has been extensively studied in the literature in order to delineate the economic effect of board-CEO agreement that
I believe has been overlooked by the literature. It is not my intention in this paper to develop a fully-fledged theory to study how board-CEO agreement evolves along the CEO’s tenure as in Hermalin and Weisbach (1998). It is important, however, to empirically distinguish my theory with that of Hermalin and Weisbach (1998). To do so, I rerun the regressions in Table 4, using the variables from the CEO’s first year in office, instead of the average values over her of his entire tenure. The idea is as follows. According to Hermalin and Weisbach (1998), a CEO has relatively weak bargaining power over the board during the initial period of her tenure. Thus, if their theory applies to this paper regarding board-CEO agreement, then one would not observe a significant empirical relationship between board-CEO agreement during the very first period of the CEO’s tenure and the length of her tenure (note that most directors during the initial period of the CEO’s tenure have been on the board before the CEO assumes the position). However, the empirical relationship between agreement and tenure remains significant in this alternative specification of variables, which at least to some extent differentiates my theory with that of Hermalin and Weisbach (1998). It also partially addresses the causality issue of the regressions in Table 4.

6 Conclusion

The objective of this paper has been to investigate the factors that determine CEO longevity. I develop a theory that incorporates disagreement between the board and the CEO regarding the value-maximizing choice of project-investment action. I show that this board-CEO disagreement causes CEO-ability-assessment asymmetry conditional on performance on the part of the board, which influences the length of CEO tenure and her degree of entrenchment. I find that CEOs with higher agreement with their boards are more likely to enjoy longer tenure, deliver better financial performance, and are more likely to have an insider as a successor. However, board-CEO agreement also shields the CEO from being removed upon bad performance, which is the dark side of agreement and CEO longevity. My theory also casts a shadow of doubt on the validity of CEO tenure as an empirical measure of managerial entrenchment. I find strong empirical support for the predictions of my theory. As a direction for future research, it would be interesting to link this paper to the matching literature (e.g., Bertrand and Schoar (2003), and Li and Ueda (2006)), and further investigate the underlying factors in the CEO-firm matching process. Toward that end, my paper suggests a broader view (beyond agency and information perspectives) of the issues surrounding board-CEO relationship and hence the choice of corporate governance statutes.

38I have also tried to use the average values of the variables from the CEO’s first 2 years and 3 years in office. I still find significant empirical relationship between board-CEO agreement and tenure.

39The statistical significance of the coefficient estimates on board-CEO agreement is similar to that in Table 4.

40Another idea is to study the interaction of board tenure and CEO tenure. The idea is that a board member whose tenure starts before the CEO’s tenure is not selected by the CEO. Future study may look at how the CEO reshuffles the board’s structure along her tenure to offer sharper tests.
Appendix

Proof of Proposition 1: First, consider the case in which the incumbent agrees with board. I conjecture that in equilibrium the incumbent’s action choice is signal independent, i.e., she always implements $a_B$ regardless of $s = s_B$ or $s = s_C$. Suppose the project succeeds, i.e., $F = \{\text{agree}, 1\}$. Note that

$$g(\varphi|\text{agree}, 1) = \frac{\theta_h[\varphi + [1 - \varphi]]g(\varphi)}{\int_0^1 \theta_h[\varphi + [1 - \varphi]]g(\varphi)d\varphi} = g(\varphi),$$

and hence

$$E(\varphi|\text{agree}, 1) = \int_0^1 \varphi g(\varphi|\text{agree}, 1)d\varphi = \bar{\varphi}. \quad (A1)$$

Suppose the project fails, i.e., $F = \{\text{agree}, 0\}$. Note that

$$g(\varphi|\text{agree}, 0) = \frac{[1 - \theta_h][\varphi + [1 - \varphi]]g(\varphi)}{\int_0^1 [1 - \theta_h][\varphi + [1 - \varphi]]g(\varphi)d\varphi} = g(\varphi),$$

and hence

$$E(\varphi|\text{agree}, 0) = \int_0^1 \varphi g(\varphi|\text{agree}, 0)d\varphi = \bar{\varphi} + \sigma^2. \quad (A2)$$

Given these, the incumbent will in equilibrium prefer to always choose $a_B$ because $\Pr(\omega_B|s_B) > 0.5$ when she agrees with the board, having a sufficiently strong prior belief about state $\omega_B$ (i.e., $\theta_h$ sufficiently large).

Second, consider the case in which the incumbent disagrees with board. I conjecture that in equilibrium the incumbent’s action choice is signal dependent, i.e., she always implements $a_B$ when $s = s_B$ and $a_C$ when $s = s_C$. Suppose the project succeeds, i.e., $F = \{\text{disagree}, 1\}$. Note that

$$g(\varphi|\text{disagree}, 1) = \frac{[\theta_h[\varphi + [1 - \varphi]]g(\varphi)}{\int_0^1 [\theta_h[\varphi + [1 - \varphi]]g(\varphi)d\varphi} = \frac{\varphi g(\varphi)}{\bar{\varphi}},$$

and hence

$$E(\varphi|\text{disagree}, 1) = \int_0^1 \varphi g(\varphi|\text{disagree}, 1)d\varphi = \bar{\varphi} + \sigma^2. \quad (A3)$$

Suppose the project fails, i.e., $F = \{\text{disagree}, 0\}$. Note that

$$g(\varphi|\text{disagree}, 0) = \frac{[\theta_h[1 - \varphi] + [1 - \theta_h][1 - \varphi]]g(\varphi)}{\int_0^1 [\theta_h[1 - \varphi] + [1 - \theta_h][1 - \varphi]]g(\varphi)d\varphi} = \frac{[1 - \varphi]g(\varphi)}{1 - \bar{\varphi}},$$

and hence

$$E(\varphi|\text{disagree}, 0) = \int_0^1 \varphi g(\varphi|\text{disagree}, 0)d\varphi = \bar{\varphi} - \frac{\sigma^2}{1 - \bar{\varphi}}. \quad (A4)$$

Given these, the incumbent’s optimal strategy is to implement $a_j$ when $s = s_j$, $j \in \{B, C\}$ in equilibrium, since $\Pr(\omega_j|s_j) > 0.5$, $j \in \{B, C\}$ when she disagrees with the board.

When the project is not available, i.e., $F = \{\text{NO}\}$, the board learns nothing about the incumbent’s ability, and hence

$$E(\varphi|\text{NO}) = \bar{\varphi}. \quad (A5)$$

These prove the proposition.

