

# Changing of the Guards: Does Succession Planning Matter?\*

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## ABSTRACT

Using hand-collected data on succession planning disclosures in a comprehensive sample of public firms undergoing management transitions over 1993-2010, we provide novel evidence on the role of formal succession planning in CEO turnover decisions. First, succession planning ensures leadership continuity by reducing the likelihood of forced CEO turnover, the incidence of non-CEO executive team resignations, and making the departing CEO an integral part of the transition process. Second, succession planning is associated with significantly lower stock return volatility surrounding CEO turnover as well as a much faster decline in volatility with the successor's tenure, suggesting a fundamentally different nature of learning about CEO ability. Third, succession planning significantly improves the efficiency of executive transitions by raising turnover-performance sensitivity and allowing for proper filtering of industry factors in CEO dismissals. Finally, succession planning impacts CEO pay structure and reduces agency conflicts following CEO turnover.

Keywords: succession planning, CEOs, executive turnover, executive labor market, CEO pay

JEL classification: G34, J24, J33, J41

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## 1. Introduction

In September 2009, Bank of America's CEO Ken Lewis suddenly announced his intention to retire by the end of the year. The company's board was clearly taken by surprise as they scrambled to find a successor, and was further embarrassed as multiple candidates rebuffed the company's approach.<sup>1</sup> Several delays of self-imposed deadlines and rampant speculation that the company would be forced to choose a "stopgap CEO" followed. It was only days before Lewis's departure that the board named Brian Moynihan as the new CEO. This incident highlights that companies have been complacent about succession planning; more than half of the respondents in a widely publicized 2010 survey admit that they will not be able to name a successor if the CEO had to leave immediately.<sup>2</sup>

In response to several high-profile succession failures at companies like Bank of America, the SEC issued a revised guidance that firms could no longer exclude shareholder proposals related to succession planning from their annual proxy statements. The guideline states that "[r]ecent events have underscored the importance of this board function ... CEO succession planning raises a significant policy issue regarding the governance of the corporation that transcends the day-to-day business matter of managing the workforce"<sup>3</sup>. Given that succession planning "directly impacts" analyst recommendations and credit ratings<sup>4</sup>, why do companies resist disclosures of their succession planning practices? Whole Foods, one of the dozens of companies targeted by shareholders for inadequate disclosures, argues that publicly discussing the company's succession planning "will result in competitive harm", "interfere with ordinary business operations", and present an "attempt to micro-manage the Board of Directors"<sup>5</sup>.

The SEC's Proxy Disclosure Enhancements are aimed at increasing the amount of information companies must provide in their proxy statements regarding succession planning, including the board's leadership structure and its role in risk oversight. However, the SEC does not specifically mandate any particular type of succession planning disclosure. As of 2010, only one-third of

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<sup>1</sup> See "Struggle to find successor for Lewis at BofA", *The Financial Times*, November 11, 2009 and "BofA may name stopgap chief if board needs more time," *Bloomberg*, Nov. 23, 2009.

<sup>2</sup> See 2010 Survey on CEO Succession Planning by Heidrick and Struggles, available at

<https://www.gsb.stanford.edu/sites/gsb/files/publication-pdf/cgri-survey-2010-ceo-succession.pdf>.

<sup>3</sup> See the SEC Staff Bulletin from October 27, 2009, available at <https://www.sec.gov/interps/legal/cfslb14e.htm>.

<sup>4</sup> See *Investors identify their 7 top concerns relative to succession planning*, PR Newswire, January 29, 2010, <http://www.prnewswire.com/news-releases/investors-identify-their-7-top-concerns-relative-to-succession-planning-83022357.html>.

<sup>5</sup> See Form DEF 14-A filed by Whole Foods on Jan. 25, 2010, available at

[https://www.sec.gov/Archives/edgar/data/865436/000120677410000109/wholefoods\\_def14a.htm](https://www.sec.gov/Archives/edgar/data/865436/000120677410000109/wholefoods_def14a.htm).

public companies undergoing CEO turnovers publicly discuss their succession planning procedures. As a result, there is almost no *direct* evidence on how ongoing formal succession planning affects managerial transitions and firm policies following CEO turnover.<sup>6</sup> Our paper aims to fill this gap.

Using hand-collected data on succession planning disclosures in a large sample of public firms undergoing CEO transitions from 1993 to 2010, we study how having a formal succession plan affects the nature and efficiency of turnover decisions and the firm's prospects post-turnover. Several of our contributions deserve attention. First, we provide novel large-scale evidence that succession planning ensures leadership continuity by reducing the likelihood of forced CEO turnover and the incidence of non-CEO executive team resignations, as well as increasing the likelihood that the departing CEO will remain at the company to guide the management transition.

Second, we demonstrate that succession planning is associated with significantly lower stock return volatility surrounding turnover events as well as a much faster decline in volatility with CEO tenure. These results suggest faster learning about CEO ability that contrasts with the convex volatility-tenure relationship previously documented at the average firm. Third, we provide evidence that succession planning significantly improves the efficiency of management transitions by raising turnover-performance sensitivity and ensuring proper filtering of exogenous (industry) factors from CEO firing decisions. Finally, we demonstrate that having a succession plan impacts the structure of CEO pay by more closely aligning the CEO's interests with those of shareholders and reducing agency conflicts following the succession.

Our paper uses a new dataset of succession planning practices at 3,300 public firms experiencing CEO turnovers from 1993 to 2010<sup>7</sup>. We manually examine regulatory filings (8-K and DEF-14A forms) in the years surrounding CEO departures to identify whether a firm has a formal CEO succession plan *prior* to the turnover event. We document that the percentage of firms that use a formal succession plan to guide management transitions has increased from less than 7% in 1993-2003 (pre-Sarbanes Oxley) to almost 22% in 2004-2010 (post-Sarbanes Oxley).

Given the limited prior work on CEO succession planning, we start by providing some general evidence on the role of succession planning in management transitions. Firms with formal

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<sup>6</sup> Our data relies on voluntary disclosure of succession planning practices. Thus, we implicitly assume that the benefits of disclosure (e.g., lower costs of information acquisition by shareholders (Diamond, 1985), lower information asymmetry and lower cost of capital (Diamond and Verrecchia, 1991), high price efficiency and managerial incentives (Kanodia, 1980; Fishman and Hagerty, 1989) outweigh its costs (potential competitive harm, interfering with the firm's operations and reducing board flexibility, as discussed in the Whole Foods case above).

<sup>7</sup> Lucian Taylor and Dirk Jenter generously shared their CEO turnover data with us.

succession plans have a 10% lower likelihood of forcing their CEOs out. This effect is substantial, equal to about one-third of the probability of forced CEO turnover in the turnover sample. Such firms are also marginally more likely to pick an insider successor and about 8% less likely to choose an interim CEO (one-third of the probability of interim CEO succession). In addition, firms with succession plans are 17% more likely to retain their departing CEOs during the transition and significantly less likely to experience departures by non-CEO members of their top management, suggesting that succession planning extends to the whole executive team (Fee and Hadlock, 2004). Taken together, these findings support the claim that succession planning plays a critical role in choosing a successor and ensuring a smooth management turnover.

Next, we study how succession planning affects investor perceptions about the future prospects of the firm. Prior literature has documented a generally positive market reaction to CEO turnovers (Weisbach, 1988; Denis and Denis, 1995; Huson Parrino, and Starks, 2001; Huson, Malatesta, and Parrino, 2004). We do not find a statistically significant difference in short-term cumulative abnormal returns (CARs) between firms with and without succession planning. The only exception is in the sample of voluntary CEO turnovers, where we observe 86 basis points higher CARs but these results are only marginally significant.

In terms of short-term stock return volatility, we find that firms with succession plans see lower short-term volatility in the three days around the announcement of CEO turnover. We confirm these results over the long run, using measures of realized and idiosyncratic return volatility over the first year of the successor CEO's tenure. Relative to firms with no succession plans, firms with succession plans experience significantly lower realized and idiosyncratic volatility, especially in cases of voluntary turnover and when the succession plan provides details about the current CEO transition. These findings extend prior work, which has documented higher stock return volatility around CEO turnover events (see Clayton, Hartzell, and Rosenberg, 2005).

We further study the decline in stock return volatility with CEO tenure to investigate whether the pattern of learning about CEO ability differs between firms with and without succession plans. Our approach extends prior work by Taylor (2013) and Pan, Wang, and Weisbach (2015) who document a convex decline in volatility following CEO turnover, suggestive of a Bayesian learning model where uncertainty about CEO ability gets resolved within the first few years of CEO tenure. We expect that the additional disclosure of information during the succession planning process will allow for faster learning about CEO ability. Indeed, we show a strikingly different pattern of learning at firms with and without formal succession plans. While we find evidence of a convex learning curve at firms without succession plans (closely mirroring the

findings in Pan, Wang, and Weisbach, 2015), we provide evidence of non-convex learning occurring mostly during the first year of the new CEO's tenure at firms with succession plans. Our findings indicate that succession planning affects not only the initial uncertainty but also the nature of learning about the incoming CEO's ability.

Denis and Denis (1995) and Huson et al., (2004) show that operating performance improves in the years after CEO turnover whereas more recent evidence by Fisman, Khurana, Rhodes-Kropf, and Yim (2013) demonstrates a downward trend in performance following CEO transitions. A succession plan may allow a firm to assess more thoroughly its strategic needs and choose a CEO successor with the requisite skills to execute a successful operational strategy. Thus, we conjecture that firms with formal succession plans will experience better post-turnover performance and valuation. Using a difference-in-differences approach based on a performance-matched control sample, we show that firms with succession plans experience 0.87-1.31% higher ROA and 0.81% higher EBITDA ratio than firms with no succession plans. This improvement in ROA (EBITDA ratio) represents about 10% (8%) of the unconditional mean in the sample of public firms. Even more striking are the valuation improvements we document – firms with succession plans experience 16-30% higher Q in the three years post-succession, or 10-18% of the unconditional mean of Q in our sample.

Next, we study whether succession planning improves the efficiency of management transitions. First, we examine whether firms with formal succession plans exhibit stronger turnover-performance sensitivity (that is, negative relationship between CEO turnover and pre-turnover performance). We find that firms with succession plans have four times higher turnover-performance sensitivity (based on ROA) than firms with no succession plans. In terms of EBITDA ratio and Q, firms with succession plans drive the turnover-performance sensitivity of the entire turnover sample. These findings add to prior work (Weisbach, 1998; Fee and Hadlock, 2004, Huson et al., 2001) by showing that succession planning improves the efficiency of management turnover decisions.

Further, we provide evidence that firms with succession plans make more efficient firing decisions by properly filtering out exogenous (industry) information from their assessment of CEO ability. We generally confirm the findings in Jenter and Kanaan (2015) that forced CEO turnovers are driven not only by idiosyncratic firm performance but also by industry-based performance, suggesting that firms do not fully filter industry factors in their firing decisions. In particular, we find that the link between the probability of a forced turnover and industry

performance is attenuated for firms with succession planning, suggesting that in bad times firms with pre-existing succession plans are less likely to fire their CEOs.

Finally, we study the role of succession planning in determining the pay structure of incoming CEOs. We conjecture that a formal succession plan will help a firm expand the pool of qualified applicants, thus increasing its negotiating position in setting CEO pay and better aligning the interests of the successor with those of shareholders. We find evidence in support of both hypotheses. First, we show that firms with succession plans pay about 5-9% less to their incoming CEOs than firms with no succession plans. This result appears to be driven by equity compensation, which is 21-28% lower. Thus, succession planning seems to limit the tendency to overpay incoming CEOs.

Most of the existing CEO turnover literature does not interpret dismissals as an extreme case of pay-for-performance<sup>8</sup>; rather, it suggests that CEO turnover is caused by learning about the CEO's ability or the CEO-firm match quality. This implies that CEO compensation and CEO turnover are driven by different mechanisms. Our findings, in turn, suggest that succession planning affects both the probability of forced turnover and the pay and pay-performance sensitivity ex-post.

We also provide evidence that succession planning is associated with lower post-succession agency costs. Using CEO delta to measure pay-performance sensitivity, we show that incoming CEOs at firms with formal succession plans have higher CEO deltas, suggesting higher CEO pay sensitivity to stock returns, which largely reverses the lower pay-performance sensitivity of the average incoming CEO in the sample. In addition, we see that the share of total compensation awarded to the CEO relative to that of the five highest-paid executives in the firm – “the CEO pay slice” proposed by Bebchuk, Cremers, and Peyer (2011) as a measure of agency conflicts – is three times smaller. Taken together, our results indicate that succession planning plays an important role in alleviating agency costs.

We make several contributions to the literature on CEO succession. To the best of our knowledge, this is the first study to explore the role of formal succession planning in determining CEO turnover decisions and firm policies. Due mostly to data limitations, previous research

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<sup>8</sup> Exceptions include Peters and Wagner (2014) and Kaplan and Minton (2012). Peters and Wagner (2014) uncover a positive cross-sectional relationship between CEO turnover risk and compensation. Kaplan and Minton (2012), on the other hand, suggest a time-series link between dismissal risk and compensation. More precisely, they document a secular downward shift in CEO tenure, and argue that shorter CEO tenure “likely offsets some of the benefits of the increase in CEO pay”.

identifies only a firm that is likely to have a succession plan, rather than a firm that actually has a succession plan. Naveen (2006), the only finance study on succession planning, *indirectly* defines a firm that has a president or a chief operating officer as a firm with a succession plan, and examines the association between this measure of succession planning and different aspects of CEO turnover.<sup>9</sup> Several studies follow Naveen (2006)'s approach (Kale, Reis, and Venkateswaran (2009), Kini and Williams (2012)) but their focus is not on succession planning.

We also add to recent work by Pan, Wang, and Weisbach (2015), who show that there is a convex decline in stock return volatility following CEO turnover. Our results draw a sharp distinction between firms with and without pre-existing succession plans: following CEO turnover there seems to be a non-convex decline in stock return volatility at firms with succession plans, consistent with the notion that most learning about CEO ability at these firms occurs in the first year after succession. Our results are also in line with Taylor (2010), who models CEO turnover costs as the sum of the real cost to shareholders and the effective personal utility cost to the board. We find that firms with succession plans make more efficient CEO turnover decisions, suggesting that succession planning may reduce the overall cost of management transitions. Our results also extend the work of Jenter and Kanaan (2015) by providing evidence that firms with succession plans are less likely to fire their CEOs during bad times, indicating that these firms are better at filtering out exogenous information from their assessment of CEO ability.

