

**ONCE AN OUTSIDER, ALWAYS AN OUTSIDER? CEO ORIGIN, STRATEGIC
CHANGE, AND FIRM PERFORMANCE**

YAN ZHANG

Jesse H. Jones Graduate School of Management
Rice University
6100 Main Street
Houston, Texas 77005
Phone: (713) 348-2462
Fax: (713) 348-6296
yanzh@rice.edu

NANDINI RAJAGOPALAN

Department of Management and Organization
Marshall School of Business
University of Southern California
Los Angeles, CA 90089-0808
Phone: (213) 740-0750
Fax: (213) 740-3582
nrajagop@marshall.usc.edu

April 3 2009

Forthcoming at *Strategic Management Journal*

ACKNOWLEDGEMENTS

We would like to thank the SMJ Editor, Professor Richard Bettis, and the two anonymous referees for their constructive suggestions and insightful comments.

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ABSTRACT

In this study, we examine how the relationship between the level of strategic change in the pattern of resource allocation and firm performance differs between firms led by outside CEOs and those led by inside CEOs. Based on longitudinal data on the tenure histories of 193 CEOs who left office between 1993 and 1998, we find that the level of strategic change has an inverted U-shaped relationship with firm performance. As the level of change increases from slight to moderate, performance increases; as the level of change increases from moderate to great, performance declines. Further, we find that this inverted U-shaped relationship differs between firms led by outside CEOs and those led by inside CEOs. That is, both the positive effect of strategic change on firm performance when the level of change is relatively low and the negative effect of strategic change on firm performance when the level of change is relatively high are more pronounced for outside CEOs than for inside CEOs. Supplementary analyses also suggest that this difference between outside and inside CEOs in the relationship between the level of strategic change and firm performance exists in later years but not in the early years of CEO tenure.

Key words: CEO origin, CEO tenure, strategic change, upper echelon.

The literature on the relationship between strategic change and firm performance has revealed equivocal findings (see Rajagopalan and Spreitzer, 1997 for a detailed review). Some studies have found that strategic change enhances performance (Hambrick and Schecter, 1983; Haveman, 1992; Zajac and Kraatz, 1993), while other studies have found that strategic change reduces performance (Jauch, Osborne, and Glueck, 1980; Singh, House, and Tucker 1986). Still another set of studies has found either no relationship (Zajac and Shortell, 1989; Kelly and Amburgey, 1991) or mixed relationships (Smith and Grimm, 1987). These contradictory findings suggest that the relationship between strategic change and firm performance may not be linear, as most previous studies have assumed. In this study, we propose and test an inverted U-shaped relationship between the level of strategic change and firm performance.

Further, we examine how the relationship between the level of strategic change and firm performance differs between firms led by outside CEOs (those hired from outside the firm) and those led by inside CEOs (those promoted from within the firm). Over the last few decades, strategy researchers have paid considerable attention to the question of how CEO origin (outsider versus insider) affects organizational outcomes (e.g., Kesner and Dalton, 1994; Shen and Cannella, 2002; Wiersema, 1995; Zajac, 1990; Zhang and Rajagopalan, 2004; Zhang, 2008). It has been argued that outside CEOs and inside CEOs bring different experiences (Harris and Helfat, 1997; Zhang and Rajagopalan, 2003, 2004). While inside CEOs bring firm-specific knowledge and skills from their prior experience within the firm, outside CEOs are prized for their non-firm-specific but relatively novel knowledge and skills (Harris and Helfat, 1997; Zhang and Rajagopalan, 2003, 2004). The origin of the CEOs is hence expected to influence their ability to formulate and implement strategic change, and therefore to also affect the relationship between the level of strategic change and firm performance. Accordingly, in this study, we examine how the inverted U-shaped relationship between the level of strategic change and firm performance varies between firms led by outside CEOs and those led by inside CEOs.

THEORY AND HYPOTHESES

Level of Strategic Change and Firm Performance: An Inverted U-Shaped Relationship

Like strategy, strategic change can be defined in different ways. In some studies, strategic change has been studied as the change in a single, specific strategic dimension—for example, the change in a firm’s product diversification level (e.g., Wiersema and Bantel, 1992), geographic diversification level (e.g., Sanders and Carpenter, 1998), or R&D investment intensity (e.g., Hoskisson and Hitt, 1988). In other studies, strategic change has been defined as the overall change in a firm’s pattern of resource allocations in multiple key strategic dimensions (Carpenter, 2000; Finkelstein and Hambrick, 1990; Zhang, 2006). This conceptualization of strategic change is based upon the view of strategy as a pattern in a firm’s resource allocations (Mintzberg, 1978). Consistent with the second school of thought, we also conceptualize strategic change as the variation over time in a firm’s pattern of resource allocations in key strategic dimensions that goes beyond industry-wide changes in these dimensions. In essence, strategic variation refers to the extent to which a firm’s pattern of resource allocations in key strategic dimensions change over time (Carpenter, 2000; Zhang, 2006). The opposite of strategic variation is strategic persistence, defined as the extent to which a firm’s pattern of resource allocations in key strategic dimensions remains stable over time (Finkelstein and Hambrick, 1990: 487). Thus, the level of strategic variation captures the extent to which a firm’s pattern of resource allocations in key strategic dimensions is different from its own past experience.