□
Disagreement After Signal Realization: Suppose the board sees its disagreement with the incumbent after the incumbent receives the signal and updates her prior. This corresponds to the following scenario: the board is aware of its potential prior-belief-difference with the incumbent, but it does not know the incumbent’s prior. After the incumbent receives the signal and updates her prior, the board then knows whether the incumbent agrees or disagrees with it. Note that

\[ g(\varphi | \text{agree}, 1) = \frac{[\rho | \theta_h + [1 - \rho] | \varphi] g(\varphi)}{\int_0^1 [\rho | \theta_h + [1 - \rho] | \varphi] g(\varphi) d\varphi} = \frac{[\rho | \theta_h + [1 - \rho] | \varphi] g(\varphi)}{\int_0^1 [\rho | \theta_h + [1 - \rho] | \varphi] g(\varphi) d\varphi}, \]

and hence

\[ E(\varphi | \text{agree}, 1) = \int_0^1 \varphi g(\varphi | \text{agree}, 1) d\varphi = \frac{\varphi}{\varphi + \frac{\sigma^2}{1 - \varphi}}; \tag{A6} \]

\[ g(\varphi | \text{agree}, 0) = \frac{[\rho | 1 - \theta_h + [1 - \rho] | 1 - \varphi] g(\varphi)}{\int_0^1 [\rho | 1 - \theta_h + [1 - \rho] | 1 - \varphi] g(\varphi) d\varphi} = \frac{[\rho | 1 - \theta_h + [1 - \rho] | 1 - \varphi] g(\varphi)}{\int_0^1 [\rho | 1 - \theta_h + [1 - \rho] | 1 - \varphi] g(\varphi) d\varphi}, \]

and hence

\[ E(\varphi | \text{agree}, 0) = \int_0^1 \varphi g(\varphi | \text{agree}, 0) d\varphi = \frac{\varphi}{\varphi + \frac{\rho | 1 - \theta_h|}{1 - \rho}}; \tag{A7} \]

\[ g(\varphi | \text{disagree}, 1) = \frac{[1 - \rho] | \varphi g(\varphi)}{\int_0^1 [1 - \rho] | \varphi g(\varphi) d\varphi} = \frac{\varphi g(\varphi)}{\varphi}, \]

and hence

\[ E(\varphi | \text{disagree}, 1) = \int_0^1 \varphi g(\varphi | \text{disagree}, 1) d\varphi = \frac{\varphi}{\varphi + \frac{\sigma^2}{1 - \varphi}}; \tag{A8} \]

\[ g(\varphi | \text{disagree}, 0) = \frac{[1 - \rho] | 1 - \varphi g(\varphi)}{\int_0^1 [1 - \rho] | 1 - \varphi g(\varphi) d\varphi} = \frac{[1 - \varphi] g(\varphi)}{1 - \varphi}, \]

and hence

\[ E(\varphi | \text{disagree}, 0) = \int_0^1 \varphi g(\varphi | \text{disagree}, 0) d\varphi = \frac{\varphi}{\varphi + \frac{\sigma^2}{1 - \varphi}}. \tag{A9} \]

It is clear that \( E(\varphi | \text{disagree}, 1) > E(\varphi | \text{agree}, 1) \) and \( E(\varphi | \text{disagree}, 0) < E(\varphi | \text{agree}, 0) \), which is the key intuition of Proposition 1. \( \square \)

An Alternative Setup: This is to generalize the key intuition of Proposition 1 to show that (i) the board’s posterior assessment about the incumbent’s ability depends on the prior-belief-heterogeneity between the board and the incumbent; and (ii) the assessment is more outcome-sensitive as the prior-belief-heterogeneity between the two increases. Suppose there may exist an information source that the incumbent can use to derive her private signal about the state of the world. The board’s prior belief about the state is \( \Pr(\omega_B) = \theta_h \in (0.5, 1) \) and \( \Pr(\omega_C) = 1 - \theta_h \in (0, 0.5) \), and the incumbent’s prior belief is \( \Pr(\omega_B) = \theta_t \in (0, 0.5) \) and \( \Pr(\omega_C) = 1 - \theta_t \in (0.5, 1) \). Thus, \( \theta_h - \theta_t \) measures the degree of prior-belief-heterogeneity between the board and the incumbent.

If the information source exists, the incumbent derives a private signal, \( s \in \{ s_B, s_C \} \), with its precision depending on her ability, \( \Pr(s_j | \omega_j) = \varphi, j \in \{ B, C \} \). If the information source does not exist, the incumbent
does not learn the private signal and acts on her prior belief. That is, if the information source does not exist, she chooses action \(a_C\). If the information source exists, she chooses \(a_B\) if \(s = s_B\), and \(a_C\) if \(s = s_C\).

The board believes that with probability \(\lambda[\theta_h - 0.5] \equiv \lambda \Delta > 0\) this information source exists (where \(\lambda > 0\) is a constant), meaning that the stronger its prior belief (higher \(\theta_h\)) the more likely it perceives the information source to exist. Suppose the project succeeds at \(t = 3\). Note that

\[
g(\varphi|1) = \frac{[1 - \lambda \Delta][1 - \theta_h] + \lambda \Delta \varphi g(\varphi)}{\int_0^1 [1 - \lambda \Delta][1 - \theta_h] + \lambda \Delta \varphi g(\varphi) d\varphi} = \frac{[1 - \lambda \Delta][1 - \theta_h] + \lambda \Delta \varphi g(\varphi)}{1 - \lambda \Delta}[1 - \theta_h] + \lambda \Delta \varphi,
\]

and hence

\[
E(\varphi|1) = \int_0^1 \varphi g(\varphi|1) d\varphi = \bar{\varphi} + \frac{\lambda \Delta \sigma^2}{1 - \lambda \Delta}[1 - \theta_h] + \lambda \Delta \bar{\varphi}.
\]

Suppose the project fails at \(t = 3\). Note that

\[
g(\varphi|0) = \frac{[1 - \lambda \Delta][\theta_h + \lambda \Delta [1 - \varphi]]g(\varphi)}{\int_0^1 [1 - \lambda \Delta][\theta_h + \lambda \Delta [1 - \varphi]]g(\varphi) d\varphi} = \frac{[1 - \lambda \Delta][\theta_h + \lambda \Delta [1 - \varphi]]g(\varphi)}{1 - \lambda \Delta}[\theta_h + \lambda \Delta [1 - \varphi]],
\]

and hence

\[
E(\varphi|0) = \int_0^1 \varphi g(\varphi|0) d\varphi = \bar{\varphi} - \frac{\lambda \Delta \sigma^2}{1 - \lambda \Delta}[\theta_h + \lambda \Delta [1 - \bar{\varphi}]].
\]

It is clear that \(\partial E(\varphi|1)/\partial \Delta > 0\) and \(\partial E(\varphi|0)/\partial \Delta < 0\).

The intuition is as follows. If the degree of prior-belief-heterogeneity increases, i.e., \(\Delta\) increases, the board believes the probability that the information source exists also increases. Hence, project outcome (success or failure) contains more information about the incumbent’s ability, causing \(E(\varphi|1)\) to be increasing in \(\Delta\), whereas \(E(\varphi|0)\) to be decreasing in \(\Delta\).

