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Attributive change in top management teams as a driver of strategic change

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Abstract This study examines the role of top management team (TMT) member succession in breaking organizational inertia. We compare the impact of two types of change in TMTs—in member number and demographic heterogeneity—on subsequent strategic reorientation using data on the diversification activities of firms in the Japanese textile industry. Our findings suggest that executive succession does not trigger strategic change unless succession entails change in the values and interests of executives embedded in their demographic traits.

Keywords Executive succession · Strategic change · Demographic approach

The mortality rates of organizations increase when environmental turbulence and technological breakthroughs require fundamental strategic change to allow successful adaptation to that new environment (Haveman, 1992). In response to ever-increasing competition in the marketplace, growing research attention is being devoted to factors that account for the difference between inertia and change (Mitsuhashi & Greve, 2004). One of the dominant approaches that have contributed to the theoretical development of this field is the upper echelon view. This view suggests that an analysis of distribution of demographic traits of executives responsible for strategic decisions enables us to understand why firms display particular patterns of strategic action (Hambrick & Mason, 1984). A number of previous studies have supported this view and demonstrated close linkages between the demographic backgrounds of executives and the likelihood of strategic

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redirections (e.g., Geletkanycz & Black, 2001; Hambrick, Cho, & Chen, 1996; Tihanyi, Ellstrand, Daily, & Dalton, 2000; Wiersema & Bantel, 1992).

Regardless of the widely prevalent acceptance of this view, the literature so far has sidestepped the following two issues. First, previous studies have tended to focus exclusively on how succession (or replacement) of chief executive officers (CEOs) triggers strategic change. Lant et al., (1992), for instance, found that CEO succession provokes strategic change because entering CEOs who are in charge of setting a firm's long-term course of action bring new cognitive capabilities, knowledge, and political interests to strategic decision-making processes. However, previous studies have left unexplored the strategy formulation role of other executives who are also responsible for and influential over organizational outcomes. Given that strategic decisions are frequently outcomes of interplays among executive team members, work is needed to complement existing studies that focus exclusively on the effects of CEO succession.

Second, Shen and Cannella (2002) argued that the relationships between CEO succession and subsequent strategic change are contingent upon whether a new CEO is a "follower" or a "contender" of her/his predecessor. When a new CEO believes in strategic plans that her/his predecessor formulated, s/he will have greater propensities to maintain strategic momentum. On the other hand, a new CEO is not hesitant to break inertia when having values, perspectives, and interests different from the former CEO. CEO succession per se does not guarantee subsequent strategic change unless succession entails essential change in the competitive perspectives and political standpoints of organizational leaders. The implication of this key insight is that strategic change is not a function of *executive succession* per se but of the nature of executive succession. More specifically, an underlying mechanism that links executive succession with strategic change is the differences of executives' impetus for decision-making processes that succession generates. Previous studies, however, did not explicitly theorize and empirically test this potential impact of the nature of executive succession.

The purpose of this research is to address these oversights and examine how executive succession influences strategic change and breaks organizational inertia. In order to achieve this objective, we distinguish between two forms of executive change. Numerical change refers to flow of personnel into and out of executive teams, and is a function of the number of exiting and entering executives from time $t-1$ to time t. Attributive change refers to the magnitude of change in the demographic heterogeneity of a TMT from time $t-1$ to time t. These two forms are not independent but interdependent. Attributive change does not take place without numerical change, but numerical change does not automatically guarantee the occurrence of attributive change.

Our primary argument is that a powerful propellant in driving strategic reorientation is not numerical but attributive change. That is, a firm is able to break organizational inertia and provoke change in corporate strategy only when its executive succession involves change in the essential nature of the impetus of executives. Even after a firm replaces all its incumbent executives, we expect less change if newly entering executives have demographic traits, attitude toward and ideas about competitive environment, and strategic plans that are similar to those of their predecessors.

We develop these arguments and test resulting hypotheses predicting the effects of numerical and attributive changes in TMTs on the diversification activities of firms. Diversification is a representative form of strategic change that involves reallocations and remobilization of strategic assets and resources, having substantial long-term consequences on organizational profitability and survival (Mayes & Allen, 1977; Wiersema & Bantel, 1992). Accordingly, this study investigates the linkages of numerical and attributive change with the magnitude of change in corporate diversification activities.

Theory and hypotheses

Numerical change in executive teams and strategic change

Executive teams are organizational units that make decisions about the strategic domains, business-level strategies, and structures of organizations. Only executives are granted authority to break organizational inertia to initiate large-scale strategic change. Therefore, change in executive teams is frequently viewed as an effective tool that firms can use to adapt to turbulent environments (Hambrick & Mason, 1984). Numerical change means flow of personnel into and out of executive teams, and is occasionally measured by the number of exiting and entering executives from time $t-1$ to time t (Tushman & Rosenkopf, 1996). Previous studies suggest strong linkages between numerical change and the likelihood of strategic change for the following three reasons (Helmich & Brown, 1972; Nystrom & Starbuck, 1984).

First, some have argued that numerical change results in a change in the value and sensemaking of the group that makes strategic decisions (Hambrick et al., 1996; Wiersema & Bantel, 1992). Strategic sensemaking and perceptions about internal strategic assets and external environments that entering executives possess may be different from those of exiting and incumbent executives. Numerical change thus may involve the change of perceptions about external environments, identifications of competitive rivals, understanding of rivals' competitive moves, and assessment of strengths and weaknesses of firms' resources and competence. Their different strategic sensemaking may generate new insights and unique impetus in strategic decision-making, facilitating transformations of executive teams' overall attitudes toward missions, strategies, and leaderships.

Second, numerical change may create a discontinuous change in the collective knowledge of an executive team that in turn breaks status quo (Wiersema & Bantel, 1992). Strategy formulation processes are ones in which executives leverage their own knowledge, expertise, skills, and experience to develop strategic plans that enable firms to effectively achieve the missions and respond to competitive threats. Numerical change may shape and change the patterns of accumulation of strategic repertoires and knowledge-bases that executives bring to their firms as a result of their operational experience. Entering executives with unique experience and knowledge-bases may have repertoires of strategic alternatives that both incumbent and exiting executives do not possess, and therefore contribute to the enrichment of the knowledge base that firms could use in exploring and selecting strategic alternatives.

