

New CEO Openness to Change and Strategic Persistence: the Moderating Role of Industry Characteristics

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Drawing on the upper echelons, managerial discretion and strategic contingency perspectives we examine the relationships between newly chosen CEOs' openness to change and firm strategic persistence in the post-succession phase. This study is different from prior studies on the consequences of CEO succession in that it focuses on specific characteristics of the new CEO (that reflect his/her knowledge-base and cognitive orientations) and the industry context rather than purely on the event of succession. Based on a sample of 132 successions in 118 firms in the US manufacturing sector, and after controlling for industry concentration, board power, firm size and pre-succession performance, we find a negative relationship between CEOs' openness to change and post-succession strategic persistence. Interestingly, our findings indicate that this relationship is moderated by industry characteristics in that the negative association between CEO openness to change and strategic persistence is significant in high-discretion but not in low-discretion industries. Contributions of the paper to the CEO succession and strategic change literatures along with the managerial implications of our findings are discussed in the concluding section of the paper.

Introduction

The choice of a chief executive officer (CEO) is a key organizational decision, with important ramifications for organizational strategies and performance. Not surprisingly, there has been extensive research over the past three decades on issues related to CEO succession. However, as reviews (Finkelstein and Hambrick, 1996; Kesner and Sebora, 1994) highlight, there are still major gaps in our understanding of succession issues. Two such important gaps relate to (a) whether

and how newly selected CEOs influence the strategic direction of their organizations, and (b) the extent to which their actions are contingent upon the industry.

We contend that there are two primary reasons for these empirical gaps. First, prior research on the performance consequences of CEO succession has typically focused on the event of succession. However, the event of succession does not fully capture the succession phenomenon. The successor's characteristics obviously influence subsequent strategic actions and, consequently, they need to be examined as well. In order to address this gap, we develop and test a theoretical model that relates variations in CEO successor characteristics to post-succession strategic persistence. Second, from a theoretical standpoint, it is somewhat unrealistic to assume

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that a new CEO, *per se*, will directly influence organizational strategy (Zajac, 1990). Post-succession strategic changes initiated by the new CEO can often be constrained or encouraged by the environmental context within which changes are implemented (Finkelstein and Hambrick, 1996). Therefore, in this paper we examine the moderating effects of the firm's industry environment on the CEO successor-strategic persistence relationship.

The paper is structured as follows: first, we review past empirical literature on the strategic consequences of CEO succession. Second, we develop a parsimonious theoretical framework that integrates strategic choice, upper echelons and contingency theories. The framework seeks to identify the direct effects of CEO characteristics on strategic persistence and the moderating effects of industry characteristics on the CEO-strategic persistence relationship. In this section we also present the specific research hypotheses examined in our study. In the following section we discuss research methods adopted, including sample selection, time-frame, measures and data-analysis techniques. Next, we present the empirical results. Finally, we discuss the implications of our findings, identify study limitations and present directions for future research.

Literature review: CEO Succession and firm strategy

Based on the strategic choice paradigm (Child, 1972), which postulates that key managers have considerable control over an organization's future direction, one set of studies has examined the relationships between top-management characteristics and firm strategy.² These studies also reflect the contingency argument (Gupta, 1984; 1988) that the appropriateness of particular managerial skills is contingent on a firm's strategy (Chaganti and Sambharya, 1987; Govindarajan, 1989; Smith and White, 1987). Consistent with theory, Smith and White (1987)

found systematic relationships between firms' diversification strategies and new CEOs' functional backgrounds. Similarly, Govindarajan (1989) and Chaganti and Sambharya (1987) found significant relationships between firms' competitive strategies and top managers' functional backgrounds. More recently, Barker and Mueller (2002) examined the relationships between CEO characteristics and firm R&D spending and found that R&D spending is greater at firms where CEOs are younger, have career experience in marketing and/or engineering/R&D and advanced science-related degrees. Likewise, in the international context, Herrmann and Datta (2002) found strong relationships between the characteristics of newly selected CEOs and the choice of foreign-market entry modes. In addition, studies by Miller, Kets de Vries and Toulouse (1982) and Miller and Toulouse (1986) identify links between a CEO's personality and his/her strategy-making behaviour. They found that while firms led by confident and aggressive CEOs pursued risky and innovative strategies, those led by CEOs given to feeling of 'helplessness' tended to adopt more conservative strategies. These studies offer descriptive validity to the proposition that systematic relationships exist between executive characteristics and firm strategies.

