# Leadership Vacillation as a Pattern of CEO Succession

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## Abstract

We develop and empirically test a theory of *leadership vacillation*, a CEO succession pattern in which organizations alternate between "output" and "throughput" leaders to dynamically elevate both exploration and exploitation. We provide a brief case study of leadership vacillation at PepsiCo, before empirically exploring leadership vacillation in a sample of 200 large corporations from 1992 to 2011. Leadership vacillation firms tend to outperform peers in terms of growth, innovation, profitability and stock performance. We also find evidence that the pattern of switching CEO types is associated with substantive changes in strategy, and that the longer a CEO of one type is in place, the more likely the next CEO selected will switch to the other type.

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## 1. Introduction

CEO succession is a vital organizational decision because the organization's strategy is profoundly shaped by the vision and skill set of its top leader (Finkelstein, Hambrick, and Cannella, 2009). Accordingly, research suggests that CEOs are commonly selected "because their experiences and credentials align with the strategic mandate"—the strategic needs that an organization faces (Finkelstein, et al., 2009: 201).<sup>1</sup> For example, after the U.S. government announced antitrust laws that encouraged greater corporate diversification, selection of CEOs with finance backgrounds increased sharply (Fligstein, 1987; 1990; Ocasio and Kim, 1999). Following this logic, studies suggest that performance advantages accrue to firms where the CEO functional background aligns with the organizational strategies being pursued (Gupta, 1984; Chaganti and Sambharya, 1987; Govindarajan, 1989; Guthrie and Olian, 1991; Guthrie and Datta, 1997; Barker and Mueller, 2002). For example, CEOs with a primary functional experience in what Hambrick and Mason (1984) have termed "throughput functions", such as manufacturing and operations, are generally more successful in pursuing strategies that focus on current operating performance, while CEOs with primary functional experiences in "output functions", such as marketing and sales, are generally more successful in pursuing strategies that focus on future growth (Hambrick and Mason, 1984: 199; see also Thomas, Litschert, and Ramaswamy, 1991). Thus, this literature posits that CEOs are selected with functional experience matched to meet firms' strategic needs.

But the CEO succession decision is made more complicated by the simple fact that strategic needs are seldom static or one dimensional. In fact, a long tradition in the organizations literature maintains that long-run, sustained performance demands *simultaneously* addressing two core strategic needs: *exploration* focused on growth, and *exploitation* focused on harvesting profits (March, 1991; Levinthal and March,

<sup>&</sup>lt;sup>1</sup> Strategic mandate is a mixture of three judgments: "[A] forecast of the future [challenges] facing the corporation, an assessment of the degree and rate of change that will be required to cope with [the challenges], and an identification of the skills, experience, and foresight required of the next CEO" (Vancil, 1987: 27).

1993; Benner and Tushman, 2003). An active debate (Boumgarden, Nickerson, and, Zenger, 2012; Lavie, Stettner, and Tushman, 2010; Nickerson and Zenger, 2002; Raisch, Birkinshaw, Probst, Tushman, 2009) continues in what is labeled the organizational ambidexterity literature as to how precisely these dual needs should be addressed. One side claims that skillful leaders can maintain a balanced focus on both strategic needs (e.g., Tushman and O'Reilly, 1996; Gibson and Birkinshaw, 2004). The other side claims that high performance demands dynamically switching between the two (Nickerson and Zenger, 2002; Siggelkow and Levinthal, 2003; Gulati and Puranam, 2009). To date, the empirical and theoretical literature on dynamic switching has focused on structural shifts, in particular vacillating between discretely different organizational forms-e.g., centralization to promote exploitation and decentralization to promote exploration, and then through this sequencing achieving both exploration and exploitation more effectively (Boumgarden, et al, 2012; Siggelkow and Levinthal, 2003; Gulati and Puranam, 2009; Stevens, Pil, and Holweg, 2012; Stettner and Lavie, 2013). An alternative and complementary hypothesis, which is the focus of this paper, is that organizations achieve this dynamic balance by sequencing or vacillating the types of leaders the board of directors selects, choosing an *output CEO* to promote exploration, then a *throughput CEO* to promote exploitation, and vacillating selection back and forth across time. In other words, because functional experience shapes capability to generate either exploration or exploitation, the dynamic balance proposed by organizational vacillation theory (Nickerson and Zenger, 2002) is obtained by vacillating the types of leaders selected. Thus, our initial empirical question is: Do such patterns of leadership vacillation reveal themselves in the data? And, if they do, what are the performance consequences of this pattern?

To facilitate our empirical exploration, we ground our analysis with a motivating illustration of the selection of PepsiCo's CEOs over four decades. Based on insights derived from this case, we collect and analyze a panel dataset of 569 CEOs in 200 large, publicly-traded companies from 1992 to 2011. We assume that CEOs can be categorized as either *output* or *throughput* leaders based on their prior functional experience (an assumption that we empirically assess for its robustness), and then test for non-random patterns of leadership vacillation. Our analysis and robustness checks indicate that leadership vacillation is a common and non-random empirical phenomenon. When vacillating patterns are predicted, we also predict

and empirically examine that these vacillation patterns yield higher firm performance.

## 2. A Motivating Illustration

To fix ideas, we begin with a brief illustration of leadership vacillation at PepsiCo, a well-known, public company in a highly competitive environment yet with a long history of growth. Though the beverage company, Pepsi-Cola, predates this event, PepsiCo was created in 1965 by the merger of Pepsi-Cola and Frito-Lay. Its first CEO, Donald Kendall, joined Pepsi-Cola Company as a sales representative, rose through the sales ranks, and in 1956 became a marketing vice president. Throughout his tenure, Kendall was an explorer with a strategic orientation toward market expansion, diversification, and marketing activities (Muris, Scheffman, and Spiller, 1992). He expanded into China and the Soviet Union, and diversified into truck leasing, transportation, and sporting goods businesses. He also introduced new soft drinks, promoted substantial and high-profile mass-market advertising campaigns, and introduced key packaging innovations into the soft drink industry (Gasbarre, 2000). These actions are credited with achieving rapid revenue growth. By the early 1980's, and as Kendall approached retirement, the increasing size and complexity of PepsiCo's operation had generated a cost structure growing faster than revenue—an organization that was considered operationally inefficient (*PepsiCo Annual Report*, 1985).

In 1986, the board of directors chose Wayne Calloway—a CEO with educational background and experience in accounting and finance—to succeed Kendall. He quickly turned organizational attention toward tightening operations by divesting non-core businesses and streamlining operations, while revenue growth continued. Calloway's heightened focus on exploitation is credited with the growth in market capitalization during his decade of leadership from \$8 billion to \$32 billion. His focus on internal operations, however, resulted in what was viewed as an underinvestment in marketing and foregone growth, particularly in the core beverage business (Salamie, 2006).

In 1996, the board of directors chose Roger Enrico—a leader with experience in Frito-Lay brand management—as the next CEO. During his five-year tenure, Enrico placed heavy emphasis on marketing and growth initiatives, in large part to remedy lost market share to its archrival, The Coca-Cola Company (*PepsiCo Annual Report*, 1996). He launched an initiative called "Power of One" that aimed to take

advantage of the market synergies between Frito-Lay's salty snacks and Pepsi-Cola's beverages (*PepsiCo Annual Report*, 1997). Moreover, he expanded PepsiCo into juice, breakfast cereal, and sports beverages, fueled in part by the acquisition of Tropicana and Quaker Oats—a deal signed just before his retirement in December 2000. Consequently, post-merger integration became the immediate task facing the next CEO.

Steven Reinemund—a CEO with an operations background at Pizza Hut, one of PepsiCo's restaurant businesses—was chosen by the board to take the helm in 2001, with the strategic mandate from the board to ensure that the merger produced shareholder return (Halpern, 2005). An expanded "Power of One" initiative was developed to integrate selling operations and distribution logistics, which created a focus on cost reduction instead of revenue expansion (Halpern, 2005). Toward the end of his tenure, Reinemund began to pivot in response to increasing health concerns of consumers (*PepsiCo Annual Report*, 2004), and formulated a growth strategy focused on developing "Good-for-you" products.

In late 2006, the board chose Indra Nooyi—a CEO with product management, marketing, and strategy consulting experience—to continue expanding the focus on healthier products and develop an active program of product and brand acquisition to keep up with evolving consumer tastes. Most notably, she withstood an aggressive and well-funded push from activist investors to squeeze more value out of PepsiCo by separating the snack and beverage businesses.

During this 45-year time window illustrated in Figure 1, PepsiCo board hired five CEOs, which equates to four succession events. Notable is the interesting pattern in functional background and strategic emphasis of these leaders. The choice of leader alternates between what upper echelon researchers characterize as either output or throughput leaders (Hambrick and Mason, 1984; Thomas, et al., 1991; Finkelstein, et al., 2009). Output leaders—those "responsible for monitoring and adjusting products and markets" are more focused on growth, while throughput leaders—those who "work at improving the efficiency of the transformation process" are more focused on operational efficiency (Hambrick and Mason, 1984: 199)." PepsiCo's first, third, and fifth leaders have functional backgrounds and strategic emphases that are readily characterized as output CEOs (*O*), while the second and fourth have functional backgrounds and strategic emphases that are characterized as throughput CEOs (*T*). As a result, PepsiCo's pattern of

leadership choices is a vacillating one, the sequence of which we depict as *O-T-O-T-O*. Also notable is that PepsiCo's performance over this period is strong, with PepsiCo significantly outperforming market indices, such as those linked to the S&P 500 and the S&P beverage and food industry (Figure 1). This pattern of leadership vacillation is thus *not* the history of a failing company, constantly grasping for a remedy for its failure. The empirical question raised by this observation is whether the pattern of leadership vacillation is simply random or whether it is directly linked to strategic differences and higher performance. Before turning to these empirical questions, however, we first develop a theory for why vacillating patterns of CEO types might appear in the data.

