



Top management team turnover, CEO succession type, and strategic change

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ABSTRACT

While previous research suggests that CEO turnover correlates with strategic changes in firm's operations such as discontinuation of operations, we demonstrate that such findings apply only to specific types of CEO turnover, and only if non-CEO members of the top management team also exit the firm. Our analysis examines cases of contender, follower, and outsider succession and reinforces the key role of non-CEO departures in strategic change at a firm. The results support an integration of the upper echelons perspective and the power circulation theory view of top management team turnover.

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1. Introduction

Research on top management teams (TMTs) recognizes that senior executives rarely work alone. The upper echelons perspective (Hambrick and Mason, 1984) argues that collective characteristics and actions of the TMT may affect organizational outcomes. However, studies of executive turnover in economics and finance typically pay exclusive attention to the CEO and firm performance measures (e.g. Murphy and Zimmerman, 1993; Warner et al., 1988; Pourciau, 1993; Huson et al., 2004). Less research in this literature focuses on strategic changes at the firm coinciding with CEO turnover. In one example, Weisbach (1995) explores the extent to which CEO turnover correlates with the divestitures of recently acquired divisions and concludes that the probability of exiting a line of business and divesting unsuccessful acquisitions is significantly higher with the dismissal of the CEO responsible for the acquisition.

In order to complement the research on strategic changes at the time of top management turnover, our analysis exploits a large representative dataset that allows us to better identify the specific types of CEO turnover that correlate with changes at the firm, including joint turnover of the CEO and non-CEO members of the TMT. We use the accounting disclosure of discontinued operations – exiting a line of business – as a measure of strategic change in firm operations. Such a variable has been used previously in studies of escalation in managerial decisions (Statman and Sepe, 1989) and is similar in flavor to the variable considered by Weisbach (1995). Our analysis helps

reveal a more focused relationship than has been previously documented.

Shen and Cannella (2002) adapt the power circulation theory of control (Ocasio, 1994; Ocasio and Kim, 1999) to the discussion of TMT turnover. In this view, there are three distinct types of CEO turnover – outsider succession, follower succession that includes insider CEO replacement appointed after a retirement of the outgoing CEO, and contender succession that includes insider successors appointed after the resignation of the outgoing CEO. Shen and Cannella demonstrate that these three types of succession have different effects on the subsequent operational performance of the firm. We complement this strand of research by exploring a more precise measure of strategic change in the operations of firms affected by the three types of CEO succession. We also integrate the three types of turnover suggested by Shen and Cannella with the upper echelons perspective by examining TMT turnover scenarios at the time of CEO succession. Our analysis leads to three significant findings.

Our first finding is that CEO departure from the firm is associated with reporting of discontinued operations only if other top executives also exit the firm. Note that limiting the analysis to only cases of CEO turnover was common in earlier empirical studies in the finance and economics literature (e.g. Weisbach, 1995; Huson et al., 2004). We replicate the basic finding of Weisbach that CEO turnover is correlated with changes in the firm's operations. In further analysis, we allow estimates to differ in cases of joint turnover by the CEO and other top managers and in cases when the CEO leaves alone. Doing so demonstrates that the basic result reflects a large and significant link between discontinued operations and CEO departures that also involve departures of other TMT members. This finding supports the upper echelons perspective and questions the merit of theorizing

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about the events surrounding CEO turnover separately from those that relate to the turnover of other members of the TMT.

Second, we find that a significant relationship between CEO turnover and discontinued operations exists in cases of contender succession, but not follower succession. This result supports the application of power circulation theory to the analysis of TMT turnover and suggests that contender succession and a mandate for strategic re-orientation of the firm coincide. Our third result is that in cases of outsider succession, a higher likelihood of discontinuing operations only occurs if outsider succession coincides with the departure of other TMT executives. In cases when outsider succession does not involve turnover in the TMT, or in cases when the outgoing CEO stayed with the firm in another capacity, we find no significant relationship. Karaevli (2007) summarizes conflicting findings of over fifty studies on outsider succession and recommends better measurement of turnover context. We complement the literature on outsider succession by demonstrating the need for integration of outsider succession studies with the upper echelons perspective. In our extensive sample, the apparent significant relationship between outsider succession and change at the firm is driven by the cases when outsider succession also involves departure of non-CEO top managers from the firm.