**Proof of Proposition 2:** Viewed at \(t = 0\) by the incumbent, the probabilities that she will be fired at \(t = 3\) conditional on various project outcomes are

\[
Pr(fired|agree, i, R_c) = Pr(E(\varphi|agree, i) < \bar{\varphi}|1 - \kappa R_c] = 0, \forall i \in \{B, C\}, \quad (A12)
\]

\[
Pr(fired|disagree, 1, R_c) = Pr(E(\varphi|disagree, 1) < \bar{\varphi}|1 - \kappa R_c] = 0, \quad (A13)
\]

\[
Pr(fired|disagree, 0, R_c) = Pr(E(\varphi|disagree, 0) < \bar{\varphi}|1 - \kappa R_c] = 1 - \kappa R_c, \quad (A14)
\]

\[
Pr(fired|NO, R_c) = Pr(E(\varphi|NO) < \bar{\varphi}|1 - \kappa R_c] = 0. \quad (A15)
\]

Thus, the incumbent’s problem can be written as

\[
\max_{\{R_c, R_d\}} \Pi = R_d[1 - \rho] [\bar{\varphi} \alpha - [1 - \bar{\varphi}] [1 - \kappa R_c] F] + R_d \rho [\theta_h \alpha + [1 - R_d] [0]. \quad (A16)
\]

First, note that for a given \(R_c\), we must have \(R_d = 1 - R_c\) (this is true if \(F\) is not too large so that the incumbent’s expected utility from project investment is always higher than her expected utility when the project is not available). Substituting \(R_d = 1 - R_c\) into (A16) yields the optimal solution for the incumbent’s entrenchment as

\[
R_c = 1 - \frac{1}{2[1 - \bar{\varphi}] \kappa F} \left[ \bar{\varphi} \alpha - [1 - \bar{\varphi}] [1 - \kappa F] + \frac{\theta_h \alpha \rho}{1 - \rho} \right]. \quad (A17)
\]

It is clear that \(\partial R_c/\partial \rho < 0\). The incumbent’s effort allocation in project investment is given by

\[
R_d = \frac{1}{2[1 - \bar{\varphi}] \kappa F} \left[ \bar{\varphi} \alpha - [1 - \bar{\varphi}] [1 - \kappa F] + \frac{\theta_h \alpha \rho}{1 - \rho} \right]. \quad (A18)
\]
which is increasing in $\rho$.

The expected project payoff under the incumbent’s management from the board’s perspective is

$$U_B = R_d[\rho \theta_h + [1 - \rho] \varphi] = \frac{1}{2[1 - \varphi] \kappa F} \left[ \alpha[\varphi + \rho [\theta_h - \varphi]] - [1 - \varphi][1 - \kappa] F \right] [\varphi + \rho [\theta_h - \varphi]],$$

(A19)

which is increasing in $\rho$ given $\theta_h > \bar{\varphi}$ (ensured by Assumption 1).

□

Proof of Proposition 3: When the project fails at $t = 3$, the probability that the incumbent will be fired by the board is

$$\Pr(\text{fired}|0) = \rho \Pr(\text{fired}|\text{agree}, 0, R_c) + [1 - \rho] \Pr(\text{fired}|\text{disagree}, 0, R_c) = [1 - \rho][1 - \kappa R_c],$$

(A20)

where $R_c$ is given by (A17). Thus,

$$\frac{\partial \Pr(\text{fired}|0)}{\partial \rho} = -\frac{1 - \kappa}{2} - \frac{\alpha \bar{\varphi}}{2[1 - \varphi] F} < 0.$$

This proves the proposition.

□

Proof of Proposition 4: Denote the potential agreement between the board and an inside CEO candidate as $\rho_{Ri}$, and the potential agreement between the board and an outside CEO candidate as $\rho_{Ro}$. Note that

$$\rho_{Rj} = \lambda_j \rho + [1 - \lambda_j][1 - \rho], j \in \{i, o\}.$$  

(A21)

Thus,

$$\rho_{Ri} - \rho_{Ro} = \lambda_i \rho + [1 - \lambda_i][1 - \rho] - \lambda_o \rho - [1 - \lambda_o][1 - \rho] = [\lambda_i - \lambda_o][2\rho - 1].$$

That is, $\rho_{Ri} > \rho_{Ro}$ if and only if $\rho > 1/2$. Proposition 2 tells that conditional on the incumbent being removed at $t = 3$, the expected firm value under an insider’s management viewed by the board will be higher than that under an outsider’s management if and only if $\rho > 1/2$. Thus, in the CEO-succession process, an insider will be hired if $\rho \geq 1/2$, whereas an outsider will be hired if $\rho < 1/2$. □
References


Table 1: Summary Statistics

Table 1 provides summary statistics for the variables in the sample. Panel A reports summary statistics for CEOs. Tenure is the number of years the CEO is in office from the time assuming the position till departure (those CEOs still in office at the year end of 2005 are excluded from calculating tenure statistics). Age is the CEO’s age when assuming the position. Inside CEO is a dummy variable that takes the value 1 if the CEO is an insider, i.e., the CEO assumes the position more than 1 year of joining the firm, and 0 if the CEO is an outsider, i.e., the CEO assumes the position within (including) 1 year of joining the firm. Founder is a dummy variable that equals 1 if the CEO is a founder or co-founder of the firm, and 0 otherwise. Family is a dummy variable that takes the value 1 if the CEO is a member of the founder’s family, and 0 otherwise. Panel B reports firm characteristics of the sample. Sales is net sales of the firm (Compustat #12). Tobin’s Q is calculated as book value of assets (Compustat #6) + market value of equity – book value of equity ($60) – balance sheet deferred taxes (#74). ROA is the industry-adjusted return on assets, calculated as the ratio of operating income before depreciation (Compustat #13) over lagged book value of asset (Compustat #6), less the industry median of that ratio defined as the median value of that ratio for corresponding firms having the same two-digit SIC code. Return is the size adjusted annual buy-and-hold stock return. Panel C reports governance characteristics of the sample. GIM index is an index that counts the 24 takeover defense provisions calculated by Gompers, Ishii and Metrick (2003). BCF index is an index that counts the 6 takeover defense provisions calculated by Bebchuk, Cohen and Ferrell (2005). Board size is the number of directors on the board. Outboard, Inboard and Greyboard are the percentiles of the outside, inside and grey directors on the board, respectively. Directors who are officers of the firm are classified as inside directors; directors who are linked to the firm (such as lawyers, investment bankers, commercial bankers, and other advisory personnel) are classified as grey directors; all other directors are classified as outside directors. Duality is a dummy variable that equals 1 if the CEO is also the chairman of the board, and 0 otherwise.