## <Insert Figure 1 here>

#### 3. Theory

Research on top management teams proposes a correspondence between a CEO's functional career path and a firm's strategy (Hambrick and Mason, 1984). Empirical research consistently supports this prediction, in particular showing that executives with primary experiences in output functions tend to pursue *exploration-related strategies*, and those with primary career experiences in throughput functions are likely to adopt *exploitation-related strategies* (Gupta and Govindarajan, 1984; Thomas, et al., 1991; Rajagopalan and Datta, 1996; Chaganti and Sambharya, 1987; Strandhom, et al., 2004). Top management research also finds that organizations enjoy performance benefits when their strategies are consistent with a leader's prior functional experience. In specific, though the labels for various strategies may vary by study, firms obtain higher average performance over the tenure of the CEOs when exploration strategies are matched to output CEOs and exploitation strategies are matched to throughput CEOs (Thomas and Ramaswamy, 1996; Strandholm, et al., 2004; Gupta and Govindarajan, 1984; Beal and Yasai-Ardekani, 2000).

This reported matching between functional background and strategic focus raises a conundrum. Most organizations—at least those concerned with long-term survival and growth—must pursue both exploration and exploitation to be successful. How can organizations achieve both exploration and exploitation? Some research maintains that the ideal CEO selection is to find ambidextrous leaders with the capacity to pursue both exploration and exploitation effectively (e.g., Tushman, Smith, and Binns, 2011). These leaders "must live with a dual agenda", must "move resources between businesses as shifting needs demand", and simply "be consistently inconsistent" in managing this dual agenda (Tushman, et al., 2011: 80). While we by no means rule out the existence of these ambidextrous leaders, we suspect that few executives are able to accumulate both exploration and exploitation skills sets and additionally possess the awareness and capacity to know how and when to push which.<sup>2</sup> We suggest a more accessible alternative to such ambidextrous leadership—a solution reflected in the PepsiCo history: that organizations may simply vacillate between leaders with output experience, who focus on exploration, and leaders with throughput experience, who focus on exploitation.

This paper is of course not the first to debate whether organizations obtain the requisite doses of exploration and exploitation by adroitly balancing the two or by temporally sequencing their focus. A substantial literature argues that ambidextrous leaders can deliver both exploration and exploitation by balancing various conflicting structural elements of an organization, such as centralization and decentralization (Lavie, Stettner, and Tushman, 2010; Nickerson and Zenger, 2002; Raisch, Birkinshaw, Probst, Tushman, 2009). In essence, this ambidextrous leader balances various tradeoffs and in doing so delivers the required balance between exploration and exploitation.

In contrast, organizational vacillation theory, which can be described as dynamic ambidexterity or ambidexterity achieved by temporal sequencing (Nickerson and Zenger, 2002; Boumgarden, et al., 2012; Siggelkow and Levinthal, 2003; Gulati and Puranam, 2009; Raisch, et al., 2009) is based on two key assumptions. First, it recognizes exploration and exploitation as complements in generating organizational performance (Boumgarden, et al., 2012), which is consistent with prior organizations' literature (March, 1991; Gupta, Smith, and Shalley, 2006). Increasing the level of one performance dimension raises the marginal return to increasing the other (Milgrom and Roberts, 1995). Therefore, a firm with greater capacity

<sup>&</sup>lt;sup>2</sup> In the sample of CEOs collected in the study, only 5.2% had worked in functional areas that facilitate both exploration (output functions) and exploitation (throughput functions). See section 4.2 below.

to explore benefits more from improvements in exploitation and vice versa. Second, while exploration and exploitation are complements in generating performance, they are frequently substitutes in production (Boumgarden, et al., 2009). In other words, efforts to increase exploration compromise efforts to increase exploitation, and similarly, efforts to increase exploitation compromise efforts to increase exploration. In part, this substitution effect reflects the simple fact that the formal controls, such as organizational structure, performance measurement, and individual incentives, used to promote exploration are quite different from the formal controls used to support exploitation. Therefore, efforts to accelerate both exploration and exploitation simultaneously by composing some configuration that balances these formal choices compromise overall performance. Consequently, depending on the organizational costs of switching between exploration and exploitation and the inertia that each emphasis carries (i.e., how quickly the benefits from an emphasis on exploration or exploitation dissipate after the emphasis is switched) will determine whether a pattern of vacillation is optimal—aligning the organization to first promote exploration and then aligning it to promote exploitation, and back and forth over time.

The extant literature on organizational vacillation makes no assumptions about the leaders who compose these strategies to promote either exploration or exploitation, implicitly assuming that leaders do not shape the effectiveness of the chosen strategy in any systematic way. Rather, they are assumed to be equally effective in organizing these divergent strategies. However, as noted from our review of prior literature, this implicit assumption is flawed. Leaders, in fact, differ in their effectiveness in implementing exploration and exploitation strategies. Therefore, if a vacillating pattern of emphasis on exploration and exploitation is optimal, then so is a vacillating pattern of functional background in the leadership of those that manage these organizations.

We label leadership vacillation as this dynamic pattern of leadership switching where a throughput CEO succeeds an output predecessor and is followed by another output successor (O-T-O), or the reverse pattern of first a throughput CEO, then output, and then throughput again (T-O-T). We refer to this complete cycle as a *full-form* vacillation. An alternative path to identifying leadership vacillation is to explore whether the probability of switching leader types is non-random conditional on one CEO succession event.

Namely, an output leader follows a throughput CEO (i.e., O-T), or the reserve pattern (T-O). We label this alternative pattern and empirical test as *partial form* leadership vacillation.

Consistent with organizational vacillation theory, we maintain that, organizations will achieve superior long-run performance (i.e., over the time span of the vacillation) by sequentially shifting their focus between exploration and exploitation, and that to promote the success of this vacillating pattern, organizations will also vacillate their leaders over time based on functional background. The pace of vacillation and even the need to vacillate altogether may be shaped by a variety of strategic and exogenous factors. We nonetheless expect a pattern of leadership vacillation to be evident in the data. In particular, we predict that in examining the functional origins of successive CEOs, change in CEO type is more likely than continuity. More specifically, an output predecessor is likely to herald a throughput successor, while a throughput predecessor is likely to lead to an output successor. Consequently, we make two related hypotheses regarding the partial form as well as the whole pattern of leadership vacillation, respectively.

**Hypothesis 1a**: *The functional origins of two successive CEOs are more likely to be different than would be predicted by purely random assignment* (partial-form).

**Hypothesis 1b**: Leadership vacillation (a pattern of three successive CEO changes that switch leaders' functional origin) is a common pattern that occurs with greater than random frequency (full-form).

Ultimately, organizational vacillation theory predicts that organizations that temporally sequence their focus between exploration and exploitation generate higher levels of both exploration and exploitation over the long-run, which in turn leads to enhanced long-run survival and growth. Under the assumption that throughput CEOs promote exploitation and output CEOs promote exploitation, we argue that firms that exhibit a full leadership vacillation pattern, that is (O-T-O) or (T-O-T), will experience higher performance.

**Hypothesis 2**: *Firms pursuing full leadership vacillation outperform other firms in the same industry in the long run.* 

Beyond these general performance correlations, our theory of leadership vacillation offers more detailed predictions about the dynamics of CEO selection and performance. We develop three such predictions below.

An underlying assumption of organizational vacillation theory is that exploration and exploitation are complements in generating organizational performance, but substitutes in production—in other words, an organization's effectiveness in exploitation (or the rate of improvement in of an organization's effectiveness in exploitation) begins to diminish with further investments in exploration, and vice versa (Boumgarten, et al., 2009). Therefore, suppose an organization has an output CEO who adopts an exploration strategy. Over time, this strategy elevates the level of exploration activities, but, predictably at some point, the returns to further investment in exploration begin to diminish, and the returns to investments in exploitation rise. Eventually, a switching point is reached, where the marginal increase in performance from further increases in exploitation exceed the marginal return from increases in the level of exploration. When the marginal gains from switching become sufficiently large to compensate for the fixed costs associated with making a switch, then a switch occurs. Assuming that the board correctly perceives these benefits of change, the organization naturally formulates a revised strategic mandate of exploitation.

The question for the board of directors then becomes: can existing leadership make this pivot without leadership change—a pivot toward a strategic emphasis that is in this case misaligned with the CEO's functional experience and expertise? Research on expert performance indicates that developing new expertise takes many years (Ericsson, Krampe, and Tesch-Römer, 1993). Therefore, instead of asking the incumbent output CEO to make this shift, drawing on capabilities the leader may lack, the board of directors recruits a throughput successor and makes a leadership shift—a recommendation also consistent with the top management teams literature (Thomas, et al, 1991; Guthrie and Datta, 1997; Beal and Yasai-Ardekani, 2000; Barker and Mueller, 2002).<sup>3</sup>

One of the unique implications of organizational vacillation theory is that all else equal, the longer a firm has pursued exploitation, the more likely a switch to exploration becomes and vice versa (Nickerson

<sup>&</sup>lt;sup>3</sup> A similar process occurs after a throughput CEO takes the helm. The throughput leader adopts an exploitation strategy, which increases the level of exploitation activities and reduces the gap between the two activity levels, but over time leads to insufficient exploration. When the marginal returns to switching are sufficient to compensate for the fixed costs of switching, then the firm may reverse course strategically, adopt an emphasis on exploration and hire a new output CEO to lead this effort. While prior literature highlights the virtue of switching leaders to shift an organization's strategic emphasis, it does not hypothesize this pattern of vacillation in the types of leaders.

and Zenger, 2002)<sup>4</sup>. As noted above, time tends to generate diminishing returns to the current strategy and to increase the returns to switching. Yet, leaders tend to be quite stable in their choice of organizational strategy (Finkelstein and Hambrick, 1990; Miller, 1991; Hambrick, Geletkanycz, and Fredrickson, 1993). Moreover, long tenured leaders tend to be particularly cognitively biased toward the strategic *status quo* (e.g., Hambrick and Fukutomi, 1991; Miller, 1991; Hambrick, et al., 1993; Rumelt, 1995). Therefore, long tenured CEOs at the time they are replaced are likely to be leading organizations in particular need of a strategic switch, and therefore are more likely to be replaced by CEOs with a different functional background, with particular capacity to lead this new strategy. Accordingly, as the tenure of a CEO of one type increases, the probability that the new leader will come from the other functional type increases.