Our findings also contribute to the literature on the sensitivity of CEO turnover to performance. Prior work views the board's decision to fire the CEO in response to poor performance as a manifestation of the quality of internal monitoring, and has examined its relation with other governance mechanisms. For example, Goyal and Park (2002) find that it is negatively associated with CEO-chairman duality. Huson, Parrino, and Starks (2001) document no relation between turnover-performance sensitivity and institutional ownership, whereas Hillier, Linn, and McColgan (2005) establish a positive association using equity issuance as a proxy for institutional monitoring. Our results suggest that turnover-performance sensitivity is positively correlated with succession planning.

Finally, our findings demonstrate the importance of succession planning in alleviating the "pleasing of the incoming manager" aspect of the managerial power hypothesis (Bebchuk and Fried, 2003). Our results are also in line with the argument that an economy-wide improvement in corporate governance may not lead to higher pay in equilibrium if the change also makes

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<sup>9</sup> The correlation between Naveen (2006)'s indirect measure and our direct one is 0.04, significant at 5% level.

CEOs' outside opportunities less attractive (Edmans and Gabaix, 2010; Frydman and Jenter, 2010).

## **2. Hypotheses development**

Before we formulate specific hypotheses for our tests, we note that our study uses voluntary disclosure of succession planning practices to proxy for whether a firm has a formal succession plan in place. Thus, we implicitly assume that the benefits of disclosing a succession plan outweigh its costs. The benefits of disclosure are well documented in the literature and include lower information acquisition costs by investors (Diamond, 1985), lower information asymmetry facing shareholders and lower cost of capital (Diamond and Verrecchia, 1991), and higher price efficiency and managerial investment incentives (Kanodia, 1980; Fishman and Hagerty, 1989). As we will show, the benefits of succession planning disclosure also include lower firm uncertainty around CEO turnovers and higher efficiency of management transitions. The costs of disclosure, on the other hand, are less obvious. Costs may arise in the production and communication of information as well as the dissemination of information that may benefit competitors (Verrecchia, 1983; Dye, 1986). As discussed earlier in the case of Whole Foods, which argued against a shareholder proposal for additional disclosure about the company's succession planning, such disclosure "will result in competitive harm", "interfere with ordinary business operations", and presents an "attempt to micro-manage the Board of Directors".

Below we summarize some of the findings of prior work regarding the causes and consequences of CEO turnover decisions and relate these findings to succession planning. Since there is almost no direct evidence on how formal succession planning impacts managerial transitions and firm outcomes around CEO turnover events, we start with a more general investigation of the role of succession planning in ensuring leadership continuity.

One of the primary goals of implementing a succession plan is to provide stability in firm management. A succession plan contains a set of policies and procedures that enable boards to actively and continuously monitor CEO performance to reduce the likelihood of an abrupt dismissal. Thus, firms with pre-existing succession plans will be less likely to experience forced CEO turnover relative to firms without succession plans in place.

Another critical factor in ensuring a smooth management transition is whether to choose a successor from inside or outside the firm. Inside CEO successors are typically appointed when the firm is performing well and reflect intent to maintain strategic continuity whereas outside

successors are chosen when the firm is performing poorly and suggest a willingness to initiate strategic change (Parrino, 1997). Appointing an outsider is also considered more costly and justified when the expected improvement in firm performance following the turnover is larger (Huson et al., 2004).

The typical succession plan in our sample relies heavily on the participation of the departing CEO, and hence, is more likely to favor policy continuity over strategic change. Thus, to ensure a smooth management transition, corporate boards have an incentive to generate a succession plan that would groom the next CEO from within the firm, lessen the need to delay the appointment of a permanent replacement, and retain the departing CEO in a transitional role. As argued by Fee and Hadlock (2004), favoring an insider replacement is also associated with a reduced rate of non-CEO management departures around CEO turnovers.

Hypothesis 1A (Forced successions): *Firms with pre-existing succession plans are less likely to experience forced CEO successions.*

Hypothesis 1B (Leadership continuity): *Firms with succession plans are more likely to (i) pick an internal successor, (ii) hire a permanent replacement rather than an interim CEO, (iii) retain the departing CEO in a support function during the transition, and (iv) experience fewer non-CEO executive changes after the turnover event.*

A large literature investigates the market's reaction to CEO turnovers. In terms of abnormal announcement returns, the evidence is mixed, but on balance, indicative of a positive market reaction. For example, Weisbach (1988), Denis and Denis (1995), Huson, Parrino, and Starks (2001), and Huson, Malatesta, and Parrino (2004) find positive abnormal returns around CEO turnover events, and even stronger positive market reaction to forced CEO turnovers. These results reflect positive investor expectations of post-turnover outcomes.

A CEO change raises investor uncertainty about the firm's future prospects and policies, which is captured by the second moment of stock returns (volatility). Clayton, Hartzell, and Rosenberg (2005) find an increase in stock return volatility surrounding CEO transitions, especially when they are forced. They argue that the volatility consequences of a CEO turnover can be significant and should be taken into account by the board in planning a transition. Having a formal succession plan should reduce uncertainty about the firm's future prospects as a well-mapped out succession process will ensure that the incoming CEO's ability is less of an "unknown quantity" and provide continuity in leadership. Consequently, relative to firms with no succession plans,

firms with succession plans are expected to experience lower short- and long-term volatility around CEO turnovers. It is an empirical question whether this lower volatility would be observed for both voluntary and forced CEO changes. To the extent that forced CEO turnovers are less planned, it could be that volatility may remain high even if a succession plan is in place.

In addition, Taylor (2013) estimates a structural model of CEO wage dynamics, which predicts a decline in stock return volatility with CEO tenure. Pan, Wang, and Weisbach (2015) formally show that volatility indeed drops from an “unusually high level” at the time of the CEO change and document a convex decline in volatility following the turnover event. For firms with pre-announced succession plans, we expect that the additional level of disclosure associated with the succession planning process would lead to a faster decline in stock return volatility post-succession, implying faster learning about CEO ability.

Hypothesis 2A (Abnormal volatility): *Firms with pre-existing succession plans are more likely to experience lower short- and long-term return volatility surrounding CEO turnovers.*

Hypothesis 2B (Learning about CEO ability): *Firms with succession plans are likely to experience a faster drop in stock return volatility, associated with faster learning about the incoming CEO’s ability.*

In terms of pre-turnover performance, it is well documented that CEO turnovers follow periods of poor stock return and operating performance (Weisbach, 1998; Fee and Hadlock, 2004; Huson et al., 2001). Prior work also relates the board’s decision to fire the CEO in response to poor performance to other governance mechanisms (Goyal and Park, 2002; Huson et al., 2001; Hillier, Linn, and McColgan, 2005). Succession planning allows the board to better assess the need for and plan a management transition; consequently, we expect that firms with formal succession plans will have stronger turnover-performance sensitivity.

Hypothesis 3A (Turnover-performance sensitivity): *Firms with formal succession plans are likely to have stronger turnover-performance sensitivity; that is, such firms will be more likely to experience a turnover event following poor performance.*

In contrast to a small earlier literature studying the relationship between CEO turnovers and industry performance (Gibbons and Murphy, 1990; Barro and Barro, 1990), recent work by Jenter and Kanaan (2015) shows that boards fail to completely filter out exogenous (industry) shocks in making CEO dismissals. As a result, poorly performing CEOs are more likely to be

forced out in recessions than in booms. If a succession plan allows a firm to make more efficient CEO retention decisions, then we expect that firms with a succession plan would be less likely to dismiss their CEOs for reasons unrelated to firm-specific performance.<sup>10</sup>

Hypothesis 3B (Relative Performance Evaluation): *Firms with pre-existing succession plans are less likely to fire the incumbent CEO during bad times.*

A large prior literature documents that operating performance improves in the years after the turnover event (Denis and Denis, 1995; Huson et al., 2004). In contrast, more recent evidence by Fisman et al. (2013) indicates a downward trend in performance following CEO transitions. We conjecture that firms with formal succession plans will have relatively better performance following the CEO change.

Hypothesis 3C (Post-turnover performance): *Firms with succession plans are more likely to experience better operating performance following the turnover event.*

Having a well mapped out process for CEO succession allows a firm's board to more accurately determine the essential qualities of a replacement CEO as well as expand the pool of qualified candidates. That is, the presence of a succession plan helps the board to more accurately assess a candidate's ability, appropriately tailor the compensation contract, and hire a replacement with lower ex-ante dismissal risk (Peters and Wagner, 2014). As a result, firms with succession plans should be less likely to overpay for a high-quality replacement CEO. Note that a lower compensation does not imply underpayment but rather no overpayment because CEO candidates, subject to their own participation constraints, will not accept compensation below their abilities or expected contributions to firm performance.

In addition, such firms should be in a better position to hire successors whose interests are closely aligned with those of firm shareholders, as captured by higher pay-performance sensitivity. Given the total amounts paid out to departing CEOs, either in the form of severance pay (Rau and Xu, 2013) or golden handshakes (Yermack, 2006b), boards have an incentive to structure the incoming CEO's compensation contract in a way that mitigates potential agency frictions (Edmans and Liu, 2011; Yermack, 2006a)

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<sup>10</sup> There can be other explanations for why CEOs are fired when peer firms are not performing well. Eisfeldt and Kuhnen (2013), for example, show in a competitive assignment framework that it can be optimal to fire the CEO in bad industry times if industry shocks change the outside options facing firms and CEOs (e.g., if they change required managerial skills).

Hypothesis 4A (CEO Pay): Firms with formal succession plans are less likely to overpay successor CEOs.

Hypothesis 4B (Pay-performance sensitivity): Firms with succession plans are more likely to increase the incoming CEO's pay-performance sensitivity and better align the CEO's interests with those of shareholders.

### **3. Data on CEO turnover and succession**

The primary dataset used in this paper is a sample of 3,300 CEO turnovers over 1993-2010, generously provided to us by Lucian Taylor and Dirk Jenter. The sample includes firms in S&P's ExecuComp database, which consists of all firms in the S&P 500, MidCap and SmallCap indexes. About 900 of the CEO turnovers are classified as forced and include: (i) CEOs who are reported in the press to be fired, forced out, or retiring/resigning due to policy differences or pressure, (ii) CEOs below the age of 60 for whose departures the press does not report the reason as death, poor health, or the acceptance of another position, and (iii) CEOs whose retirement is not announced in the press at least six months before the succession. As is common in the literature, we also exclude from the analysis CEO turnovers due to mergers or spin-offs.

As described in Table 1, the frequency of CEO turnovers at public firms in the Compustat database increases from 2.5% in 1993-2003 (pre-SOX period) to 3.3% in 2004-2010 (post-SOX). The highest rate of CEO turnovers is in 1999-2001 (Internet bubble) and 2007-2008 (Great recession). The frequency of forced CEO turnovers is also increasing, from 25.7% of all CEO successions in 1993-2003 to 30.0% in 2004-2010.

[Insert Table 1]

For each of the 3,300 CEO turnovers over 1993-2010, we manually examine regulatory filings in the year before and after the CEO departure to identify whether the firm disclosed a formal CEO succession plan *prior* to the CEO turnover event. Specifically, we look at 8-K filings, item 5.02 related to the departure of an outgoing CEO and the naming of an incoming CEO, and any press releases filed with the firm. We also review the disclosures provided in the firm's proxy statements (DEF-14A) in the year of the CEO change and in the year prior to the change in order to ascertain whether the board provides information regarding its CEO succession planning prior to the transition.

Companies tend to disclose information about their succession plans in a variety of ways, as seen in Appendix B, which presents a few examples. Importantly, we make sure that the firm follows a pre-existing CEO succession plan rather than an ad-hoc procedure to replace a particular CEO. We collect both (i) general descriptions of the CEO succession process at the firm, and (ii) information about how the succession plan applies to a specific departing CEO. We code succession planning (SP) as one if the firm discloses (i), regardless of whether (ii) is also reported. If the firm discloses information pertaining to the departing CEO, we code an additional variable – *SP discusses current CEO transition* – as one. In addition, we code a third indicator variable – *CEO remains during transition*, when the succession plan mentions that the departing CEO will remain at the firm in a different function (e.g., chairman, director, etc.) to aid with the transition.

As seen in columns 5 and 6 of Table 1, about 13% of the firms with CEO turnover events report details of their succession plans. The tendency to disclose such information has increased over the sample period, from 6.9% in 1993-2003 (pre-SOX period) to 21.9% in 2004-2010 (post-SOX). Succession plan disclosures more than double between 2002 and 2004 (from 10.1% to 25%), coinciding roughly with the adoption of the SOX act.

Panel A of Table 2 reports firm, board, and CEO characteristics of the CRSP-Compustat sample (48,625 firm years) and the CEO turnover sample (3,264 firm years). All variables are defined in Appendix A. As seen in Panel A, 72% of the firms in our CEO turnover sample choose insider CEOs and 26% of them appoint interim CEOs. In addition, in more than half of all CEO successions, the departing CEO remains with the firm during the transition, most often as a chairman or a director. Note also that slightly over one-third of CEO successions are accompanied by non-CEO resignations, defined as departures of other top four executives within three years following the CEO turnover.

[Insert Table 2]

Panel B of Table 2 compares firms in the CEO turnover sample based on whether they have a succession plan in place. Firms with succession plans are less likely to experience a forced CEO turnover, more likely to pick an insider successor, and less likely to appoint an interim CEO. In addition, such firms are more likely to retain their outgoing CEOs during the transition process. These statistics provide some preliminary evidence that the presence of a succession plan may have important consequences for the nature of CEO turnovers.

Firms with succession plans also have a slightly lower market-to-book ratio (*MTB*), are more profitable (by *EBITDA/Assets* and *ROA* measures), larger (*Log of total assets*) and older. In addition, they have higher institutional ownership and number of block owners. In Appendix C, we present estimates of OLS regressions, which confirm that larger and older firms are more likely to disclose succession plans. Market-to-book ratio and performance do not appear to be significant determinants of succession planning. Firms with older CEOs and CEOs with longer tenure are more likely to have succession plans. In terms of governance characteristics, board independence seems to be the only consistent determinant of succession planning.

#### **4. Succession planning and leadership continuity**

Given the limited prior work on CEO succession planning, we start by providing some general evidence on the role of succession planning in management transitions. First, we investigate whether firms with pre-existing succession plans are less likely to force out their CEOs (*Hypothesis 1A*). Then, we examine whether such firms are more likely to pick an insider successor, hire a permanent rather than an interim CEO, retain the incumbent CEO during the transition process, and experience non-CEO executive changes around the turnover event (*Hypothesis 1B*).