2. Background and hypotheses

Our analysis complements two distinct strands of research. One such strand, arising in finance and economics, considers changes at the firm that coincide with CEO turnover. For example, CEO turnover has been linked to stock-price movements (e.g., Warner et al., 1988) and changes in accounting variables (Murphy and Zimmerman, 1993; Pourciau, 1993). Less work has focused on the strategic changes at the firm accompanying such movements. An exception noted above is the Weisbach (1995) study of the link between CEO changes and divestitures of recently acquired divisions.

The above turnover studies focused solely on the CEO. However, an emerging literature on the patterns of non-CEO top manager turnover documents that non-CEO departures from the firm are frequent events at the time of CEO departure. Fee and Hadlock (2004) report that the probability of non-CEO turnover increases when the CEO exits the firm. Hayes et al. (2006) find that the probability of non-CEO turnover increases around times of CEO turnover, which may be explained by complementarities among members of the TMT. We extend this research by detailing the patterns of CEO and non-CEO turnover for an extensive dataset of firms and exploring the specific types of turnover that coincide with strategic change at firms.

In contrast to the studies in economics and finance, management literature has long held the view that strategic choices and performance are influenced not only by the CEO, but also by non-CEO members of the TMT (e.g., Hambrick and Mason, 1984; Carpenter et al., 2004). The “upper echelons perspective” suggests that observed characteristics of the TMT may serve as reasonable proxies for the unobserved differences in cognition and values that are related to strategic outcomes. A number of studies have shown that characteristics of the TMT play an important role for changes in the firm's strategy. For instance, Wiersema and Bantel (1992) report that firms are more likely to experience a change in strategy if they exhibit TMTs with shorter organizational tenure and lower average age, while Finkelstein and Hambrick (1990) report that long-tenured TMTs are associated with strategic persistence. Boeker (1997) demonstrates that turnover of individual members of the TMT in an 18-year sample of observations from the semiconductor industry is associated with the strategic action of new product entry. Beckman et al. (2007) indicate that in a sample of 161 technology firms, entry of new members into the TMT increases the likelihood that a firm achieves an IPO, while TMT exits reduce the likelihood of achieving an IPO. Carpenter et al. (2004) provide a comprehensive review of the

theoretical and empirical developments in the related literature. More recent empirical studies explored the impact of TMT characteristics such as gender composition (Krishnan and Park, 2005), power distribution (Smith et al., 2006), and pay dispersion (Ensley et al., 2007).

In this study, we extend the research on TMT turnover by examining coincident strategic change in the firm's operations as measured by new disclosures of discontinued operations. Such disclosures indicate strategic re-orientation at the firm. Adopting this measure of strategic change allows for the creation of a large multi-industry dataset that complements earlier small-sample studies by considering various turnover scenarios.

Studies of turnover in the TMT also explore succession processes and their impact on the relationships among top executives. These studies include research on heirs apparent, defined as insiders who may be in line to replace the CEO (Vancil, 1987). Such heirs are often identified by the title of president or chief operating officer (Cannella and Shen, 2001). The findings in this area include Bigley and Wiersema (2002) demonstration that the heir apparent status carries consequences for strategic decision-making, including the tendency to undertake corporate strategic refocusing after the heir's promotion to CEO.

The power circulation theory of control (Ocasio, 1994; Ocasio and Kim, 1999) focuses on power contests at the firm initiated by non-CEO senior executives as well as by outside directors and suggests that an insider succession may be the outcome of a power contest. In this case, the inside successor is more likely to have a mandate for strategic change. Shen and Cannella (2002) refer to such successors as “contenders”. In contrast, insider successors that follow an ordinary retirement are likely to have the mandate to maintain strategic continuity (Friedman and Oik, 1995). The extensive dataset that we employ allows us to identify cases of contender and follower successions. We anticipate contender succession to be associated with strategic re-orientation and follower successions to have no such association.

Hypothesis 1. CEO departure in a contender succession will be positively associated with discontinued operations reported by the firm.

Hypothesis 2. CEO departure in a follower succession will not be associated with discontinued operations reported by the firm.

In contrast with insider succession, outsider succession is more likely in periods of poor firm performance and may indicate the absence of competent talent inside the firm (Finkelstein and Hambrick, 1996). Outsider successors may have the mandate to change the direction of the firm, but the lack of firm-specific knowledge and the resistance of the remaining TMT members put outsiders at a disadvantage as Shen and Cannella (2002) find a strong negative impact of outsider succession on post-succession operational performance. Zhang and Rajagopalan (2010) present evidence that outsider succession has a complex non-linear relationship with firm performance. In order to further focus on the differences between outsider, contender, and follower succession, we identify turnover scenarios that include the entire TMT. The upper echelons perspective suggests that change in the TMT may be a key indicator of strategic change at the firm. Empirically, Mueller and Barker (1997) report that firms that experience a turnaround are more likely to exhibit turnover in the TMT. Shen and Cannella (2002) conclude that focusing on the CEO alone “cannot fully capture the performance consequences of CEO succession”. Thus, we consider the following hypothesis suggested by the upper echelons perspective:

Hypothesis 3. Joint turnover of the CEO and non-CEO members of the TMT will be associated with discontinued operations reported by the firm.