# **Hypothesis 3**: *The longer the tenure of a departing CEO, the higher the likelihood of a change in leader type.*

A second related implication of our theory is that unexpected CEO exits will be less likely to lead to CEO type changes than exits precipitated by retirement, turnover, or board level decisions. Suppose a firm has just hired a throughput CEO, who has started to implement operational improvements to realize the high marginal benefits of exploitation we described above. But before these improvements are fully executed, the CEO unexpectedly dies. In this case, one would expect the board of directors to replace the deceased CEO with another CEO of the same functional background—a CEO who can finish the previously incomplete operational improvements. Stated differently, if boards are performing their roles well and switching CEO types when needed, unexpected exits are simply unlikely to lead to the board's choosing a successor with different functional background where performance improvement demands continuity in CEO type.

**Hypothesis 4**: Unexpected CEO departures are particularly likely to lead to successor CEOs of the same type.

The logic of dynamic CEO selection under leadership vacillation theory also offers detailed predictions

<sup>&</sup>lt;sup>4</sup> Leaders like all individuals can learn. Hence, a throughput CEO who remains in their position long enough may learn the capabilities to successfully shift their focus to output and vice-versa. Because we anticipate that such learning requires a decade or more of experience and our observation window is inadequate to empirically investigate this topic, we do not explore this topic further in this paper.

about the dynamics of performance effects. Although CEOs can in principle be quickly replaced, organizational processes, such as "informal behaviors, processes, communication patterns, and routines" (Boumgarden, et al., 2012) are slow-moving and therefore take time to respond (Nickerson and Zenger, 2002). Consequently, the hire of a throughput CEO leads at first to increasing performance because in the first years of this CEO's tenure the marginal benefits of exploitation are high, but implementing operational improvements to realize these gains takes time. Therefore, the performance gains will increase over time. However, eventually diminishing returns will set in, implying a decline in performance over time.

**Hypothesis 5**: For firms pursuing leadership vacillation, replacement of an output CEO with a throughput CEO will lead at first to an increase in performance in time and then later to a decrease in performance.

## 4. Empirical Methodology

## 4.1 Sample and Data Sources for CEO Types

To test the predictions from our theory, we draw a sample of large, publicly-traded firms from the 2011 Fortune 500. Our sampling window is from the beginning of Compustat Execucomp Database in 1992 through 2011, which contributes to constructing detailed histories of each CEO. Omitting private firms and firms with only one CEO during 1992-2011 leaves us with 377 companies. Given the high cost of assembling CEO histories, we randomly selected 200 firms from this population, which generated 569 leaders and 369 succession events over this time window.<sup>5</sup>

<Insert Table 1 about here>

## 4.2 Measuring CEO Types and Leadership Vacillation

Our analysis requires us to closely consider two variables: CEO turnover ( $\Delta CEO$ ) and changes in leader type ( $\Delta \tau^{CEO}$ ). Measuring CEO turnover is straight forward:  $\Delta CEO$  in year t is coded as 1 if the top leader's position was taken by two different persons in consecutive years (i.e., year t and t-1), and 0 otherwise. However, developing an operational measure of change in leadership type ( $\Delta \tau^{CEO}$ ), which is elaborated below, is more challenging because it requires objective data and subjective judgment.

<sup>&</sup>lt;sup>5</sup> Out of the 569 leaders, 200 are incumbents. Thus 369 leaders experienced turnover and succession. Note also that there 28 interim CEOs dropped because they are not the final successor choices made by the boards of directors.

Data about functional career background are collected from various sources because no single source contains information on all leaders in the sample of 200 firms. Company websites offer profiles of all incumbent leaders and some of their predecessors. Data regarding the remaining predecessors are collected from Forbes profiles of business leaders, Hoover's Online Business Network, NNDB database, Bloomberg Business Week Executive Profile, and Dun and Bradstreet reference book of corporate managements. Additionally, obituaries in Wall Street Journal, New York Times and local newspapers are used to collect data about a small number of leaders whose information is not found in the previously mentioned databases. Except for these few leaders, information is independently collected from at least two sources to insure reliability.

To categorize functions, we first consulted classifications in *Forbes*, which assigns CEO backgrounds into nine functional categories: "technical, production, sales, marketing, finance, operations, medical, journalism, and legal" (e.g., Ocasio and Kim, 1999: 543). However, new and distinct functions are observed during the data collection process, such as founder entrepreneur, strategic planning, research and development (R&D), general management, and human resources. For accuracy and parsimony, the paper collapses functional origins into ten categories shown in Table 2: (1) consulting and strategic planning, (2) founder entrepreneur, (3) sales, marketing, and merchandising, (4) product R&D and technology, (5) general management, (6) process engineering, (7) finance and accounting, (8) production, manufacturing, and operation, (9) law and general counsel, and (10) other functions, such as human resource and industrial relation.<sup>6</sup> Based on the categorization adopted in prior upper echelons research (Hambrick and Mason, 1984; Thomas, et al., 1991), we classified these ten functional backgrounds into the two types: output and throughput functions. Namely, categories 1, 2, 3, 4, and 5 are classified as output functions, while categories 6, 7, 8, 9, and 10 are classified as throughput functions. We provide summary statistics for the frequency of each CEO functional background and our classification of CEO types in Table 2.

<sup>&</sup>lt;sup>6</sup> Note that (5) general management does not include President or Chief Operating Officer (COO) because almost every leader has been President or COO before they assumed the office.

#### <Insert Table 2 about here>

In addition to leaders' primary functional backgrounds, data about their secondary backgrounds were collected because the measure of leadership vacillation becomes ambiguous if some leaders had worked in multiple functional areas that cover both output and throughput functions. A leader has a secondary background when he or she worked in second functional area for more than 5 years.<sup>7</sup> A total of 67 leaders—11.7% of all leaders in the sample—can be classified with a secondary function; yet, only 30 of them (or 5.2% of leaders in the sample) had worked in a secondary function that was different from their primary function according to the output vs throughput function categorization.<sup>8</sup> The fact that so few leaders had worked in both output and throughput functions clearly reduces the potential for measurement error in our categorization of leaders and leadership vacillation. (We later undertake a robustness analysis of this categorizing approach.)

We define two kinds of leadership vacillation: partial form and full form. We define partial form leadership vacillation as a change in leader type between two successive CEOs (i.e., O-T or T-O).  $\Delta \tau^{CEO}$ is coded as 1 if the functional origin of a successor is different from that of a predecessor. Namely, both the pattern of output to throughput CEO (O-T) and that of throughput to output CEO (T-O) represent changes in leader type, and the patterns of O-O and T-T represent no change in type.  $\Delta \tau^{CEO}$  is also the dependent variable for testing Hypothesis 1.

We define a full-form pattern of leadership vacillation as the changing of CEO type for two transitions in a row (i.e., three CEOs) in which the CEO type vacillated from one to the other and back again: O-T-O and T-O-T. For our purpose, all other patterns of three successive CEOs with changes such as T-O-O, O-O-T, T-T-O, and O-T-T, are not considered as leadership vacillation (see Figures 2a and 2b), which creates a conservative test of our theory.

<sup>&</sup>lt;sup>7</sup> Alternative thresholds of 3 years and 7 years yielded little difference and had no substantive impact on empirical results.

<sup>&</sup>lt;sup>8</sup> For example, a leader who had worked in both finance and manufacturing is classified as throughput-oriented, causing no measurement ambiguity. But a leader whose primary functional background is marketing but secondary functional background is accounting can be classified as either output-oriented or throughput-oriented.

#### <Insert Figure 2a, 2b about here>

#### 4.4 Regression Specifications

#### 4.4.1 CEO Types and Strategic Growth Orientation

Consistent with (Hambrick and Mason, 1984), output CEOs are expected to emphasize exploration in the form of expanding into new markets or products. Therefore, we expect to observe that throughput CEOs relative to output CEOs are associated with lower firm growth, and lower levels of innovation, as measured by patenting. We estimate these performance measures (growth and patenting)  $y_{i,t+T}$ , while controlling for current period performance  $y_{i,t}$  and controlling for industry and year fixed effects.

$$y_{i,t+T} = \phi \cdot \tau_{i,t}^{CEO} + controls + error \tag{1}$$

For the future outcome variables, we expect  $\phi < 0$  for throughput CEOs, relative to output CEOs.

We analyze two sets of dependent variables with specification (1). On the one hand, we analyze firm growth from the current year to the following year as dependent variable. The analysis of firm growth follows well-established results in the strategy literature that output CEOs tend to be associated with growth-oriented firms, while throughput CEOs are associated with less growth-oriented firms, see (Chaganti and Sambharya, 1987; Thomas, Litschert, and Ramaswamy, 1991; Strandholm, Kumar and Subramanian, 2004). For these specifications, we include initial firm size to control for mean reversion (Dunne, Roberts and Samuelson, 1988; 1989) as well as firm age as measured by years since IPO to control for lifecycle effects (Evans, 1987; see also Sutton, 1997; Bartelsman and Doms, 2000).

O On the other hand, we also consider (strategic investments in) innovation as dependent variable, consistent with empirical work in strategy (Datta and Gurthrie, 1994; Barker and Mueller, 2002). This previous work has shown that CEOs with more technical backgrounds are associated with higher R&D intensity. We generalize this analysis in the context of validating the Hambrick and Mason typology for our analysis, and consider general throughput vs output CEOs, instead of narrowly focusing on technical CEO backgrounds only. Our dependent variables for this analysis are R&D expenditures, number of patents and number of high-citation patents.

Our analysis in (1) is not a causal empirical model. It is a method to simply validate that our measures of CEO types correlate with different types of strategic behavior and outcomes. If our CEO typelogy suffers from misclassification, we expect the estimated coefficients  $\phi$  to be biased towards zero under classical measurement error. On the other hand, results with  $\phi < 0$  are at least consistent with our theoretical predictions and imply that our empirical measures of CEO types are broadly consistent with our theory and measurement goals. Our online appendix provides more detailed empirical analyses further validating the Hambrick and Mason typology and showcasing the robustness.