The first model in column (1) of Table 3 presents OLS estimates of the probability of a forced CEO turnover. The main explanatory variable is an indicator – *SP* – for the presence of a pre-announced succession plan to guide the management transition. We also add an indicator for whether the succession plan includes a discussion pertaining to the current CEO turnover and an indicator for whether the departing CEO remains at the firm during the transition process. As firm controls, we include lagged values of firm size, *ROA*, market-to-book as well as institutional ownership and number of block owners. All variables are defined in Appendix A.

[Insert Table 3]

Consistent with the univariate evidence in Table 2, firms with succession plans have 10% lower probability of experiencing a forced CEO turnover in comparison to firms without succession plans. In terms of economic magnitude, this represents about one-third of the probability of forced turnover in the turnover sample. The likelihood of forced turnover is also significantly lower if the succession plan refers specifically to the departing CEO and if the CEO remains with the company during the transition. The coefficient on *ROA* is negative and highly statistically significant, confirming prior findings of a strong negative relationship between pre-turnover

performance and forced turnover (high turnover-performance sensitivity). It is also interesting to note that neither institutional ownership nor the number of institutional block owners has a statistically significant association with forced CEO turnover after controlling for the presence of a succession plan.

As seen in column (2), firms with pre-existing succession plans are only marginally more likely to hire a successor from within the firm. This association is stronger at firms with better recent performance and firms that retain their outgoing CEO during the management transition. It is important to note that having a succession plan typically involves both grooming internal candidates and searching through the external CEO talent pool. None of the results in this paper are affected by including a control for an insider successor. This is consistent with the conclusions of a recent report by the Institute of Executive Development and Stanford University's Rock Center for Corporate Governance: "Succession planning and internal talent development are treated as distinct activities rather than one continuous program to gradually develop leadership skills in the organization"<sup>11</sup>.

The coefficient estimate in column (3) suggests that firms with succession plans are 7.5% less likely to choose an interim CEO, presumably because a succession plan raises the preparedness of the firm for a management transition. This effect is economically significant, representing about one-third of the probability of interim succession in the turnover sample. This finding is stronger for firms that provide more details about the current CEO transition.

The model in column (4) of Table 3 suggests that firms with succession plans are 17% more likely to retain their departing CEOs in a support function to ensure a smooth management transition. This association is stronger at firms with better recent performance and higher market-to-book ratios as well as at firms that discuss in more detail the current CEO transition. The results in column (5) show that firms with succession plans are significantly less likely to lose other members of their top management teams during the three years following the succession. This result suggests that the role of a succession plan extends to the whole top management team rather than just the CEO, consistent with the findings of Fee and Hadlock (2004) that firms evaluate their management teams in groups.

Overall, the results in Table 3 provide evidence that succession planning plays a significant role in choosing the successor CEO and ensuring a smooth management transition.

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<sup>11</sup> The 2014 Report on Senior Executive Succession Planning and Talent Development is available at <https://www.gsb.stanford.edu/sites/gsb/files/publication-pdf/cgri-survey-2014-senior-executive-succession.pdf>.

## 5. Succession planning and firm uncertainty

### 5.1. Abnormal stock return volatility

Next, we study whether the presence of a succession plan impacts investor perceptions of the future prospects of the firm. First, we examine whether having a succession plan affects announcement returns surrounding the turnover event. Then, we present evidence that firms with succession plans are more likely to see lower short- and long-term stock return volatility around CEO successions (*Hypothesis 2A*).

In terms of abnormal announcement returns, prior literature has documented a generally positive market reaction to CEO turnovers. For example, Weisbach (1988), Denis and Denis (1995), Huson, Parrino, and Starks (2001), and Huson, Malatesta, and Parrino (2004) find positive abnormal returns around CEO turnovers, and even more positive market reaction to forced CEO successions. In terms of stock return volatility, Clayton, Hartzell, and Rosenberg (2005) show an increase in return volatility surrounding CEO transitions, especially when they are forced.

In columns (1)-(3) of Table 4, we present OLS regression estimates of three-day cumulative abnormal returns (CARs) around the CEO turnover event. Abnormal returns are calculated with respect to the Fama-French three-factor model with the market, SMB and HML factors estimated from day -244 to day -6 before the turnover announcement, following Brown and Warner (1985). Since prior literature has documented more positive returns and higher return volatility in forced CEO successions, we present results separately for all, voluntary, and forced turnover events.

[Insert Table 4]

Our results suggest that firms with pre-existing succession plans do not experience significantly different announcement CARs in comparison to firms without succession plans. The only exception is in the sample of voluntary CEO turnovers, where we observe 86 basis points higher CARs but the coefficient is only marginally significant.<sup>12</sup> Note also that the indicator for whether the departing CEO aids the management transition has a positive and highly statistically significant coefficient in the full sample (column (1)), and this result seems to be driven by forced successions (column (3)).

In columns (4)-(6) of Table 4, we report short-term stock return volatility (measured by *Log of CAR squared*) in the three days around the CEO turnover event. Starting with all CEO

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<sup>12</sup> The average CAR for voluntary successions is 4.8% and that for forced successions is 3.5%, and the difference is significant at the 1% level. The average CAR for all successions is 4.4%.

successions in column (4), we find that firms with succession plans experience lower short-term volatility relative to firms with no succession plans. Comparing columns (5) and (6) suggests that these results are driven by forced successions, as seen by the statistical significance and higher economic magnitude of the coefficient in column (6). Note also that the coefficient on short-term volatility is negative and statistically significant when the disclosure contains specific details about the departure of the current CEO. Short-term volatility is also strongly negatively associated with lagged operating performance, as seen by the statistically significant coefficient on ROA in columns (4)-(6).

In Panel B, we study realized stock return volatility (columns (1)-(3)) and idiosyncratic volatility (columns (4)-(6)). As additional controls we include the Fama-French market, SMB and HML factors. Both volatility measures and the Fama-French factors are estimated using daily stock returns over the year of CEO succession. Our results document negative long-term return volatility for all and voluntary successions at firms with pre-existing succession plans, relative to firms with no succession plans. The coefficient on forced successions is either marginally or not statistically significant, suggesting that volatility following forced turnovers remains high even in the presence of a succession plan. Both realized and idiosyncratic volatility are negative and statistically significant when the disclosure contains details about the departing CEO. In addition, we observe lower volatilities at larger and more profitable firms and firms with higher institutional ownership and fewer block owners. The latter findings are in line with prior work (see Weisbach, 1988; Huson et al., 2001).

Overall, the evidence in Table 4 indicates that firms with succession plans tend to experience lower short- and long-term volatility around CEO turnovers, relative to firms without succession plans. These findings suggest that succession planning is associated with lower uncertainty about the future prospects of the firm and/or lower uncertainty about the ability of the incoming CEO.

## **5.2. Learning about CEO ability**

Taylor (2013)'s structural model of CEO wage dynamics predicts a decline in stock return volatility with CEO tenure. Pan, Wang, and Weisbach (2015) take this analysis further and document a convex decline in volatility following CEO succession, suggesting that learning about CEO ability is much faster in the first year after the turnover event than in the second or third year. As they point out, these findings are consistent with a Bayesian learning model where uncertainty about CEO ability is highest when the CEO steps into office. The lower short- and long-term volatility we document at firms with succession plans suggests that succession

planning assures investors that the incoming CEO's ability is less of an "unknown quantity". Here, we continue this analysis by investigating whether the nature of learning about CEO ability is different at those firms. As postulated by *Hypothesis 2B*, we expect that the additional disclosure during the succession planning process will allow for faster learning about CEO ability, as captured by a faster decline in stock return volatility following the CEO transition.

In Table 5, we study the nonlinear trend in stock return volatility during the successor CEO's tenure. Panel A presents piecewise linear spline regressions, where tenure in year  $i$  is the spline for the twelve months in the  $i$ -th year following the turnover; Panel B presents polynomial model specifications. Each panel reports both realized (columns (1)-(3)) and idiosyncratic (columns (4)-(6)) monthly volatilities. Columns (1) and (4) present results for all firms in our turnover sample whereas columns (2) and (5) focus on firms without succession plans and columns (3) and (6) study firms with succession plans. We follow the estimation approach in Pan, Wang, and Weisbach (2015) and include the same control variables.

[Insert Table 5]

The results in columns (1) and (4) of Panel A closely mirror the findings in Pan et al. (2015). Stock return volatility declines faster in the first year of CEO tenure than in the second or third year, suggesting a convex learning curve about CEO ability. Columns (2) and (5) confirm these findings in the sample of firms without succession plans. However, the results for firms with succession plans (reported in columns (3) and (6)) point to a different learning pattern. First, the coefficients on all tenure years are several times smaller in magnitude, implying less learning. Second, the coefficient on year one of CEO tenure is the only statistically significant one, indicating that most learning about CEO ability occurs during the first year in which the CEO is in office. These results suggest that learning about CEO ability is faster at firms with formal succession planning procedures.

In Panel B, we predict a firm's realized and idiosyncratic volatility as a function of CEO tenure and CEO tenure squared. We find the expected convex relationship (i.e., negative linear term and positive quadratic term) in the sample of all turnovers and turnovers at firms without succession plans, similar to the findings of Pan et al. (2015). However, the results for firms with succession plans (columns (3) and (6)) suggest a different learning pattern; the quadratic term is statistically insignificant for both measures of volatility. Thus, learning about CEO ability at firms with succession plans does not appear to have the usual convex relationship observed at the average firm in the sample.

These results are also clearly observable in Figure 1, which plots differences in the means of realized and idiosyncratic volatility between firms with and without succession plans over the 96 months around CEO turnover. Even though these firms experience similar pre-trend patterns in volatility, the decline in both measures of volatility is faster for firms with succession plans.

[Insert Figure 1]

Overall, our results in Table 5 and Figure 1 suggest that the presence of a formal succession plan appears to change the nature of learning about CEO ability. Learning is not convex and occurs mostly in the first year of CEO tenure.

## 6. Succession planning and firm performance

### 6.1. Efficiency of CEO performance evaluation

A large prior literature documents that CEO turnovers follow periods of poor stock return and operating performance (Weisbach, 1998; Fee and Hadlock, 2004, Huson et al., 2001). Here, we study whether firms with succession plans exhibit a stronger negative relationship between CEO turnover and pre-turnover performance (*Hypothesis 3A*), which would suggest a more efficient CEO succession process.

Table 6 reports estimates of OLS models of CEO turnover as a function of (lagged) performance and its interaction with an indicator for whether a firm has a pre-existing succession plan, *Firm with SP*. We measure operating performance by ROA in columns (1)-(2) and EBITDA/Assets in columns (3)-(4), and measure valuation by Tobin's  $Q$  in columns (5)-(6). Odd numbered columns include year fixed effects whereas even-numbered columns include industry-year fixed effects. All regressions include firm fixed effects and cluster standard errors at the firm level.

[Insert Table 6]

The coefficient on *Performance* is negative and statistically significant in the ROA regressions (columns (1) and (2)) but not significant in the EBITDA/Assets and  $Q$  models. However, the interaction term between *Firm with SP* and performance/valuation measures is negative and statistically significant in all models, suggesting that the turnover-performance sensitivity during our sample period appears to be driven by firms with succession plans. For example, the results in column (2) suggest that a firm with a succession plan has four-times the turnover-performance sensitivity of a firm without a succession plan. We find even stronger results in terms of

EBITDA/Assets and Q, indicating that succession planning appears to be associated with a more prompt response to deteriorating firm performance and valuation. These findings, combined with our earlier result that firms with succession planning are less likely to force out their CEOs, provide indication that succession planning improves the efficiency of management transitions.

To provide further evidence in support of the above claim, we investigate whether firms with succession plans are more likely to base CEO firing decisions on relevant firm-specific information. Recent work by Jenter and Kanaan (2015) shows that boards fail to completely filter out exogenous (industry) shocks in making CEO dismissals. As a consequence, they document a higher likelihood of forced CEO turnovers in bad times than in good times. We conjecture that a succession plan will make it less likely for firms to dismiss their CEOs for reasons unrelated to firm-specific performance (*Hypothesis 3B*).

In Table 7, we follow the two-stage regression approach in Jenter and Kanaan (2015) and study whether succession planning improves the efficiency of turnover decisions by reducing the frequency of forced CEO turnovers following bad industry performance. In Panel B, we report the first-stage regressions where we predict a firm's stock returns using contemporaneous equally-weighted (columns (1)-(2)) and value-weighted (columns (3)-(4)) industry stock returns. In Panel A, we regress forced CEO turnover on two components – the predicted value based on industry performance and the residual capturing idiosyncratic firm performance. Columns (1) and (4) present results for all firms in our turnover sample whereas columns (2) and (5) focus on firms without succession plans and columns (3) and (6) study firms with succession plans. All models include industry and year fixed effects and cluster standard errors by industry.

[Insert Table 7]

The results for all firms and firms without succession plans (reported in columns (1) and (4), and (2) and (5), respectively) confirm the findings in Jenter and Kanaan (2015) that forced CEO turnovers are determined by not only idiosyncratic firm performance but also predicted (industry) performance. That is, poor industry performance increases the likelihood of forced CEO turnover, suggesting that firms do not fully filter out industry performance in their firing decisions. In contrast, we find that firms with succession planning do a good job in using mostly firm-specific information when making CEO firing decisions, as seen in columns (3) and (6).

There is a large body of existing literature that supports the hypothesis that boards filter industry and market shocks from firm performance before deciding whether to fire their CEOs (Warner, Watts, and Wruck, 1988; Morck, Shleifer, and Vishny, 1989; Barro and Barro, 1990; Gibbons

and Murphy, 1990; Kaplan and Minton, 2012). Our results for firms with succession plans broadly support this view. They are consistent with the notion that firms with succession plans base CEO-related decisions on the goodness of fit between the CEO and the job, and the CEO and the firm.

Overall, the evidence presented in Tables 6 and 7 indicates that succession planning improves the efficiency of management transitions by raising turnover-performance sensitivity and properly filtering out industry factors in CEO dismissals.

## **6.2. Post-succession performance**

Denis and Denis (1995), Huson et al. (2004), and others, show that operating performance improves in the years after the CEO turnover whereas more recent evidence by Fisman et al. (2013) documents a downward trend in performance following CEO transitions. In this subsection, we study changes in long-term operating performance and valuation in the three years before and after CEO succession. We hypothesize that a succession plan would allow a firm to assess more thoroughly its strategic needs and find a CEO successor with the requisite skills to execute a successful operational strategy. Hence, we conjecture that firms with pre-existing succession plans will experience better post-succession operating performance and valuation (*Hypothesis 3C*).