Another group of studies has related various demographic characteristics of top executives to the direction and magnitude of strategic change (Rajagopalan and Spreitzer, 1997). Consistent with the upper echelons theory (Hambrick and Mason, 1984), Wiersema and Bantel (1992) found that lower average age, shorter organizational tenure, higher team tenure and higher educational level among TMT members resulted in greater changes in corporate strategy as reflected in absolute changes in diversification level. Positive relationships between executive education levels and organizational innovation have also been observed in samples of commercial banks (Bantel and Jackson, 1989) and computer companies (Thomas, Litschert and Ramaswamy, 1991). Norburn and Birley (1988) also found positive relationships between top executives' educational levels and company growth. In addition, studies by Finkelstein and Hambrick (1990) and Hambrick, Geletkanycz and Fredrickson (1993) show a negative relationship between executive firm tenure and strategic

²While the focus of our study is on strategic persistence, rather than firm strategy, we draw upon studies that have examined CEO-strategy relationships in general because of the relatively few studies that have focused on the strategic persistence consequences of CEO succession.

change. These two studies also identified the moderating effects of the industry environment on the executive-strategic change relationship. Finkelstein and Hambrick (1990) observed that the relationships between TMT tenure and strategic persistence were much stronger in high-discretion industries than in low-discretion ones. Similarly, Hambrick, Geletkanycz and Fredrickson (1993) found that the association between executives' organizational and industry tenure and their commitment to the status quo held in high-discretion but not in low-discretion industries.

Interestingly, none of the above studies examine the direct effects of CEO succession on subsequent firm strategy. Yet, it can be reasonably argued that strategic change is likely to be more pronounced in the succession context. For one, CEO successions provide an important mechanism for realignment with the organizational or environmental context and are often a precipitating force in overcoming organizational inertia and resistance (Ocasio, 1994; Perrow, 1986; Thompson, 1967; Tushman and Romanelli, 1985). In addition, it can be argued that the background characteristics of a newly selected CEO (e.g. age, firm tenure and educational background) should have a significant influence on the firm's strategic direction. Such characteristics often reflect the CEO's underlying psychological orientation and knowledge base (Datta and Rajagopalan, 1998; Keisler and Sproull, 1982) and are, hence, likely to be reflected in strategic decisions made during the post-succession period.

Limited empirical evidence indicates that new CEOs do initiate major organizational changes. Helmich and Brown (1972) and Grusky (1963) found that outsider succession was associated with greater change in organizational staffing and structures, while insider succession was typically associated with a perpetuation of existing policies and practices. In the strategy literature, Wiersema (1992) found that firms with outside succession have a greater likelihood of experiencing significant change in their diversification strategy than those with inside succession. In addition, Boeker's (1997) study of managerial characteristics and strategic change in the semiconductor industry revealed that longer CEO tenure was negatively associated with the extent of strategic change.

In sum, the studies reviewed above indicate that newly chosen executives' characteristics are likely to influence the firm's strategic direction. However, our understanding of the relationships between such characteristics and subsequent strategic change is rather limited because very few studies have examined the effects of CEO succession on firms' strategic behaviors and those that do focus on CEO origin (outsider versus insider) rather than a more holistic set of CEO characteristics. This can be a problem because simple dichotomous definitions of CEO origin cannot adequately capture the psychological orientation and knowledge base of the successor CEO (Finkelstein and Hambrick, 1996). To compound the problem, there is little consensus on the definition of an 'insider' versus 'outsider' (Kesner and Sebor, 1994). In the following section, we develop a framework that focuses on these empirical gaps and provides a theoretical rationale for our research hypotheses.

Theoretical perspectives and research hypotheses

This section draws on the upper-echelons (Hambrick and Mason, 1984), managerial-discretion (Hambrick and Finkelstein, 1987) and contingency (Gupta, 1984) perspectives to develop relationships between new CEO openness to change, strategic persistence and the moderating effects of industry characteristics. We first briefly describe the key theoretical constructs used in this study and then develop specific research hypotheses.

We examine the effect of the new CEO on firm strategy and performance through an integrative construct termed 'CEO openness to change'. This construct is adopted from Finkelstein and Hambrick (1996, p. 185) who identify two elements of CEO openness to change—cognitive and social/interpersonal. We focus on the cognitive elements of openness to change because the demographic proxies we use have been directly linked to cognitive (rather than social) openness to change in past literature. We use the term 'openness to change' to synthesize the three CEO demographic characteristics that have been most extensively related to firm-level changes in prior research, namely, CEO firm tenure, age and educational background.

While past research has typically examined the separate effects of individual demographic attributes, several arguments can be made for looking at them in combination. First, a combined construct takes into account potential offsetting effects between individual demographic attributes. For example, while one might associate high firm tenure with lower openness to change, this effect may be offset by higher educational level. Second, a close examination of the executive leadership and CEO succession literatures indicates that researchers have typically invoked similar theoretical arguments in examining individual demographic characteristics (e.g. Datta and Guthrie, 1994). In general, high levels of firm tenure, lower levels of education, and higher executive age have all been linked to low levels of propensity for change, greater levels of risk aversion, use of limited information sources etc. (e.g. Rajagopalan and Datta, 1996; Wiersema and Bantel, 1992). While these three demographic characteristics are distinct theoretical constructs, they appear to have similar effects in predicting CEO actions and organizational change. Hence, an integrative construct that represents the CEO's underlying cognitive orientation offers a theoretically parsimonious way of synthesizing these distinct CEO attributes. Based on prior research (Datta and Rajagopalan, 1998; Finkelstein and Hambrick, 1996; Wiersema and Bantel, 1992) we postulate that higher openness to change will be associated with lower firm tenure and age, and higher educational level. In contrast, low openness to change will be associated with greater firm tenure and age, and lower educational levels. Consistent with our theoretical arguments, we will demonstrate later in this paper that these three variables also empirically load on a single factor.