Finally, numerical change may transform institutionalized structures of vested interests and political orientations in executive teams (Helmich & Brown, 1972). A political view of organizations (Cyert & March, 1963) suggests that even in strategy formulation processes, coalitions of actors in organizations with different political interests compete with each other and exercise influence to protect their vested interests. From this perspective, strategic decisions are considered to be a result of bargaining about who gains what. To the extent that entering executives have different ideas about and interests in long-term directions of organizational actions, numerical change should entail change of political agendas to be addressed and discussed in strategy formulation processes.

The linkage between numerical change and strategic change is based on the assumption that their perception of the competitive environments and strategic options differ from those of incumbent executives. Similarly, the exit of incumbent executives is assumed to have a critical impact on the maintenance of status quo and the persistence of current strategic actions as firms experience the destruction of current strategic framing and knowledge bases as well as that of vested interests at the upper echelon of hierarchies. Therefore, both the entry and exit of executives may result in the reorientation of cognitive and political processes in strategy formulation processes.

However, the findings are actually mixed about the consequences of succession of CEOs and other executives. Tushman and Rosenkopf (1996) found negative associations between the number of new executives and the likelihood of strategic reorientation. Lant et al. (1992) did not find any significant consequences of numerical change. In contrast, others have found the empirical evidences that CEO succession provokes strategic reorientations (Barker & Duhaime, 1997; Gordon, Stewart, Sweo, & Luker, 2000; Lant et al., 1992). These studies suggest the instrumentality of entering CEOs as catalysts to break organizational inertia. In addition to that, Goodstein and Boeker (1991), Gordon et al. (2000), and Wiersema and Bantel (1992) found that numerical change significantly provokes subsequent strategic change. These inconclusive findings suggest the value of retesting the consequences of numerical change on strategic change in this study. We address these competing arguments and findings with the following hypotheses, in line with those of Tushman and Rosenkopf (1996):

Hypothesis 1a As the number of entering executives increases, a firm is more likely to engage in strategic change.
Hypothesis 1b As the number of exiting executives increases, a firm is more likely to engage in strategic change.

Attributive change in executive teams and strategic change

Rather than a focus on numerical change, Wiersema (1992) found that the extent to which executive succession influences subsequent strategic change is contingent upon the origins of entering executives. A firm is more likely to engage in strategic change when entering executives come from outside the firm, but less likely when a greater number of entering executives are promoted from within. One of the implications of her findings is that executive succession per se (i.e., numerical

change) does not provoke strategic change when succession results in the reproduction of the strategic sensemaking, knowledge, and political interests of former executive teams.

Contrary to numerical change, attributive change refers to change in demographic attributes, traits, and profiles of executive team members, often related to their observable demographic traits such as functional and educational backgrounds (e.g., Hambrick et al., 1996). Numerical change may be a necessary condition for attributive change, but attributive change occurs only when demographic traits of entering executives differ from those of existing or exiting executives. We argue that it is not numerical but attributive change that enables organizations to break inertia because attributive change only entails change of impetus that executives make into decision-making processes.

Given that the overall heterogeneity of TMTs is a function of differences in demographic traits of individuals in TMTs, we expect that the magnitude of change in the overall demographic heterogeneity of executive teams is a critical lever for strategic reorientation. Previous studies tend to have a static view of organizational demography (i.e., firms with low heterogeneous TMTs are inert; e.g., Wiersema & Bird, 1993). Rather than focusing on heterogeneity per se, this study proposes that the magnitude of change in heterogeneity in TMTs, whether positive or negative, causes strategic reorientation.

An increase in TMT heterogeneity implies that strategic decisions are made based on more diverse perspectives and knowledge and, therefore, are more likely to deviate from the current course of action. At the same time, executive teams may also need to formulate strategies that meet more diverse political demands and interests. The increased heterogeneity of demographic traits of executives in TMTs certainly decreases the likelihood occurrence of group-think phenomenon (Janis, 1982), strategic consensus (Knight et al., 1999), and group cohesion (O'Reilly, Caldwell, & Barnett, 1989). Similarly, other studies have demonstrated that increased heterogeneity simultaneously provokes innovation and enhances the breadth of perspectives, cognitive resources, and overall problem-solving capabilities of the group (Bantel & Jackson, 1989; Eisenhardt & Schoonhoven, 1990). It is Hambrick et al. (1996) who concluded that while heterogeneity is certainly a double-edged sword, its benefits significantly outweigh the costs, suggesting the overall positive effects of increased heterogeneity on the likelihood of strategic change. These studies thus imply that attributive change may cause strategic reorientation, rather than the maintenance of status quo, when demographic heterogeneity in TMT increases.

Also, with decreased heterogeneity, the choice of strategic actions that firms take now becomes reflections of more limited and specific perceptions and interests, moving firms into specific directions (Mitsuhashi & Greve, 2004). Therefore, change in the overall demographic heterogeneity of executives, whether increasing or decreasing, is expected to directly affect the likelihood of strategic change.

Suppose that a firm's TMT consists of executives representing various functional or educational backgrounds, for example. When this TMT is replaced with executives who all have R&D backgrounds, it is likely that the way of allocating and mobilizing resources will change to enhance technological strength of the firm with the limited investment in such other functional areas as manufacturing and marketing. On the other hand, the further upward shift of demographic heterogeneity

should result in greater breadth of perspectives, cognitive resources, and overall problem-solving capacities. The shift of overall demographic characteristics of TMTs, whether upward or downward, breaks status quo.