[Insert Figure 2]

Figure 2 compares changes in operating performance and valuation around CEO turnover. We measure operating performance by ROA and EBITDA/Assets, and valuation by Q. All measures are industry-year adjusted by subtracting the median values of the corresponding Fama-French (FF) 48 industry. Three observations are worth mentioning. First, both operating performance and valuation display a decreasing trend in the years around CEO turnovers, consistent with Fisman et al. (2013). Second, both performance measures exhibit similar trends in firms with and without succession plans before year -1 but start to diverge thereafter. Third, the performance gap is driven by firms without succession plans suffering performance deterioration. The last two observations imply that firms with succession plans outperform firms without succession plans starting in the year before the CEO turnover. Below, we test formally whether the outperformance of firms with succession plans remains after controlling for firm characteristics in a difference-in-differences framework.

Table 8 reports coefficients from OLS regressions of firm performance on an indicator for whether a firm has a pre-existing succession plan – *Firm with SP* – and an indicator *After*, which captures the period following the turnover event. We follow the approach in Denis and Denis (1995) and Huson et al. (2004) and define the pre-event window (*After* = 0) from year -3 to year -1 before succession and the post-event window (*After* = 1) from year -1 to year +3 around the succession. As in these studies, we perform the analysis on a performance-based control group where each firm with a succession plan is matched to a firm without a succession plan in the same year and FF 48 industry on performance measures (ROA in year  $t-1$  and change in ROA from year  $t-2$  to year  $t-1$ ).<sup>13</sup> We measure operating performance by ROA in columns (1)-(2) and EBITDA/Assets in columns (3)-(4), and measure valuation by Tobin's  $Q$  in columns (5)-(6). Odd numbered columns include year fixed effects whereas even-numbered columns include industry-year fixed effects. All regressions include firm fixed effects and cluster standard errors at the firm level.

[Insert Table 8]

The coefficient on *After* is negative and statistically significant in all models, indicating that firms in our turnover sample generally experience deterioration in both performance and valuation metrics following a management succession. This result is in contrast to the findings in Denis and Denis (1995) and Huson et al. (2004) who cover 1995-1998 and 1971-1995, respectively, but in line with Fisman et al. (2013) who study the more recent period of 1994-2007. We investigate this further and document that both operating performance and valuation experience a sharp downward drift during our sample period (1993-2010), particularly pronounced after 1997.

The results in columns (1)-(2) demonstrate that firms with succession plans experience 0.87-1.31% higher ROA in the three years following a CEO turnover, relative to firms with no succession plans. Based on column (2), the economic magnitude of the difference in post-succession change in ROA between the two types of firms is about 10% of the unconditional mean of ROA (reported in Panel A of Table 2). Column (4) shows similar results in terms of EBITDA/Assets; firms with succession plans improve their operating performance by 0.81%

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<sup>13</sup> Firms without matches in the same FF 48 industry are matched to firms within the same FF 12 industry. Similarly, Huson et al. (2004) use 2-digit SIC codes (64 industries) and, for firms without matches, 1-digit SIC codes (11 industries). Our matching procedure finds at least one match for 400 out of the 421 firms with succession plans. These include 364 (36) firms in the same FF 48 (12) industry.

more than firms with no succession plans. In terms of economic magnitude, this represents about 8% of the unconditional mean in the Compustat sample.

The results in terms of Tobin's  $Q$  are even more striking; firms with succession plans experience 16-30% higher valuations in the three years post-succession, relative to firms with no succession plans. The economic magnitudes are substantial – 10-18% of the unconditional mean of  $Q$  in our sample. Note also that institutional ownership has a positive association with operating performance and valuation (confirming findings in Huson et al., 2004) whereas the number of blockholders has a negative association with both performance and valuation. In unreported results, we confirm that the inclusion of these two governance measures does not appear to reduce the statistical or economic significance of the interaction term, suggesting that succession planning captures information beyond typical governance metrics.

The results in Table 8 suggest that formal succession planning is associated with economically significant improvements in operating performance and valuation in the years following a management change.

## **7. Succession planning and CEO pay**

Finally, we study the role of succession planning in determining the pay structure of incoming CEOs. A succession plan could impact CEO pay in a number of ways. First, it could help the board of directors to better determine the necessary requirements for a new CEO, thus expanding the pool of qualified candidates and allowing for a more targeted selection process. Second, a well mapped out succession plan increases the preparedness of the firm and could increase its bargaining power in negotiating the incoming CEO's pay package. As a result, we conjecture that firms with succession plans would be less likely to overpay their new CEOs (*Hypothesis 4A*) and ensure that the compensation plan aligns the interests of the CEO with those of shareholders (*Hypothesis 4B*).

In Table 9, we present difference-in-differences regression results, comparing post-turnover CEO pay between firms with and without succession plans. As in previous tests, the indicator *After* is coded as one for years -1 to +3 around the succession and coded as zero for years -3 to -1 before the turnover event (as in Huson et al., 2004). We measure CEO compensation by the log of total compensation in columns (1)-(2), the log of equity compensation in columns (3)-(4), and the log of cash compensation in columns (5)-(6). As in Table 8, we perform this analysis on a performance-based control group where each firm with a succession plan is matched to a firm

without a succession plan in the same year and FF 48 industry on performance measures. Odd numbered columns include year fixed effects whereas even-numbered columns include industry-year fixed effects. All regressions include firm fixed effects and cluster standard errors at the firm level.

[Insert Table 9]

The coefficient on *After* is negative and statistically significant only in the last two columns, indicating that incoming CEOs generally receive a lower cash component as part of their compensation, relative to departing CEOs. Note however that the coefficient on *After* is not significant in columns (1) and (2), suggesting a statistically insignificant difference between the total compensations of departing and successor CEOs at the average firm.

The interaction term between *Firm with SP* and *After* in column (1) is negative and statistically significant, implying that firms with succession plans are less likely to overpay incoming CEOs. In terms of economic magnitude, such firms pay about 8.8% less than their counterparts with no formal succession plans. Adding industry-by-year fixed effects in column (2) reduces slightly the magnitude and statistical significance of this result. The findings in columns (3) and (4) reveal that the main difference between the two types of firms is in terms of equity compensation – firms with succession plans pay 21% to 28% lower equity compensation to their new CEOs than firms with no succession plans. This result suggests that boards of firms without succession plans may have insufficient understanding of the incoming CEO’s ability, and end up paying more in equity. The higher equity compensation could be an outcome of the boards’ contracting on higher uncertainty about CEO ability and finding it more difficult to precisely align the CEO’s interests with those of shareholders. We also observe a positive association between CEO pay and institutional ownership and a negative association between CEO pay and the number of blockholders.

We continue our analysis of CEO pay with a focus on measures of agency costs. In Table 10, we use quartiles of CEO pay delta to measure pay-performance sensitivity in columns (1) and (2), quartiles of CEO pay vega to capture CEO risk-taking in columns (3) and (4), and CEO pay slice in columns (5) and (6).<sup>14</sup> As in Bebchuk, Cremers, and Peyer (2011), CEO pay slice is defined as the share of total compensation awarded to the CEO relative to that of the five highest-paid executives in the firm. While CEO pay slice reflects the relative importance of the CEO and/or the extent to which the CEO extracts rents, existing research finds that CEO pay slice is

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<sup>14</sup> We use quartiles of CEO delta and vega to account for their non-normal distributions.

positively associated with agency conflicts (see Bebchuk, Cremers, and Peyer, 2011; Chen, Huang, and Wei, 2013). We perform this analysis on our performance-based matched sample. Odd numbered columns include year fixed effects whereas even-numbered columns include industry-year fixed effects. All regressions include firm fixed effects and cluster standard errors at the firm level.

[Insert Table 10]

The negative and statistically significant coefficient on *After* in columns (1) and (2) suggests that the average incoming CEO has a lower pay-performance sensitivity, relative to the average departing CEO. However, this effect is reversed for firms with succession plans, as seen from the positive and statistically significant coefficient on the interaction term, suggesting that these firms do a better job in aligning the interests of the new CEO with those of shareholders.

Columns (3) and (4) reveal that the average incoming CEO takes less risk than the average departing CEO but this effect is not significantly different between firms with and without succession plans. Columns (5) and (6) use Bebchuk, Cremers, and Peyer (2011)'s CEO pay slice variable and show that incoming CEOs are generally paid less as a fraction of the total compensation of the management team. More importantly, the coefficient on the interaction term indicates that firms with succession plans have more than two times lower CEO pay slice compared to other firms, suggesting that succession planning has an important effect in reducing agency conflicts following CEO turnover.

Taken together, the evidence in Tables 9 and 10 demonstrates that succession planning reduces the likelihood of overpaying incoming CEOs and helps align the interests of management with those of shareholders.

## **8. Conclusion**

Using hand-collected data on succession planning practices in a large sample of public firms undergoing CEO transitions from 1993 to 2010, we study how having a formal succession plan affects the nature and efficiency of turnover decisions and the firm's prospects post-succession. First, we provide novel large-scale evidence that succession planning ensures leadership stability by reducing the likelihood of forced CEO turnover, the incidence of non-CEO executive team resignations, and making the departing CEO an integral part of the transition process. Second, we demonstrate that succession planning is associated with significantly lower stock return

volatility surrounding turnover events as well as a faster decline in volatility with CEO tenure. These results suggest faster learning about CEO ability that contrasts with the convex volatility-tenure relationship documented at the average firm. Third, we provide evidence that succession planning significantly improves the efficiency of management transitions by raising turnover-performance sensitivity and ensuring proper filtering of industry factors from CEO firing decisions. Finally, we demonstrate that having a succession plan impacts the incoming CEO's pay by better aligning the successor's interests with those of shareholders and reducing agency conflicts following the turnover event.

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Appendix A. Variable definitions

Variables	Definitions	Data source
<i>CEO turnover sample</i>		
SP	Indicator equal to one if a firm has a formal succession plan prior to the CEO turnover event, and zero otherwise.	8-K and DEF-14A
Forced CEO succession	Indicator equal to one if a CEO succession is involuntary, and zero otherwise.	See section 3
Insider successor	Indicator equal to one if an executive has been with the firm for at least one year prior to becoming the CEO, and zero otherwise.	ExecuComp
Interim successor	Indicator equal to one if the CEO is replaced within two years, and zero otherwise.	ExecuComp
CEO remains during transition	Indicator equal to one if the departing CEO remains with the firm in another position after stepping down, and zero otherwise.	8-K and DEF-14A
Non-CEO resignation	Indicator equal to one if a top four (non-CEO) executive leaves the firm within three years after the succession, and zero otherwise.	ExecuComp
SP discusses current CEO transition	Indicator equal to one if the succession plan provides specific details about the departure of the incumbent CEO.	8-K and DEF-14A
CAR	Cumulative abnormal return calculated from day -1 to day +1 around the announcement of the CEO succession. Returns are calculated with respect to the Fama-French three-factor model where the factors are estimated from day -244 to day -6 before the announcement.	CRSP / Ken French's website
<i>CRSP-Compustat firm sample</i>		
Stock returns	Stock returns, calculated over the fiscal year using monthly returns (ret), for firm-years with more than 10 non-missing return months.	CRSP
Realized return volatility	Standard deviation of stock returns, calculated over the fiscal year using daily returns (ret), for firm-years with more than 200 non-missing return days; annualized based on 250 trading days.	CRSP
Idiosyncratic return volatility	Standard deviation of residual returns from the Fama-French three-factor model, calculated over the fiscal year using daily returns (ret), for firm-years with more than 200 non-missing return days; annualized based on 250 trading days.	CRSP / Ken French's website
Market beta / SMB beta / HML beta	Coefficient estimate on the excess market return, the SMB factor, and the HML factor in the Fama-French three-factor model, estimated over the fiscal year using daily returns (ret), for firm-years with more than 200 trading days.	CRSP / Ken French's website
ROA	Operating income before depreciation (oibdp) / total assets (at), winsorized at 1%.	Compustat
EBITDA/Assets	Earnings before interest, taxes, depreciation, and amortization (ebitda) / total assets (at), winsorized at 1%.	Compustat
Q	Tobin's Q proxy that includes intangible capital in the replacement cost of the firm's capital, estimated by accumulating past investments in R&D and SG&A, as in Peters and Taylor (2016), winsorized at 1%.	WRDS
Total comp.	$\ln(\text{total compensation (tdc1)} + 1)$	ExecuComp
Equity comp.	Before 2006: $\ln(\text{restricted stock grant (rstkgrnt)} + \text{Black-Sholes value of options granted (option\_awards\_blk\_value)} + 1)$ 2006 and after: $\ln(\text{grant date fair value of stock awarded under plan-based awards (stock\_awards\_fv)} + \text{grant date fair value of options granted (option\_awards\_fv)} + 1)$	ExecuComp
Cash comp.	Before 2006: $\ln(\text{salary} + \text{bonus} + 1)$ 2006 and after: $\ln(\text{salary} + \text{bonus} + \text{non-equity incentive plan compensation (noneq\_icent)} + 1)$	ExecuComp
Delta	Change in the dollar value of the CEO's wealth for a 1% change in the stock price, winsorized at 1%, as in Coles, Daniel, and Naveen (2006).	Naveen's website

Vega	Change in the dollar value of the CEO's wealth for a 1% change in the annualized standard deviation of stock returns, winsorized at 1%, as in Coles, Daniel, and Naveen (2006).	Naveen's website
CEO pay slice	Fraction of the aggregate compensation (TDC1) of the top five executives paid to the CEO, as in Bebchuk, Cremers, and Peyer (2011).	ExecuComp
MTB	$(\text{Book value of assets (at)} + \text{market value of equity (csho} \times \text{prcc\_f)} - \text{book value of equity (ceq)} - \text{deferred taxes (txdb)}) / \text{book value of assets (at)}$ , winsorized at 1%.	Compustat
Firm size	$\ln(\text{total assets (at)} + 1)$	Compustat
Firm age	Number of years since the firm first appeared in CRSP.	CRSP
Leverage	$(\text{total liabilities (lt)} + \text{total debt in current liabilities (dlc)}) / (\text{total liabilities (lt)} + \text{total debt in current liabilities (dlc)} + \text{book value of equity (ceq)} + \text{preferred stock at carrying value (upstk)})$ , winsorized at 1%.	Compustat
Tangibility	$\text{Property, plant, and equipment (ppegt)} / \text{total assets (at)}$ .	Compustat
Capital expenditures	$\text{Capital expenditures (capx)} / \text{property, plant, and equipment (ppegt)}$ , winsorized at 1%.	Compustat
R&D expenditures	$\text{Research and development expense (xrd)} / \text{total revenue (revt)}$ , winsorized at 1%.	Compustat
Cash holdings	$\text{Cash and short-term investments (che)} / \text{total assets (at)}$ , winsorized at 1%.	Compustat
Dividend payer	Indicator equal to one if the firm pays dividends (dvt), and zero otherwise.	Compustat
Volatility of profitability (ROE)	Standard deviation of the residuals from an AR(1) process of ROE, as in Pastor and Veronesi (2003).	Compustat
ROE	$\text{Net income (ni)} / \text{average book value of equity (seq)}$ in the current and previous fiscal years, winsorized at 1%.	Compustat
CEO age	Age of the CEO.	ExecuComp
CEO tenure	Number of years that the executive has served as the CEO.	ExecuComp
CEO of retirement age	Indicator equal to one if the CEO is between 63 and 66 years of age, and zero otherwise, as in Jenter and Kanaan (2015).	ExecuComp
Institutional ownership	Total institutional ownership as a percentage of shares outstanding.	Thomson Reuters
Number of block owners	Number of institutional block owners holding more than 5% of shares outstanding.	Thomson Reuters
Board independence	Percentage of independent non-executive directors on the board.	IRRC
Board size	Number of directors on the board.	IRRC
CEO-chairman duality	Indicator equal to one if the CEO also chairs the board, and zero otherwise.	IRRC
E-index	Entrenchment index, which scores a firm from 0 to 6 based on whether it has any of six IRRC provisions – a staggered board, limits to shareholder bylaw amendments, a poison pill, a golden parachute, and supermajority requirements for mergers and charter amendments, as in Bebchuk, Cohen, and Ferrell (2008).	IRRC