To capture changes in firm strategy we use the holistic multidimensional construct of 'strategic persistence' developed by Finkelstein and Hambrick (1990). Their concept of 'strategic persistence' captures the extent to which a firm's strategy remains fixed over time and is similar to Hambrick, Geletkanycz and Fredrickson's (1993) 'commitment to status quo' construct. Following Finkelstein and Hambrick (1990), we use six strategic indicators to create composite measures of a firm's strategic persistence: (1) advertising intensity; (2) research and development intensity; (3) plant and equipment; (4) non-

production overhead; (5) inventory levels and; (6) financial leverage. This multidimensional construct is discussed in more detail in the methods section.

While industry characteristics have been addressed along a variety of dimensions in prior literature, we focus on three dimensions, namely, the degree of industry capital intensity, product differentiability and growth rate (Bain and Qualls, 1987; Hay and Morris, 1979; Porter, 1980). From a theoretical standpoint, these three dimensions can be related directly to variations in the types and range of competitive actions pursued in an industry and have been used in recent CEO succession studies (e.g. Datta and Rajagopalan, 1998; Rajagopalan and Datta, 1996) as key environmental contingencies.

The descriptive interrelationships between CEO openness to change, firm strategic persistence and industry characteristics are based on the following theoretical arguments. First, when a new CEO is less open to change there is a greater likelihood that the firm will be characterized by strategic persistence in the post-succession phase. Second, the ability of the new CEO to initiate strategic changes is likely to be enhanced (or, alternatively, constrained) by the extent of discretion afforded by the industry environment. Detailed arguments and specific research hypotheses are discussed next.

CEO openness to change and strategic persistence

It has been documented in the literature (e.g. Hambrick Geletkanycz and Fredrickson, 1993) that while some CEOs exhibit a propensity for change others emphasize the status quo. The underlying factors behind some CEOs being more open-minded about change than others lies in their psychological/cognitive orientation, i.e. their beliefs, knowledge, assumptions and values (Hambrick and Mason, 1984). For example, a CEO might be less committed to change because of beliefs and assumptions that it is best for the organization to maintain the current strategy. Alternatively, reluctance to affect change might be due to a limited knowledge base—a lack of awareness that limits the range of strategic options that can be conceptualized and considered.

While we focus on the integrative construct 'CEO openness to change', past work (e.g. Bantel

and Jackson, 1989; Hambrick, Geletkanycz and Fredrickson, 1993), has related individual demographic characteristics to strategic change/persistence. It has been argued that CEOs with higher levels of organization tenure can become embedded within organizational routines and processes that contribute to maintaining the status quo (Daft and Weick, 1984; Staw and Ross, 1980; Tushman and Romanelli, 1985). In other words, insider successions are likely to be associated with the perpetuation of existing policies, practices and strategies because there is a greater probability that the new CEO will frame problems and identify alternatives based on past experience. On the other hand, outsider succession, associated with less commitment to the status quo and a broader knowledge of environmental conditions, is more likely to result in strategic change (Helmich and Brown, 1972; Tushman and Romanelli, 1985; Wiersema, 1992). Moreover, as argued by Hambrick, Geletkanycz and Fredrickson (1993), executives with long organizational tenures have a great deal invested (psychologically and tangibly) in the status quo and often have more to lose than gain from organizational and strategic changes. Likewise, age has been associated with reduced openness to change, as identified by greater commitment to past strategies, limited exploration of new alternatives and less likelihood of strategic change (Wiersema and Bantel, 1992). Higher levels of formal education should also reduce the likelihood of strategic persistence. This is based on the premise that a higher education level is associated with greater tolerance for ambiguity, increased ability to process multiple alternatives and greater openness to change (Becker, 1970; Dollinger, 1984).

In summary, CEO openness to change, as reflected in lower firm tenure, lower age and greater educational level should be associated with lower levels of strategic persistence during the post-succession period. On the other hand, the selection of a CEO with higher firm tenure and age, and lower educational level is likely to result in greater emphasis on the status quo and hence, higher levels of strategic persistence. Thus:

H1: There will be a negative relationship between CEO openness to change and post-succession firm strategic persistence.

Moderating role of industry characteristics

Industry has been widely acknowledged as a key influence on managerial actions and competitive strategies of firms (e.g. Bain and Qualls, 1987; Porter, 1980). Hambrick and Finkelstein (1987) argued that the structural characteristics of an industry also affect the extent of influence that top managers can have on firms' strategic choices. Specifically, they argued that top executives are likely to have more influence in environments that offer greater discretion and latitude. These arguments have particular relevance for studying the relationships between CEO openness to change and strategic persistence. Variations in discretion have important implications for both feasible strategic alternatives and the ability of a CEO to initiate strategic change. When discretion is low, the role of the top executive (CEO) is limited and even a very 'open' CEO might be constrained in making strategic changes he/she might otherwise be inclined to make. With restricted latitude in low-discretion industries, the effects of the CEO on post-succession strategic change are likely to be attenuated. On the other hand, when discretion is high, CEOs can significantly shape the organization and its strategies. CEO openness to change, under such circumstances, will be reflected in significant strategic changes.