However, in some circumstances, the overall competitive environment of an industry may change (for example, due to the emergence of disruptive new technologies or significant industry consolidation via mergers and acquisitions), and as a response many firms in the industry may change their patterns of resource allocations in key strategic dimensions. In these situations, individual firms’ strategic deviation mirrors industry-wide collective strategic deviation. Thus, individual firms’ strategic deviation actually conforms to the central tendency of the industry. In these situations, a firm’s strategic deviation may not be very risky because the firm learns from and imitates the concurrent strategies of peer firms in the industry.

As noted earlier, we conceptualize strategic change as the variation over time in a firm’s pattern of resource allocations in key strategic dimensions that goes beyond industry-wide

changes in these dimensions. In this conceptualization, we take into account both the extent to which a firm's current pattern of resource allocations deviates from its own past experience and the extent to which such deviation differs from the industry's central tendency. This conceptualization captures the experimenting and risk-taking aspects of a firm's strategic change more completely because, based on this definition, a firm with a higher level of strategic change not only differs greatly from its own past experience but also deviates from the industry's central tendency. Thus it is reasonable to argue that the firm is experimenting with fundamentally new (and thus uncertain) patterns of resource allocations in key strategic dimensions.

According to our conceptualization, a firm's strategic change in the pattern of resource allocation can affect the firm in two different ways. One effect is adaptive and increases the chance of aligning the firm with the environment, and the other effect is disruptive and increases the chance of initiating inappropriate changes and/or poor implementation of changes. In the adaptive way, the level of strategic change can have a positive impact on firm performance. As noted above, the level of strategic change reflects the experimenting and risk-taking aspects of a firm's strategic choices (Carpenter, 2000; Finkelstein and Hambrick, 1990; Zhang, 2006). It reflects the firm's bold thinking and novel strategic alternatives, and thus it may enable the firm to align with the environment and achieve better performance (Hambrick and Schecter, 1983; Haveman, 1992; Zajac and Kraatz, 1993).

In the disruptive way, however, the level of strategic change in the pattern of resource allocation can have a negative impact on firm performance. The greater the level of change, the greater the cost and difficulty of implementing the change because of the need to build new capabilities and acquire new resources. High levels of strategic change typically involve significant breaks from past strategies and include major organizational changes as well (Lant, Milliken, and Batra, 1992). Such changes are disruptive to the organization because they often require significant internal restructuring, the cost of which can be very high (Jauch, et al., 1980).

Indeed, both managers as individuals and firms as collective systems of knowledge and practices have limited absorptive capacity to process and assimilate new knowledge and practices effectively (Cohen and Levinthal, 1990). Hence, substantial changes in the firm's resource allocation pattern carried out in a short time period can put significant strains on the firm's managerial resources and organizational systems (Penrose, 1959). Therefore, a certain level of overlap (between new knowledge/practices and existing knowledge/practices) is necessary for the firm to effectively use the new knowledge and practices (Ahuja and Katila, 2001; Cohen and Levinthal, 1990; Rosenkopf and Almeida, 2003; Tallman et al., 2004). When the level of strategic change is too high, the new pattern of resource allocation deviates significantly from the firm's historical pattern and the industry's central tendency so that the firm is less able to manage the change effectively. While both the adaptive effect and the disruptive effect of strategic change grow with the level of change, they grow at different rates. We argue that the adaptive effect of strategic change grows with the level of change at a decreasing rate. This is because there is a ceiling on the extent to which a firm can align with the environment through changing its strategy. As a result, the marginal adaptive benefit of strategic change becomes smaller as the level of change increases. Furthermore, we argue that the disruptive effect of strategic change grows with the level of change at an increasing rate. When the level of change is relatively low, the change may still be consistent with the firm's existing capabilities and resources and build upon existing organizational competencies (Lant, et al., 1992). The overlap between the new and existing pattern of resource allocation enables the firm to manage the change (Ahuja and Katila, 2001; Cohen and Levinthal, 1990; Rosenkopf and Almeida, 2003; Tallman et al., 2004). Thus,

the marginal increase in the change's disruptive effect is limited. However, as the level of strategic change further increases, the marginal increase in the change's disruptive effect becomes greater. This is because multiple key strategic dimensions simultaneously experience significant changes, and the discontinuity and disruption caused by these changes reinforce each other and lead to an amplified disruptive effect. Therefore, when the firm pursues large changes in multiple strategic dimensions simultaneously, it may stretch its managerial resources excessively and experience lower performance (Kor and Leblebici, 2005).