Previous studies suggest that functional background and educational background are two primary demographic attributes of executives that capture their values, knowledge, and political agendas (Finkelstein & Hambrick, 1996; Williams & O'Reilly, 1998). In addition, we expect that executive tenure is another critical element of traits that influence cognitive capabilities. Sorensen (1999) shows that executives tend to develop cognitive maps similar to those possessed by other executives in the same cohort. For instance, executives who entered the firm when the firm dynamically expanded into international markets have a tendency to view entry into foreign markets positively and use it more frequently as a strategic option for corporate growth. Because tenure is an indirect indicator of what executives have experienced, its distribution shapes the pattern of information processing in TMTs. Change in the overall demographic heterogeneity of TMTs, whether increasing or decreasing, is therefore expected to have a distinct effect on the likelihood of strategic change. It follows from these arguments that:

Hypothesis 2a The likelihood of strategic change increases with the degree of change in overall demographic heterogeneity of executives in term of organizational tenure.
Hypothesis 2b The likelihood of strategic change increases with the degree of change in overall demographic heterogeneity of executives in terms of functional backgrounds.
Hypothesis 2c The likelihood of strategic change increases with the degree of change in overall demographic heterogeneity of executives in terms of educational backgrounds.

Methods

Sample

To test the hypotheses, we use data from 36 firms in the Japanese textile industry from 1980 to 2004. These firms are primary listed companies in the Tokyo Stock Exchange and the Osaka Stock Exchange with textile as their major business lines. During our observation period, comparative price advantages gained by firms in other Asian countries presented great incentives for Japanese firms in the textile industry to diversify their business lines for their survival. Figure 1 shows continuous growth of the average of these firms' revenues from non-textile business areas. In addition to this within-firm variance over time, our analysis confirmed sufficient across-firm variations in the level of corporate diversification activities (i.e., firms have different propensities to diversify).

We collected data about both corporate diversification activities and executive team members from *Nikkei Kaisha Nenkan* (Nikkei Annual Corporation Report) and *Nihon Shinshiroku* (the Japanese version of *Who's Who*). The number of firm-year

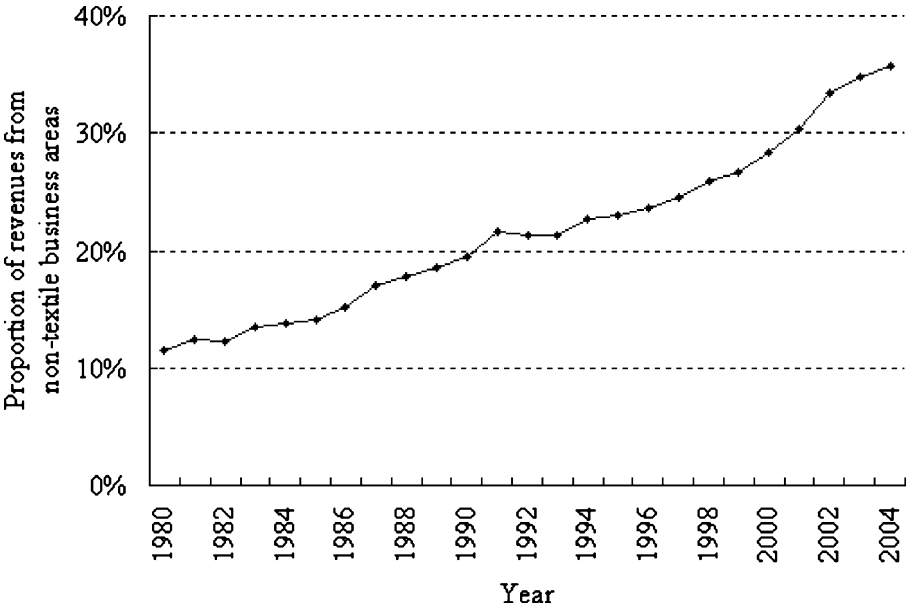

Figure 1 Industry average of the proportion of revenues from non-textile business areas

observations is 796, and 12,995 executives are included in the dataset. Our strategic change measure is the annual change in the composition of business line portfolios. Unless otherwise noted, all the change-related variables are year-on-year changes. This reflects the results of change in annual budget plans as well as in the patterns of resource allocation and mobilization. The members of TMTs who make such decisions can change annually as well, because TMT members in Japanese corporations typically do not make multiyear contracts (Prowse, 1995).

Variables

The level of strategic change We measure our dependent variables—the level of strategic change—with data about diversification activities of firms.

We use two indicators of change in diversification. First, we use the absolute value of change in the proportion of revenues from non-textile business areas from time t to time t+1. For instance, when a firm generates 40% of its revenues from textile business areas, the remaining 60% comes from non-textile business areas. If in the subsequent year the contribution of the textile business to the overall firm revenue decreases to 20%, this firm derives 80% of its revenue from non-textile business areas. The score for this firm is thus 0.2 points (=|0.60−(1−0.20)|). We label this variable *non-textile revenue change* in our model. Representative examples of non-textile business areas in which firms in the sample are active include real estate, sales and manufacturing of medical products and equipment, electronic communications, and food processing.

The second dependent variable in our model measures change in the concentration of revenue sources using the Herfindal–Hirschman Index (HHI) from time t to time t+1. We first collected information about the firm's business domains

and the proportion of revenues from each domain. After constructing the HHI of heterogeneity of its revenue streams, a typical measure of corporate diversification (Haveman, 1992), we then computed the absolute value of the difference of HHI from time $t-1$ to time t. We term this variable *HHI change* and use it as a secondary dependent variable for enhancing the robustness of findings.

Change in executive teams We used *Nikkei Kaisha Nenkan* as a primary data source and *Nihon Shinshiroku* as a supplementary data source to collect information about numerical and attributive change of executive team members. Around the turn of last century, Japanese business societies started importing Anglo-Saxon corporate governance models, in which the expected roles of board members and executive team members are overtly different (Prowse, 1995). Prior to the governance reform, a majority of board members in Japanese corporations were internal executives who not only participate in strategy formulation in board meetings but also are responsible for execution of strategic plans. Previous research viewed traditional boards in Japanese corporations as a critical decision-making unit and used them to identify those who are influential for long-term firm success (e.g., Mitsuhashi & Greve, 2004; Wiersema & Bird, 1993). In our context, executive teams (i.e., boards) consist of *Kaicho* (president), *Shacho* (CEO), *Fuku Shacho* (senior executive vice president), *Senmu* (executive vice president), *Jomu* (senior vice president), and *Torishimariyaku* (director). These are in descending order of hierarchical ranks.

Following Tushman and Rosenkopf (1996), we measure numerical change in executive teams by the absolute number of entering and exiting executives.