Industry differentiability (typically operationalized as industry advertising intensity) has an important impact on available managerial discretion. In an industry characterized by high product differentiability, there are typically multiple ways by which firms can choose to create and maintain competitive advantage (Porter, 1980). In general, a differentiable industry increases the scope for managerial discretion, providing managers with a wider latitude for strategic choice and greater possibilities for breaking away from past practices and norms. Strategic change (deviations from past practices), in such contexts, is likely to be less prohibitive (Sutton, 1991). As such, the negative relationships between CEO openness to change and post-succession strategic persistence are likely to be more pronounced in industries characterized by high levels of product differentiability. These arguments lead to our second research hypothesis:

H2: CEO openness to change will be negatively associated with strategic persistence in high

differentiation industries but not in low differentiation industries.

Along with product differentiability, industry growth rate has been associated with greater market opportunity and competitive variation, providing managers with more discretionary opportunities. Dess and Beard (1984, p. 55) also recognize the importance of industry growth and identify it as being the primary factor determining environmental munificence. Rapid industry growth often attracts new entrants (Sutton, 1991) who might choose to pursue very different strategies from incumbent firms. High growth industries are characterized by significant uncertainty and causal ambiguity—conditions that value change. Conversely, slow growth environments limit the ability of managers to explore new competitive options and instead value a greater commitment to the status quo. These arguments suggest that the negative relationships between successor CEO openness to change and post-succession strategic persistence will be significant in high growth as opposed to low growth industries as reflected in the next research hypothesis.

H3: CEO openness to change will be negatively associated with strategic persistence in high growth industries but not in low growth industries.

Unlike product differentiation and growth, industry capital intensity has been associated with limited managerial discretion (Hambrick and Finkelstein, 1987). Firms in capital-intensive industries are generally committed to a course of action; capital intensity often creates rigidity such that new products or markets cannot be accommodated, as deviations might be expensive (Ghemawat, 1991). As such, capital intensity is associated with limited managerial latitude in terms of strategic choices. Moreover, given the importance of efficient management of assets in capital intensive environments, new strategies (involving greater experimentation and greater risk of failure) are less likely to be valued. Thus, due to the limited opportunity available to an incoming CEO of affecting strategic changes in a capital-intensive industry, the negative relationships between CEO openness to change and strategic persistence is likely to be less pronounced in such industries.

These arguments lead to our final hypothesis.

H4: CEO openness to change will be negatively associated with strategic persistence in low capital intensity industries but not in high capital intensity industries.

Methods

The sample for our study consisted of CEO successions in non-diversified US manufacturing firms that took place during the 1977–1987 time period. Data for study variables, however, spanned the 1977–1990 period. We used the following criteria in selecting our sample: first, each firm had to derive at least 70% of its sales from a single four-digit manufacturing industry in the year of succession and in each of the preceding five years. The sample was restricted to non-diversified firms (with sales revenues greater than \$100 million) to enable us to more directly assess the moderating effects of specific industry characteristics on the relationships between CEO openness to change and post-succession strategic change. Second, firms in the sample had to be publicly traded so that comparable data on firm strategy variables and characteristics of the newly selected CEO could be obtained from published sources. On applying these selection criteria (and, ensuring data availability on all study measures) we obtained a final sample of 132 CEO successions in 118 firms representing forty four-digit manufacturing industries.³ The number of successions in each industry varied from a minimum of three to a maximum of 12 with an average of approximately 3.5 successions per four-digit industry.⁴

³The four-digit industries in the sample came from a wide variety of industries such as food products, paper products, chemicals, petroleum refining, machinery, electronic equipment, transportation equipment, measuring instruments, games and toys. A complete list of four-digit SICs included in the sample can be obtained from the authors.

⁴We re-ran the regressions subsequently reported after dropping the industries with minimum and maximum number of successions and the results did not change. This indicates that the results reported in this study are not affected by under or overrepresentation of particular industries.

Table 1. Factor loadings and correlations: CEO openness to change ($n = 132$)

Variables	Factor Loadings (eigenvalue = 1.506)	Correlations			
		CEO Openness to Change	Age	Tenure	Educational Level
Age	-0.721	-0.710***			
Tenure	-0.773	-0.743***	0.331***	-	
Educational Level	0.624	0.669***	-0.175*	-0.245**	-