#### 4.4.2 Leadership Vacillation and Performance

To capture longer run performance correlations, we use the classification of firms with full-form leadership vacillation ( $FLV_i$ ) and merge it with data for these public firms from 1992-2016. Controls will always include 3-digit SIC industry fixed effects to control for average differences in industry performance and year fixed effects to control for macroeconomic shocks that affect all firms.

$$y_{it} = \theta \cdot FLV_i + controls + error \tag{2}$$

Following Hypothesis 2, we expect that  $\theta > 0$  if leadership vacillation is correlated with better performance in the long run. We are especially interested in forward-looking measures that capture future performance. A natural measure to use in this context is Tobin's Q, as it incorporates stock price information about the present value of future profits (see Fama, 1970). However, as argued by (Litov, Moreton and Zenger, 2012; Benner and Zenger, 2016; Sampson and Shi, 2020), capital markets might be subject to biases that lead to an underestimation of long-term profit prospects. Therefore, in addition to Tobin's Q, we also construct the present value of future profits, 10 years ahead, discounted at a discount rate of 10%, which corresponds to the average long-run market return of the S&P 500.

We view our analysis in (2) as again validation of our measure of leadership vacillation, rather than a full causal assessment of Hypothesis 2. That is, if our measure of leadership vacillation suffers from mismeasurement, we expect  $\theta \approx 0$ . If  $\theta > 0$  then we can say that the data is consistent with Hypothesis 2, though it also means that Hypothesis 2 may not be the only possible explanation for this result.

#### 4.4.3 Dynamic CEO Selection

Following Hypotheses 3 and 4, we analyze the implications of leadership vacillation for CEO type selection. For Hypothesis 3 (on the impact of predecessor CEO tenure length on successor type), we construct measures for tenure (in years) of the previous CEO, denoted by  $T_{i,t}^{pCEO}$ . To investigate Hypothesis 4 (on CEO type retention by leadership vacillation firms), we focus on exogenous CEO departures. These departures are defined as CEO exits due to unexpected death, illness or acceptance of another position. In our narrow time window from 1992-2011, 34 exogenous departure events occur, which are denoted with the variable  $\delta_{i,t}^{CEO}$ . The key property of exogenous CEO departures is that they are externally imposed on the firm. Formally, the regression specification for this analysis can be written as:

$$\Delta \tau_{i,t}^{CEO} = a_1 \cdot FLV_i + a_2 \delta_{i,t}^{CEO} + a_3 (FLV_i \times \delta_{i,t}^{CEO}) + c \cdot T_{i,t}^{CEO_{-1}} + controls + error$$
(3)

For Hypothesis 3, we expect c > 0, if longer tenure of a predecessor CEO implies higher likelihood of CEO type changes. For Hypothesis 4, we expect that  $a_3 < 0$  if leadership vacillation firms are more likely to replace an unexpectedly departing CEO with another CEO of the same type.

While the analysis begins with specification (3), this analysis is conditional on the sample of firms with a CEO change. This conditioning is a potential source of sample selection, because firms that change CEOs are generally different from the sample of all firms. In our context, this selection concern might bias the coefficient  $a_3$  upwards, because firms that tend to perform badly might be more likely to change CEOs and CEO types. This bias concern is addressed in two ways. First, we include a rich set of control variables for firm performance, including stock return, industry stock return, and aggregate S&P 500 return, as well as lags of all these variables. We also include measures of board independence, in case more independent boards are more likely to replace incompetent CEOs, thereby increasing the likelihood of CEO turnover. Second, we estimate a two-step sample selection model as proposed in prior literature (Heckman, 1979; Maddala, 1983; 1986, Hamilton and Nickerson, 2003). The selection stage in this model has CEO changes ( $\Delta CEO$ ) as the dependent variable and uses the inverse mills ratio  $\lambda(\Delta CEO_{i,t})$  to control for sample selection effects in the second stage. The full Heckman model can be written as

$$\Delta \tau_{i,t}^{CEO} = \alpha_1 \cdot FLV_i + \alpha_2 \delta_{i,t}^{CEO} + \alpha_3 (FLV_i \times \delta_{i,t}^{CEO}) + \gamma \cdot T_{i,t}^{CEO_{-1}} + \lambda (\Delta CEO_{i,t})$$
(4)

## + controls + error

We expect  $\alpha_3 < a_3 < 0$ , because not correcting for sample selection will bias the coefficient  $a_3$ upwards, as CEO changes due to poor performance are likely to imply CEO type changes. Therefore, correcting for sample selection should make the coefficient  $\alpha_3$  estimated in (4) more negative than the coefficient  $a_3$  in the OLS regression in (3). Importantly, for the inverse mills ratio term to be nonparametrically identified, we need to exclude variables that only determine CEO changes ( $\Delta CEO$ ) but do not directly affect CEO type changes ( $\Delta \tau^{CEO}$ ). We use two instrumental variables for this purpose. First, CEOs that are particularly old, conditional on tenure, are more likely to retire and thereby trigger a CEO change. At the same time, planned retirements are unlikely to directly impact a change in CEO type. To capture this information, we use a dummy variable  $D_{age>60}$  which is one if an incumbent CEO is older than 60. Second, large stock holdings by an incumbent CEO will make CEO changes less likely, while not predicting CEO type changes in case of departure. We formalize this condition using a variable  $CEO_{hold}$ which denotes the fraction of stock held by the incumbent CEO.

#### 4.4.5 Dynamic Complementarity

Hypothesis 5 predicts that performance of leadership vacillation firms should exhibit an inverted V-shaped response in the wake of throughput CEO hires. Formally this can be expressed in the following interaction regression that is similar to a Difference-in-Difference type specification:

$$y_{it+T} = \beta_1 \cdot \tau_{i,t}^{CEO} + \beta_2 \cdot FLV_i + \beta_3 \cdot \left(\tau_{i,t}^{CEO} \times FLV_i\right) + controls + error$$
(5)

where  $\tau_{i,t}^{CEO}$  is the indicator for throughput CEOs and  $FLV_i$  is an indicator for firms that exhibit full-form leadership vacillation. We expect that  $\beta_3 > 0$ , as hiring a throughout CEO will increase performance only at firms exhibiting full leadership vacillation. Control variables for specification (5) include CEO changes and the interaction with full leadership vacillation and CEO changes to control for the potentially negative correlation of performance and CEO changes. We also include current performance to control for mean reversion. As the main measure of performance, we use ROA, defined as EBIT divided by total assets. Importantly, we consider different future time horizons T in (5), which allows us to investigate, whether performance effects of hiring a throughput CEO for leadership vacillation firms shows an inverted Vshaped response over time.

## 5. Results

## 5.1 CEO Types and Strategic Growth Orientation.

We begin our analysis by validating the CEO typology from Table 2 using measures of firms' growth orientation and innovation, consistent with our assumptions based on the prior literature. Broadly, Table 3 provides evidence for the growth orientation of firms. For this, we begin with firm growth, as measured by the growth in revenues in column 1 and growth in the number of employees in column 2 of Table 3. We also consider strategic investments in innovation—investments that enable product expansion and growth. This investment is measured by R&D expenditures in column 3 of Table 3, the number of patents generated in column 4, and number of high-citation patents granted shown in column 5.

Table 3 documents our findings for throughput CEOs. Remember that  $\tau^{CEO} = 1$  for throughput CEOs and  $\tau^{CEO} = 0$  for output CEOs. Therefore, the coefficient estimates found in the first two columns of Table 3 for  $\tau^{CEO}$  show that firms with throughput CEOs exhibit a statistically significant slower growth in terms of sales (column 1) and employees (column 2). These coefficient estimates also imply that firms with output CEOs exhibit faster growth along these two dimensions. Throughput CEOs also are associated with significant reductions in R&D spending (column 3), a direct contributor to future growth. Firms with throughput type CEOs generate significantly less patents (column 4) and generate less valuable patents (column 5), as measured by forward citations of patents generated. These empirical results are consistent with our assumption that the strategic focus of firms correlates with the functional background of the CEOs that manage them. These results also provide a generalization of previous empirical results by (Thomas et al., 1991), who focused on computer manufacturing firms when showing that firms with high R&D expenditure and high product line growth tend to have a high fraction of output executives. Our findings are also complementary to analyses of R&D and technical CEO backgrounds in (Datta and Guthrie, 1994)

and R&D and CEO backgrounds in (Barker and Mueller, 2002). In contrast to these papers, we directly use the Hambrick and Mason typology and analyze firm growth as well as patenting.

<Insert Table 3 about here>

#### 5.2 Leadership Vacillation is Non-random and Common

Having established that the strategic focus of firms correlates with the functional backgrounds of CEOs, we now assess whether a pattern of leadership vacillation is common in our sample of firms and if the likelihood of its occurrence is statistically different from that of chance. We explore both commonness and non-randomness using two alternative criteria. A partial-form statistical assessment examines the correlation of CEO types between predecessor and successor pairs, which examines Hypothesis 1a. We utilized the assignment of each CEO to the output or throughput categories shown in Table 2 and used in Table 3. A total of 300 leaders are categorized as output and 269 leaders are categorized as throughput. Because the unit of analysis for this examination of partial-form vacillation is the pair of two successive CEOs, the sample includes 369 CEO succession events. A summary of the data reveals that 219 (59.4 %) reflect changes in leader type ( $\Delta \tau^{CEO} = 1$ ) and 150 (40.6 %) have no change in leader type ( $\Delta \tau^{CEO} = 0$ ). A correlation of leader type for succession events, which accounts for both OT and TO transitions, is -0.186 (0.0003). This correlation allows us to reject the null hypothesis that predecessor and successor types are random. Looking at firms instead of succession events reveals that 117 out of the 200 firms (58.5%) have successive CEOs with different functional origins, which also indicates that the partial-form phenomenon is non-random.

A different statistical assessment allows us to evaluate Hypothesis 1b by examining whether two consecutive succession events, O-T-O and T-O-T, are likely random or not when compared with succession patterns O-O-T, O-T-T, T-O-O, T-T-O, O-O-O, and T-T-T. Specifically, the statistical examination appraises whether the observed number of firms having leadership vacillation is significantly greater than the null hypothesis of an *expected number* under a random process. The Chi-squared statistics is estimated by:

$$\chi^{2} = \sum_{i=1}^{n} \frac{(Oi - Ei)^{2}}{Ei}$$
(6)

where  $O_i$  is the observed number (frequency) for bin *i*;  $E_i$  is the expected number (or theoretical frequency) for bin *i*, asserted by the null hypothesis; where *i*=1 to 8 for the eight types of succession patterns that exist.