Therefore, at low levels of strategic change, increases in the level of change serve primarily to enhance the adaptive effect of change. At high levels of change, increases in the level of change strengthen the disruptive effect far more than the adaptive effect. Based on these arguments, we expect to observe an inverted U-shaped effect of the level of strategic change on firm performance.

Hypothesis 1: The level of strategic change in the pattern of resource allocation will have an inverted U-shaped relationship with firm performance.

The Moderating Role of CEO Origin

We also argue that the inverted U-shaped relationship between the level of strategic change and firm performance may differ between firms led by outside CEOs and those led by inside CEOs. Previous studies have suggested that the relationship between strategic change and firm performance depends upon the organizational conditions under which the change is initiated and implemented (Rajagopalan and Spreitzer, 1997). An important organizational condition that is salient in understanding the performance effect of strategic change is executive leadership

(Virany, Tushman, and Romanelli, 1992). Following this logic, we expect that the origin of the CEO represents one important organizational condition that is likely to affect the relationship between the level of strategic change and firm performance.

As discussed above, the overall impact of the level of strategic change on firm performance is the net result of the adaptive effect and the disruptive effect of strategic change. How CEO origin moderates the overall impact of the level of strategic change on firm performance will hence be determined by how CEO origin affects the adaptive effect vis-à-vis the disruptive effect of strategic change, respectively. We argue that, relative to inside CEOs, outside CEOs will amplify both the adaptive and the disruptive effects of strategic change.

Relative to inside CEOs, outside CEOs can amplify the adaptive effect of strategic change for the following reasons. First, outside CEOs are usually hired when change is expected due to performance decline (Cannella and Lubatkin, 1993). Strategic changes initiated by outside CEOs meet such expectations and thus tend to be supported by key internal and/or external constituents. Second, outside CEOs can bring in relatively novel knowledge and skills (Harris and Helfat, 1997; Zhang and Rajagopalan, 2003, 2004), and they do not have emotional commitment to or vested interests in the firm's status quo. Their outsider status and experience enable them to search for strategic options within and outside the firm more broadly. For these reasons, strategic change under the leadership of outside CEOs may be more adaptive than that under the leadership of inside CEOs.

On the other hand, relative to inside CEOs, outside CEOs can also amplify the disruptive effect of strategic change. As noted earlier, higher levels of strategic change likely require a higher cost of implementation and have an attendant greater risk of failure. The cost, risk, and organizational disturbance associated with higher levels of strategic change should be even more pronounced under the leadership of outside CEOs than inside CEOs. Relative to inside CEOs, outside CEOs have a more limited understanding of the firm's resources and constraints (Greiner, Cummings, and Bhambri, 2002). Without a direct, experience-based understanding of the firm's resource conditions and administrative heritage, it may be more difficult for the

outside CEO to choose the appropriate types and levels of strategic change (Shen and Cannella, 2002). Hence, they may initiate changes in the firm's pattern of resource allocation that deviate from rather than build upon existing firm capabilities. Such changes tend to have a greater risk of failure because organizational changes that build on existing competencies are more likely to enhance immediate performance than changes that require entirely new competencies (Haveman, 1992; Sastry, 1997). Similarly, because outside CEOs tend to have a limited understanding of the firm's internal resources and capabilities and how they can be reconfigured and reused, the implementation of strategic change can also be a problem. All these reasons can contribute to the amplified disruptive effect of strategic change under the leadership of outside CEOs.

So far, we have argued that the level of strategic change has an inverted U-shaped relationship with firm performance: at relatively low levels of change the adaptive effect dominates the disruptive effect, while at relatively high levels of change the disruptive effect dominates the adaptive effect. We have also argued that, relative to inside CEOs the leadership of outside CEOs can amplify both the adaptive effect and the disruptive effect of strategic change. Combining these arguments, we expect that both the positive effect of strategic change on firm performance at lower levels of change and the negative effect of strategic change on firm performance at higher levels of change will be more pronounced under the leadership of outside CEOs than inside CEOs. In other words, relative to outside CEOs, inside CEOs will tend to have a more "even" performance across various levels of strategic change.