We measure attributive change in the following three ways. First, we follow Boeker (1997) and measure change in demographic heterogeneity in terms of organizational tenure by taking the absolute difference of the coefficients of variations of executives' tenure between time $t-1$ and time t. We compute the coefficients of variation by dividing the standard deviations of executives' tenure in a team by the mean of their tenure.

Second, we follow Hambrick et al. (1996) and measure change in demographic heterogeneity in terms of functional backgrounds by computing the absolute difference of the HHI of the functional backgrounds of executives in a team from time $t-1$ to time t. To construct this variable, we first coded each executive's functional backgrounds with the scheme presented in Appendix 1 and computed the proportions of executives for each of the functions. We then computed the HHI by adding up the square of the obtained proportions. Finally, we obtained scores for this facet of attributive change by taking the absolute difference between the HHI at times $t-1$ and t. Third, we repeat the same procedure to compute attributive change defined by educational backgrounds. The list of categories of educational backgrounds used for our coding is presented in Appendix 2.

Control variables

As it is possible to expect a ceiling effect for corporate diversification (i.e., a highly diversified firm is less likely to diversify further), we enter non-textile revenues and HHI at time t into regression models as controls (Amburgey & Miner, 1992). Also,

as it is possible to expect organizational momentum effects (i.e., a firm with recent diversification experience is more likely to diversify), we use prior non-textile revenue change and prior HHI change as controls, which capture change in the proportion of revenues from non-textile business areas from time $t-1$ to time t and change in the HHI from time $t-1$ to time t, respectively.

Market growth is a variable that describes the general trend of profitability in this industry. We compute this variable by taking the sum of each firm's revenues at time t. We measure *firm performance* by return on sales (ROS) at time t, *firm age* by the number of years since a firm's founding, and *firm size* by the number of employees.

Three more control variables that describe the characteristics of executives are also entered into regression models. *Team size* is the total number of executives on the top management team of the firm. *Percent of outsider* is the proportion of incumbent executives who sit on or come from other firms' boards.

Previous studies demonstrated the path-dependent nature of cognitive resources that each executive possesses (Shane, 2000). That is, in addition to demographic traits, executives' prior experience may be highly influential in shaping the processes by which they develop and accumulate cognitive resources and competitive orientations. In order to control for this historical effect, we created *% of new outsiders* by dividing the number of new members from outside by the total number of new members. This variable reflects the extent to which new members may bring experience acquired outside of the given firms.

We also control for two characteristics of CEO influence. We have created *CEO succession* by coding it as 1 if CEO succession occurred within the previous three years and 0 otherwise. Following Lant et al. (1992), we expect CEOs with shorter tenures to be free from organizational inertia and to have a tendency to challenge existing strategies and structures. In addition, we have created a variable, *% of executives appointed by CEO*, by dividing the number of executives appointed by the current CEOs by the total number of executives in TMTs. We consider that CEOs hold greater power if the proportion of executives appointed by them are greater (Ocasio, 1994), and that powerful CEOs can exercise their power to redirect the current course of strategic actions to break or maintain the status quo to preserve and institutionalize their power (Mitsuhashi & Greve, 2004).

Statistical method

The data are pooled time series design and require the use of a regression model that corrects both autocorrelation and heteroscedasticity. Autocorrelation will result from the correlation between values of the dependent variable in the previous and current periods, or interfirm differences in the time taken to execute diversification decisions due to different levels of interest in or expectations about diversification decisions. Heteroscedasticity results from unexplained variability in the dependent variables. Both of these could be issues in this analysis. Thus, we used a generalized least squares (GLS) model with separate autocorrelation coefficients for each firm, allowing firms to have different autocorrelation coefficients resulting from difference in time taken to diversify. Analyses were run using the xtgls procedure of Stata software (StataCorp, 2001).

Table 1 Descriptive statistics and correlation matrix.

Number	Variables	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	Non-textile revenue change	0.02	0.04																			
2	Prior level of non-textile revenue	0.22	0.23	0.22																		
3	Prior non-textile revenue change	.02	0.03	0.27	.30																	
4	HHI change	0.03	0.05	0.54	−0.08	0.09																
5	Prior HHI	0.40	0.19	0.15	0.37	0.11	−0.06															
6	Prior HHI change	0.03	0.05	0.10	−0.06	0.54	0.12	−0.15														
7	Market growth	128,079.90	490,572.60	−0.09	−0.10	−0.04	−0.14	0.02	0.01													
8	Firm performance	0.08	1.17	−0.03	0.00	0.01	−0.02	−0.01	0.00	−0.03												
9	Firm age	70.30	21.59	0.11	0.13	0.13	−0.01	0.40	−0.03	−0.01	0.01											
10	Firm size	3,079.71	3,372.25	−0.01	0.52	0.00	−0.15	0.14	−0.13	0.05	0.04	0.04										
11	Team size	14.88	5.97	−0.04	0.45	−0.05	−0.18	0.08	−0.18	0.04	0.03	0.02	0.83									
12	% of outsiders	.11	0.12	0.02	−0.19	0.00	0.07	−0.18	0.05	−0.01	0.00	−0.07	−0.43	−0.40								
13	% of new outsiders	0.11	0.31	0.07	−0.01	0.02	0.06	−0.07	0.05	0.02	−0.01	−0.04	−0.12	−0.09	0.32							
14	CEO succession	.56	0.50	0.06	0.08	0.07	0.09	0.01	0.10	−0.06	0.03	0.07	0.07	0.01	0.02	0.06						
15	% of executives appointed by CEO	0.49	0.27	−0.05	−0.02	−0.06	−0.11	0.02	−0.08	0.04	−0.06	−0.07	0.00	0.10	−0.08	−0.03	−0.71					
16	N of entering executives	1.78	2.01	−0.01	−0.03	0.02	0.03	0.02	0.07	0.01	−0.03	0.01	−0.03	−0.02	0.00	0.02	0.02	−0.04				
17	N of exiting executives	1.98	2.19	0.02	−0.02	0.04	0.04	−0.04	0.01	−0.01	0.07	0.00	−0.02	−0.02	0.04	0.00	−0.06	0.08	0.02			
18	Change in organizational tenure heterogeneity	0.04	0.08	0.12	−0.02	0.08	0.11	−0.07	0.12	−0.04	−0.03	−0.03	−0.20	−0.25	0.29	0.36	0.07	−0.02	−0.03	0.01		
19	Change in functional background heterogeneity	0.06	0.08	0.12	0.15	0.14	0.01	0.05	0.06	−0.02	−0.01	−0.04	−0.01	−0.11	0.01	0.02	0.05	−0.04	−0.05	0.04	0.06	
20	Change in educational background heterogeneity	0.03	0.06	0.15	0.06	0.03	0.12	0.05	0.01	−0.06	−0.01	0.00	0.02	−0.02	−0.03	−0.08	0.08	−0.03	−0.02	−0.04	−0.03	0.00

There are 796 observations in the data.