The context of CEO succession influences the TMT turnover, as follower successions reflect a well-planned succession process (Vancil, 1987), while contender successions indicate a mandate for change that may provide for TMT restructuring. Those executives not suited to the new strategies leave the firm (Shen and Cannella, 2002). Our final set of hypotheses complements the work of Shen and Cannella (2002) by looking at non-CEO turnover at the time of CEO succession. We attempt to integrate the power circulation theory and the upper echelons perspective, and explore the correlation between strategic change at the firm and the different scenarios of turnover in the TMT and CEO succession. We expect a positive correlation between TMT turnover and discontinued operations in contender successions, and no such correlation in follower successions.

In outsider successions, we expect the re-orientation at the firm to occur only if the prior CEO and other TMT members leave the firm. While Shen and Cannella (2002) explore all outsider successions jointly, we are able to separate cases of outsider successions that involve the former CEO staying with the firm in another capacity from cases that involve no departures in the former TMT. The mandate for change mentioned in the literature on outsider succession is more likely to be observed if the prior CEO leaves the firm, and less likely if the prior management team stays at the firm beyond a transitional period.

Hypothesis 4. Joint turnover of the CEO and non-CEO members of the TMT at the time of contender succession will be associated with discontinued operations reported by the firm.

Hypothesis 5. Joint turnover of the CEO and non-CEO members of the TMT at the time of follower succession will not be associated with discontinued operations reported by the firm.

Hypothesis 6. Joint turnover of the CEO and non-CEO members of the TMT at the time of outsider succession will be associated with discontinued operations reported by the firm.

3. Data and sample selection

The analysis starts with the Standard and Poor's *ExecuComp* dataset of top executives for the period from 1992 through 2006. With 2664 publicly traded firms in the sample, the panel of observations amounts to a total of 23,747 firm-year observations. The *ExecuComp* dataset records detailed characteristics of executive compensation contracts allowing for the separate identification of the cases of CEO and non-CEO turnover. Barron and Waddell (2003) present a general discussion of the *ExecuComp* data.

3.1. Identifying the CEO

While the *ExecuComp* dataset typically identifies each firm's Chief Executive Officer (CEO), this information can be missing. We therefore supplemented the *ExecuComp* database in two ways. First, we integrated the LexisNexis *Corporate Affiliations* database of top executives with *ExecuComp*. Second, we searched historical sources contained in Dow Jones and Reuters' *Factiva* full-text news dataset in order to confirm the executive's identity in cases when the data were missing or conflicting. In total, over 1600 separate inquiries were made to verify and supplement the CEO identification from *ExecuComp* and *Corporate Affiliations* data sources.

We were careful throughout to establish the identity of the CEO and the exact timing of succession. In cases when conflicting database information indicated a succession process that was not clear-cut, at least two researchers examined the newswire descriptions of the succession and found agreement on the exact timing of succession and CEO identification in each year. This resulted in over 300 adjustments to CEO identification. Most of these changes corrected

the reported timing of succession. In several cases we needed to correct the CEO designation, as co-CEOs were reported in a transition period. In another case, we excluded from the sample 2 years of data for Lucent Technologies, as this company was not spun off from ATT and had no separate CEO until 1996, although it appears in the *ExecuComp* database prior to 1996 as a separate company. In general, we performed multiple checks to assure overall accuracy. For example, our consistency checks revealed that the unique identifier assigned to executives in *ExecuComp* can change when an executive's surname changes due to marriage. A full list of adjustments to the *ExecuComp* data is available from the authors.

3.2. Identifying turnover scenarios

"CEO turnover" is typically defined in the literature as departure from the official position of CEO and not necessarily the firm. However, a departure can often involve the individual taking a new position within the firm (e.g., Chairman of the Board of Directors) or maintaining a past position (e.g., Chairman would again be typical). One distinguishing feature of our analysis is that we separately identify CEO turnover that reflects an individual who actually leaves the firm from that which constitutes a change in responsibility within the firm. In essence, our expectation is that the CEO's retention within the firm contains information. We therefore consider how variation in the observed turnover patterns across firms – a true departure for some CEOs versus a change of duties for others – is connected to disclosures of discontinued operations.