Appendix B. Examples of succession planning disclosures

Company name	Description of succession plan	Document type / filing date	SP	SP discusses current CEO transition
Sysco Corp	On an ongoing basis, the board plans for succession to the position of CEO and other key management positions, and the corporate governance and nominating committee oversees this management development and succession planning process. To assist the board, the CEO periodically provides the board with an assessment of senior executives and their potential to succeed to the position of CEO, as well as perspective on potential candidates from outside the company. In addition, the CEO periodically provides the board with an assessment of potential successors to other key positions.	DEF-14A / Oct. 8, 2009	Yes	No
Citigroup Inc.	The nomination and governance committee, or a subcommittee thereof, shall make an annual report to the board on succession planning. The entire board shall work with the nomination and governance committee, or a subcommittee thereof, to nominate and evaluate potential successors to the CEO. The CEO shall meet periodically with the nomination and governance committee in order to make available his or her recommendations and evaluations of potential successors, along with a review of any development plans recommended for such individuals.	DEF-14A / Mar. 13, 2008	Yes	No
Hershey Co.	The board shall review management succession plans annually. This shall include review by the board of organization strength and management development and succession plans for each member of the company's executive team. The board shall also maintain and review annually, or more often if appropriate, a succession plan for the CEO. If the president, CEO, and/or chairman of the board is unable to perform for any reason, including death, incapacity, termination, or resignation before a replacement is elected, then: (1) if the company is without a chairman of the board, the vice chairman of the board, if any, shall serve as chairman until a replacement is elected or, in the case of temporary incapacity, until the board determines that the incapacity has ended, and in the absence of a vice chairman of the board, the chair of the governance committee or, in his or her absence, the chair of the compensation and executive organization committee, shall serve in such capacity; (2) if the company is without a president and CEO, the interim president and CEO shall be the officer of the company approved by the board, taking into consideration the annual recommendation of the CEO; (3) in the case of incapacity of the president, CEO and/or chairman, the board shall determine whether to search for a replacement; and (4) the chair of the compensation and executive organization committee shall lead any search for a replacement.	DEF-14A / Mar. 10, 2008	Yes	No
Brinker International Inc.	The board of directors of Brinker International, Inc. (NYSE: EAT) announced today that Ron McDougall advised the board that he has decided to relinquish his responsibilities as chief executive officer effective January 1, 2004. In accordance with the company's established succession plan, Ron will continue to serve as chairman of the board and Doug Brooks, currently president and chief operating officer, will become CEO on that date and will also continue as president.	8-K / June 6, 2003	Yes	Yes

### Appendix C. Determinants of succession planning

This table reports estimates of OLS regressions of succession planning on firm, CEO, and governance characteristics. SP is an indicator equal to one if the firm has a formal succession plan prior to the turnover, and zero otherwise. Regressors include firm size, firm age, return-on-asset, and market-to-book in columns (1)-(4), CEO age and tenure in columns (2)-(4), percentage of institutional ownership and number of institutional block owners in columns (3)-(4), and percentage of independent directors, board size, an indicator for whether the firm has a separate CEO and board chairman, and E-Index in column (4). All variables are defined in Appendix A. Firm controls with time subscripts  $t-1$  are as of the latest fiscal year-end prior to the succession.  $t$ -statistics, reported in parentheses, are calculated with standard errors clustered at the FF 48 industry level. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent Variable	(1) SP	(2) SP	(3) SP	(4) SP
Firm size $t-1$	0.0204*** (3.48)	0.0180*** (2.77)	0.0243** (2.64)	0.0252* (1.74)
Firm age $t-1$	0.0012** (2.39)	0.0011 (1.67)	0.0014* (1.76)	0.0016 (1.04)
ROA $t-1$	0.0734 (1.67)	0.0616 (1.25)	0.0213 (0.29)	0.3184* (1.68)
MTB $t-1$	0.0023 (0.59)	0.0020 (0.56)	0.0001 (0.02)	-0.0054 (-0.65)
CEO Age $t-1$		0.0026*** (2.69)	0.0029** (2.61)	0.0045* (1.97)
CEO Tenure $t-1$		0.0064* (1.85)	0.0042 (1.00)	-0.0036 (-0.57)
% Institutional ownership $t-1$			0.0011 (0.02)	-0.2793** (-2.22)
# block owners $t-1$			0.0051 (0.70)	0.0237* (1.93)
Board Independence $t-1$				0.4327*** (4.81)
Board Size $t-1$				0.0062 (0.54)
CEO-chairman duality $t-1$				-0.0460 (-0.87)
E-Index $t-1$				0.0028 (0.15)
Constant	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	2,713	2,153	1,563	725
Adjusted R <sup>2</sup>	0.0913	0.0967	0.0982	0.0848

Figure 1. Changes in volatility around CEO turnover

This figure compares changes in stock return volatility between firms with and without succession plans in the 48 months before and after CEO turnover. The sample includes 3,300 CEO succession events over 1993-2010. The top (bottom) panel plots differences in the means of realized (idiosyncratic) return volatility between firms with and without succession planning. Volatility measures are calculated over each calendar month using daily CRSP stock returns.

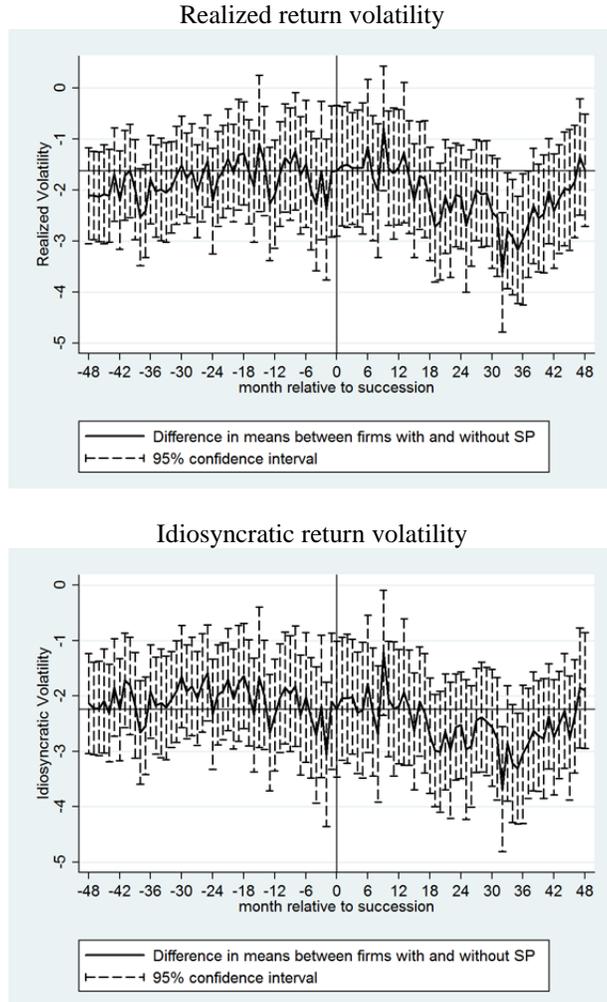


Figure 2. Changes in operating performance and valuation around CEO turnover

This figure compares changes in operating performance and valuation between firms with and without succession plans in the four years before and after CEO turnover. The sample includes 3,300 CEO succession events over 1993-2010. Operating performance is measured by return on assets (ROA) in the top left panel and earnings before interest, taxes, depreciation, and amortization divided by total assets (EBITDA/Assets) in the top right panel; valuation is measured by Tobin's Q in the bottom panel. All variables are defined in Appendix A and are adjusted by subtracting the median variable value in the corresponding Fama-French (FF) 48 industry and year. The comparisons are based on a performance-matched control group where each firm with a succession plan is matched to a firm without a succession plan in the same year and FF 48 industry.

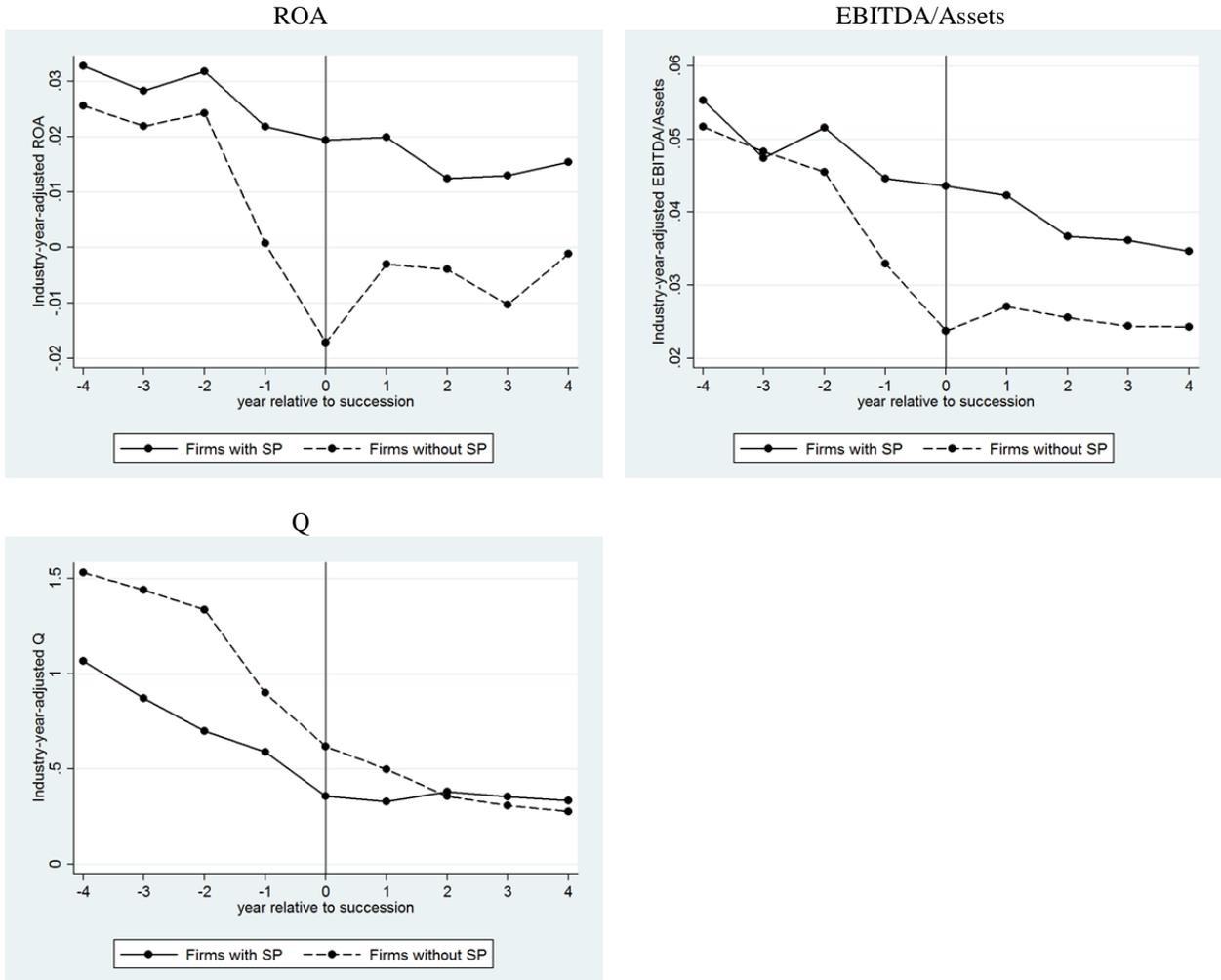


Figure 3. Changes in CEO pay measures around CEO turnover

This figure compares changes in CEO pay measures between firms with and without succession plans in the four years before and after CEO turnover. The sample includes 3,300 CEO succession events over 1993-2010. The CEO pay measures are the log of delta, the log of vega, and CEO pay slice. All variables are defined in Appendix A. The comparisons are based on a performance-matched control group where each firm with a succession plan is matched to a firm without a succession plan in the same year and FF 48 industry.