Results

Table 1 shows descriptive statistics and correlations of variables entered into the regression models. Two of the correlation coefficients are relatively high: *r*(*firm size*, *team size*)=0.83 and *r*(*CEO succession*, *% of executives appointed by CEO*)=−0.71. Such relatively high levels of intercorrelation may generate a conservative estimate for tests of significance for particular coefficients as they inflate standard errors for the collinear variables. However, we have checked these effects by adding and dropping one variable at a time, and find that the highly correlated variables have no significant impact on the standard errors.

Table 2 Regression results for non−textile revenue change.

	I	II	III	IV
Prior level of non-textile revenue	0.03*** (0.01)	0.03*** (0.01)	0.03*** (0.01)	0.03*** (0.01)
Prior non-textile revenue change	0.19*** (0.04)	0.19*** (0.04)	0.18*** (0.04)	0.18*** (0.04)
Market growth	−3.80e–09† (2.24e–09)	−3.78e–09† (2.24e–09)	−3.27e–09 (2.20e–09)	−3.24e–09 (2.20e–09)
Firm performance	−9.23e–04 (9.71e–04)	−9.86e–04 (9.74e–04)	−7.69e–04 (9.57e–04)	−8.41e–04 (9.60e–04)
Firm age	7.74e–05 (5.10e–05)	7.71e–05 (5.11e–05)	9.55e–05† (5.03e–05)	9.56e–05† (5.03e–05)
Firm size	−3.72e–07 (6.44e–07)	−3.76e–07 (6.45e–07)	−6.69e–07 (6.40e–07)	−6.74e–07 (6.41e–07)
Team size	−3.84e–04 (3.29e–04)	−3.92e–04 (3.29e–04)	−1.77e–05 (3.35e–04)	−2.48e–05 (3.35e–04)
% of outsiders	−6.56e–04 (.01)	−9.38e–04 (.01)	−4.90e–03(.01)	−.01 (.01)
% of new outsiders	3.68e–03 (3.63e–03)	3.74e–03 (3.63e–03)	1.99e–03 (3.76e–03)	2.04e–03 (3.76e–03)
CEO succession	6.20e–04 (3.12e–03)	5.68e–04 (3.13e–03)	−1.45e–03 (3.11e–03)	−1.50e–03 (3.11e–03)
% of executives appointed by CEO	−3.62e–03 (0.01)	−3.96e–03 (0.01)	−0.01 (0.01)	−0.01 (0.01)
N of entering executives		−3.21e–04 (5.30e–04)		−2.73e–04 (5.22e–04)
N of exiting executives		2.76e–04 (4.92e–04)		3.60e–04 (4.83e–04)
Change in organizational tenure heterogeneity			0.05** (0.02)	0.05** (0.02)
Change in functional background heterogeneity			0.03 * (0.01)	0.03 * (0.01)
Change in educational background heterogeneity			0.08**** (0.02)	0.08*** (0.02)
Constant	0.01* (0.01)	0.01* (0.01)	0.01 (0.01)	0.01 (0.01)
N	796	796	796	796
Log likelihood	1,613.67	1,613.88	1,627.98	1,628.29
Wald chi-square	108.56***	110.55***	147.38***	150.22***
Delta chi-square		0.67	30.62***	31.61***

Standard errors are in parentheses.
†$p<0.1$
*$p<0.05$
**$p<0.01$
***$p<0.001$

In Table 2, we present the models that predict the magnitude of change in the proportion of revenues that a firm makes from non-textile business areas.

Model 1 is the baseline model, which contains all the control variables. To investigate Hypotheses 1a and 1b about the effects of numerical change, we include *n of entering executives* and *n of exiting executives* in model 2, which jointly represent change in the number of executive team members from time $t-1$ to time t. Neither coefficients of numerical change are significant in model 2, yielding no support to Hypotheses 1a and 1b. We therefore reject the hypothesis that numerical change provokes strategic change.

In model 3, we introduce three independent variables that represent attributive change. We measure attributive change by using information about executives' organizational tenure, functional backgrounds, and educational backgrounds. Hypotheses 2a, 2b, and 2c posit that the likelihood of strategic change increases when the overall demographic heterogeneity of executive team members changes. In support of these hypotheses, all of the coefficients about attributive change are positive and significant, suggesting that firms in our sample display greater propensity to engage in strategic change when experiencing greater change in the overall demographic profiles of executives. Model 4 is the full model, in which we test the effects of numerical and attributive change simultaneously. We find that the results remain the same even when we test them simultaneously, suggesting strong support for the effects of attributive change.

Table 3 presents the results of four regression models that predict the change of the HHI, a heterogeneity measure of firms' sources of profits, from time t to time $t+1$. The models in Table 3 use the same sets of independent variables as those in Table 2 except for *prior HHI* and *prior HHI change*.

Almost all of the findings from Table 2 are reproduced in Table 3. The only exception is that the coefficients of the overall change of functional backgrounds are no longer significant in models 3 and 4 in Table 3. However, two other variables about attributive change still have significant explanatory power over the variations in the magnitude of change in diversification. On the other hand, as found in Table 3, the coefficients of variables representing numerical change have no significant impact, suggesting no support for the idea that executive succession per se provokes strategic change.