<table>
<thead>
<tr>
<th>Mean</th>
<th>Median</th>
<th>Std. Dev</th>
<th>Min</th>
<th>Max</th>
<th># obs</th>
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<td>Panel A: CEO Characteristics</td>
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<td></td>
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<td></td>
<td></td>
</tr>
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<td>Tenure (years)</td>
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<td>7.840</td>
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<td>48.630</td>
</tr>
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<td>Age (years)</td>
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<td>49.820</td>
<td>7.979</td>
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<td>0.423</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Founder</td>
<td>0.109</td>
<td>0</td>
<td>0.312</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Family</td>
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<td>0</td>
<td>0.350</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Panel B: Firm Characteristics</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales (millions)</td>
<td>49340.05</td>
<td>1437.503</td>
<td>10100.490</td>
<td>0.135</td>
<td>138523.000</td>
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<td>Q</td>
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<td>1.523</td>
<td>1.424</td>
<td>0.675</td>
<td>15.065</td>
</tr>
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<td>0.033</td>
<td>0.023</td>
<td>0.113</td>
<td>−0.986</td>
<td>0.733</td>
</tr>
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<td>Return (%)</td>
<td>4.790</td>
<td>1.571</td>
<td>31.053</td>
<td>−79.096</td>
<td>343.085</td>
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<td>Panel C: Governance Characteristics</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td>9.600</td>
<td>2.765</td>
<td>3</td>
<td>16.500</td>
</tr>
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<td>BCF Index</td>
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<td>2.444</td>
<td>1.300</td>
<td>0</td>
<td>6</td>
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<td>Outboard (%)</td>
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<td>66.865</td>
<td>15.355</td>
<td>10.417</td>
<td>100</td>
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<tr>
<td>Inboard (%)</td>
<td>21.017</td>
<td>19.512</td>
<td>11.008</td>
<td>0</td>
<td>85.417</td>
</tr>
<tr>
<td>Greyboard (%)</td>
<td>13.182</td>
<td>11.111</td>
<td>11.632</td>
<td>0</td>
<td>78.889</td>
</tr>
<tr>
<td>Duality (%)</td>
<td>69.273</td>
<td>0</td>
<td>38.977</td>
<td>0</td>
<td>100</td>
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</table>
Table 2: CEO Tenure and Board-CEO Agreement

Table 2 reports means of the six measures of the agreement parameter ($\rho$) and the disagreement parameter ($1 - \rho$), CEO and financial characteristics for CEOs with long tenure (long, column I), CEOs with short tenure who are forced out from their positions (short-forced, column II) and CEOs with short tenure who voluntarily leave their positions (short-voluntary, column III). A CEO is classified as having long tenure if her or his tenure is longer than the sample median (7.840 years) (399 observations). All CEOs with tenure less than the sample median are classified as having short tenure, and are further categorized into the short-forced group (131 observations) or the short-voluntary group (207 observations) based on the turnover type (CEOs with tenure less than 7.840 years and who are still in office at the year end of 2005 are excluded here); see Section 3.2.1 for details regarding the classification of turnover type. The measures used for the agreement parameter ($\rho$) are: (1) $Funcsim$ defined as the square of the proportion of CEO-board-member dyads sharing the same functional background; (2) $Dispersion$ defined as the standard deviation of analyst forecasts for the current period’s EPS during the month of the fiscal year end normalized by the absolute value of the mean forecast. Column IV and V report the differences of these mean values between the long group and the short-forced group, and between the long-group and the short-voluntary group, respectively. Wilcoxon test $z$–values are reported in parentheses. Asterisks denote statistical significance at the 1%(***) , 5%(**) and 10%(*) levels.

<table>
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<tr>
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</thead>
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<td>Funcsim</td>
<td>0.443</td>
<td>0.208</td>
<td>0.367</td>
<td>0.235***</td>
<td>0.076**</td>
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<tr>
<td>Forecast error</td>
<td>0.013</td>
<td>−0.016</td>
<td>0.021</td>
<td>0.029*</td>
<td>−0.008</td>
</tr>
<tr>
<td>$\Delta$Breadth ($\times 10^{-2}$)</td>
<td>0.212</td>
<td>−0.133</td>
<td>0.177</td>
<td>0.346***</td>
<td>0.035</td>
</tr>
<tr>
<td>$\Delta$Held ($\times 10^{-2}$)</td>
<td>0.918</td>
<td>0.432</td>
<td>1.052</td>
<td>0.486*</td>
<td>−0.134</td>
</tr>
<tr>
<td>Agedissim (years)</td>
<td>8.229</td>
<td>12.031</td>
<td>8.729</td>
<td>−3.801***</td>
<td>−0.499*</td>
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<td>Dispersion</td>
<td>0.064</td>
<td>0.160</td>
<td>0.081</td>
<td>−0.096***</td>
<td>−0.018</td>
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<table>
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<tr>
<th>Panel B: CEO Characteristics</th>
<th>Age (years)</th>
<th>Inside CEO</th>
<th>Founder</th>
<th>Family</th>
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<tr>
<td></td>
<td>45.806</td>
<td>0.867</td>
<td>0.226</td>
<td>0.271</td>
</tr>
<tr>
<td></td>
<td>49.341</td>
<td>0.649</td>
<td>0.015</td>
<td>0.023</td>
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<td></td>
<td>54.682</td>
<td>0.734</td>
<td>0.073</td>
<td>0.087</td>
</tr>
<tr>
<td></td>
<td>−3.535***</td>
<td>0.218***</td>
<td>0.210***</td>
<td>0.248***</td>
</tr>
<tr>
<td></td>
<td>−3.998***</td>
<td>0.133***</td>
<td>(5.509***)</td>
<td>0.248***</td>
</tr>
<tr>
<td></td>
<td>−10.562***</td>
<td>(4.050***)</td>
<td>(4.719***)</td>
<td>(6.041***</td>
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</table>

<table>
<thead>
<tr>
<th>Panel C: Financial Characteristics</th>
<th>Q</th>
<th>ROA</th>
<th>Return (%)</th>
</tr>
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<tr>
<td></td>
<td>2.148</td>
<td>0.046</td>
<td>5.950</td>
</tr>
<tr>
<td></td>
<td>1.892</td>
<td>0.008</td>
<td>−5.301</td>
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<td></td>
<td>2.058</td>
<td>0.026</td>
<td>5.610</td>
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<tr>
<td></td>
<td>0.256**</td>
<td>0.038***</td>
<td>11.250***</td>
</tr>
<tr>
<td></td>
<td>0.091</td>
<td>0.019**</td>
<td>0.342</td>
</tr>
<tr>
<td></td>
<td>(2.519**)</td>
<td>(3.948***)</td>
<td>(4.648***</td>
</tr>
<tr>
<td></td>
<td>(0.829)</td>
<td>(2.228**)</td>
<td>(0.421)</td>
</tr>
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</table>
Table 3: CEO Tenure and Entrenchment

Table 3 reports governance characteristics (GIM index, BCF index, board size, percent of outside directors (Out-board) and CEO/chairman duality (Duality)) for CEOs in the long group (399 observations), short-forced group (131 observations) and short-voluntary group (207 observations). Panel A compares those characteristics between the long group and the short-forced group (column IV), and between the long group and the short-voluntary group (column V), separately. Panel B pools the short-forced and short-voluntary groups together (short group) and compares that with the long group. Wilcoxon test z-values are reported in parentheses. Asterisks denote statistical significance at the 1%(***), 5%(**) and 10%(*) levels.