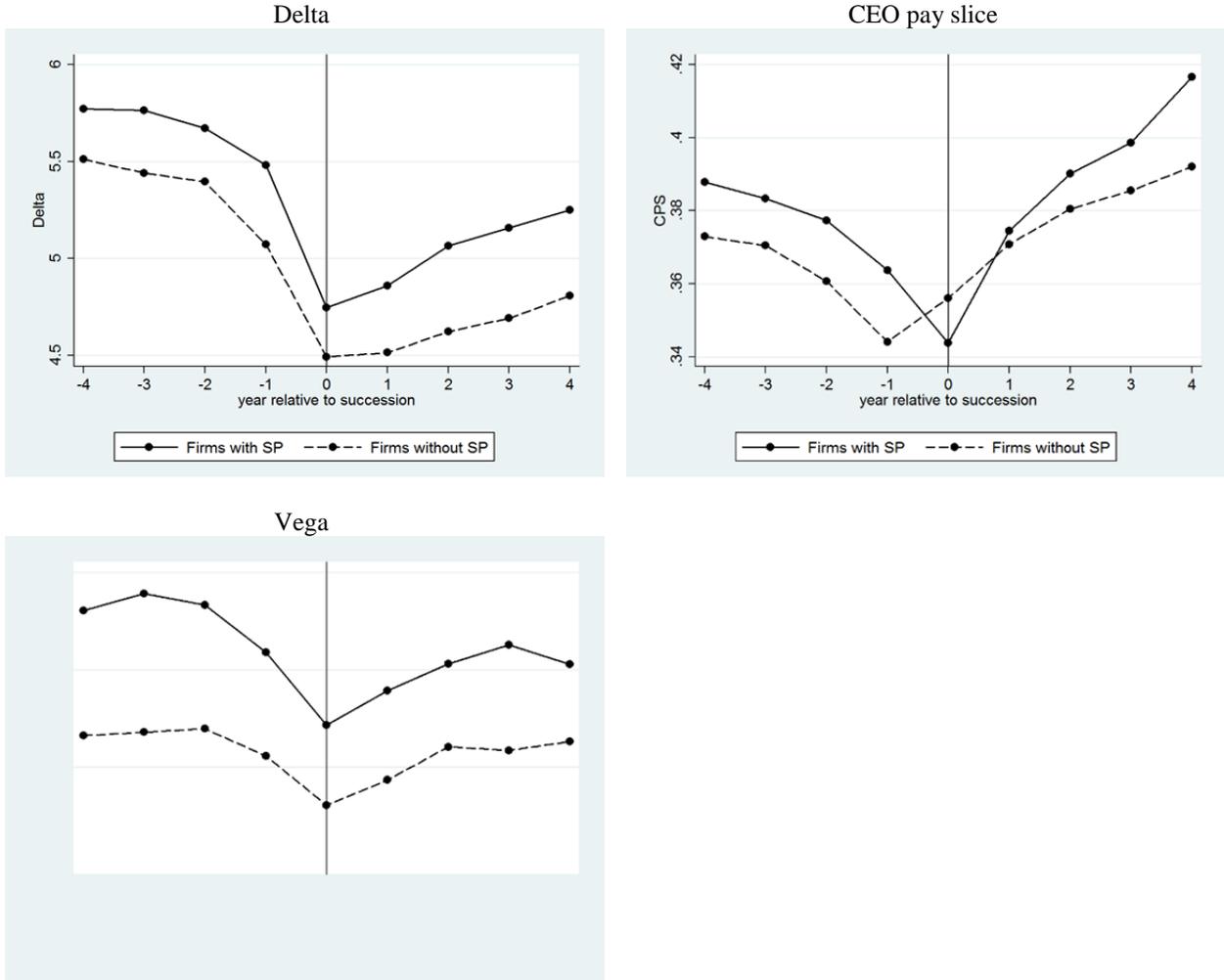


Table 1. Summary statistics of CEO turnover and succession planning

This table reports the number of CEO turnover events in column (1), the percentage of Compustat firms with CEO turnovers in column (2), the number and percentage of forced CEO successions in columns (3)-(4), and the number and percentage of planned CEO successions in columns (5)-(6) during 1993-2010. The last two rows report aggregates over 1993-2003 (pre-Sarbanes-Oxley (SOX) period) and 2004-2010 (post-SOX period).

Year	(1) # CEO successions	(2) % Compustat firms with CEO successions	(3) # Forced CEO successions	(4) % Forced CEO successions ((3)/(1))	(5) # Planned CEO successions	(6) % Planned CEO successions ((5)/(1))
1993	66	0.9%	11	16.7%	1	1.5%
1994	135	1.8%	20	14.8%	4	3.0%
1995	181	2.4%	40	22.1%	8	4.4%
1996	163	2.0%	36	22.1%	7	4.3%
1997	205	2.5%	55	26.8%	12	5.9%
1998	202	2.6%	45	22.3%	11	5.4%
1999	218	2.8%	56	25.7%	15	6.9%
2000	278	3.7%	75	27.0%	19	6.8%
2001	239	3.5%	69	28.9%	19	7.9%
2002	159	2.5%	49	30.8%	16	10.1%
2003	169	2.8%	62	36.7%	27	16.0%
2004	180	3.0%	61	33.9%	45	25.0%
2005	204	3.5%	68	33.3%	36	17.6%
2006	186	3.2%	78	41.9%	35	18.8%
2007	198	3.5%	72	36.4%	37	18.7%
2008	245	4.6%	56	22.9%	51	20.8%
2009	173	3.4%	37	21.4%	44	25.4%
2010	99	2.0%	14	14.1%	34	34.3%
Total	3300	2.8%	904	27.4%	421	12.8%
1993-2003 (pre-SOX)	2015	2.5%	518	25.7%	139	6.9%
2004-2010 (post-SOX)	1285	3.3%	386	30.0%	282	21.9%

Table 2. Summary statistics

Panel A reports summary statistics of firm, board, and CEO characteristics in the CEO turnover sample and CRSP-Compustat sample of public firms. Panel B compares average values of these characteristics between firms with and without succession planning. The sample period is 1993-2010. All variables are defined in Appendix A.

## Panel A. Summary statistics

Variables	N	Mean	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	S.D.	Min	Max
<i>CEO turnover sample</i>								
SP	3159	0.13	0.00	0.00	0.00	0.34	0.00	1.00
Forced CEO succession	3293	0.27	0.00	0.00	1.00	0.45	0.00	1.00
Insider successor	3264	0.72	0.00	1.00	1.00	0.45	0.00	1.00
Interim successor	3264	0.26	0.00	0.00	1.00	0.44	0.00	1.00
CEO remains during transition	3158	0.58	0.00	1.00	1.00	0.49	0.00	1.00
Non-CEO resignation	3264	0.37	0.00	0.00	1.00	0.48	0.00	1.00
SP discusses current CEO transition	3158	0.94	1.00	1.00	1.00	0.24	0.00	1.00
CAR	3234	0.04	0.01	0.05	0.08	0.10	-0.79	1.62
<i>CRSP-Compustat firm sample</i>								
Stock returns	48606	0.17	-0.15	0.09	0.37	0.56	-0.98	2.90
Realized return volatility	48502	0.46	0.28	0.39	0.56	0.26	0.00	2.24
Idiosyncratic return volatility	47881	0.42	0.26	0.36	0.52	0.24	0.10	3.17
Market beta	48594	1.07	0.74	1.02	1.34	0.54	-8.40	9.51
SMB beta	48594	0.60	0.08	0.51	1.02	0.74	-8.67	7.70
HML beta	48594	0.22	-0.22	0.25	0.72	0.96	-27.64	9.11
ROA	48613	0.02	0.01	0.04	0.08	0.15	-1.50	0.27
EBITDA/Assets	48134	0.12	0.08	0.13	0.18	0.13	-1.16	0.42
Q	46440	1.64	0.42	0.77	1.49	3.88	-4.31	44.13
Total comp.	43185	7.81	7.06	7.83	8.61	1.23	0.00	13.39
Equity comp.	43186	5.82	5.05	6.90	8.01	3.18	0.00	13.39
Cash comp.	43420	6.90	6.40	6.93	7.51	1.11	0.00	10.77
Delta	39579	3.27	3.00	4.00	4.00	0.95	1.00	4.00
Vega	41052	3.15	3.00	4.00	4.00	1.06	1.00	4.00
CEO pay slice	42628	0.37	0.30	0.37	0.44	0.13	0.00	1.00
MTB	43823	1.98	1.12	1.48	2.19	1.52	0.30	12.43
Firm size	48625	7.34	6.03	7.26	8.55	1.87	1.23	14.63
Firm age	48625	25.36	10.00	20.00	35.00	20.09	0.00	86.00
Leverage	48384	0.23	0.07	0.21	0.34	0.18	0.00	0.95
Tangibility	48128	0.29	0.11	0.23	0.42	0.23	0.00	0.95
Capital expenditures	45962	0.13	0.06	0.10	0.15	0.10	0.00	0.77
R&D expenditures	48606	0.09	0.00	0.00	0.04	0.89	0.00	25.87
Cash holdings	48591	0.14	0.02	0.07	0.20	0.17	0.00	0.93
Dividend payer	48494	0.59	0.00	1.00	1.00	0.49	0.00	1.00
Volatility of profitability (ROE)	48625	0.56	0.52	0.57	0.60	0.05	0.50	0.65
ROE	47642	0.07	0.03	0.12	0.19	0.46	-3.57	2.11
CEO age	40669	55.57	51.00	56.00	60.00	7.26	29.00	91.00
CEO tenure	43420	3.71	2.00	3.00	5.00	2.65	1.00	18.00
CEO of retirement age	43420	0.09	0.00	0.00	0.00	0.29	0.00	1.00
Institutional ownership	34626	0.65	0.50	0.68	0.82	0.22	0.00	1.00
Number of block owners	34663	2.06	1.00	2.00	3.00	1.56	0.00	11.00

Panel B. Comparison of firms with and without succession planning

Variables	Firms with SP		Firms without SP		Diff. in means	t-stat
	N	Mean	N	Mean		
SP	421	1.00	2738	0.00	1.00	0.00
Forced CEO succession	420	0.19	2732	0.29	-0.10***	-4.79
Insider successor	420	0.76	2705	0.71	0.05**	2.25
Interim successor	420	0.17	2705	0.27	-0.10***	-5.02
CEO remains during transition	421	0.67	2737	0.57	0.10***	4.03
Non-CEO resignation	420	0.34	2705	0.37	-0.03	-1.21
SP discusses current CEO transition	421	0.59	2737	0.99	-0.40***	-16.70
CAR	419	0.04	2679	0.05	-0.01**	-2.55
Stock returns	420	0.06	2734	0.05	0.01	0.40
Realized return volatility	420	0.43	2734	0.49	-0.06***	-4.50
Idiosyncratic return volatility	420	0.38	2716	0.47	-0.09***	-7.50
Market beta	420	1.07	2734	1.09	-0.02	-0.87
SMB beta	420	0.43	2734	0.65	-0.22***	-5.70
HML beta	420	0.28	2734	0.23	0.05	1.10
ROA	420	0.03	2735	0.00	0.03***	4.29
EBITDA/Assets	410	0.13	2704	0.11	0.02***	3.77
Q	390	1.45	2618	1.57	-0.12	-0.57
Total comp.	411	8.14	2624	7.60	0.54***	8.54
Equity comp.	411	6.02	2624	5.10	0.92***	5.22
Cash comp.	413	7.21	2644	6.72	0.49***	8.51
Delta	375	3.42	2353	3.17	0.25***	4.99
Vega	390	3.29	2491	2.97	0.32***	5.41
CEO pay slice	404	0.37	2567	0.35	0.02***	2.87
MTB	374	1.78	2465	1.92	-0.14**	-2.10
Firm size	420	8.17	2735	7.25	0.92***	9.82
Firm age	420	30.13	2735	23.34	6.79***	6.20
Leverage	418	0.26	2722	0.23	0.03***	3.01
Tangibility	409	0.29	2703	0.29	0.00	0.00
Capital expenditures	382	0.11	2592	0.13	-0.02***	-4.32
R&D expenditures	420	0.05	2735	0.11	-0.06**	-2.32
Cash holdings	419	0.11	2735	0.14	-0.03***	-3.96
Dividend payer	419	0.67	2729	0.57	0.10***	4.02
Volatility of profitability (ROE)	420	0.56	2735	0.57	-0.01***	-3.82
ROE	420	0.10	2717	0.01	0.09***	3.95
CEO age	363	60.05	2171	57.68	2.37***	5.94
CEO tenure	413	5.77	2644	4.04	1.73***	9.04
CEO of retirement age	413	0.26	2644	0.15	0.11***	4.83
Institutional ownership	329	0.72	1911	0.64	0.08***	6.88
Number of block owners	330	2.27	1913	2.06	0.21**	2.04

Table 3. Succession planning and leadership stability

This table reports estimates of OLS regressions of succession outcomes on an indicator for whether the firm has a formal succession planning process prior to the succession (SP). The succession outcomes include an indicator for a forced succession in column (1), indicator for an insider successor in column (2), indicator for an interim successor in column (3), indicator for whether the incumbent CEO remains with the firm during the management transition in column (4), and indicator for whether other non-CEO top executives resign following the CEO succession in column (5). Firm controls with time subscripts  $t-1$  are as of the latest fiscal year-end prior to the succession. All variables are defined in Appendix A.  $t$ -statistics, reported in parentheses, are calculated with standard errors clustered at the FF 48 industry level. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
Independent variables	Forced succession	Insider successor	Interim successor	CEO remains during transition	Non-CEO executive resignation
SP	-0.1003*** (-4.07)	0.0579* (1.89)	-0.0747** (-2.38)	0.1713*** (4.52)	-0.0813*** (-2.82)
Firm size $t-1$	-0.0123* (-1.85)	0.0080 (0.92)	-0.0351*** (-4.79)	-0.0071 (-0.73)	0.0121 (1.56)
ROA $t-1$	-0.3473*** (-3.40)	0.1704** (2.17)	-0.2290*** (-3.01)	0.3077*** (2.63)	-0.0744 (-0.97)
MTB $t-1$	0.0002 (0.03)	0.0064 (0.90)	-0.0128* (-1.89)	0.0235*** (3.29)	-0.0010 (-0.10)
SP discusses current CEO transition	-0.1305*** (-3.70)	0.0220 (0.84)	-0.1061*** (-2.63)	0.1558*** (2.91)	-0.0903* (-1.73)
CEO remains during transition	-0.2728*** (-9.62)	0.0511*** (4.22)	-0.0370* (-1.77)		-0.0254 (-1.08)
% Institutional ownership $t-1$	-0.0062 (-0.09)	0.0805 (1.10)	0.0824 (0.95)	0.0614 (0.81)	0.1626** (2.38)
# Block owners $t-1$	0.0093 (1.01)	-0.0307*** (-2.75)	0.0033 (0.40)	-0.0261*** (-3.37)	-0.0099 (-1.14)
Constant	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	1,947	1,938	1,938	1,950	1,938
Adjusted R <sup>2</sup>	0.166	0.0340	0.0746	0.0337	0.0194

Table 4. Abnormal returns and volatility

This table reports estimates of OLS regressions of cumulative abnormal returns (CARs) and volatility measures on succession planning (SP). Panel A reports announcement CARs from day -1 to day +1 around the CEO succession (columns (1)-(3)) and log of CAR squared (columns (4)-(6)). Panel B reports realized return volatility (columns (1)-(3)) and idiosyncratic return volatility (columns (4)-(6)). All variables are defined in Appendix A. In each panel, full-sample results are in columns (1) and (4), subsample results for voluntary successions are in columns (2) and (5), and subsample results for forced successions are in columns (3) and (6). Firm controls with time subscripts  $t-1$  are as of the latest fiscal year-end prior to the succession. In Panel B, additional controls include the coefficient estimates on the excess market return, the SMB factor, and the HML factor in the Fama and French (1993) three-factor model, estimated yearly using daily stock returns.  $t$ -statistics, reported in parentheses, are calculated with standard errors clustered at the FF 48 industry level. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Cumulative abnormal returns and returns squared (short-term volatility)