We conducted a robustness check of these findings by re-estimating the models in Tables 2 and 3 with logit transformed dependent variables (Ashton, 1976). As our dependent variables, *non-textile revenue change* and *HHI change*, take finite values ranging from 0 to 1, regression models that presume infinite values for dependent variables may yield biased estimations. We reconstructed the dependent variables with the logit transformation[1] and used them to estimate the models. We found no significant difference between models in which we used the original measures of the dependent variables and those using logit transformed measures.[2] We therefore believe that these additional analyses increase the robustness of our findings.

[1] We use the following equation to obtain the logit transformed dependent variables (Ashton, 1976) $D_L = \ln\left(\frac{s}{1-s}\right)$ D_L: Logit transformed dependent variable s: Dependent variable

[2] Results for the robustness test are available from the authors on request.

Table 3 Regression results for HHI change.

	I	II	III	IV
Prior level of HHI	−0.01 (0.01)	−0.01 (0.01)	−0.01 (0.01)	−0.01 (0.01)
Prior HHI change	0.07* (0.04)	0.07* (0.04)	0.07† (0.04)	0.07† (0.04)
Market growth	−1.48e–08*** (3.48e–09)	−1.47e–08*** (3.48e–09)	−1.41e–08*** (3.46e–09)	−1.40e–08*** (3.46e–09)
Firm performance	−1.37e–03 (1.44e–03)	−1.35e–03 (1.46e–03)	−1.41e–03 (1.32e–03)	−1.41e–03 (1.34e–03)
Firm age	3.26e–05 (8.69e–05)	3.46e–05 (8.69e–05)	3.01e–05 (8.63e–05)	3.20e–05 (8.63e–05)
Firm size	−6.22e–07 (1.03e–06)	−6.04e–07 (1.04e–06)	−8.40e–07 (1.03e–06)	−8.20e–07 (1.04e–06)
Team size	−1.50e–03** (5.55e–04)	−1.52e–03** (5.57e–04)	−1.30e–03* (5.65e–04)	−1.32e–03 (5.68e–04)
% of outsiders	−0.03† (0.02)	−0.03† (0.02)	−0.04 (0.02)	−0.04 (0.02)
% of new outsiders	0.01 (.01)	0.01 (.01)	0.01 (.01)	0.01 (.01)
CEO succession	2.84e–03 (4.87e–03)	3.11e–03 (4.89e–03)	1.19e–03 (4.87e–03)	1.47e–03 (4.88e–03)
% of executives appointed by CEO	−0.01 (0.01)	−0.01 (0.01)	−0.02† (0.01)	−0.02† (0.01)
N of entering executives		6.99e–04 (8.33e–04)		6.76e–04 (8.27e–04)
N of exiting executives		5.30e–04 (7.91e–04)		6.10e–04 (7.83e–04)
Change in organizational tenure heterogeneity			0.05* (0.02)	0.05* (0.03)
Change in functional background heterogeneity			−0.02 (.02)	−0.02 (.02)
Change in educational background heterogeneity			0.11*** (0.03)	0.11*** (0.03)
Constant	0.06*** (0.01)	0.06*** (0.01)	0.06*** (0.01)	0.06*** (0.01)
N	796	796	796	796
Log likelihood	1,270.69	1,271.20	1,279.15	1,279.64
Wald chi-square	71.18***	72.08***	88.36***	89.09***
Delta chi-square		1.21	17.75***	18.60**

Standard errors are in parentheses.
†$p<0.1$
*$p<0.05$
**$p<0.01$
***$p<0.001$

Discussion

This study has explored the role of executive team change in reorienting corporate strategy and breaking organizational inertia. We proposed two forms of executive team change, numerical and attributive change, and examined the effects on the diversification activities of firms in the Japanese textile industry from 1980 to 2004. Our analysis provides evidence about significant relationships between the nature of executive succession and subsequent strategic reorientation. Specifically, we find that a firm experiencing attributive change of executive teams displays a greater propensity to redirect corporate diversification activities. We also find no evidence

supporting the idea that numerical change of executives breaks organizational inertia. Thus, our findings support Wiersema's (1992) conclusion that differences in the nature of executive succession may cause different strategic directions of these firms.

Our findings make several contributions to the research on executive succession and strategic change. First, it has direct implications for the upper echelon view of executive succession. We show that no matter how many executives a firm replaces and changes, succession cannot break inertia if it does not entail change in executives' strategic framing, views, and interests that ultimately drive strategic redirection. Strategic perspectives that firms can receive from entering executives can only be the reproduction of those of exiting and incumbent executives unless succession changes the overall demographic attributes of executive teams. It appears from our analysis that, in order for executive succession to trigger strategic change, succession needs to create discontinuity and path-independence in the values, perceptions, power and vested interests inherent in an executive team.

Our findings are pertinent to previous studies about executive succession. As discussed earlier, prior research on the linkage between executive succession and strategic change has had mixed results (e.g., Lant et al., 1992; Tushman & Rosenkopf, 1996). Our findings disentangle the theoretical puzzles by proposing to differentiate effects of attributive change from those of numerical change.

While our findings for numerical change do not replicate those of some prior studies (e.g., Gordon et al., 2000; Lant et al., 1992), they do concur with those in Shen and Cannella (2002) who demonstrated that CEO succession generates subsequent strategic change only when the values and perceptions of new CEOs are distinctively different from their predecessors. This is also consistent with those of Wiersema (1992), who found that a firm displays greater propensity to change corporate strategy when hiring new executives from outside the firm than when promoting new executives from within. Both her study and ours highlight the critical role of discontinuity and path-independence of executives' demographic traits as a lever for breaking inertia. Our study, however, differs from hers in that we theorize and simultaneously test the effects of both numerical and attributive change, and the latter using a more comprehensive range of indicators to capture different aspects of executives' traits.

Our study differs from that of Tushman and Rosenkopf (1996) in that their models do not predict strategic change per se, but subsequent firm performance. We predict strategic change on the ground that findings about the impact of executive succession on firm performance can only be attributed to that on strategic change that ultimately causes performance. However, future research should examine the performance impact of numerical and attributive change.