The *ExecuComp* data provides reasons for CEO departure classified as one of the three types – retired, resigned, or deceased. We supplemented this information through detailed searches of business publications using the Dow Jones and Reuters' *Factiva* full-text news database. The collected data helped clarify the unknown and missing cases, identify cases of departure due to death or illness, and separate interim CEOs from others. We removed from our analysis turnover activity involving interim CEOs that constituted about two hundred cases of turnover (1% of all firm-year observations). As individuals leaving the firm from the CEO position often have a short period of transition that we want to allow for, we made the assumption that outgoing CEOs left the office and the firm if they are not found in the firm's record of top executives in the second year following their last year in the CEO position. That is, we allow for up to 1 year of transitional employment before making the determination that the executive stayed with the firm.

Our analysis is also distinguished by including turnover patterns of non-CEO members of the TMT. Once the CEO was identified, we used total compensation to determine the top three non-CEO executives. A similar mechanism is employed by Fee and Hadlock (2004) and Hayes et al. (2006). For each of these non-CEO executives, we assume that if he or she is not among the firm's list of top executives the following year, the executive departed the firm. A limitation of the dataset is that for executives below the CEO, it could be the case that exclusion from the set of top-four managers in a given year reflects only a change in ordinal compensation, but not necessarily a departure from the firm. In order to provide accommodation for this issue, we compare each executive not only to the top-four, but to the entire list of the firm's executives in the dataset in the subsequent year to determine turnover. This entire list of executives typically includes at least five executives for each firm, but may have as many as eleven top executives. In addition, we performed over 1600 individual inquiries on the details of turnover for both CEO and non-CEO executives. Our experience indicates that senior executives that drop off the list for a particular firm are in fact leaving senior positions.

The definition of the top-four executives as the size of the TMT in our study is dictated by the availability of the data in the *ExecuComp* database. This approach is common in studies that rely on financial statements as a source of data. For instance, Carpenter et al. (2003)

and Carpenter et al. (2001) constrain the definition of the TMT to the top five highest paid executives including the CEO as listed in the financial statements, while Bertrand and Schoar (2003) use the top five executives reported in the *ExecuComp*. Other studies reported similar mean TMT size using publicly available sources, including Wiersma and Bantel (1992) with mean TMT size of 4.3 or Haleblan and Finkelstein (1993) with 3.39. Surveys of top managers yielded mean TMT sizes reported by Amason (1996) – 3.45, Iaquinto and Fredrickson (1997) – 4.2, Amason and Mooney (1999) – 4.9. An extensive list of TMT sizes is provided in Carpenter et al. (2004). In general, our definition of the TMT size is in line with these existing studies, especially the ones that rely on financial statements.

3.3. Identifying discontinued operations

In analyzing the effects of CEO turnover, Murphy and Zimmerman (1993) consider changes in R&D, advertising, capital expenditures, and accounting accruals, while Weisbach (1995) looks at 282 reported divestitures of previous acquisitions. Our proxy for a real change in a firm's portfolio of operations is the disclosure of discontinued operations, which is defined by FASB Statement No. 144 as “the results of operations of a component of an entity that either has been disposed of or is classified as held for sale”. Note that prior to 2001, the guidance for reporting discontinued operations was provided by the 1973 APB Opinion No. 30 that defined a discontinued operation as a separate line of business or a separate class of customer. The change in the definition of discontinued operations can be viewed as introducing noise into our dependent variable, and our empirical findings are consistent and stronger if the sample is restricted to years before this 2001 change in the accounting standard of discontinued operations.

In order to obtain a measure of discontinued operations, we match each firm in our *ExecuComp* sample to *Compustat* records in which annual data item number 66 represents “the total of income (loss) from operations of the discontinued division and the gain (loss) on the disposal of the division”. Our dependent variable is binary and equals one for each year that the firm disclosed a new sequence of discontinued operations, as our analysis focuses on the fact that discontinuations were announced, and not on specific amounts. This approach is consistent with that of Statman and Sepe (1989). While

sharing the spirit of the divestiture measure adopted in Weisbach (1995), we are knowingly trading a somewhat less-precise measure of change in the firm's portfolio of operations for the advantage of having a measure that is available for a larger and more-general collection of firms, which is necessary to separately examine a variety of turnover scenarios. As the financial implications of discontinued operations are commonly spread over multiple annual reports, we focus on the first disclosure of discontinued operations in each sequence. In summary, the dependent variable in the empirical results reported below is equal to 1 if the firm discloses a new sequence of discontinued operations in a year, and 0 otherwise.