Dependent variables	(1)	(2)	(3)	(4)	(5)	(6)
	All successions	Voluntary successions	Forced successions	All successions	Voluntary successions	Forced successions
	CAR			Log of CAR squared		
SP	0.0019 (0.38)	0.0086* (1.89)	-0.0380 (-1.55)	-0.0016** (-2.25)	-0.0008 (-1.50)	-0.0088** (-2.50)
Firm size $t-1$	0.0012 (0.93)	-0.0008 (-0.68)	0.0065* (1.93)	-0.0002 (-0.33)	0.0001 (0.17)	-0.0001 (-0.10)
ROA $t-1$	0.0071 (0.25)	0.0155 (0.83)	-0.0025 (-0.04)	-0.0297*** (-2.71)	-0.0130*** (-3.70)	-0.0467** (-2.44)
MTB $t-1$	-0.0039* (-1.75)	-0.0028 (-1.60)	-0.0092 (-1.61)	0.0012* (1.75)	0.0000 (0.10)	0.0034 (1.27)
SP discusses current CEO transition	0.0006 (0.07)	0.0014 (0.15)	-0.0296 (-1.05)	-0.0055** (-2.39)	-0.0032* (-1.76)	-0.0134*** (-2.69)
CEO remains during transition	0.0105*** (3.30)	0.0031 (0.85)	0.0346*** (3.38)	-0.0021 (-1.57)	-0.0021 (-1.62)	0.0015 (0.51)
% Institutional ownership $t-1$	-0.0315** (-2.30)	-0.0276*** (-2.80)	-0.0439 (-0.93)	-0.0007 (-0.24)	-0.0007 (-0.19)	0.0043 (0.55)
# Block owners $t-1$	0.0005 (0.27)	-0.0001 (-0.07)	0.0006 (0.13)	0.0001 (0.30)	0.0004 (1.04)	-0.0006 (-0.49)
Constant	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,947	1,454	490	1,947	1,454	490
Adjusted R <sup>2</sup>	0.0729	0.103	0.0370	0.0634	0.0546	0.0594

Panel B. Long-term return volatility

Dependent variables	(1)	(2)	(3)	(4)	(5)	(6)
	All successions	Voluntary successions	Forced successions	All successions	Voluntary successions	Forced successions
	Realized return volatility			Idiosyncratic return volatility		
SP	-0.0352*** (-4.06)	-0.0269*** (-2.68)	-0.0383* (-1.67)	-0.0318*** (-3.02)	-0.0224** (-2.11)	-0.0259 (-1.31)
Market beta	0.1394*** (7.43)	0.1469*** (7.22)	0.1038*** (3.19)			
SMB beta	0.0559*** (4.73)	0.0569*** (4.32)	0.0543** (2.15)			
HML beta	-0.0293* (-1.82)	-0.0299* (-1.83)	-0.0289 (-1.46)			
Firm size $t-1$	-0.0220*** (-3.37)	-0.0199*** (-3.07)	-0.0287*** (-3.40)	-0.0317*** (-5.13)	-0.0323*** (-5.07)	-0.0330*** (-4.04)
ROA $t-1$	-0.4750*** (-6.08)	-0.4249*** (-4.19)	-0.5233*** (-4.85)	-0.5669*** (-6.62)	-0.5887*** (-5.36)	-0.4890*** (-4.90)
MTB $t-1$	0.0114* (1.77)	0.0141*** (2.89)	0.0048 (0.39)	0.0143** (2.09)	0.0197*** (3.38)	0.0067 (0.59)
SP discusses current CEO transition	-0.0544*** (-3.35)	-0.0377* (-1.90)	-0.0824** (-2.24)	-0.0508** (-2.37)	-0.0387* (-1.80)	-0.0548 (-1.18)
CEO remains during transition	-0.0293*** (-2.95)	-0.0193* (-1.80)	-0.0031 (-0.12)	-0.0249** (-2.14)	-0.0198 (-1.64)	0.0422* (1.75)
% Institutional ownership $t-1$	-0.1888*** (-5.31)	-0.1426*** (-4.03)	-0.2621*** (-4.25)	-0.1760*** (-4.36)	-0.1201*** (-3.00)	-0.2915*** (-4.79)
# Block owners $t-1$	0.0088** (2.45)	0.0084** (2.17)	0.0045 (0.49)	0.0133*** (3.06)	0.0093** (2.18)	0.0182* (1.68)
Constant	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,949	1,457	489	1,947	1,455	489
Adjusted R <sup>2</sup>	0.573	0.570	0.589	0.485	0.484	0.515

Table 5. Succession planning and learning about CEO ability

This table reports the nonlinear trend in volatility from the time the CEO takes office to three years after, using (piecewise linear) spline specifications in Panel A and polynomial specifications in Panel B, as in Pan, Wang, and Weisbach (2015). Full-sample results are in columns (1) and (4), subsample results for firms without succession planning are in columns (2) and (5), and subsample results for firms with succession planning are in columns (3) and (6). In each panel, the outcome variables are realized return volatility in columns (1)-(3) and idiosyncratic return volatility in columns (4)-(6), calculated over each calendar month using daily CRSP stock returns. Market, SMB, and HML betas are also calculated monthly; other control variables are calculated yearly. All variables are defined in Appendix A. Tenure (year  $i$ ) is the spline for the twelve months in the  $i$ -th year after turnover. For the 1<sup>st</sup> to 12<sup>th</sup> month since the new CEO takes office, *Tenure (year 1)* takes the value of 1/12 to 1, while the other two splines take the value of 0. For the 13<sup>th</sup> to 24<sup>th</sup> month, *Tenure (year 1)* takes the value of 1, *Tenure (year 2)* takes the value of 1/12 to 1, and *Tenure (year 3)* takes the value of 0.  $t$ -statistics, reported in parentheses, are calculated with standard errors clustered at the firm-CEO level. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Spline specification

	(1)	(2)	(3)	(4)	(5)	(6)
	All firms	Firms without SP	Firms with SP	All firms	Firms without SP	Firms with SP
Dependent variables	Realized return volatility (monthly)			Idiosyncratic return volatility (monthly)		
CEO tenure (year 1)	-2.4167*** (-6.45)	-2.4203*** (-6.14)	-1.0681*** (-2.82)	-2.3493*** (-6.71)	-2.3644*** (-6.39)	-0.9026** (-2.54)
CEO tenure (year 2)	-1.6195*** (-4.68)	-1.6313*** (-4.52)	-0.5019 (-1.54)	-1.4975*** (-4.62)	-1.4721*** (-4.35)	-0.5206 (-1.57)
CEO tenure (year 3)	-2.0203*** (-5.63)	-2.0688*** (-5.51)	-0.5185 (-1.56)	-1.8907*** (-5.69)	-1.9569*** (-5.63)	-0.2470 (-0.72)
Market beta (monthly)	0.5916*** (5.42)	0.6008*** (4.94)	0.6440*** (2.75)			
SMB beta (monthly)	0.2983*** (3.89)	0.2658*** (3.15)	0.6124*** (4.92)			
HML beta (monthly)	-0.1049** (-2.20)	-0.1079** (-2.04)	-0.0780 (-0.75)			
Firm size	-0.1059 (-0.18)	-0.1893 (-0.30)	0.8837 (0.67)	-0.1493 (-0.27)	-0.2451 (-0.40)	0.9297 (0.71)
MTB	-0.0564 (-0.57)	-0.0485 (-0.48)	-0.1031 (-0.26)	-0.0469 (-0.47)	-0.0304 (-0.29)	-0.2469 (-0.61)
Leverage	0.2442 (0.21)	-0.1128 (-0.09)	2.4698 (0.66)	0.2633 (0.23)	-0.0681 (-0.06)	2.2537 (0.60)
Dividend payer	-0.8201 (-1.56)	-0.9150 (-1.48)	-0.1187 (-0.15)	-0.8902* (-1.67)	-0.9751 (-1.57)	-0.3284 (-0.40)
Volatility of profitability (ROE)	-0.7947 (-0.24)	-1.2827 (-0.34)	1.1223 (0.19)	-2.0114 (-0.61)	-2.5487 (-0.68)	0.4409 (0.07)
ROE	-0.3182 (-1.02)	-0.4294 (-1.14)	0.0489 (0.13)	-0.3416 (-1.12)	-0.4261 (-1.14)	-0.0752 (-0.19)
% Institutional ownership	-6.6856*** (-4.18)	-6.8692*** (-3.99)	-3.9303 (-1.02)	-6.6253*** (-4.23)	-6.9726*** (-4.12)	-2.4682 (-0.68)
# Block owners	-0.0194 (-0.29)	-0.0445 (-0.60)	0.1213 (1.07)	-0.0506 (-0.79)	-0.0647 (-0.91)	0.0377 (0.34)
Constant	Yes	Yes	Yes	Yes	Yes	Yes
Firm-CEO FE	Yes	Yes	Yes	Yes	Yes	Yes
Calendar year-month FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	43,665	36,854	6,811	43,658	36,847	6,811
No. of firms	1,558	1,329	229	1,558	1,329	229
Within R <sup>2</sup>	0.356	0.340	0.492	0.233	0.227	0.311

Panel B. Polynomial specification

	(1)	(2)	(3)	(4)	(5)	(6)
	All firms	Firms without SP	Firms with SP	All firms	Firms without SP	Firms with SP
Dependent variables	Realized return volatility (monthly)			Idiosyncratic return volatility (monthly)		
CEO tenure	-2.2987*** (-6.07)	-2.2902*** (-5.71)	-1.1126*** (-2.86)	-2.2388*** (-6.29)	-2.2179*** (-5.85)	-1.0727*** (-2.89)
CEO tenure <sup>2</sup>	0.1216** (2.15)	0.1122* (1.76)	0.1504 (1.22)	0.1382** (2.52)	0.1281** (2.08)	0.1745 (1.45)
Market beta (monthly)	0.5924*** (5.42)	0.6017*** (4.95)	0.6447*** (2.75)			
SMB beta (monthly)	0.2977*** (3.88)	0.2653*** (3.14)	0.6123*** (4.93)			
HML beta (monthly)	-0.1049** (-2.20)	-0.1082** (-2.04)	-0.0775 (-0.75)			
Firm size	-0.1069 (-0.19)	-0.1890 (-0.30)	0.8749 (0.66)	-0.1505 (-0.27)	-0.2445 (-0.40)	0.9245 (0.71)
MTB	-0.0578 (-0.58)	-0.0501 (-0.49)	-0.1022 (-0.25)	-0.0483 (-0.48)	-0.0322 (-0.31)	-0.2468 (-0.61)
Leverage	0.2516 (0.22)	-0.1033 (-0.09)	2.4717 (0.66)	0.2707 (0.24)	-0.0577 (-0.05)	2.2634 (0.60)
Dividend payer	-0.8091 (-1.54)	-0.9052 (-1.46)	-0.1154 (-0.15)	-0.8787* (-1.65)	-0.9641 (-1.55)	-0.3284 (-0.40)
Volatility of profitability (ROE)	-0.8838 (-0.26)	-1.3813 (-0.36)	1.1126 (0.19)	-2.1022 (-0.63)	-2.6589 (-0.70)	0.4425 (0.07)
ROE	-0.3145 (-1.01)	-0.4262 (-1.12)	0.0525 (0.14)	-0.3379 (-1.10)	-0.4225 (-1.13)	-0.0736 (-0.19)
% Institutional ownership	-6.6820*** (-4.17)	-6.8636*** (-3.98)	-3.9347 (-1.02)	-6.6215*** (-4.22)	-6.9666*** (-4.11)	-2.4755 (-0.68)
# Block owners	-0.0181 (-0.27)	-0.0432 (-0.58)	0.1223 (1.08)	-0.0492 (-0.77)	-0.0632 (-0.89)	0.0383 (0.35)
Constant	Yes	Yes	Yes	Yes	Yes	Yes
Firm-CEO FE	Yes	Yes	Yes	Yes	Yes	Yes
Calendar year-month FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	43,665	36,854	6,811	43,658	36,847	6,811
No. of firms	1,558	1,329	229	1,558	1,329	229
Within R <sup>2</sup>	0.356	0.340	0.492	0.233	0.227	0.311

Table 6. Succession planning and absolute performance evaluation

This table reports estimates of OLS regressions of CEO succession in year  $t$  on performance in year  $t-1$  and its interaction with the indicator *Firm with SP*. *CEO succession* equals one in the year of succession, and zero otherwise. *Firm with SP* is an indicator equal to one for firms with a pre-disclosed succession plan, and zero otherwise. Performance is measured by return on assets (ROA) in columns (1)-(2), earnings before interest, taxes, depreciation, and amortization divided by total assets (EBITDA/Assets) in columns (3)-(4), and Q in columns (5)-(6). All variables are defined in Appendix A. Odd-numbered columns include year fixed effects, and even-numbered columns include industry-by-year fixed effects.  $t$ -statistics, reported in parentheses, are calculated with standard errors clustered at the firm level. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	ROA		EBITDA/Assets		Q	
Dependent variables	CEO succession					
Performance $t-1$	-0.0606*** (-2.69)	-0.0640*** (-2.69)	-0.0478 (-1.59)	-0.0349 (-1.09)	0.0007 (0.69)	0.0007 (0.68)
<b>Firm with SP x Performance <math>t-1</math></b>	<b>-0.1960** (-2.04)</b>	<b>-0.1954** (-1.97)</b>	<b>-0.2240** (-2.55)</b>	<b>-0.2385*** (-2.63)</b>	<b>-0.0039** (-2.38)</b>	<b>-0.0036** (-2.02)</b>
Firm size $t-1$	0.0125*** (2.63)	0.0126** (2.42)	0.0117** (2.43)	0.0120** (2.26)	0.0129*** (2.67)	0.0139*** (2.62)
Stock return volatility $t-1$	0.6146*** (2.85)	0.3059 (1.28)	0.5957*** (2.74)	0.3652 (1.52)	0.4563** (2.20)	0.3113 (1.34)
CEO age $t-1$	0.0052*** (12.34)	0.0053*** (12.15)	0.0052*** (12.34)	0.0053*** (12.17)	0.0049*** (11.66)	0.0051*** (11.51)
CEO tenure $t-1$	0.0090*** (8.60)	0.0088*** (8.26)	0.0089*** (8.47)	0.0087*** (8.13)	0.0089*** (8.25)	0.0086*** (7.86)
% Institutional ownership $t-1$	-0.0201 (-0.98)	-0.0285 (-1.33)	-0.0232 (-1.13)	-0.0311 (-1.44)	-0.0367* (-1.80)	-0.0371* (-1.73)
# Block owners $t-1$	0.0001 (0.07)	0.0009 (0.49)	0.0001 (0.06)	0.0009 (0.48)	0.0015 (0.86)	0.0020 (1.09)
Constant	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	No	Yes	No
Industry-by-Year FE	No	Yes	No	Yes	No	Yes
Observations	25,762	25,762	25,578	25,578	24,791	24,791
No. of firms	2,581	2,581	2,564	2,564	2,474	2,474
Within R <sup>2</sup>	0.0309	0.0660	0.0305	0.0655	0.0283	0.0630