Significance Level: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Measures

CEO openness to change. This variable is proxied by a composite measure of three demographic indicators, namely, (1) age (2) organizational tenure, and (3) educational level. The CEO successor's age was measured as the number of years from birth to the year of succession, and organizational tenure was measured as the number of years the CEO had been employed in the firm prior to the year of succession (Singh and Harianto, 1989). We measured CEO educational level based on the highest degree earned by the CEO (Finkelstein, 1988) with 1 = high school, 2 = some college, 3 = undergraduate degree, 4 = some graduate school, 5 = masters degree, 6 = attended doctoral programme and 7 = doctorate degree. Data on all CEO successor characteristics were collected from *Dun and Bradstreet's Reference Book of Corporate Management* and *Who's Who in Finance and Industry*. First, we examined the validity of our theoretical argument that these three demographic variables represent the same underlying construct (i.e. openness to change) through principal components factor analysis of the three distinct variables. The results (presented in Table 1) indicate that all three variables loaded on a single factor, with age and tenure loading negatively and educational background positively on this factor. No other factor satisfied the criteria of eigenvalue greater than 1. Next, we created a measure of 'CEO openness to change' as follows. Since age and organizational tenure are negatively related to the concept of 'openness to change', these measures were converted by subtracting each observation's values from the highest values in the sample (Zajac and Westphal, 1996). Then, these two converted measures and CEO educational level were standardized (mean = 0, standard deviation = 1) and summed to yield a

composite⁵ measure of CEO openness to change. Table 1 also presents the correlation matrix between the composite measure of CEO openness to change and its three indicators. As expected, CEO age and organizational tenure were negatively associated with CEO openness to change and CEO educational level was positively related to the composite measure ($p < 0.001$)

Industry characteristics. The three industry characteristics examined in this study were defined as follows. Capital intensity was operationalized as the ratio of the industry's gross book value of assets to value of annual shipments (Lawless and Teagarden, 1991). For this measure, the most recent available data⁶ was obtained from the *U.S. Census of Manufactures*. Industry growth rate was defined as the average annual growth rate in value of shipments (Hambrick and Abrahamson, 1995). The value of shipments data was adjusted for inflation using GDP implicit price deflators (*Economic Report of the President, 1993*). Finally, industry advertising intensity was operationalized as advertising expenses as a percentage of sales in the industry (Rajagopalan and Datta, 1996). This measure was obtained from the *Troy Almanac of Key Business and Industrial Financial Ratios*. For industry growth rates and advertising intensity, we used average data for four years – the year of

⁵When we used alternative methods to create this measure, e.g., a weighted index that weighted raw scores on each variable by its factor loading, results of hypotheses tests did not change.

⁶Whereas value of shipments data is available on an annual basis, gross book value of assets data is only provided at intervals of five years in this database. Hence, the data available for the year closest to the year of succession had to be used. Corresponding to the time period chosen for this study, these data were available for 1977, 1982 and 1987.

succession and the three years following succession.

Strategic persistence. This variable seeks to measure the extent to which a firm's strategy remains fixed over time. Following Finkelstein and Hambrick (1990), a composite measure of strategic persistence was derived using six strategic indicators: (1) advertising intensity (advertising/sales); (2) research and development intensity (R&D/sales); (3) plant and equipment newness (net P&E/gross P&E); (4) non-production overhead (SGA expenses/sales); (5) inventory levels (inventories/sales); and (6) financial leverage (debt/equity). The composite strategic persistence measure was calculated as follows: with 't' as the year of succession, we first computed the firm's five-year ($t - 1$ to $t + 3$) variance ($\Sigma(t_i - T)/n - 1$) for each strategic dimension. Next, variance scores for each dimension were standardized by the sample (mean = 0, standard deviation = 1), and multiplied by minus one to bring the measures in line with the concept of persistence (i.e. absence of strategic variance over time). Finally, the six standardized indicators were averaged to yield an overall measure of 'strategic persistence'.

Control Variables. Based on prior literature, we controlled for four variables. First, industry concentration was defined as the four-firm concentration ratio (Bain and Qualls, 1987) and data for this measure was obtained from *U.S. Census of Manufactures* (again, since these data are only available at five-year intervals, the year closest to the year of succession was used). Second, since firm size has been associated with the direction and magnitude of strategic change (Fombrun and Ginsberg, 1990), it was used as a control variable. Firm size was operationalized as the natural logarithm of the average number of employees in the three years prior to succession (e.g. Dalton and Kesner, 1983; Guthrie and Olian, 1991). Third, pre-succession firm performance was also controlled for because it has been associated both with new CEO characteristics (Datta and Rajagopalan, 1998) and the likelihood of strategic change (Boeker, 1997; Zajac and Kraatz, 1993). This measure was operationalized as the average of the ratio of the firm's ROA to industry ROA for the three years prior to succession. Data for firm size and firm ROA were obtained from *Compustat*; industry ROA data were obtained from *Dun & Bradstreet's Industry Norms & Key Business Ratios*.

Finally, we controlled for board power given that past research highlights the importance of the firm's board of directors in strategic change (Rajagopalan and Spreitzer, 1997), as well as in CEO succession (Zajac and Westphal, 1996). Two different measures of board power were obtained from annual corporate proxy statements for the three-year time period preceding the year of succession. We calculated the three-year average for the percentage of outsiders on the board (Zajac and Westphal, 1996) and percentage of the firm's total equity held by outside board members (Hoskisson, Johnson and Moesel, 1994). Both these measures were then standardized and summed to yield a composite measure of board power (Zajac and Westphal, 1996).