<table>
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<tr>
<th></th>
<th>Long (I)</th>
<th>Short-forced (II)</th>
<th>Short-voluntary (III)</th>
<th>Difference between long and short-forced (IV = I - II)</th>
<th>Difference between long and short-voluntary (V = I - III)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GIM index</td>
<td>9.273</td>
<td>9.231</td>
<td>9.703</td>
<td>0.042</td>
<td>-0.431</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>(0.308)</td>
<td>(-1.960**)</td>
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<tr>
<td>BCF index</td>
<td>2.314</td>
<td>2.364</td>
<td>2.608</td>
<td>-0.050</td>
<td>-0.293**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(-0.241)</td>
<td>(-2.461**)</td>
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<tr>
<td>Board size</td>
<td>9.826</td>
<td>9.183</td>
<td>9.925</td>
<td>0.643**</td>
<td>-0.098</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(1.964**)</td>
<td>(-0.340)</td>
</tr>
<tr>
<td>Outboard (%)</td>
<td>64.490</td>
<td>66.564</td>
<td>64.667</td>
<td>-2.074</td>
<td>-0.176</td>
</tr>
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<td></td>
<td>(-1.190)</td>
<td>(-0.164)</td>
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<tr>
<td>Duality (%)</td>
<td>71.079</td>
<td>68.178</td>
<td>69.081</td>
<td>2.901</td>
<td>1.998</td>
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<td>(0.629)</td>
<td>(0.407)</td>
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</table>

<table>
<thead>
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<th>Long (I)</th>
<th>Short (II)</th>
<th>Difference between Long and Short (III = I - II)</th>
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</thead>
<tbody>
<tr>
<td>GIM index</td>
<td>9.273</td>
<td>9.521</td>
<td>-0.249</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(-1.233)</td>
</tr>
<tr>
<td>BCF index</td>
<td>2.314</td>
<td>2.514</td>
<td>-0.199*</td>
</tr>
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<td></td>
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<td></td>
<td>(-1.878*)</td>
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<td>Board size</td>
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<td>Outboard (%)</td>
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<td>(0.591)</td>
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Table 4: CEO Tenure, Board-CEO Agreement and Entrance: Multinomial Logit Analysis

Table 4 presents the results from a multinomial logit regression with three possible categories for a CEO: the CEO has a long tenure (long), a short tenure and is forced out from the position (short-forced), or a short tenure and voluntarily leaves the position (short-voluntary). The base category for comparison is long. \( \log(\text{sales}) \) is the logarithm value of net sales. Panels A reports the results of comparison between the short-forced category and the long category. Panels B reports the results of comparison between the short-voluntary category and the long category. Within each panel, columns I and VIII report results for baseline regressions without board-CEO agreement, and columns II to VII present results using the six measures for board-CEO agreement, \( \text{Funcsim}, \text{Forecast error}, \Delta \text{Breadth}, \Delta \text{Held}, \text{Agedissim} \) and \( \text{Dispersion} \), respectively, in which GIM index is used as the measure for entrenchment, and columns IX to XIV present results using the six measures for board-CEO agreement, \( \text{Funcsim}, \text{Forecast error}, \Delta \text{Breadth}, \Delta \text{Held}, \text{Agedissim} \) and \( \text{Dispersion} \), respectively, in which BCF index is used as the measure for entrenchment. Asterisks denote statistical significance at the 1%(***) , 5%(**) and 10%(*) levels, and \( p \)-values based on robust standard errors are reported in parentheses.

<table>
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<tr>
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<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>VII</th>
<th>VIII</th>
<th>IX</th>
<th>X</th>
<th>XI</th>
<th>XII</th>
<th>XIII</th>
<th>XIV</th>
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<tr>
<td>Panel A: Short-forced versus Long</td>
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<td></td>
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<td></td>
<td>-0.069</td>
<td>-0.091</td>
<td>-0.069</td>
<td>-0.068</td>
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<td>-0.081</td>
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<td>-1.087*</td>
<td></td>
<td></td>
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<td>-0.713</td>
<td>-0.595</td>
<td>-0.569</td>
<td>-0.377</td>
<td>-0.430</td>
<td>-0.624</td>
<td>-0.732</td>
<td>-0.642</td>
<td>-0.732</td>
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<tr>
<td>( \Delta \text{Breadth} )</td>
<td>-86.655***</td>
<td>-86.655***</td>
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<td></td>
<td>0.870</td>
<td>0.711</td>
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<td>0.787</td>
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<td>0.998</td>
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<tr>
<td>( \Delta \text{Held} )</td>
<td>-4.978*</td>
<td>-4.978*</td>
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<td></td>
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<td>0.046</td>
<td>0.005</td>
<td>0.033</td>
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<td>0.006</td>
<td>0.016</td>
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<td>0.060</td>
<td>0.061</td>
<td>0.134</td>
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<td>0.059</td>
<td>0.049</td>
<td>0.056</td>
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<td>Dispersion</td>
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<td>0.001</td>
<td>0.009</td>
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<td>0.001</td>
<td>0.000</td>
<td>0.001</td>
<td>0.000</td>
<td>0.001</td>
<td>0.000</td>
<td>0.001</td>
</tr>
<tr>
<td>GIM index</td>
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<td></td>
<td></td>
<td></td>
<td>0.001</td>
<td>0.012</td>
<td>0.001</td>
<td>0.000</td>
<td>0.000</td>
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<td>0.001</td>
<td>0.001</td>
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</tr>
<tr>
<td>BCF index</td>
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<td></td>
<td></td>
<td>0.001</td>
<td>0.000</td>
<td>0.001</td>
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<td>0.000</td>
<td>0.001</td>
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</tr>
<tr>
<td>Outboard</td>
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<td></td>
<td>0.000</td>
<td>0.012</td>
<td>0.001</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
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<td>0.001</td>
</tr>
<tr>
<td>Log(sales)</td>
<td>0.013</td>
<td></td>
<td></td>
<td></td>
<td>0.000</td>
<td>0.012</td>
<td>0.001</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
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</tr>
<tr>
<td>ROA</td>
<td>-2.402***</td>
<td>-2.906***</td>
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<td></td>
<td>0.004</td>
<td>0.046</td>
<td>0.005</td>
<td>0.033</td>
<td>0.016</td>
<td>0.015</td>
<td>0.006</td>
<td>0.016</td>
<td>0.005</td>
<td>0.014</td>
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<tr>
<td>Age</td>
<td>0.060***</td>
<td>0.049***</td>
<td>0.056***</td>
<td>0.060***</td>
<td>0.061***</td>
<td>0.134***</td>
<td>0.069***</td>
<td>0.059***</td>
<td>0.049***</td>
<td>0.056***</td>
<td>0.059***</td>
<td>0.060***</td>
<td>0.132***</td>
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</tr>
<tr>
<td>Inside CEO</td>
<td>-0.932***</td>
<td>-0.932***</td>
<td></td>
<td></td>
<td>0.001</td>
<td>0.001</td>
<td>0.000</td>
<td>0.000</td>
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<tr>
<td>Family</td>
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<td>-2.154***</td>
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<td>0.000</td>
<td>0.009</td>
<td>0.002</td>
<td>0.003</td>
<td>0.006</td>
<td>0.003</td>
<td>0.012</td>
<td>0.009</td>
<td>0.009</td>
<td>0.003</td>
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<tr>
<td>Constant</td>
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<td>-2.005</td>
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<td>0.064</td>
<td>0.400</td>
<td>0.090</td>
<td>0.118</td>
<td>0.063</td>
<td>0.000</td>
<td>0.015</td>
<td>0.000</td>
<td>0.039</td>
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<tr>
<td># obs</td>
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</tr>
<tr>
<td>Pseudo ( R^2 )</td>
<td>0.167</td>
<td>0.257</td>
<td>0.182</td>
<td>0.195</td>
<td>0.178</td>
<td>0.258</td>
<td>0.185</td>
<td>0.165</td>
<td>0.258</td>
<td>0.182</td>
<td>0.196</td>
<td>0.179</td>
<td>0.258</td>
<td>0.185</td>
</tr>
</tbody>
</table>