Second, by viewing the change in demographic heterogeneity, rather than the level itself, as a lever for strategic change, this study may present a potential resolution of the current theoretical confusion. Previous studies have identified numerous antecedents of structural inertia (Hannan & Freeman, 1984). Among them, the antecedent most relevant to our study is the lack of demographic heterogeneity in executive teams (Hambrick et al., 1996; Wiersema & Bantel, 1992). However, after reviewing multiple areas of research taking the upper echelon view, Finkelstein and Hambrick (1996) and Webber and Donahue (2001) point out that few conclusions

have been systematically derived from empirical examination of the linkages between demographic heterogeneity of executive teams and corporate strategy.

Finally, this study elucidates the important role of attributive change in the process of organizational adaptation to external environments. The finding suggests that the reproduction of executives' demographic traits causes organizational inertia and discourages adaptation. These results demonstrate the hazard of long-term reproduction of demographically similar executive teams as a source of inertia and of misalignments with turbulently changing external environments. The results also highlight the potential weakness of owner-managed firms, co-ops, ecclesiastical enterprises and family businesses in which the attributive change of TMTs is particularly less likely to occur.[3] Managers in such organizations need to carefully select TMT members if intending to use executive succession as a lever for strategic change, or they must find alternative organizational tools for adaptation.

This research is clearly limited by its sample of firms coming from one industry and Japan; both of these features may introduce systematic bias in the results, and suggest the need to test hypotheses in other industry and national contexts. In addition, our exclusive focus on change in corporate diversification prevents us from exploring alternative forms of strategic change, including entry to and exit from geographical markets, and pricing and differentiation. Future research is required to investigate whether our findings are applicable to strategic change in other contexts. However, the fact that two of our dependent variables about corporate diversification and our extended analysis with the logit transformed dependent variables (Ashton, 1976) yield similar results gives us confidence in our arguments.

It is also notable that studies like this one that take the demographic approach have been criticized in that they have a tendency to treat decision-making processes as the "black box" and leave unexplored underlying micro-processes by which differences in executives' demographic traits shape firm outcomes (Lawrence, 1997; Priem, Lyon, & Dess, 1999; Smith K. G., Smith K. A., Olian, Sims, O'Bannon, & Scully, 1994). Theoretical ambiguity still remains about the reliability of using demographic traits as proxies of cognitive resources and political interests of TMTs (Lawrence, 1997). Future research thus should examine how numerical and attributive change generates different patterns of strategic framing and political interactions in TMTs.

Moreover, one of our dependent variables (i.e., *non-textile revenue change*) measures the change in percentage of revenues coming from non-textile businesses. While it is certain that this variable is a good proxy of the shift of business domains in our research contexts, it does not specify whether the shift results from expansions of already existing business or from entry of new business. Future research should develop more sophisticated measures of strategic change that capture such differences. In particular, it is interesting and important to examine whether it is not expansion but new entry that requires attributive change.

Finally, we do not deny the possibility that there may be other factors that account for the variance in our dependent variables. For example, the internal and external

[3] This part of the discussion owes much to the thoughtful and helpful comments from one of the anonymous reviewers. The authors are, of course, responsible for the entire content of this paper.

social networks of TMT members shape the distributions of strategic options available to them, having substantial impact on decision outcomes (Geletkanycz & Hambrick, 1996). Furthermore, TMTs occupied by family owners exhibit strategic postures distinctively different from those administered by professional managers (Daily & Dalton, 1992). It is true that the lack of data prevents us from incorporating all potential alternative explanations. In order to develop a comprehensive model of strategic change and adaptation, future research should examine how attributive change and other mechanisms of strategic change and adaptations interact with each other and under what conditions specific drivers of strategic change become more effective than others.

Nevertheless, several control variables incorporated into the regression models above strengthen our confidence in the robustness of our findings. By incorporating a variable that indicates where new executives come from (i.e., outside or inside), the model controls for the effects found in Shane (2000) that executives' preentry experience shapes the development of their strategic repertories. Furthermore, responding to Pitcher and Smith (2001) who caution scholars against confounding the effects of cognitive resources and capabilities with power, we control for the effects of CEO power with a variable that indicates the proportion of executives appointed by the current CEOs. It is important to note that even after incorporating these other factors into our analytical models, we obtained statistically significant support for our arguments on the effects of attributive change.

In sum, this study examines the role of executive succession in breaking organizational inertia and provoking change in corporate strategy. We find that attributive change of executive team members has significant explanatory power but provides no support for the idea that numerical change has subtle effects on the likelihood of strategic change. Instead, our findings suggest that executive succession does not trigger strategic change unless succession entails change in the values and interests of executives embedded in their demographic traits.

Appendix 1

Coding functional background

We use the following functions to code executives' functional backgrounds:

1. Accounting
2. Finance
3. General council/secretary
4. General management
5. International management
6. Operation
7. Human resource management
8. Strategic planning
9. Production and manufacturing
10. Process R&D (research and development) and quality control

11. Product R&D
12. Purchase
13.Sales/marketing
14.Others

Appendix 2

Coding educational background

We use the following academic areas to code executives' educational backgrounds:

1. Agriculture
2. Arts
3. Business
4. Economics
5. Engineering
6. Law
7. Science
8. Others

References

Amburgey, T. L., & Miner, A. S. 1992. Strategic momentum: The effects of repetitive, positional, and contextual momentum on merger activity. *Strategic Management Journal*, 13: 335–348.

Ashton, W. D. 1976. *The logit transformation (Statistical Monograph)*. Port Jervis, NY: Lubrecht & Cramer.

Bantel, K. A., & Jackson, S. E. 1989. Top management and innovations in banking: Does the composition of the top team make a difference? *Strategic Management Journal*, 10: 107–124.

Barker, V. L. I., & Duhaime, I. 1997. Strategic change in turnaround companies: Theory and empirical evidence. *Strategic Management Journal*, 18: 18–35.

Boeker, W. 1997. Strategic change: The influence of managerial characteristics and organizational growth. *Academy of Management Journal*, 40: 152–170.

Cyert, R. M., & March, J. G. 1963. *A behavioral theory of the firm*. Englewood Cliffs, NJ: Prentice-Hall.

Daily, C. M., & Dalton, D. R. 1992. Financial performance of founder-managed versus professionally managed small corporations. *Journal of Small Business Management*, 30: 25–34.