Data analysis and results

Means, standard deviations and zero-order correlations among study variables are presented in Table 2. The lack of high correlations ($r > 0.40$) between any of the independent or control variables indicates that multicollinearity did not pose a problem in these data.

To test *H1* we estimated two stepwise OLS regression models with strategic persistence as the dependent variable. Model 1 included the four control variables (industry concentration, firm size, board power and relative past performance) and the three industry structure characteristics. Model 2 added the CEO openness to change variable to Model 1. The regression results presented in Table 3 strongly support *H1*. CEO openness to change had a significant, negative relationship with post-succession strategic persistence (incremental $R^2 = 5.2\%$, $p < 0.01$). The overall model was also significant ($p < 0.001$) and explained 21.5% of the variance in firm-level strategic persistence.

In order to test *H2-4* we used sub-group analyses. Haleblan and Finkelstein (1993) suggest that sub-group analysis is the most appropriate technique for testing non-relational hypotheses, as is the case here (the relationship is expected to be significant in high but not in low-discretion environments). We split the sample at the median value for each of the three industry variables and estimated the regression model for each sub-group. Following the procedure outlined in Arnold (1982), we then estimated

Table 2. Means, standard deviations and correlations (n = 132)

Variables	Mean	Standard Deviation	1	2	3	4	5	6	7	8
1. Strategic persistence	0.025	0.41	–							
2. CEO openness to change	0	0.70	–0.30***	–						
3. Industry capital intensity	0.44	0.27	0.07	–0.14	–					
4. Industry growth rate	1.06	0.09	0.06	0.19*	–0.19*	–				
5. Industry advertising intensity	1.35	1.53	0.06	0.26**	–0.26**	0.25**	–			
6. Firm pre-succession performance	0.85	1.18	0.18*	0.04	–0.10	0.20*	0.18*	–		
7. Industry concentration	38.92	14.72	–0.22**	0.05	–0.03	–0.13	–0.21**	–0.07	–	
8. Firm size	6.68	2.03	0.22**	–0.39***	0.02	–0.24**	–0.15	–0.08	0.13	–
9. Board power	0.09	1.46	0.05	–0.05	0.01	0.07	–0.02	0.24**	–0.06	0.22**

Significance Levels: ***p < 0.001; **p < 0.01; *p < 0.05.

Table 3. Results of regression analysis: pooled sample (n = 132)

Variables	Strategic persistence	
	Model 1	Model 2
Intercept	–0.568 (0.508)	–0.538 (0.494)
Industry concentration	–0.006** (0.002)	–0.005* (0.002)
Firm size	0.059*** (0.018)	0.038* (0.019)
Board power	–0.017 (0.024)	–0.014 (0.023)
Firm pre-succession performance	0.065* (0.029)	0.061* (0.028)
Industry capital intensity	0.147 (0.131)	0.119 (0.128)
Industry growth rate	0.315 (0.417)	0.374 (0.406)
Industry advertising intensity	0.009 (0.023)	0.024 (0.023)
CEO openness to change		–0.145** (0.052)
F-value	3.26**	3.97***
Model R-square	0.163	0.215
Change in R-square	–	0.052**

Significance Levels: ***p < 0.001; **p < 0.01; *p < 0.05.

the differential effect of CEO openness to change on strategic persistence in the two sub-groups through one-tailed t-tests for the difference in beta coefficients associated with the CEO openness to change variable. Table 4 presents the regression analyses for the six sub-groups.

The regression results in Table 4 indicate no significant differences between the beta coefficients for CEO openness to change in the low-industry differentiation versus high differentiation sub-groups. In other words, H2 was not supported. However, consistent with H3, CEO

openness to change was a significant (negative) predictor of strategic persistence in industries with high growth rates but not in industries with low growth rates (p < 0.05). In addition, CEO openness to change was significantly (negatively) associated with strategic persistence in industries with low capital intensity but not in industries with high capital intensity (p < 0.05) supporting H4. Overall, two out of three industry characteristics were found to exercise significant contingency effects on the CEO openness to change-strategic persistence relationship.

Discussion

This study was motivated by the need to address important gaps in the CEO succession empirical literature. As reviews of the CEO succession literature by Kesner and Seborra (1994) and Finkelstein and Hambrick (1996) indicate, there have been a number of studies on the organizational antecedents to CEO succession. In contrast, very few have examined the organizational consequences of such succession. This is particularly true in the context of strategic changes initiated by the newly selected CEO. Likewise, the moderating role of industry in the CEO-firm strategy relationship has also remained virtually unexamined. In order to address these gaps we developed and tested hypotheses that related variations in CEO openness to change to post-succession strategic persistence, and identified the moderating effects of industry characteristics on this relationship.