The base category for comparison is long. \( \log(\text{sales}) \) is the logarithm value of net sales. Panels A reports the results of comparison between the short-forced category and the long category. Within each panel, columns I and VIII report results for baseline regressions without board-CEO agreement, and columns II to VII present results using the six measures for board-CEO agreement, \( \text{Funcsim}, \text{Forecast error}, \Delta \text{Breadth}, \Delta \text{Held}, \text{Agedissim} \) and \( \text{Dispersion} \), respectively, in which GIM index is used as the measure for entrenchment, and columns IX to XIV present results using the six measures for board-CEO agreement, \( \text{Funcsim}, \text{Forecast error}, \Delta \text{Breadth}, \Delta \text{Held}, \text{Agedissim} \) and \( \text{Dispersion} \), respectively, in which BCF index is used as the measure for entrenchment. Asterisks denote statistical significance at the 1%(***) , 5%(**) and 10%(*) levels, and \( p \)-values based on robust standard errors are reported in parentheses.
Panel B: Short-voluntary versus Long

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimate 1</th>
<th>Estimate 2</th>
<th>Estimate 3</th>
</tr>
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<tbody>
<tr>
<td>alkalization</td>
<td>0.016</td>
<td>0.015</td>
<td>0.014</td>
</tr>
<tr>
<td>Forecast error</td>
<td>0.046</td>
<td>0.045</td>
<td>0.044</td>
</tr>
<tr>
<td>∆Breadth</td>
<td>-0.035</td>
<td>0.778</td>
<td></td>
</tr>
<tr>
<td>∆Held</td>
<td>2.176</td>
<td>2.348</td>
<td></td>
</tr>
<tr>
<td>Age dissim</td>
<td>0.180</td>
<td>0.181</td>
<td></td>
</tr>
<tr>
<td>Dispersion</td>
<td>0.007</td>
<td>0.005</td>
<td></td>
</tr>
<tr>
<td>GIM index</td>
<td>0.007</td>
<td>0.007</td>
<td></td>
</tr>
<tr>
<td>BCF index</td>
<td>0.007</td>
<td>0.007</td>
<td></td>
</tr>
<tr>
<td>Outboard</td>
<td>-0.995</td>
<td>-0.995</td>
<td></td>
</tr>
<tr>
<td>Log(sales)</td>
<td>-0.086</td>
<td>-0.086</td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>-2.073</td>
<td>-2.073</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.190</td>
<td>0.190</td>
<td></td>
</tr>
<tr>
<td>Inside CEO</td>
<td>-0.570</td>
<td>-0.570</td>
<td></td>
</tr>
<tr>
<td>Family</td>
<td>-0.996</td>
<td>-0.996</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-8.403</td>
<td>-8.403</td>
<td></td>
</tr>
<tr>
<td># obs</td>
<td>664</td>
<td>664</td>
<td></td>
</tr>
<tr>
<td>Pseudo $R^2$</td>
<td>0.167</td>
<td>0.167</td>
<td></td>
</tr>
</tbody>
</table>
Table 5: The Dark Side of Board-CEO Agreement

Table 5 reports board-CEO agreement proxies (Funcsim, Forecast error, ∆Breadth, ∆Held, Agedissim and Dispersion), financial performance (Tobin’s Q, ROA, stock return), and governance characteristics (GIM index, BCF index, board size, percent of outside directors and CEO/chairman duality) for CEOs in the long-forced and short-forced groups. Column III reports the differences between the two groups in terms of these variables. Wilcoxon test z-values are reported in parentheses. Asterisks denote statistical significance at the 1%(***), 5%(**) and 10%(*) levels.

<table>
<thead>
<tr>
<th></th>
<th>Long-forced (I)</th>
<th>Short-forced (II)</th>
<th>Difference between Long-forced and Short-forced (III = I − II)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funcsim</td>
<td>0.333</td>
<td>0.208</td>
<td>0.126*** (4.538*** )</td>
</tr>
<tr>
<td>Forecast error</td>
<td>0.073</td>
<td>−0.016</td>
<td>0.089 (0.484)</td>
</tr>
<tr>
<td>∆Breadth (×10^{-2})</td>
<td>−0.049</td>
<td>−0.133</td>
<td>0.085* (1.348*)</td>
</tr>
<tr>
<td>∆Held (×10^{-2})</td>
<td>0.522</td>
<td>0.432</td>
<td>0.090* (1.337*)</td>
</tr>
<tr>
<td>Agedissim (years)</td>
<td>7.743</td>
<td>12.031</td>
<td>−4.288*** (−4.954*** )</td>
</tr>
<tr>
<td>Dispersion</td>
<td>0.147</td>
<td>0.160</td>
<td>−0.012* (−1.447*)</td>
</tr>
<tr>
<td>Q</td>
<td>1.767</td>
<td>1.892</td>
<td>−0.124 (−0.798)</td>
</tr>
<tr>
<td>ROA</td>
<td>−0.005</td>
<td>0.008</td>
<td>−0.013 (−0.281)</td>
</tr>
<tr>
<td>Return (%)</td>
<td>−3.681</td>
<td>−5.301</td>
<td>1.620 (0.676)</td>
</tr>
<tr>
<td>GIM index</td>
<td>9.176</td>
<td>9.231</td>
<td>−0.054 (−0.042)</td>
</tr>
<tr>
<td>BCF index</td>
<td>2.150</td>
<td>2.364</td>
<td>−0.214 (−0.729)</td>
</tr>
<tr>
<td>Board size</td>
<td>10.262</td>
<td>9.183</td>
<td>1.078* (1.092*)</td>
</tr>
<tr>
<td>Outboard (%)</td>
<td>68.055</td>
<td>66.564</td>
<td>1.491 (0.461)</td>
</tr>
<tr>
<td>Duality (%)</td>
<td>70.005</td>
<td>68.178</td>
<td>1.826 (0.493)</td>
</tr>
</tbody>
</table>
Table 6: The Dark Side of Board-CEO Agreement: Logit Analysis