The relative frequency of all eight potential succession patterns for three CEOs is shown Table 4. Note that 125 of the 200 firms have three or more CEOs. Of these, 46 (36%) display full-form leadership vacillation with 24 (19%) exhibiting O-T-O and 22 (17%) exhibit T-O-T. In undertaking a Chi-square analysis, we assume that successions follow a random walk with the odds of a type of leader being selected set at 50:50. The odds of either O-T-O or T-O-T from a random walk is 12.5%. Applying (6) generates a  $\chi^2$  statistic of 13.7, which is significantly higher than the critical value, indicating that the observed probability of full-form leadership vacillation is unlikely to be random. Hypothesis 1b cannot be rejected.

## <Insert Table 4 about here>

## 5.3 Leadership Vacillation and Performance

We now examine Hypothesis 2 and validate our measures of full-form leadership vacillation. Table 5 begins in its first five columns by documenting the correlation of full-form vacillation with strategic growth orientation and innovation of firms. These estimates are followed in columns 6 to 10 with performance correlations, as measured by profitability, stock return performance, Tobin's Q and present value of profits relative to assets.

The analysis in the first five columns of Table 5 shows that leadership vacillation is systematically positively correlated with more growth and systematically more R&D investments and innovation output as measured by number and value of patents. Patent value in these columns is measured by stock price increases on the day of patent issuance, based on the measurement approach of (Kogan, Papanikolaou, Seru, and Stoffman, 2017). These results are instructive, especially in the context of Table 3. In Table 3 we found that firms with throughput CEOs systematically grow more slowly and innovate less. However, the results in Table 5 indicate that firms that fully vacillate between throughput and output CEOs on average grow faster and innovate more. Note that this finding is inconsistent with an alternative explanation for the firms

that vacillate; that is, boards are simply dissatisfied with CEO performance, and hence bounce between leader types searching for a solution. In fact, the results in columns 6 to 10 suggest the opposite. Firms that vacillate their leadership type outperform their competitors, defined as firms in the same 3-digit SIC industry. The signs of all performance outcomes are consistent with the long-run performance predictions of organizational vacillation (Boumgarden, et al., 2012). Note also, that although the correlation of Tobin's Q and leadership vacillation is positive, the coefficient estimate is insignificant at conventional levels. At the same time, both stock price return and the 10-year present value of future profits are systematically higher for leadership vacillation firms. These estimates indicate that capital markets do not necessarily struggle to recognize the long-run opportunities created by leadership vacillation.<sup>9</sup>

#### <Insert Table 5 about here>

#### 5.4 Dynamic CEO Selection

Our next step is to analyze the implications of leadership vacillation for dynamic CEO type selection, as stated in Hypotheses 3 and 4. Unsurprisingly, coefficient estimates in column 1 of Table 6 reveal that firms with full-form leadership vacillation are more likely to exhibit CEO turnover. At the same time, column 2 shows that the longer the tenure of the previous CEO, the higher the probability of a type change for the successor CEO. This result is consistent with Hypothesis 3. Furthermore, column 2 also shows that the interaction term between exogenous CEO exits and leadership vacillation is negative and remains so for any value within a 95% confidence interval. This finding means that in response to unexpected, exogenous CEO exits, firms are also significantly less likely to change the CEO type. In other words, after an unexpected or externally-induced CEO exit, leadership vacillation firms are systematically more likely to replace the leaving CEO with a CEO of the same type. This retention of CEO type in response to an unexpected CEO exit supports Hypothesis 4. The last column of Table 6 also shows that both results are robust to a correction for sample selection from CEO turnovers.

<sup>&</sup>lt;sup>9</sup> One reason our results using Tobin's Q might be insignificant is that Tobin's Q is well known to suffer from high degrees of measurement error, see for example the discussion in Alti, 2003. In this context, Tobin's Q is also known to reflect the value of assets-in-place, while stock returns might more strongly reflect news on growth opportunities, see (Sanford and Yang, 2022).

<Insert Table 6 about here>

## **5.5 Dynamic Complementarity**

The last step in our empirical analysis is to more deeply investigate the performance implications of leadership vacillation, along the lines of Hypothesis 5. In particular, we empirically explore the extent to which performance first increases and then decreases after a switch in leader type.

Table 7 estimates the impact of hiring a throughput CEO on firm performance, as captured by ROA. In this context, it is important to remember that leadership vacillation firms are defined by a pattern of only hiring a throughput CEOs after having had an output CEO as the immediate predecessor. The main effect of interest is therefore the coefficient on the interaction between throughput CEO and full leadership vacillation, estimated for one to nine years after a throughput CEO was hired. Additionally, we control for general CEO changes at full leadership vacillation firms to capture the potentially value-destroying effects of CEO turnover at vacillating firms.

Coefficient estimates in Table 7 show that ROA systematically increases for firms with leadership vacillation, in the wake of replacing output CEOs with throughput CEOs. This basic pattern is remarkable in the context of Table 3, which showed that firms with throughput CEOs tend to grow more slowly and tend to be less innovative than firms with output CEOs. How do throughput CEOs generate higher ROA, if the firms they lead are growing more slowly and innovate less? This seemingly puzzling observation can be understood in the context of Hypothesis 5. At the time when a firm replaces an output CEO with a throughput CEO, the marginal returns from exploitation is high, so profitability should first increase with time as organizational processes and routines require time to change. Table 7 shows that performance gains from replacing an output CEO with a throughput CEO slowly increase over 7 years and then, as predicted, eventually dissipate to zero.

<Insert Table 7 about here>

The performance effects in Table 7 are robust in at least three ways. First, the inverted V-shaped performance patterns only apply to firms with full-form leadership vacillation. This conclusion can be drawn from the fact that only the interaction effect of the full leadership vacillation indicator variable and the throughput CEOs exhibits this pattern, and the pattern does not exist for the throughput CEO variable alone. These results address a natural concern about our analysis in Table 7: throughput CEOs might always cut R&D or advertising budgets, which is consistent with our findings in Table 3 and such cuts might mechanically increase ROA over time. However, if this explanation drives our results, one would expect the increases in ROA to apply to all firms and not just to leadership vacillation firms, so that the coefficients for throughput CEOs would be positive throughout instead of negative. Additionally, under this alternative hypothesis, one would expect that the interaction terms of leadership vacillation firms and throughput CEO type would be approximately zero, once one controls for throughput CEOs. This prediction is again contradicted by the systematically positive ROA effects of hiring throughput CEOs for leadership vacillation firms.

A second potential concern with our analysis is that we only capture the effects of mean-reversion after CEO turnover. If CEOs are dismissed on the basis of bad past performance, and this performance is in part driven by bad luck instead of incompetence, then any new CEO is likely to perform better than a predecessor. If this concern is valid, one would expect that ROA in response to CEO changes is systematically higher. General mean reversion in ROA is addressed by including current ROA as control variable, but we also explicitly address the CEO turnover concern by including an indicator for CEO change, as well as the interaction of CEO change with leadership vacillation firms in Table 7. As rows 4 and 5 of Table 7 show, ROA increases for only 2 years after CEO changes for all firms and only one year after CEO changes are an order of magnitude smaller than the increased performance effects of hiring a throughput CEO for leadership vacillation firms.

Third, performance effects of replacing output CEOs with throughput CEOs remain positive, even if taking into account negative performance implications of CEO turnovers themselves. Indeed, not only

are the interaction terms between leadership vacillation and  $\Delta CEO$  statistically indistinguishable from zero, they also are an order of magnitude smaller than the positive interaction terms between throughput CEO type and leadership vacillation. These findings imply that even when taking account of potentially negative performance implications of CEO turnover, replacing an output CEO with a throughput CEO within the context of leadership vacillation creates a net benefit for firm performance.

#### 6. Discussion

By employing various empirical methods, this paper finds initial evidence of a non-random vacillating pattern in CEO succession, or what we have termed leadership vacillation. The empirical analysis fails to reject any of our theoretical predictions. Companies pursuing full-form leadership vacillation are shown to outperform peer firms in the same 3-digit industries in the long run. In addition to these findings of the existence, antecedents, and performance implications of leadership vacillation, we highlight two additional insights.

First, a leader's tenure is both negatively associated with  $\Delta CEO$  and positively correlated with  $\Delta \tau^{CEO}$ . Namely, the longer the CEO's tenure, the lower the likelihood of CEO turnover but the higher the likelihood of changes in leader type, given that a CEO change takes place. Both results are consistent with previous research on CEO turnover and the proposed theory of leadership vacillation. In research on CEO turnover, a leader's power over the board of directors accumulates with the increase in his or her tenure. The stronger the leader's power over the board, the less likely that the leader will turn over. In the current study, the leader's tenure is a proxy measuring the relative merits between a firm's exploration and exploitation strategy. The longer a leader employs one type of strategy, the lower the benefits of the existing strategy, and the more likely that the firm will select a new leader of the alternative type.

Second, our empirical analysis indicates that the performance benefits of leadership vacillation can (far) outweigh the potential costs of CEO turnover. As a result, CEO turnover should not be considered bad for performance per se. Instead, our theory predicts an underlying strategic logic for the CEO turnover with respect to when turnover is efficiency enhancing.

Our empirical analysis has two limitations. First, we examined only 200 large, public companies

and focused on their CEO successions between 1992 and 2011. The empirical generalizability to small and medium enterprises as well as private enterprises is not investigated, and remains an open question for future research. The empirical analysis also does not decompose the various reasons for CEO turnover. For example, two main reasons for CEO succession are planned retirement and forced dismissal. While both create an opportunity for the board of directors to choose the next leader to "fit" with existing strategy, the two may differently influence the successor choice. Unpacking different sources of succession events may provide further understanding of leadership vacillation. Nevertheless, treating various types of turnover events in one construct is not a unique empirical treatment and does not invalidate the purpose of the current study because previous research on CEO turnover has argued that although many nominal reasons for CEO turnover exist, their causes may be similar (Kaplan and Minton, 2012; Finkelstein, et al., 2009). For instance, "dismissals, voluntary escapes, and executive fatigue" all result in CEO turnover and may be associated with poor performance (Finkelstein, et al., 2009: 169). Also, because the econometric design of the empirical analysis treats CEO turnover as given (i.e., sample selection) and then explores the choice of successor type, the influence of grouping all types of succession events into one construct of  $\Delta CEO$  is minimized.