The findings of our study offer strong support for theoretical predictions derived from upper

Table 4. Results of sub-group regressions: the moderating effects of industry characteristics

Variables	Strategic persistence		Strategic persistence		Strategic persistence	
	Low industry advertising intensity (n = 66)	High industry advertising intensity (n = 66)	Low industry growth rate (n = 66)	High industry growth rate (n = 66)	High industry capital intensity (n = 66)	Low industry capital intensity (n = 66)
Intercept	0.214 ⁺ (0.113)	0.252 ⁺ (0.150)	-0.712 ⁺ (0.371)	0.136 (0.133)	0.425** (0.126)	-0.027 (0.156)
Industry concentration	-0.004 ⁺ (0.002)	-0.007 ⁺ (0.004)	-0.012** (0.004)	-0.008*** (0.002)	-0.007* (0.003)	-0.003 (0.003)
Firm size	0.010 (0.053)	-0.009 (0.013)	0.139** (0.047)	0.034** (0.014)	-0.026 (0.045)	0.010 (0.016)
Board power	0.010 (0.026)	-0.001 (0.046)	-0.097 (0.081)	0.010 (0.015)	-0.017 (0.037)	-0.015 (0.031)
Firm pre-succession performance	0.000 (0.044)	0.093** (0.031)	0.246** (0.078)	0.037* (0.018)	-0.030 (0.049)	0.108** (0.037)
CEO openness to change	-0.133 ⁺ (0.071)	-0.146* (0.066)	0.076 (0.077)	-0.086** (0.034)	-0.041 (0.071)	-0.230** (0.075)
F-value	1.57	4.61***	5.20***	7.40***	1.66	4.30**
Model R-square	0.109	0.311	0.313	0.390	0.127	0.274
t-value - difference in coefficients for CEO openness to change	-	-0.15	-	-1.93*	-	-1.89*

Significance Levels: ***p<0.001; **p<0.01; *p<0.05; ⁺p<0.10

echelons, managerial discretion and strategic contingency perspectives. First, CEO openness to change is negatively associated with strategic persistence in the post-succession period. Specifically, it suggests that younger and more educated CEOs and CEOs with lower levels of firm tenure are more likely to challenge the status quo and move the firm in new strategic directions. Second, our results indicate that the ability of a new CEO to pursue new strategies is significantly increased or constrained by the discretion afforded by the firm's industry. Specifically, for two out of the three industry characteristics examined in our study, the negative relationships between CEO openness to change and post-succession strategic persistence were significant in high discretion but not in low discretion environments. Overall, consistent with strategic choice theory, these findings indicate that new CEOs can and do affect the strategic direction of the firm. However, consistent with the predictions of environmental contingency theory, the ability of the new CEO to effect strategic change is significantly tempered by the firm's industry environment. Even a CEO who is very open to change may be unable to pursue new strategies in an industry that offers limited

opportunity for discretion. Taken together, these findings endorse Hrebiniak and Joyce's (1980) view of organizational adaptation as interplay between managerial choice and environmental determinism. Our findings also support Finkelstein and Hambrick's (1996) contention that the succession context will significantly moderate the direct influence of CEOs on organizational outcomes.

Our study makes a number of contributions to the CEO succession and strategic change literatures. First, while prior work has primarily examined either the event of succession or the effect of CEO origin, we develop a more holistic construct (CEO openness to change) that integrates three distinct CEO demographic characteristics. We are thus able to assess the combined effects of distinct demographic attributes on strategic persistence in a more theoretically parsimonious manner. Furthermore, because we control for other firm-specific influences on strategic persistence (size, past performance and board power) we are able to more accurately assess the effect of the new CEO on the firm's strategic choices. Second, with rare exceptions (e.g. Tushman and Rosenkopf, 1996), prior research has not examined how environmental

contingencies affect the ability of the new CEO to effect strategic changes. Our framework integrated the theoretical perspectives of managerial discretion and environmental contingency to more fully explicate the key industry contingencies in the CEO-strategic persistence relationship. This allowed us to develop and test a more completely specified model of the organizational consequences of CEO succession. Third, large-sample empirical studies of the effects of CEO succession on firms' post-succession strategies are virtually non-existent. Our study contributes to a better understanding of the antecedents to strategic persistence and is, hence, relevant for strategic-change researchers as well.

Our study findings also have interesting implications from a managerial standpoint. It appears that organizations can derive significant benefits from choosing CEOs whose prior experience and background are consistent with the firm's desired strategic direction. Organizations that wish to effect significant changes in their strategies are more likely to realize their goals through the selection of a CEO with demographic attributes associated with greater openness to change. However, they also need to take into careful consideration the environment, because industry conditions can significantly constrain the ability of the new CEO to pursue strategic changes. A change-seeking CEO in a low-discretion environment may experience high levels of frustration because his/her natural tendency to pursue aggressive, growth-oriented strategies may be curbed by the relative lack of opportunity afforded by the industry.