Eisenhardt, K. M., & Schoonhoven, C. 1990. Organizational growth: Linking founding team, strategy, environment and growth among U.S. semiconductor ventures. *Administrative Science Quarterly*, 35: 504–529.

Finkelstein, S., & Hambrick, D. C. 1996. *Strategic leadership: Top executives and their effects on organizations*. Minneapolis/St. Paul, MN: West Publishing.

Geletkanycz, M. A., & Black, S. S. 2001. Bound by the past? Experience-based effects on commitment to the strategic status quo. *Journal of Management*, 27: 3–21.

Geletkanycz, M. A., & Hambrick, D. C. 1996. The external ties of top executives: Implications for strategic choice and performance. *Administrative Science Quarterly*, 42: 654–681.

Goodstein, J., & Boeker, W. 1991. Turbulence at the top: A new perspective on governance structure changes and strategic change. *Academy of Management Journal*, 34: 306–333.

Gordon, S. S., Stewart, W. H. J., Sweo, R., & Luker, W. A. 2000. Convergence versus strategic reorientation: The antecedents of fast-paced organizational change. *Journal of Management*, 26: 911–945.

Hambrick, D. C., Cho, T. S., & Chen, M.-J. 1996. The influence of top management team heterogeneity on firms' competitive moves. *Administrative Science Quarterly*, 41: 659–684.

Hambrick, D. C., & Mason, P. A. 1984. Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review*, 9: 193–206.
Hannan, M. T., & Freeman, J. 1984. Structural inertia and organizational change. *American Sociological Review*, 49: 149–164.
Haveman, H. A. 1992. Between a rock and a hard place: Organizational change and performance under conditions of fundamental environmental transformation. *Administrative Science Quarterly*, 37: 48–75.
Helmich, D., & Brown, W. 1972. Successor type and organizational change in the corporate enterprise. *Administrative Science Quarterly*, 17: 371–381.
Janis, I. 1982. *Groupthink: Psychological studies of policy decisions and fiascoes*. Boston: Houghton Mifflin.
Knight, D., Pearce, C. L., Smith, K. G., Olian, J. D., Sims, H. P., Smith, K. et al. 1999. Top management team diversity, group process, and strategic consensus. *Strategic Management Journal*, 20: 445–465.
Lant, T. K., Milliken, F. J., & Batra, B. 1992. The role of managerial learning and interpretation in strategic persistence and reorientation: An empirical exploration. *Strategic Management Journal*, 13: 585–608.
Lawrence, B. S. 1997. The black box of organizational demography. *Organization Science*, 8: 1–22.
Mayes, B. T., & Allen, R. W. 1977. Toward a definition of organizational politics. *Academy of Management Review*, 2: 672–678.
Mitsuhashi, H., & Greve, H. R. 2004. Powerful and free: Intraorganizational power and the dynamics of corporate strategy. *Strategic Organization*, 2: 107–132.
Nystrom, P. C., & Starbuck, W. H. 1984. To avoid organizational crisis-unlearn. *Organizational Dynamics*, 12: 53–65.
Ocasio, W. 1994. Political dynamics and the circulation of power: CEO succession in U.S. industrial corporations, 1960–1990. *Administrative Science Quarterly*, 39: 285–312.
O'Reilly, C. A., Caldwell, D. F., & Barnett, W. P. 1989. Work group demography, social integration, and turnover. *Administrative Science Quarterly*, 34: 21–37.
Pitcher, P., & Smith, A. D. 2001. Top management team heterogeneity: Personality, power, and proxies. *Organization Science*, 12: 1–18.
Priem, R. L., Lyon, D. W., & Dess, G. G. 1999. Inherent limitations of demographic proxies in top management team heterogeneity research. *Journal of Management*, 25: 935–953.
Prowse, S. D. 1995. Corporate governance in international perspective: A survey of corporate control mechanisms among large firms in the U.S., U.K., Japan, and Germany. *Financial Markets, Institutions and Instruments*, 4: 1–62.
Shane, S. 2000. Prior knowledge and the discovery of entrepreneurial opportunities. *Organization Science*, 11: 448–469.
Shen, W., & Cannella, A. A. 2002. Revisiting the performance consequences of CEO succession: The impacts of successor type, postsuccession senior executive turnover, and departing CEO tenure. *Academy of Management Journal*, 45: 717–733.
Smith, K. G., Smith, K. A., Olian, J. D., Sims, H. P., O'Bannon, D. P., & Scully, J. A., 1994. Top management team demography and process: The role of social integration and communication. *Administrative Science Quarterly*, 39: 412–438.
Sorensen, J. B. 1999. The ecology of organizational demography: Managerial tenure distributions and organizational competition. *Industrial and Corporate Change*, 8: 713–744.
StataCorp, 2001. *Stata 7 reference Su-Z*, 4. College Station, TX: Stata Press.
Tihanyi, L., Ellstrand, A. E., Daily, C. M., & Dalton, D. R. 2000. Composition of the top management team and firm international diversification. *Journal of Management*, 26: 1157–1177.
Tushman, M. L., & Rosenkopf, L. 1996. Executive succession, strategic reorientation and performance growth: A longitudinal study in the U.S. cement industry. *Management Science*, 42: 939–953.
Webber, S., & Donahue, L. 2001. Impact of highly and less job-related diversity on work group cohesion and performance: A meta-analysis. *Journal of Management*, 27: 141–162.
Wiersema, M. F. 1992. Strategic consequences of executive succession within diversified firms. *Journal of Management Studies*, 29: 73–95.
Wiersema, M. F., & Bantel, K. A. 1992. Top management team demography and corporate strategic change. *Academy of Management Journal*, 35: 91–122.
Wiersema, M. F., & Bird, A. 1993. Organizational demography in Japanese firms: Group heterogeneity, individual dissimilarity, and top management team turnover. *Academy of Management Journal*, 36: 996–1025.
Williams, K., & O'Reilly, C. A. 1998. FS Demography and diversity in organizations: A review of 40 years of research. In B. M. Staw and L. L. Cummings (eds). *Research in Organizational Behavior*, 20: 77–140.

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