The paper adopts and contributes to the literature on organizational vacillation, which maintains that organizational choices exhibit a pattern of vacillation when attempting to achieve high levels of both exploration and exploitation over the long run (Nickerson and Zenger, 2002; Gulati and Puranam, 2009). One prominent view in strategy research emphasizes the contingent and largely static fit between organizational choices and its competitive environment (Lawrence and Lorsch, 1967). Furthermore, much research in the upper echelons literature has focused on the internal fit between firm strategy and CEO background (e.g. Thomas, et al. 1991; Beal and Yasai-Ardekani, 2000; Strandholm, et al. 2004), which is implicitly a focus on static complementarity. In contrast, leadership vacillation theory highlights dynamic internal fit and endogenous mechanisms inherent to having multiple (short-run and long-run) performance dimensions that shape organizational decisions. Our paper maintains and finds evidence that in many instances, successor choice is endogenously determined and exhibits a vacillating pattern.

We also contribute to broader efforts to understand CEO turnover in fields, such as finance, economics, accounting, and leadership research (see multi-disciplinary reviews such as Hilger, Mankel and Richter, A. 2013; Berns, Gupta, Schnatterly, and Steele, 2021). The majority of this research is based on two main theories. One approach draws on agency theory (Jensen and Meckling, 1976; Edmans and Gabaix, 2016) to claim that boards use the threat of CEO dismissal in addition to performance pay to motivate CEOs. Another approach draws on theories of learning to claim that boards use firm performance to learn about CEO ability (Hermalin and Weisbach, 2017) and then dismiss "low ability CEOs". However, both theories focus on how poor past performance predicts CEO dismissals<sup>10</sup>, which Hilger at al. (2013) argue "is primarily a way of dealing with an organization's past, but says little about how to deal with its future." Leadership vacillation theory provides a novel way to assess forward-looking CEO replacement and therefore goes beyond the analysis of dismissals, and moves towards a more general theory of CEO turnover.

Future research can explore organizational signals indicating the timing of necessary strategic changes and changes in leader type, as the performance signal of stock returns alone can only predict CEO turnover, not changes in leader type. For instance, what kinds of pre-succession performance measures, such as accounting, operational, survival, or market-based measures, are best predictors of changes in leader type? Also, when would organizations change their CEOs and change the types of successors; when would organizations change their CEOs but choose not to change the types of successors?

Another possible area of investigation is exploring the conditions under which leadership vacillation is likely to occur. For instance, Pfeffer reports "that some companies have been observed to appoint CEOs, decade after decade after decade, from the same functional area" (as quoted in Finkelstein, et al., 2009: 194). The current study shows that, at least in the decades from 1992 to 2011, leadership vacillation is more common than patterns in which individuals with the same function are repeatedly appointed (e.g., O-O-O and T-T-T). What kinds of changes, institutional, organizational, or temporal are

<sup>&</sup>lt;sup>10</sup> That poor performance predicts CEO dismissal is indeed a robust finding by 50 of 57 empirical studies on this topic reviewed by Hilger at al. 2013.

the boundary conditions that prompt leadership vacillation not to emerge?

Future research also can explore the relationship between leadership vacillation and structural vacillation. While both structural vacillation and leadership vacillation are means to dynamically balance exploration and exploitation, does leadership vacillation lead to structural vacillation or vice versa? Does a monotonic correspondence exist between leadership vacillation and structural vacillation, or does one vacillation incorporate multiple vacillations of the other? Do output leaders, who are experts in exploration strategy, reorganize the structure into a centralized one that facilitates exploitation activities?

Finally, how do top management teams complement the CEOs and how does this complementarity affect the likelihood of leadership vacillation? Does a top management team that has senior executives with strong complementary skills and experiences with respect to the incumbent CEO enable the firm to make necessary strategic adaptations without selecting a new leader? Do organizations that successively change their leader types outperform those that recruit top management teams to balance exploration and exploitation? Exploration of these questions will provide new insights into the selection of leaders and the dynamic management of exploration and exploitation.

The theory of leadership vacillation may offer useful managerial implications for boards of directors. The theory implies that the board, and the incumbent CEO, may benefit from nurturing internal successor candidates by developing them through experiences and credentials of both output and throughput functions. An existing pool of insider successors arguably makes the leadership transition less costly than hiring outsider CEOs.<sup>11</sup> Our analysis reveals that while most outsider selections involve changes in leader type, the same pattern is also true of leaders selected internally.<sup>12</sup> This observation is consistent with research conducted by (Bower, 2007), who advocated an "inside outsider" approach when selecting CEO successor. An inside outsider is a leader who is promoted from within but "has somehow maintained enough

<sup>&</sup>lt;sup>11</sup> Outsider selection brings costs from various sources. For example, the selection represents a repudiation of the capabilities of incumbent senior executives; it violates implicit deals with potential insider successors, such as heir apparent; and it stymies other executives whose careers likely would have been advanced with the ascendance of an insider (e.g., Cannella and Lubatkin, 1993). All of these costs can be saved if an insider CEO is chosen instead. <sup>12</sup> Out of 100 outsider successions in our sample, 64 (or 64%) have different leader types from their predecessors'. But out of 269 insider successions, 156 (or 58%) have different leader types.

detachment . . . [and] retained the objectivity of an outsider" (Bower, 2007: 8). In Bower's study, an inside outsider is usually a successor with different functional experience from that of a predecessor CEO. While (Bower, 2007) did not explore a series of succession events to see whether leadership vacillation occurs, his findings are indeed in agreement with the theory of leadership vacillation.

In conclusion, adopting the view that "organizational research is better informed by moving away from snap shots of organizational strategies and instead exploring dynamics and histories" (Boumgarden, et al., 2012: 607), this paper empirically defines, identifies, and examines a common and non-random pattern of CEO succession—leadership vacillation. In doing so, the paper resolves a conundrum of how organizations select leaders to balance exploration and exploitation given a one-to-one correspondence between leadership and strategy. The study explores a previously unexamined phenomenon in CEO succession and investigates the endogenous nature of CEO successor choices. Performance improvements are found in organizations that experience changes in leader type. The paper therefore supports and illustrates the importance of exploring dynamics and histories in strategy and organization research.

## References

- Alti, A., 2001. How Sensitive Is Investment to Cash Flow When Financing Is Frictionless? *The Journal of Finance*, 58(2), pp.707-722.
- Barker, V. L., and Mueller, G. C. 2002. CEO characteristics and firm R&D spending. *Management Science*, 48 (6): 782-801.
- Bartelsman, E. and Doms, M. 2000. Understanding Productivity: Lessons from Longitudinal Microdata, Journal of Economic Literature, 38(3): 569-594.
- Beal, R., and Yasai-Ardekani, M. 2000. Performance implications of aligning CEO functional experiences with competitive strategies. *Journal of Management*, 26 (4): 733-762.
- Benner, M. J., and Tushman, M. L. 2003. Exploitation, exploration, and process management: The productivity dilemma revisited. *Academy of Management Review*, 28 (2): 238-256.
- Benner, M. J., and Zenger, T. 2016. The Lemons Problem in Markets for Strategy. *Strategy Science*, 1(2): 71-89.
- Berns, J., Gupta, V., Schnatterly, K. and Steele, C. 2021. Chief Executive Officer Dismissal: A Multidisciplinary Integration and Critical Analysis. Group and Organization Management, 46(2): 9-28
- Boumgarden, P., Nickerson, J., and Zenger, T. 2012. Sailing into the wind: Exploring the relationships among ambidexterity, vacillation and organizational performance. *Strategic Management Journal*, 33 (6): 587-610.
- Bower, J. 2007. The CEO Within. Harvard Business School Press, Harvard, MA.
- Chaganti, R., and Sambharya, R. 1987. Strategic orientation and characteristics of upper management. *Strategic Management Journal*, 8 (4): 393-401.