Table 7. Succession planning and relative performance evaluation

This table reports estimates of logit regressions of forced CEO succession in year  $t$  on idiosyncratic and industry-induced returns in years  $t-1$  and  $t-2$  (Panel A). Idiosyncratic and industry-induced returns are the residuals and predicted values, respectively, from a first-stage OLS regression predicting firm stock returns by using equally-weighted or value-weighted contemporaneous FF 48 industry returns (Panel B), as in Jenter and Kanaan (2015). In Panel A, columns (1) and (4) report full-sample results, columns (2) and (5) report subsample results for firms without succession planning, and columns (3) and (6) report subsample results for firms with succession planning.  $t$ -statistics, reported in parentheses, are calculated with standard errors clustered at the industry level. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Second-stage Logit regressions

Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)
	All firms	Firms without SP	Firms with SP	All firms	Firms without SP	Firms with SP
	EW Industry			VW Industry		
	Forced CEO succession					
Idiosyncratic return $t-1$	-1.0899*** (-7.04)	-1.1442*** (-6.26)	-0.6100** (-2.10)	-1.0870*** (-7.25)	-1.1500*** (-6.51)	-0.5503* (-1.83)
Industry-induced return $t-1$	-0.8433*** (-4.66)	-1.0373*** (-4.87)	0.6989 (1.31)	-0.8725*** (-3.76)	-0.9579*** (-3.56)	-0.1079 (-0.18)
Idiosyncratic return $t-2$	-0.1647** (-2.03)	-0.1821** (-1.98)	-0.0954 (-0.38)	-0.1654** (-2.08)	-0.1821** (-2.07)	-0.0925 (-0.37)
Industry-induced return $t-2$	-0.2127 (-0.90)	-0.2371 (-0.92)	-0.3134 (-0.52)	-0.2252 (-0.92)	-0.2698 (-0.95)	-0.1839 (-0.24)
CEO of retirement age	-0.9012*** (-5.01)	-0.9291*** (-5.62)	-0.7746 (-1.48)	-0.8986*** (-4.96)	-0.9271*** (-5.60)	-0.7564 (-1.45)
CEO tenure	-0.0222 (-1.20)	-0.0202 (-0.97)	-0.0196 (-0.47)	-0.0226 (-1.23)	-0.0207 (-1.00)	-0.0213 (-0.52)
Constant	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	39,548	31,786	6,771	39,497	31,744	6,764
Pseudo R <sup>2</sup>	0.0507	0.0549	0.0764	0.0511	0.0554	0.0729

Panel B. First-stage OLS regressions

Dep. Var.	(1)	(2)	(3)	(4)
	Firm return $t-1$	Firm return $t-1$	Firm return $t-2$	Firm return $t-2$
EW industry return $t-1$	0.6763*** (24.55)			
VW industry return $t-1$		0.7582*** (23.03)		
EW industry return $t-2$			0.7012*** (24.08)	
VW industry return $t-2$				0.7694*** (23.14)
Constant	Yes	Yes	Yes	Yes
Observations	47,729	47,650	46,569	46,474
Adjusted R <sup>2</sup>	0.145	0.127	0.142	0.130

Table 8. Succession planning and firm performance

This table reports estimates of OLS regressions of performance on *After* and its interaction with an indicator for *Firm with SP*. Performance is measured by return on assets (ROA) in columns (1)-(2), earnings before interest, taxes, depreciation, and amortization divided by total assets (EBITDA/Assets) in columns (3)-(4), and Q in columns (5)-(6). All variables are defined in Appendix A. *After* equals one from year  $t-1$  to year  $t+3$ , and zero from year  $t-3$  to year  $t-1$ . *Firm with SP* is an indicator equal to one for firms with a pre-disclosed succession plan, and zero otherwise. Results are based on a performance-matched sample within the same FF 48 industry and year. Odd-numbered columns include year fixed effects, and even-numbered columns include industry-by-year fixed effects.  $t$ -statistics, reported in parentheses, are calculated with standard errors clustered at the firm level. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variables	(1)	(2)	(3)	(4)	(5)	(6)
	ROA		EBITDA/Assets		Q	
<i>After</i>	-0.0135*** (-7.15)	-0.0088*** (-4.92)	-0.0082*** (-6.65)	-0.0056*** (-4.87)	-0.1749*** (-5.31)	-0.0823*** (-2.61)
<b>Firm with SP x <i>After</i></b>	<b>0.0087** (2.55)</b>	<b>0.0131*** (3.97)</b>	<b>0.0044 (1.57)</b>	<b>0.0081*** (3.07)</b>	<b>0.2937*** (3.85)</b>	<b>0.1606** (2.07)</b>
Firm size	0.0388*** (4.81)	0.0427*** (4.92)	-0.0076 (-1.27)	-0.0036 (-0.59)	-0.8800*** (-5.23)	-0.8618*** (-5.04)
Firm age	-0.0002 (-0.56)	0.0001 (0.29)	-0.0003 (-1.16)	-0.0003 (-0.88)	0.0111** (2.31)	0.0203 (1.64)
Leverage	-0.1817*** (-8.88)	-0.1659*** (-7.21)	-0.0828*** (-4.68)	-0.0734*** (-4.23)	-0.9420*** (-3.07)	-1.1145*** (-3.43)
Tangibility	-0.2702*** (-7.37)	-0.2238*** (-5.99)	-0.0820*** (-2.89)	-0.0511* (-1.86)	-4.3011*** (-7.73)	-3.9011*** (-6.95)
Capital expenditures	0.1514*** (5.80)	0.1381*** (4.91)	0.1240*** (6.61)	0.1131*** (6.12)	6.7753*** (7.02)	5.4670*** (5.89)
R&D expenditures	-0.0132** (-2.05)	-0.0140** (-2.02)	-0.0144** (-2.29)	-0.0147** (-2.20)	-0.0407*** (-3.07)	-0.0942*** (-4.61)
Cash holdings	0.0808*** (3.89)	0.1024*** (4.77)	0.0375** (2.52)	0.0574*** (4.04)	3.6640*** (6.78)	4.0180*** (7.79)
% Institutional ownership	0.1415*** (7.37)	0.1652*** (8.25)	0.1308*** (10.32)	0.1413*** (11.13)	1.3373*** (3.03)	1.6406*** (3.61)
# Block owners	-0.0054*** (-5.30)	-0.0056*** (-5.39)	-0.0061*** (-9.66)	-0.0065*** (-10.43)	-0.0927*** (-5.91)	-0.0858*** (-5.13)
Constant	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	No	Yes	No
Industry-by-Year FE	No	Yes	No	Yes	No	Yes
Observations	17,450	17,450	17,404	17,404	17,450	17,450
No. of firms	2,473	2,473	2,467	2,467	2,473	2,473
Within R <sup>2</sup>	0.136	0.223	0.121	0.229	0.171	0.268

Table 9. Succession planning and CEO pay

This table reports estimates of OLS regressions of CEO pay on *After* and its interaction with an indicator for *Firm with SP*. CEO pay is measured by the log of total compensation in columns (1)-(2), the log of equity compensation in columns (3)-(4), and the log of cash compensation in columns (5)-(6). All variables are defined in Appendix A. *After* equals one from year  $t-1$  to year  $t+3$ , and zero from year  $t-3$  to year  $t-1$ . *Firm with SP* is an indicator equal to one for firms with a pre-disclosed succession plan, and zero otherwise. Results are based on a performance-matched sample within the same FF 48 industry and year. Odd-numbered columns include year fixed effects, and even-numbered columns include industry-by-year fixed effects.  $t$ -statistics, reported in parentheses, are calculated with standard errors clustered at the firm level. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Total comp.		Equity comp.		Cash comp.	
<i>After</i>	0.0042 (0.32)	0.0058 (0.48)	-0.0691 (-1.61)	-0.0419 (-1.02)	-0.0514*** (-4.15)	-0.0395*** (-3.44)
<b><i>Firm with SP x After</i></b>	<b>-0.0880*** (-3.02)</b>	<b>-0.0568* (-1.83)</b>	<b>-0.2844*** (-2.70)</b>	<b>-0.2132** (-2.05)</b>	<b>-0.0481 (-1.33)</b>	<b>-0.0020 (-0.06)</b>
Firm size	0.5027*** (10.33)	0.4910*** (10.21)	0.6505*** (5.17)	0.5967*** (4.40)	0.3787*** (8.04)	0.3923*** (8.82)
Q	0.1722*** (4.17)	0.2019*** (4.59)	-0.1251 (-0.89)	-0.0724 (-0.48)	0.1193** (2.49)	0.1445*** (2.59)
Stock return	-0.0370* (-1.77)	-0.0578** (-2.56)	-0.1580** (-2.35)	-0.2406*** (-3.31)	0.1048*** (5.94)	0.1044*** (5.09)
Stock return volatility	-0.0832 (-1.37)	-0.0962 (-1.35)	0.0320 (0.18)	0.2623 (1.28)	-0.4224*** (-5.37)	-0.3935*** (-4.44)
ROA	0.3422** (2.15)	0.2647* (1.66)	1.2617** (2.46)	1.4258*** (2.62)	0.5104* (1.93)	0.3540 (1.25)
Leverage	-0.6638*** (-4.55)	-0.7226*** (-4.64)	-0.2432 (-0.75)	-0.1626 (-0.49)	-0.6031*** (-5.18)	-0.6647*** (-5.47)
CEO age	-0.0077*** (-2.99)	-0.0085*** (-3.31)	-0.0335*** (-5.61)	-0.0336*** (-5.51)	-0.0036 (-1.28)	-0.0049* (-1.75)
CEO tenure	-0.0009 (-0.22)	-0.0028 (-0.67)	-0.0534*** (-4.26)	-0.0607*** (-4.64)	0.0181*** (4.26)	0.0176*** (4.07)
% Institutional ownership	0.4888*** (3.69)	0.4014*** (3.53)	1.1903*** (3.55)	1.1981*** (3.53)	0.2990** (2.05)	0.2258* (1.69)
# Block owners	-0.0224*** (-3.43)	-0.0233*** (-3.40)	-0.0460* (-1.87)	-0.0293 (-1.20)	-0.0164*** (-2.90)	-0.0229*** (-3.94)
Constant	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	No	Yes	No
Industry-by-Year FE	No	Yes	No	Yes	No	Yes
Observations	16,409	16,409	16,409	16,409	16,489	16,489
No. of firms	2,634	2,634	2,634	2,634	2,635	2,635
Within R <sup>2</sup>	0.0837	0.182	0.0464	0.152	0.109	0.233

Table 10. Succession planning and agency conflicts

This table reports estimates of OLS regressions of CEO pay measures on *After* and its interaction with an indicator for *Firm with SP*. The CEO pay measures are delta quartiles in columns (1)-(2), vega quartiles in columns (3)-(4), and the log of CEO pay slice in columns (5)-(6). All variables are defined in Appendix A. *After* equals one from year  $t-1$  to year  $t+3$ , and zero from year  $t-3$  to year  $t-1$ . *Firm with SP* is an indicator equal to one for firms with a pre-disclosed succession plan, and zero otherwise. Results are based on a performance-matched sample within the same FF 48 industry and year. Odd-numbered columns include year fixed effects, and even-numbered columns include industry-by-year fixed effects.  $t$ -statistics, reported in parentheses, are calculated with standard errors clustered at the firm level. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Delta		Vega		CEO pay slice	
<i>After</i>	-0.1058*** (-10.12)	-0.0774*** (-7.75)	-0.0891*** (-7.24)	-0.0781*** (-6.54)	-0.0075*** (-3.82)	-0.0062*** (-3.31)
<b>Firm with SP x <i>After</i></b>	<b>0.0882*** (2.93)</b>	<b>0.0843*** (2.90)</b>	<b>-0.0276 (-0.74)</b>	<b>-0.0230 (-0.61)</b>	<b>-0.0141*** (-3.13)</b>	<b>-0.0108** (-2.35)</b>
Firm size	0.4625*** (15.72)	0.4706*** (15.07)	0.3697*** (10.09)	0.3833*** (9.58)	0.0004 (0.07)	0.0057 (1.01)
Q	0.6795*** (22.15)	0.6411*** (19.76)	0.0631* (1.71)	0.1011*** (2.60)	-0.0038 (-0.66)	0.0092 (1.46)
Stock return	0.0992*** (7.24)	0.1041*** (7.09)	0.0408** (2.57)	0.0337* (1.91)	0.0021 (0.73)	-0.0033 (-1.07)
Stock return volatility	-0.2457*** (-4.86)	-0.3119*** (-5.79)	-0.5282*** (-9.11)	-0.5652*** (-8.53)	-0.0076 (-0.95)	-0.0040 (-0.43)
ROA	0.4466*** (3.73)	0.4232*** (3.67)	0.0771 (0.57)	0.0657 (0.48)	0.0710*** (3.69)	0.0771*** (3.95)
CEO age	0.0032** (2.07)	0.0036** (2.26)	-0.0122*** (-6.06)	-0.0113*** (-5.33)	-0.0003 (-0.70)	-0.0002 (-0.50)
CEO tenure	0.0554*** (15.59)	0.0555*** (14.99)	0.0277*** (6.48)	0.0234*** (5.45)	0.0003 (0.49)	-0.0002 (-0.30)
% Institutional ownership	0.2666*** (3.30)	0.3220*** (3.91)	0.5587*** (5.42)	0.6352*** (6.26)	0.0347** (2.23)	0.0278* (1.72)
# Block owners	-0.0116* (-1.87)	-0.0125** (-1.98)	-0.0115 (-1.47)	-0.0063 (-0.84)	0.0031*** (2.83)	0.0035*** (3.20)
Constant	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	No	Yes	No
Industry-by-Year FE	No	Yes	No	Yes	No	Yes
Observations	15,645	15,645	15,994	15,994	16,236	16,236
No. of firms	2,601	2,601	2,611	2,611	2,634	2,634
Within R <sup>2</sup>	0.328	0.413	0.125	0.246	0.0215	0.124