The findings of this study need to be viewed in the context of certain limitations, which, in turn, suggest some interesting avenues for future research. First, the nature of sample used in this study (non-diversified, manufacturing firms) may limit the generalizability of our findings to other contexts (e.g. diversified or service firms). We decided to limit our sample to non-diversified, manufacturing firms in order to enhance the internal validity of our findings. However, this provides an opportunity for future research to examine the consequences of CEO succession in different organizational contexts. Moreover, with the sample being limited to relatively large firms, the findings may not be fully generalizable to smaller firms. However, as argued by Hambrick and Finkelstein (1987), CEOs typically enjoy

greater discretion in smaller firms and are, therefore, likely to play an even more powerful role in setting strategic direction in such firms. As such, the significant effects observed in this study should be more pronounced in the context of smaller firms.

Second, our paper represents a descriptive study that examines the relationships between newly chosen CEOs' openness to change and firm strategic persistence during the post-succession phase and the moderating effects of industry on this relationship. It, therefore, does not address the normative issue of how strategic persistence affects post-succession performance. This represents an interesting question for future research. Such a study would, however, need to control for various contextual and firm-specific factors impacting firm performance – going beyond those incorporated in the current study.

Third, while we controlled for several important influences on firms' strategic persistence (such as firm size, board power and prior performance), extant strategic change literature indicates other organizational factors may also have an important impact on the ability of the CEO to initiate strategic changes. These include organizational structure (Ginsberg and Buchholtz, 1990; Meyer, Brooks and Goes, 1990), planning and control systems (Miller and Friesen, 1980; Simons, 1994) and, organizational culture (Pettigrew, 1987). Our reliance on archival data sources precluded the inclusion of these additional influences on firm-level strategic persistence. However, future research that utilizes primary data sources (e.g. questionnaire surveys or interviews) should find it easier to examine how these organization-level factors support or inhibit the ability of new CEOs to effect strategic change.

Fourth, the use of demographic variables as proxies for the construct of 'CEO openness to change' means that the study may not have fully captured the cognitive variables that more directly tap into the 'openness to change' construct. Researchers such as Pfeffer (1983) and Finkelstein (1988) strongly advocate the use of demographic data in view of the advantages of objectivity and data availability. However, in an extensive review of the relationships between demographic variables and organizational outcomes, Hodgkinson (2001a) notes that several recent studies have called into question both the

theoretical (e.g. Lawrence, 1997; Pettigrew, 1992) and the empirical validity of the underlying assumption that demographic characteristics are reliable indicators of executives' cognitions. While the linkage between demographic factors and cognitive orientations is assumed to exist by a large number of researchers (e.g. Smith *et al.*, 1994; Wiersema and Bantel, 1992) and some studies even show empirical support for the direct relationships between demographic and cognitive attributes in top managers (e.g. Tyler and Steensma, 1998), others (e.g. Chattopadhyay *et al.*, 1999; Markoczy, 1997) have not found support for these relationships. These contradictions indicate the need for more research that incorporates direct measures of executive perceptions and beliefs, along with control and contextual variables similar to those included in our paper.

Fifth, consistent with our reliance on demographic proxies, our paper relied exclusively on archival, secondary data sources. However, future research that seeks to examine executive cognitions more directly needs to employ alternative research designs and data-collection methods that tap more directly into the underlying psychological mechanisms through which senior executives influence organizational outcomes (Hodgkinson, 2001b). Several noteworthy examples of such research can be found in recent literature on executive cognitions and strategic behaviors. For example, Hodgkinson (1992) developed a scale to measure senior executives' strategic locus of control, and such a scale can be used to directly assess whether firms with CEOs who are externally controlled are more likely to exhibit strategic persistence than firms who are led by CEOs with an internal locus of control. Future work can also involve greater use of experimental techniques such as those utilized by Clark and Montgomery (1999) and Kilduff, Angelmar and Mehra (2000). Both these studies illustrate the usefulness of experimental methods in addressing the nature and significance of top-managerial beliefs and cognitions. Other promising techniques that are well-grounded in cognitive psychology and hold significant promise in the understanding of how and when firms change their strategy include causal mapping (e.g. Barr, 1998; Barr and Huff, 1997) and strategic decision scenario analysis (e.g. Hodgkinson *et al.*, 1999). These methodologies are quite versatile and lend

themselves to both secondary and primary data sources. For instance, Barr (1998) derived causal maps from content analysis of annual reports while Hodgkinson *et al.*, (1999) obtained senior executive responses to case vignettes through a primary survey.⁷

In conclusion, along with providing new insights into the relationships between the characteristics of newly selected CEOs and post-succession strategic changes, our study serves as a baseline for further inquiry into related research questions. As Kesner and Sebor (1994, p. 327) note 'when it comes to executive succession, there is little that we know convincingly, much that we do not know because of mixed results and even more that we have not yet studied'. This is particularly true for issues related to the strategic consequences of CEO succession. We hope that this study and the directions for future inquiry identified in the preceding paragraph will spur additional research on the complex set of issues surrounding CEO succession.

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⁷A detailed discussion of how psychological theories and concepts and techniques can be applied to better understand the role of top managers in organizations is beyond the scope of this paper. However, a comprehensive review and detailed guidelines for future research can be found in Hodgkinson (2001a; 2001b).

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