- Cannella, A. A. and Lubatkin, M. 1993. Succession as a sociopolitical process: Internal impediments to outsider selection. *Academy of Management Journal*, 36 (4): 763-793.
- Datta, D. K., and Guthrie, J. P. 1994. Executive succession: Organizational antecedents of CEO characteristics. *Strategic Management Journal*, 15 (7): 569-577.
- Dunne, T., Roberts, M.J. and Samuelson, L. 1988. Patterns of firm entry and exit in US manufacturing industries. *RAND Journal of Economics*, 19(4): 495-515.
- Dunne, T., Roberts, M.J. and Samuelson, L. 1989. The Growth and Failure of US manufacturing plants. *Quarterly Journal of Economics*, 104(4): 671-698.
- Edmans, A. and Gabaix, X. 2016. Executive Compensation: A Modern Primier. Journal of Economic Literature, 54(4): 1232-1287
- Ericsson, K. A., Krampe, R. T., Tesch-Römer, C. 1993. The role of deliberate practice in the acquisition of expert performance. *Psychological Review*, 100 (3): 363-406.
- Enrico, R., and Kornbluth, J. 1986. *The Other Guy Blinked: How Pepsi Won the Cola Wars*. Bantam, New York: NY.
- Evans, D., 1987. Tests of Alternative Theories of Firm Growth. *Journal of Political Economy*, 95(4): 657-674.
- Fligstein, N. 1987. The intraorganizational power struggle: Rise of finance personnel to top leadership in large corporations, 1919-1979. *American Sociological Review*, 52 (1): 44-58.
- Fligstein, N. 1990. The Transformation of Corporate Control. Harvard University Press, Harvard: MA.
- Finkelstein, S. and Hambrick, D. C., 1990. Top-Management-Team Tenure and Organizational Outcomes: The Moderating Role of Managerial Discretion, *Administrative Science Quarterly* 35(3): 484-503
- Finkelstein, S., Hambrick, D. C., and Cannella, A. 2009. *Strategic Leadership: Theory and Research on Executives, Top Management Teams, and Boards*. New York, NY: Oxford University Press.
- Gasbarre, A. D. 2000. PepsiCo, Inc. International Directory of Company Histories. Detroit: St. James Press.
- Gibson, C. B., and Birkinshaw, J. 2004. The Antecedents, Consequences, and Mediating Role of Organizational Ambidexterity. *Academy of Management Journal*, 47 (2): 209-226.
- Govindarajan, V. 1989. Implementing competitive strategies at the business unit level: Implications of matching managers to strategies. *Strategic Management Journal*, 10 (3): 251-269.
- Gulati, R., and Puranam, P. 2009. Renewal through reorganization: The value of inconsistencies between formal and informal organization. *Organization Science*, 20 (2): 422-440.
- Gupta, A. K. 1984. Contingency linkages between strategy and general manager characteristics: A conceptual examination. *Academy of Management Review*, 9 (3): 399-412.
- Gupta A. K., and Govindarajan, V. 1984. Business unit strategy, managerial characteristics, and business unit effectiveness at strategy implementation. *Academy of Management Journal*, 27(1): 25-41.
- Gupta, A. K. Smith, K., and Shalley, C. E. 2006. The interplay between exploration and exploitation. *Academy of Management Journal*, 49 (4): 693-706.
- Guthrie, J. P., and Olian, J. D. 1991. Does context affect staffing decisions? The case of general managers. *Personnel Psychology*, 44 (2): 263-292.
- Guthrie, J. P., and Datta, D. K. 1997; Contextual influences on executive selection: Firm characteristics and CEO experience. *Journal of Management Studies*, 34 (4): 537-560.
- Halpern, T. 2005. Steven S. Reinemund Biography. Encyclopedia of Business, 2nd ed.
- Hambrick, D. C., and Mason, P. A. 1984. Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review*, 9, 193-206.
- Hambrick, D. C., and Fukutomi, G. D. S. 1991. The seasons of a CEO's tenure. *Academy of Management Review*, 16 (4): 719-742.
- Hambrick, D. C., Geletkanycz, M. A., and Fredrickson, J. W. 1993. Top executive Commitment to the Status Quo: Some Tests of Its Determinants. *Strategic Management Journal*, 14 (6): 401-418.
- Hamilton, B.H., and Nickerson, J.A. 2003. Correcting for Endogeneity in Strategic Management Research, *Strategic Organization*, 1(1), 51-78.

Heckman, J., 1979. Sample selection as a specification error. *Econometrica*, 47(1): 153-161.

- Hermalin, B. and M. Weisbach, 2017. Assessing Managerial Ability: Implications for Corporate Governance. in: Hermalin, B. and M. Weisbach (eds). Handbook of the Economics of Corporate Governance. Elsevier.
- Hilger, S., Mankel, S. and Richter, A. 2013. The use and effectiveness of top executive dismissal. Leadership Quarterly, 24: 9-28
- Jensen, M., and Meckling, W. 1976. Theory of the firm: Management behavior, agency costs and capital structure. Journal of Financial Economics, 3, 305-360.
- Kaplan, S. N., and Minton, B. A. 2012. How has CEO turnover changed? *International Review of Finance*, 12 (1): 57-87.
- Kogan, L., Papanikolaou, D., Seru, A., & Stoffman, N. (2017). Technological innovation, resource allocation, and growth. *The Quarterly Journal of Economics*, 132(2), 665–712.
- Lavie D., Stettner U., and Tushman M.L. 2010. Exploration and Exploitation Within and Across Organizations. *The Academy of Management Annals*, 4(1): 109-155.
- Lawrence, P., and Lorsch, J. 1967. Differentiation and Integration in Complex Organizations. Administrative Science Quarterly, 12:1-30
- Levinthal, D. A., and March, J. G. 1993. The myopia of learning. *Strategic Management Journal*,14 (S2): 95-112.
- Litov, L. P., Moreton, P., & Zenger, T. R. (2012). Corporate strategy, analyst coverage, and the uniqueness paradox. *Management Science*, 58(10), 1797–1815.
- Maddala, G. S. 1983. *Limited Dependent and Qualitative Variables in Econometrics*. Cambridge University Press, New York, NY.
- Maddala, G. S. 1986. Disequilibrium, self-selection, and switching models. Chapter 28: 1633-1688 in *Handbook of Econometrics*, Vol. III, (ed.) Griliches, Z., and Intriligator, M. D. Elsevier Science Publishers.
- March, J. G. 1991. Exploration and exploitation in organizational learning. *Organization Science*, 2 (1): 71-87.
- Miller, D. 1991. Stale in the saddle: CEO tenure and the match between organization and environment. *Management Science*, 37 (1): 34-52.
- Milgrom, P., and Roberts, J. 1995. Complementarities and fit: Strategy, structure, and organizational change in manufacturing. *Journal of Accounting and Economics*, 19 (2-3): 179-208.
- Muris, T., Scheffman, D., and Spiller, P. 1992. Strategy and transaction costs: The organization of distribution in the carbonated soft-drink industry. *Journal of Economics and Management Strategy*, 1 (1): 83-128.
- Nickerson, J. A., and Zenger, T. R. 2002. Being efficiently fickle: A dynamic theory of organizational choice. *Organization Science*, 13 (5): 547-566.
- Ocasio, W., and Kim, H. 1999. The circulation of corporate control: Selection of functional backgrounds of new CEOs in large U.S. manufacturing firms, 1981-1992. *Administrative Science Quarterly*, 44 (3): 532-562.
- PepsiCo. 1985. *Annual Report*. Thompson Research, available at: http://research.thomsonib.com/ (accessed 21 February 2012).
- PepsiCo. 1996. *Annual Report*. Thompson Research, available at: http://research.thomsonib.com/ (accessed 21 February 2012).
- PepsiCo. 1997 Annual Report. Thompson Research, available at: http://research.thomsonib.com/ (accessed 21 February 2012).
- PepsiCo. 2004. Annual Report. Thompson Research, available at: http://research.thomsonib.com/ (accessed 21 February 2012).
- Raisch S., Birkinshaw J., Probst G., Tushman M. L. 2009. Organizational ambidexterity: Balancing exploitation and exploration for sustained performance. *Organization Science*, 2(4): 685-695.
- Rajagopalan, N. R., and Datta, D. K. 1996. CEO characteristics: does industry matter? Academy of Management Journal, 39: 197-215.

- Rumelt, R. P. 1995. Inertia and transformation, in Montgomery, C. A. (ed.), *Resources in an Evolutionary Perspective: Towards a Synthesis of Evolutionary and Resource-Based Approaches to Strategy*, Kluwer Academic Publishers: 101-132. Norwell, MA.
- Salamie, D. E. 2006. PepsiCo, Inc. *International Directory of Company Histories*. (ed.) Jay Pederson. 93: 333-344. St. James Press, Detroit.
- Sampson, R. and Y. Shi, 2020. Are U.S. firms becoming more short-term oriented? Evidence of shifting firm time horizons from implied discount rates, 1980–2013. *Strategic Management Journal*, smj.3158. https://doi.org/10.1002/smj.3158
- Sanford, A. and Yang, M., 2022. Corporate investment and growth opportunities: The role of R&D-capital complementarity. *Journal of Corporate Finance*, https://doi.org/10.1016/j.jcorpfin.2021.102130
- Siggelkow, N., and Levinthal, D. A. 2003. Temporarily divide to conquer: Centralized, decentralized, and reintegrated organizational approaches to exploration and adaptation. *Organization Science*, 14 (6): 650-669.
- Stettner, U., and D. Lavie, 2013. Ambidexterity under scrutiny: Exploration and exploitation via internal organization, alliances, and acquisitions. *Strategic Management Journal*, 35(13): 1903-1929.
- Stevens, M., Pil, F. K., and Holweg, M. 2012. Modulating between relational and contractual approaches to buyer supplier relations: A case Study of Nissan. *Cambridge Judge Business School Working Papers*.
- Sutton, J. 1997. Gibrat's Legacy. Journal of Economic Literature, 35: 40-59
- Strandholm, K., Kumar, K., and Subramanian, K. R., 2004. Examining the interrelationships among perceived environmental change, strategic response, managerial characteristics, and organizational performance. *Journal of Business Research*, 57 (1): 58-68.
- Thomas, A., Litschert, R., and Ramaswamy, K. 1991. The performance impact of strategy-manager coalignment: An empirical examination. *Strategic Management Journal*, 12 (7): 509-522.
- Thomas, A., and Ramaswamy, K. 1996. Matching managers to strategy: Further tests of the Miles and Snow typology. *British Journal of Management*, 7: 247-261.
- Tushman, M. L., and O'Reilly, C. A. 1996. Ambidextrous organizations: Managing evolutionary and revolutionary change. *California Management Review*, 38 (4): 8-30.
- Tushman, M. L., Smith, W. K., and Binns, A. 2011. The Ambidextrous CEO. *Harvard Business Review*, 89 (6): 74-80.
- Vancil, R. F. 1987. *Passing the Baton: Managing the Process of CEO Succession*. Harvard Business School Press, Harvard: MA.



**Figure 1.** Ratio of PepsiCo's Stock Price to S&P Beverage and Food Industry (1980-2010), where the Ratio is above 1, PepsiCo Outperformed the Industry. \*PepsiCo's Stock Price is Adjusted by Stock Split.



Figure 2a. The Vacillating Pattern of Output-Throughput-Output



Figure 2b. The Vacillating Pattern of Throughput-Output-Throughput

## Table 1: Selection of Random CEO Sample

Step 1. The list of 2011 1 500. Drop 55 private companies.								
	One CEO	Two CEOs	Three CEOs	Four CEOs	Five CEOs	Total		
Number of Firms	68	137	132	84	24	445		

Step 1: The list of 2011 F500. Drop 55 private companies.

Step 2: Drop 68 firms that have only one leader, choose 200 firms, and then drop interim CEOs from the 200 firms (28 interim CEOs).