We adopt the *ExecuComp* dataset as our initial sample of firms. We limit our sample to those cases where we have information on compensation for at least four top executives each year and for a minimum of three consecutive years in order to define turnover. In our empirical specifications, we also control for variation in firm characteristics that are likely to correlate with discontinuation of operations. In addition, we include measures of firm performance such as the industry-adjusted shareholder rate of return on equity over the prior one and three-year periods as well as industry-adjusted net income to assets ratio, anticipating that poor-performing firms may behave differently. Given this list of controls, missing information on one or more of these variables yields a final sample of 2399 unique firms and 17,313 firm-year observations from 1993 to 2005.

4. Empirical results

Examination of the raw departure patterns suggests why a formal analysis that exploits larger samples is useful in identifying alternative types of TMT turnover. Table 1 identifies top-executive departure types for the full sample. We identify insider replacement if the new CEO was among the top executives at the firm for at least two years prior to assuming the CEO position. Doing so excludes cases when an outsider is initially brought in below the CEO for a transition period. Following the power circulation theory (Shen and Cannella, 2002), we separate the insider succession into cases of contender and follower succession. We define follower succession as insider succession when the prior CEO changes duty and stays with the firm in another

Table 1

Executive turnover by type (1993–2005).

Reported number of cases based on a sample that excludes observations with missing data. This sample matches the full sample used in Model (6) in Table 4 except that the 45 cases when the CEO left due to death or illness are excluded. The percentages are with respect to each row.

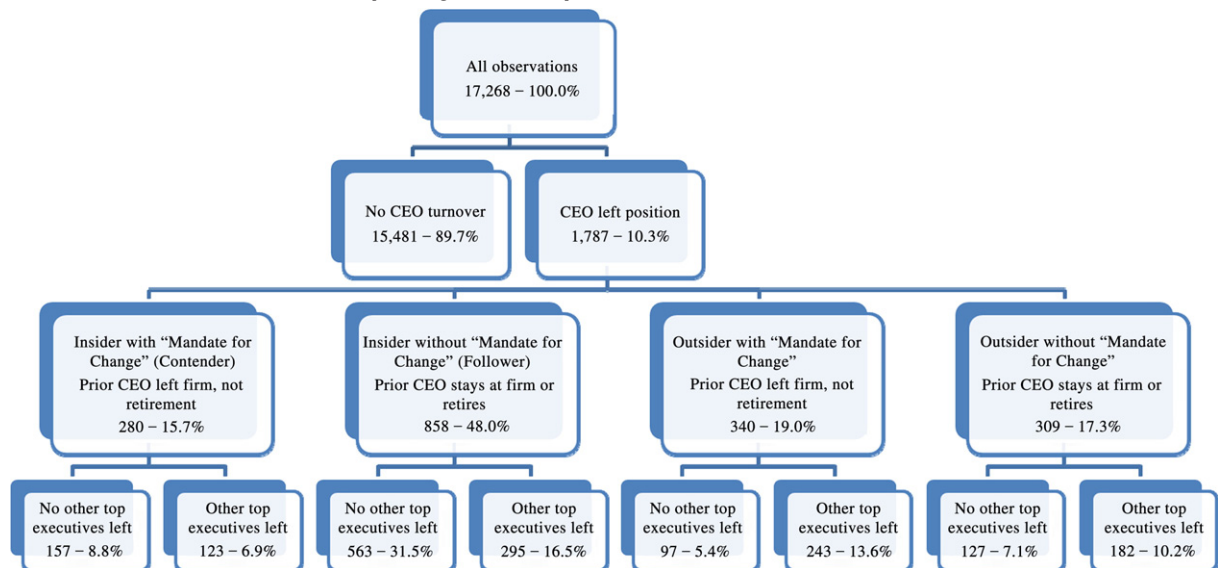


Table 2
Likelihood of discontinued operations and CEO turnover.
Reported coefficients are based on estimates of fixed-effects logit specifications. Robust standard errors are reported in parentheses. The mean value of the dependent variable is 0.143.