Table 6 presents the results from a logit regression where the dependent variable takes the value 1 if the CEO is forced out from the position and 0 if there is no turnover. Funcsim\(_{-1}\), Forecast error\(_{-1}\), ∆Breadth\(_{-1}\), ∆Held\(_{-1}\), Agedissim\(_{-1}\) and Dispersion\(_{-1}\) are the proxies for board-CEO agreement at the year before the turnover. ROA\(_{-1}\), Age\(_{-1}\), Outboard\(_{-1}\), GIM index\(_{-1}\), Log(sales)\(_{-1}\) and are the values of industry-adjusted return on assets, CEO age, percent of outside directors, GIM index and logarithm value of net sales at the year before the turnover, respectively. Family\(_{1}\) is a dummy variable that equals 1 if the CEO is a member of the founder’s family and 0 otherwise. Asterisks denote statistical significance at the 1%(***), 5%(**) and 10%(*) levels, and p-values based on robust standard errors are reported in parentheses.

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>VII</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funcsim(_{-1})</td>
<td>−2.231** (0.026)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funcsim(<em>{-1}) × ROA(</em>{-1})</td>
<td>0.441* (0.076)</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Forecast error(_{-1})</td>
<td>−0.467* (0.091)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Forecast error(<em>{-1}) × ROA(</em>{-1})</td>
<td>0.398* (0.077)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>∆Breadth(_{-1})</td>
<td>−17.721** (0.037)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>∆Breadth(<em>{-1}) × ROA(</em>{-1})</td>
<td>0.337* (0.074)</td>
<td></td>
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</tr>
<tr>
<td>∆Held(_{-1})</td>
<td>−1.302* (0.053)</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>∆Held(<em>{-1}) × ROA(</em>{-1})</td>
<td>0.341* (0.094)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Agedissim(_{-1})</td>
<td>0.126** (0.042)</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Agedissim(<em>{-1}) × ROA(</em>{-1})</td>
<td>−0.501* (0.083)</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Dispersion(_{-1})</td>
<td>0.505** (0.038)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Dispersion(<em>{-1}) × ROA(</em>{-1})</td>
<td>−0.651* (0.090)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>ROA(_{-1})</td>
<td>−0.839** −1.521** −1.585* −1.211** −1.662** −1.625** −1.482** (0.012) (0.021) (0.073) (0.031) (0.029) (0.032) (0.040)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age(_{-1})</td>
<td>0.019** 0.016** 0.015* 0.012** 0.022* 0.014** 0.015* (0.041) (0.045) (0.076) (0.042) (0.084) (0.046) (0.092)</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Family(_{-1})</td>
<td>−2.504*** −2.334*** −2.138*** −2.018*** −2.437*** −2.233*** −2.137*** (0.008) (0.001) (0.003) (0.005) (0.003) (0.000) (0.002)</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Outboard(_{-1})</td>
<td>0.311 0.308 0.312 0.433 0.265 0.401 0.412 (0.677) (0.650) (0.540) (0.601) (0.632) (0.562) (0.863)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GIM index(_{-1})</td>
<td>−0.042 −0.051 −0.047 −0.049 −0.055 −0.045 −0.044 (0.571) (0.485) (0.421) (0.398) (0.400) (0.376) (0.502)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log(sales)(_{-1})</td>
<td>0.076* 0.083* 0.064* 0.128* 0.023* 0.078* 0.091* (0.078) (0.090) (0.087) (0.082) (0.094) (0.083) (0.081)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Constant</td>
<td>−2.393*** −2.057** −1.847*** −2.332*** −2.746*** −2.095** −2.083*** (0.001) (0.016) (0.001) (0.002) (0.000) (0.020) (0.000)</td>
<td></td>
<td></td>
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<tr>
<td># obs (firm year)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Pseudo R(^2)</td>
<td>0.145 0.231 0.210 0.180 0.177 0.230 0.220</td>
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<td></td>
<td></td>
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</tr>
</tbody>
</table>
Table 7: Board-CEO agreement and CEO Succession

Table 7 reports means of the six measures of board-CEO agreement for the predecessor CEOs at the turnover year, \( L(\text{Funcsim}) \), \( L(\text{Forecast error}) \), \( L(\Delta \text{Breadth}) \), \( L(\Delta \text{Held}) \), \( L(\text{Agedissim}) \) and \( L(\text{Dispersion}) \), categorized by the origin of the successor CEO: whether the successor CEO is an insider (inside succession, column I) or an outsider (outside succession, column II). A successor CEO is classified as an insider if the CEO assumes the position more than 1 year of joining the firm, and an outsider if the CEO assumes the position within (including) 1 year of joining the firm. Wilcoxon test \( z \)-values are reported in parentheses. Asterisks denote statistical significance at the 1%(***) , 5%(**) and 10%(*) levels.