	One CEO	Two CEOs	Three CEOs	Four CEOs	Five CEOs	Total
Number of Firms	0	75	85	36	4	200
Total Number of CEOs	0	150	255	144	20	569

Note: Table shows sampling of random subsample from Fortune 500 data to collect data on CEO functional backgrounds.

Table 2. CEO Functional Backgrounds, Number of CEOs,	and
CEO Type indicator	

	Functional Backgrounds	# of CEOs	$ au^{CEC}$
1	Consulting/ Strategic Planning	39	0
2	Founder/Entrepreneur	33	0
3	Sales and Marketing	120	0
4	Product R&D and Technology	49	0
5	General Management	59	0
6	Process Engineering	42	1
7	Finance and Accounting	116	1
8	Production and Operation	73	1
9	Law and General Counsel	31	1
10	Others such as HR and IR	7	1
		569	

Note: Table shows functional backgrounds for CEOs in selected random sample and definition of Throughput CEO type.

Tuble C. Throughput (	(1)	(2)	(2)	(4)	(5)
	(1)	(2)	(3)	(4)	(3) log number of future
	Growth	Growth	log	log number	citations of patents
VARIABLES	(sales)	(employees)	(1+K&D)	of patents t+5	issued in t+5
$ au^{CEO}$	-0.021	-0.023	-0.232	-0.201	-0.278
	(0.008)	(0.01)	(0.092)	(0.086)	(0.106)
log Sales	-0.040				
	(0.007)				
log Firm Age	-0.041	-0.038			
0 0	(0.013)	(0.013)			
log Employees		-0.045	0.785		
		(0.007)	(0.108)		
log number of					
patents				0.726	
				(0.042)	
log number of future					
cites for patents					0.745
					(0.047)
Constant	0.603	0.337	0.409	1.354	1.66
	(0.073)	(0.047)	(0.358)	(0.181)	(0.347)
Industry FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Observations	3,285	3,065	3,253	1,323	1,314
R-squared	0.200	0.168	0.853	0.852	0.848

Table 3.	Throughput	CEO and	1 growth	orientation	innovat	ion
I able 5:	Inrougnput	CEO and	i growm	orientation,	mmova	loi

Note: Main independent variable is indicator for Throughput type CEOs. Analysis sample is conditional on random sample of Fortune 500 companies we used to collect data on CEO types. Industry fixed effects are on the 3-digit SIC level. Standard errors are clustered at the firm level and reported in parentheses.

Table 4. Patterns of CEO type change

(2 <sup>3</sup> ) = 8 Patterns	# of Firms
O-T-O*	24*
T-O-T*	22*
O-O-T	18
O-T-T	17
O-O-O	13
Т-Т-О	12
Т-О-О	10
T-T-T	9

Note: Table shows frequency of different CEO type changes. T denotes Throughput CEOs and O output CEOs. Full Leadership Vacillation patterns denoted by \*.

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Growth (Sales)	log number of new patents	log total value of new patents	log average value of new patents	log(1+R&D)
FullLV	0.087	2.032	3.541	1.163	2.574
	(0.009)	(0.279)	(0.357)	(0.152)	(0.276)
Log Sales	-0.015 (0.001)				
log Firm Age	-0.051 (0.002)				
Constant	0.287	1.924	2.773	1.422	2.196
	(0.007)	(0.028)	(0.046)	(0.021)	(0.023)
Industry FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Time window	1992-2016	1992-2016	1992-2016	1992-2016	1992-2016
Observations	99,548	22,608	22,608	22,608	65,801
R-squared	0.046	0.205	0 204	0.234	0.360
<u>It squarea</u>	(6)	(7)	(8)	(0)	(10)
VARIABLES	Profitability	(7) Stock return	(8) Tobin's Q	10-Year NPV of NI, relative to Assets	10-Year NPV of EBIT, relative to Assets
FullLV	3.968	0.016	0.032	1.188	0.959
	(1.621)	-0.006	-0.054	(0.409)	(0.375)
Constant	-5.189	-0.030	0.582	-3.570	-1.958
	(0.700)	(0.001)	(0.005)	(1.137)	(0.860)
Industry FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Time window	1992-2016	1992-2016	1992-2016	1992-2006	1992-2006
Observations	107,867	99,929	110,042	34,067	34,036
R-squared	0.006	0.160	0.167	0.014	0.014

 Table 5: Correlation of leadership vacillation and performance

Note: Full Leadership Vacillation is defined as defined as exhibiting at least two CEO type changes during the time window 1992-2011. Analysis sample is all Compustat companies in the time window specified in each column. Profitability is net income divided by sales. NI is net income. EBIT is earnings before interest and taxes. Industry fixed effects are on the 3-digit SIC level. Regressions are clustered at the firm level and standard errors are reported in parentheses.

	(1)	(2)	(3)	(4)
	Probit	Probit $\Lambda \tau^{CEO}$	Hecki	man ∧ <i>⊤CEO</i>
VARIABLES	$\Delta CEO$		$\Delta CEO$	$\Delta \iota$
Full LV	0.230	1.780	0.241	1.497
-CF0	(0.083)	(0.213)	(0.094)	(0.268)
$\delta^{clo}$ × Full LV		-1.576	-0.558	-1.607
		(0.594)	(0.694)	(0.635)
SCEO		-0.421	8.675	-1.233
0		(0.388)	(0.202)	(0.480)
Selection correction (inverse mills)				-0.776
				(0.374)
CEOhold	-4.728		-4.447	
	(1.853)		(2.131)	
$D_{age>60}$	0.896		1.016	
	(0.086)		-0.093	
CEO tenure	0.0355	0.0638	0.0362	0.0536
	(0.007)	(0.019)	(0.007)	(0.019)
Change in chairman		-0.810	11.470	-0.450
		(0.280)	(0.251)	(0.368)
Change outsider		0.401	-0.335	0.599
		(0.197)	(0.156)	(0.292)
Average director tenure	-0.0313	-0.062	-0.027	-0.05
	(0.014)	(0.035)	(0.015)	(0.035)
Firm stock return	-0.362	0.489	-0.335	0.599
	(0.149)	(0.302)	(0.156)	(0.292)
Constant	-1.939	-1.638	-2.135	-0.609
Additional controls: Fraction board insiders.	(0.438)	(0.867)	(0.504)	(1.021)
fraction board outsiders, Industry stock return,	YES	YES	YES	YES
S&P 500 return, lagged firm stock return, lagged industry return lagged S&P 500 return	1 25	125	125	1 200
Industry FE	YES	YES	YES	YES
Observations	2,931	309	3,07	74

 Table 6: Type of replacement CEOs after exogenous, unexpected CEO exit

Observations2,9313093,074Note: Main dependent variables are CEO changes and CEO type changes. Analysis sample is conditional on random<br/>sample of Fortune 500 companies we used to collect data on CEO types. Column (2) reports CEO type changes,<br/>conditional on CEO changes. Main independent variable is the interaction between Full LV and exogenous CEO<br/>changes. Full LV is defined as firms that have consistent CEO type changes during 1992-2011, as defined in table 3.<br/>Exogenous CEO changes are CEO departures based on death, illness or acceptance of other positions by the CEO.<br/>Industry fixed effects are on the 3-digit SIC level. Standard errors are clustered at the firm level and reported in<br/>parentheses.

Tuble II B Jilanii Com	promonoarrej								
VARIABLES	(1) ROA in t+1	(2) ROA in t+2	(3) ROA in t+3	(4) ROA in t+4	(5) ROA in t+5	(6) ROA in t+6	(7) ROA in t+7	(8) ROA in t+8	(9) ROA in t+9
$\tau^{CEO}  imes Full LV$	0.007	0.013	0.021	0.023	0.024	0.023	0.025	0.009	0.010
	(0.003)	(0.005)	(0.008)	(0.01)	(0.011)	(0.012)	(0.013)	(0.01)	(0.009)
$ au^{CEO}$	-0.002	-0.003	-0.006	-0.007	-0.007	-0.006	-0.006	-0.006	-0.007
	(0.002)	(0.003)	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)	(0.006)	(0.006)
Full LV	-0.005	-0.008	-0.017	-0.017	-0.017	-0.017	-0.016	-0.014	-0.015
	(0.003)	(0.005)	(0.009)	(0.01)	(0.011)	(0.012)	(0.011)	(0.011)	(0.012)
$\Delta CEO$	0.001	0.000	-0.004	-0.002	-0.001	-0.002	-0.003	-0.002	0.000
	(0.002)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)	(0.004)	(0.004)
$\Delta CEO \times Full LV$	0.003	0.000	0.003	0.007	0.004	0.001	-0.027	0.012	0.012
	(0.004)	(0.005)	(0.005)	(0.005)	(0.006)	(0.007)	(0.026)	(0.007)	(0.007)
No. of CEO changes	-0.002 (0.001)	-0.004 (0.002)	-0.005 (0.003)	-0.007 (0.003)	-0.008 (0.004)	-0.009 (0.004)	-0.009 (0.004)	-0.011 (0.005)	-0.012 (0.005)
Current ROA	0.780 (0.019)	0.593 (0.04)	0.447 (0.057)	0.362 (0.056)	0.355 (0.0429)	0.256 (0.078)	0.23 (0.049)	0.115 (0.075)	0.088 (0.084)
Constant	0.029 (0.003)	0.054 (0.006)	0.074 (0.009)	0.086 (0.009)	0.087 (0.008)	0.1 (0.013)	0.102 (0.01)	0.118 (0.013)	0.122 (0.014)
Industry FE Year FE Observations	YES YES	YES YES 2.447							
R-squared	5,285 0.796	0.662	0.406	0.350	0.346	0.323	0.319	0.295	0.284

 Table 7: Dynamic complementarity

Note: Analysis sample is conditional on random sample of Fortune 500 companies we used to collect data on CEO types. However, the outcome data is tracked until 2016, to maximize sample size. ROA is defined as net income divided by total assets. The main independent variable is an interaction of the indicator for T-type CEOs and the indicator for Full Leadership Vacillation firms. Full Leadership Vacillation is defined as exhibiting at least two CEO type changes during the time window. Industry fixed effects are on the 3-digit SIC level. Standard errors are clustered at the firm level and reported in parentheses.