	Discontinued operations in subsequent year	Discontinued operations in concurrent year	Discontinued operations in prior year
	Model (1)	Model (2)	Model (3)
CEO left position	-0.007 (0.11)	0.31** (0.10)	-0.01 (0.10)
Only non-CEO TMT turnover	0.05 (0.07)	0.12 (0.07)	0.05 (0.07)
Prior 1-year industry-adj. shareholder rate of return	0.0003 (0.0017)	0.0002 (0.0017)	0.0003 (0.0017)
Prior 3-year industry-adj. shareholder rate of return	-0.11 (0.21)	-0.12 (0.21)	-0.11 (0.21)
Prior industry-adj. net income divided by total assets	0.07 (0.16)	0.08 (0.16)	0.07 (0.16)
Prior log of book value of total assets	0.77** (0.10)	0.76** (0.10)	0.77** (0.10)
Prior ratio: R&D to book-value to assets	1.58 (0.94)	1.61 (0.94)	1.58 (0.94)
Prior ratio: market to book-value of assets	-0.20** (0.07)	-0.19** (0.06)	-0.20** (0.07)
Prior log of CEO tenure	0.07 (0.05)	0.04 (0.05)	0.07 (0.05)
Observations	8096	8096	8096

Not reported are coefficients on twelve year-indicator variables.

* Significant at 5%.

** Significant at 1%.

capacity, or retires. Contender succession is defined as insider succession when the outgoing CEO leaves the firm for reasons other than retirement, death, or illness.

Shen and Cannella (2002) view contender successors as having the mandate for change and follower successors as having the mandate to keep status quo, while all outsider succession is explored jointly. Our data suggest that cases of outsider succession may also be distinguished by the likely mandate of the incoming CEO. In 340 cases out of 649 outsider successions, the prior CEO stayed with the firm after leaving the position. Similar to follower succession, the mandate for

change is unlikely if the prior CEO stays with the firm beyond a transitional period. We expect such a mandate only in cases when the prior CEO left the firm for reasons other than regular retirement or illness.

Table 1 also reports whether turnover in the TMT occurred at the time of CEO succession. The table lists whether at least one of the non-CEO TMT members left the firm at the time of the CEO succession. Note that turnover in non-CEO members of the TMT is relatively more common in cases of contender succession and outsider succession with mandate for change.

4.1. Discontinuations and CEO turnover: a fixed-effects analysis

In order to focus on the link between CEO turnover of various types and new disclosures of discontinued operations, our specification includes firm-level fixed effects which allows us to abstract from differences across firms that could be correlated with both turnover and the likelihood of discontinued operations. For such analysis, there are 8096 observations across 857 firms that experienced at least one incident of discontinued operations. For comparison, we also report cross-sectional analysis for the full panel in a later table.

The fixed-effects logit estimates reported in Table 2 examine the relationship between strictly prior (Model 1), concurrent (Model 2), and strictly subsequent (Model 3) CEO turnover and new disclosures of discontinued operations. While we remain careful not to unjustifiably make causal statements, the collective impact of the patterns identified across the three specifications suggests that to the extent discontinued operations and turnover co-vary, the significance of any patterns is confined to within-year episodes. The results suggest that discontinued operations and CEO turnover vary together and with an apparent short-lived relationship. This positive result complements Weisbach's (1995) finding that divestitures are more likely with the change in CEO.

Focusing on contemporaneous movement in turnover and disclosure of discontinued operations, Tables 3 and 4 examine further the sources of the underlying link between CEO turnover and discontinued operations. Table 3 provides a version of Table 1 that illustrates the differences in the likelihood of discontinued operations depending on turnover type. The striking feature of Tables 3 and 4 is that the

Table 3
Percent of cases of discontinued operations across different types of CEO Turnover.

Reported percentages reflects the fixed-effects sample of firms used in Tables 2 and 4. The bold type indicates a cell that had a statistically significant (at the 1% level) higher likelihood of discontinued operations.