<table>
<thead>
<tr>
<th></th>
<th>Inside succession (I)</th>
<th>Outside succession (II)</th>
<th>Difference between inside and outside successions (III = I – II)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( L(\text{Funcsim}) )</td>
<td>0.422</td>
<td>0.326</td>
<td>0.096***</td>
</tr>
<tr>
<td>( L(\text{Forecast error}) )</td>
<td>0.018</td>
<td>0.007</td>
<td>0.011**</td>
</tr>
<tr>
<td>( L(\Delta \text{Breadth}) ) (( \times 10^{-3} ))</td>
<td>2.179</td>
<td>0.008</td>
<td>2.171***</td>
</tr>
<tr>
<td>( L(\Delta \text{Held}) ) (( \times 10^{-2} ))</td>
<td>0.971</td>
<td>0.525</td>
<td>0.446**</td>
</tr>
<tr>
<td>( L(\text{Agedissim}) ) (years)</td>
<td>8.218</td>
<td>9.812</td>
<td>−1.594***</td>
</tr>
<tr>
<td>( L(\text{Dispersion}) )</td>
<td>0.061</td>
<td>0.154</td>
<td>−0.093***</td>
</tr>
</tbody>
</table>
A successor CEO is classified as an insider if the CEO assumes the position more than 1 year of joining the firm, and an outsider if the CEO assumes the position within (including) 1 year of joining the firm. L(Funcsim), L(Forecast error), L(∆Breath), L(∆Held), L(Agedissim) and L(Dispersion) are the values of Funcsim, Forecast error, ∆Breath, ∆Held, Agedissim and Dispersion at the turnover year for the predecessor CEO, respectively. L(GIM index), L(BCF index), L(Outboard), L(Log(sales)) and L(ROA) are the GIM index, BCF index, percent of outside directors on the board, logarithm value of net sales and industry adjusted return on assets at the turnover year for the predecessor CEO, respectively. L(Forced) is a dummy variable that equals 1 if the predecessor CEO is forced out from the position, and 0 if the predecessor CEO leaves voluntarily. L(Family) is a dummy variable that takes the value 1 if the predecessor CEO is a member of the founder’s family and 0 otherwise. Asterisks denote statistical significance at the 1%(**), 5%(*) and 10%(*) levels, and p-values based on robust standard errors are reported in parentheses.

### Table 8: Board-CEO Agreement and CEO Succession: Logit Analysis

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>VII</th>
<th>VIII</th>
<th>IX</th>
<th>X</th>
<th>XI</th>
<th>XII</th>
<th>XIII</th>
<th>XIV</th>
</tr>
</thead>
<tbody>
<tr>
<td>L(Funcsim)</td>
<td>1.177** (0.042)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.183** (0.044)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L(Forecast error)</td>
<td></td>
<td>0.272* (0.058)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.268* (0.053)</td>
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<td></td>
</tr>
<tr>
<td>L(∆Breath)</td>
<td></td>
<td></td>
<td>26.726** (0.046)</td>
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<td></td>
<td></td>
<td>26.741** (0.047)</td>
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<tr>
<td>L(∆Held)</td>
<td></td>
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<td></td>
<td>6.483* (0.061)</td>
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<td></td>
<td>6.661* (0.067)</td>
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<td>L(Agedissim)</td>
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<td>-0.088** (0.011)</td>
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<tr>
<td>L(Dispersion)</td>
<td></td>
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<td></td>
<td></td>
<td>-2.191** (0.041)</td>
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<tr>
<td>L(GIM index)</td>
<td>0.032 (0.413)</td>
<td>0.035 (0.384)</td>
<td>0.037 (0.351)</td>
<td>0.036 (0.357)</td>
<td>0.039 (0.322)</td>
<td>0.033 (0.412)</td>
<td>0.031 (0.429)</td>
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<tr>
<td>L(BCF index)</td>
<td>0.101 (0.204)</td>
<td>0.112 (0.170)</td>
<td>0.109 (0.174)</td>
<td>0.109 (0.175)</td>
<td>0.116 (0.156)</td>
<td>0.097 (0.234)</td>
<td>0.094 (0.241)</td>
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<tr>
<td>L(Outboard)</td>
<td>-2.472*** (0.004)</td>
<td>-2.482*** (0.004)</td>
<td>-2.586*** (0.003)</td>
<td>-2.488*** (0.003)</td>
<td>-2.528*** (0.003)</td>
<td>-2.720*** (0.002)</td>
<td>-2.437*** (0.004)</td>
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<tr>
<td>L(Log(sales))</td>
<td>0.222*** (0.004)</td>
<td>0.217** (0.037)</td>
<td>0.223** (0.040)</td>
<td>0.224** (0.035)</td>
<td>0.223** (0.045)</td>
<td>0.190** (0.041)</td>
<td>0.204** (0.042)</td>
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<tr>
<td>L(ROA)</td>
<td>1.412*** (0.007)</td>
<td>1.568*** (0.047)</td>
<td>1.454*** (0.047)</td>
<td>1.182*** (0.048)</td>
<td>1.239*** (0.045)</td>
<td>1.734*** (0.048)</td>
<td>0.738*** (0.049)</td>
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<tr>
<td>L(Forced)</td>
<td>-1.762*** (0.000)</td>
<td>-1.581*** (0.000)</td>
<td>-1.769*** (0.000)</td>
<td>-1.673*** (0.000)</td>
<td>-1.749*** (0.000)</td>
<td>-1.522*** (0.000)</td>
<td>-1.658*** (0.000)</td>
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<tr>
<td>L(Family)</td>
<td>-0.440 (0.133)</td>
<td>-0.545 (0.144)</td>
<td>-0.470 (0.114)</td>
<td>-0.450 (0.125)</td>
<td>-0.428 (0.121)</td>
<td>-0.399 (0.146)</td>
<td>-0.430 (0.179)</td>
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<tr>
<td>Constant</td>
<td>1.038 (0.212)</td>
<td>0.598 (0.394)</td>
<td>1.076 (0.204)</td>
<td>0.966 (0.248)</td>
<td>0.956 (0.262)</td>
<td>1.136 (0.224)</td>
<td>1.290 (0.111)</td>
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<td># obs</td>
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<td>Pseudo R²</td>
<td>0.120</td>
<td>0.128</td>
<td>0.123</td>
<td>0.125</td>
<td>0.124</td>
<td>0.132</td>
<td>0.132</td>
<td>0.121</td>
<td>0.130</td>
<td>0.125</td>
<td>0.127</td>
<td>0.125</td>
<td>0.133</td>
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</table>
**Figure 1: Sequence of Events**

<table>
<thead>
<tr>
<th>t = 0</th>
<th>t = 1</th>
<th>t = 2</th>
<th>t = 3</th>
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</thead>
<tbody>
<tr>
<td>• The board forms its prior belief about the state of the world.</td>
<td>• The incumbent CEO forms her prior belief about the state of the world, which can be the same as or different from that of the board's.</td>
<td>• The incumbent CEO receives a private signal about the state. The precision of the signal depends on the incumbent’s ability.</td>
<td>• The payoff of the project is realized and observed by all if it was available.</td>
</tr>
<tr>
<td>• The incumbent CEO expends part of her personal effort in entrenchment to maximize her expected utility.</td>
<td>• The incumbent CEO expends part of her personal effort in project development. The project availability is observed to all.</td>
<td>• The incumbent CEO updates her prior belief about the state, and takes an action to implement the project that she perceives to be optimal.</td>
<td>• The board updates its prior belief about the incumbent’s ability, and then decides whether to fire the incumbent and hire the replacement CEO.</td>
</tr>
</tbody>
</table>