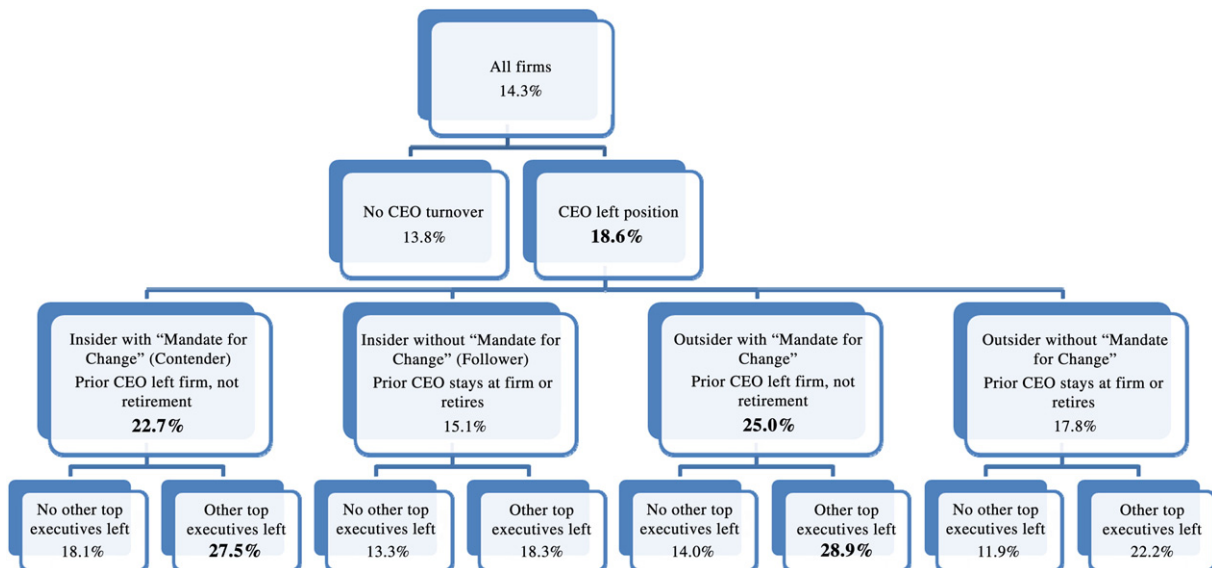


Table 4

Likelihood of discontinued operations and CEO turnover type.

Reported coefficients are based on fixed-effects logit specifications for firms with at least one discontinued operation during the period, except model (6) which is a logit specification for the full panel sample. Robust standard errors are reported in parentheses. The dependent variable mean is 0.14 for the fixed-effects sample and 0.07 for the full sample.

	Discontinued operations			
	Model (2)	Model (4)	Model (5)	Model (6)
CEO left position	0.31** (0.10)			
CEO left firm, contender successor		0.46* (0.22)		
CEO left firm, contender successor, no TMT turnover			0.21 (0.33)	0.27 (0.30)
CEO left firm, contender successor, TMT turnover			0.67* (0.29)	0.96** (0.26)
CEO changed duty or retired, follower successor		0.14 (0.15)		
CEO changed duty or retired, follower successor, no TMT turnover			-0.03 (0.19)	0.07 (0.18)
CEO changed duty or retired, follower successor, TMT turnover			0.39 (0.22)	0.49* (0.20)
CEO left firm, outsider successor		0.65** (0.20)		
CEO left firm, outsider successor, no TMT turnover			-0.08 (0.46)	-0.07 (0.43)
CEO left firm, outsider successor, TMT turnover			0.85** (0.22)	1.00** (0.19)
CEO changed duty or retired, outsider successor		0.24 (0.22)		
CEO changed duty or retired, outsider successor, no TMT turnover			-0.10 (0.39)	-0.06 (0.37)
CEO changed duty or retired, outsider successor, TMT turnover			0.44 (0.28)	0.63* (0.25)
CEO left firm, illness or death		-0.47 (0.76)	-0.42 (0.76)	-0.23 (0.73)
Only non-CEO TMT turnover	0.12 (0.07)	0.13 (0.07)	0.13 (0.07)	0.17* (0.07)
Prior 1-year industry-adjusted shareholder rate of return	0.0002 (0.0017)	0.0002 (0.0017)	0.0002 (0.0017)	0.0004 (0.0007)
Prior 3-year industry-adjusted shareholder rate of return	-0.12 (0.21)	-0.13 (0.21)	-0.13 (0.21)	-0.28 (0.17)
Prior industry-adjusted net income divided by total assets	0.08 (0.16)	0.08 (0.16)	0.08 (0.16)	0.06 (0.13)
Prior log of book value of total assets	0.76** (0.10)	0.75** (0.10)	0.74** (0.10)	0.14** (0.02)
Prior Ratio: R&D to book-value of assets	1.61* (0.94)	1.59* (0.95)	1.60* (0.95)	-1.05 (0.79)
Prior Ratio: market to book-value of assets	-0.19** (0.06)	-0.19** (0.06)	-0.19** (0.06)	-0.32** (0.04)
Prior log of CEO tenure	0.04 (0.05)	0.05 (0.05)	0.05 (0.05)	-0.01 (0.04)
Observations	8096	8096	8096	17,313

Not reported are coefficients on twelve year-indicator variables. Because Model (6) is not a fixed-effects model, it includes industry-indicator variables.

** Significant at 1%.

* Significant at 5%.

greater likelihood of discontinued operations in the raw data for CEO departures is traceable to a specific subset of CEO turnover, namely contender succession when other TMT members also leave the firm, or outsider succession when there is a mandate for change as indicated by the departure of the prior CEO and one or more of the prior TMT members from the firm. This path is highlighted using bold lettering in Table 3.

Table 4 confirms the statistical significance of this pattern. Model (2) is repeated in the first column of Table 4 as the baseline specification. Models (4) and (5) then break down CEO turnover further. In Model (4) we allow estimates to differ in cases of contender and follower succession, and in cases of outsider succession with and without a mandate for change. Doing so demonstrates that the result reported in Model (2), one that is repeated in the literature, reflects a large and significant effect associated with contender succession and with outsider succession when the departing CEO leaves the firm.

There is no significance, and the coefficients are close to zero in cases of follower succession and outsider succession associated with regular retirements. Thus, the results from Model (4) support Hypotheses 1 and 2.

4.2. Discontinuations and top management teams

Taking into account the departure behavior of non-CEO top executives, Model (5) introduces separate estimated coefficients for CEO departures that are accompanied by at least one other TMT member leaving the firm and those made alone. The empirical regularity identified in this specification strongly suggests a team effect in the correlation between CEO departures and discontinued operations. In fact, in cases when the CEO was the only top manager to leave position there is no statistically significant relationship within the data. Furthermore, this insignificance is observed for all the

possible scenarios of contender, follower, and outsider succession. Overall, only CEO departures from the firm that are accompanied by other TMT departures are significantly correlated with discontinued operations. This finding supports Hypothesis 3.

Model (5) also helps evaluate Hypotheses 4–6. Hypothesis 4 is supported, as we find strong significance for cases of contender succession associated with turnover in the TMT. Contender succession in cases when the CEO is the only member of the TMT to leave the firm does not show significance. Hypothesis 5 is supported, as we observe no significance in cases of follower succession either with or without concurrent turnover in the TMT. Hypothesis 6 is supported, as we observe significance in cases of outsider succession associated with turnover in the TMT, but not in cases of outsider succession by CEO alone. Overall, our results suggest that the turnover behavior of non-CEOs must be included in the analysis of strategic change at the firm and the upper echelons perspective needs to be integrated with the contender/follower/outsider succession scenarios suggested by the power circulation theory.

In the above results, the sample of firms is restricted to those reporting a discontinuation at least once over the sample period. This enables any time-invariant firm-level heterogeneity that remains after netting out the influence of control variables to be accounted for in the error and not spill into the coefficient estimates. In Model (6) we forgo this sample restriction and explore the entire panel of firms; the results are largely consistent with the fixed-effects analysis. One notable difference is some tendency toward larger point estimates on turnover measures, suggesting that firms that are more likely to disclose a discontinued operation at any time within the sample period are also more likely to experience turnover.

5. Conclusion

Changes in top management teams are important events for a firm. This research focuses on the correlation between different types of turnover in the TMT and strategic change at the firm measured by disclosures of discontinued operations. Using an extensive dataset, we are able to document that CEO turnover significantly increases the likelihood of new discontinued operations, but that this link is limited in three distinct ways. First, we find that discontinued operations are associated with a CEO departure only if at least one other TMT member leaves the firm with the CEO. This result demonstrates the importance of management teams in determining the firm's real investment strategy. Focusing solely on CEO turnover does not provide a complete view of strategic change at the firm. Second, we find a link with discontinued operations in cases of contender succession but not follower succession. This finding supports the power circulation theory and suggests that contender succession coincides with a mandate for strategic change. Our third result is that outsider succession is associated with new discontinued operations only if the prior CEO and prior members of the TMT leave the firm at the time of succession. Failing to distinguish cases of outsider succession that involve TMT turnover from cases that do not may provide for the conflicting results on the effects of the outsider succession discussed by Karaevli (2007).

The implications of this study for future theoretical and empirical work on the link between turnover and changes in the firm's portfolio of operations include the idea that such work should not focus solely on the CEO. Integrating the upper echelons perspective with the power circulation theory view of CEO turnover will provide for a better understanding of the impact of changes in organizational leadership on the firm.

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