Hypothesis 2: Outside CEO origin will amplify the inverted U-shaped relationship between the level of strategic change in the pattern of resource allocation and firm performance. In other words, the positive effect of strategic change on firm performance at lower levels of change and the negative effect of strategic change on firm performance at higher levels of change will both be stronger in firms led by outside CEOs than in firms led by inside CEOs.

METHODS

Sample Selection

The sample for this study was drawn from the population of relatively large (annual sales revenues greater than \$100 million), publicly traded, U.S. non-diversified (the firm had to derive at least 70% of its sales from a single 4-digit industry) manufacturing firms listed continuously on COMPUSTAT between 1993 and 1998 (Zhang and Rajagopalan, 2004). We first identified all such firms (768 in all) from COMPUSTAT. We then identified 220 CEO successions that had occurred within this group during the 1993–1998 time period from the online *Wall Street Journal Index* and Standard and Poor's *Executive Compensation* database. We traced the yearly information on the 220 departing CEOs in these successions to the first year of their tenure as CEO or the first year when the firm was publicly listed, whichever came later. Excluding those with missing information, our sample included 193 departing CEOs in 176 firms, where 159 firms had one CEO and 17 firms had two CEOs. We pooled the tenures of these departing CEOs and got a final sample of 1,600 firm-year observations for data analyses.

Measures

Consistent with our conceptualization of strategic change in this study and based on previous studies (Carpenter, 2000; Finkelstein and Hambrick, 1990; Zhang, 2006), we used six key strategic dimensions to create a composite measure of strategic change: (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 (selling, general, and administrative [SGA] expenses/sales), (5) inventory levels (inventories/sales), and (6) financial leverage (debt/equity). These dimensions capture distinct aspects of a firm's strategic profile (Finkelstein and Hambrick, 1990).

Data on these six strategic dimensions were obtained from COMPUSTAT and updated yearly. We first calculated the differences in these ratios between the current and prior year—for example, $\Delta \text{firm R\&D intensity} = (\text{firm R\&D intensity}_t - \text{firm R\&D intensity}_{t-1})$. Then, we adjusted for the industry effect by subtracting the industry median changes in these ratios. The

relevant industry was defined as the focal firm's primary 4-digit industry, and the focal firm was excluded in calculating industry median values (Huson, Malatesta, and Parrino, 2004). For example, industry-adjusted Δ R&D intensity = (firm R&D intensity_t – firm R&D intensity_{t-1}) – (industry median R&D intensity_t – industry median R&D intensity_{t-1}). Next, we calculated the absolute values of the industry-adjusted changes in these ratios and standardized the absolute values within the sample (mean = 0, standard deviation = 1). The average of the six standardized values was used as our composite measure of *strategic change*.

Firm performance was operationalized as industry-adjusted annual return on assets (ROA) and was obtained by subtracting the industry median ROA (excluding the focal firm) from the focal firm's annual ROA (Huson, et al., 2004). Data on firm ROA and industry median ROA were collected from COMPUSTAT and updated yearly. Consistent with previous studies of CEO origin (Cannella and Lubatkin, 1993; Harris and Helfat, 1997), *CEO origin* was coded 1 if the CEO was an outside CEO who had firm tenure of less than two years when he or she assumed the CEO position and 0 otherwise. Data on CEO origin were obtained from the *Dun & Bradstreet Reference Book of Corporate Management* and from firm proxy statements.

To control for possible confounding factors that affect the level of strategic change and/or firm performance, we controlled for the following variables. *Firm size* was operationalized as the logarithm of the number of employees in the prior year. *Prior firm performance* was operationalized as industry-adjusted ROA in the prior year. Data on firm size and prior firm performance were obtained from COMPUSTAT.

We also controlled for the following governance variables that may affect strategic change and firm performance (Rajagopalan and Spreitzer, 1997). *Board size* was defined as the total number of directors on the board, and *outside director percentage* referred to the proportion of outside directors on the board (Zajac and Westphal, 1996). *CEO duality* was coded 1 in a year if the CEO was also the board chair in the year and 0 otherwise.

We controlled for additional CEO background-related variables that may influence strategic change and firm performance. *CEO tenure* was measured by counting the years a CEO

had been in office, which was updated yearly (Henderson, et al., 2006; Simsek, 2007; Wu, et al., 2005). *CEO age* was measured by counting the years since a CEO was born, which was also updated yearly. *CEO educational level* was measured on a 7-point scale based on the highest degree earned (Finkelstein, 1992; Datta and Rajagopalan, 1998) as follows: 1 = high school, 2 = some college, 3 = undergraduate degree, 4 = some graduate school, 5 = master's degree, 6 = attended a doctoral program, and 7 = doctorate degree. Following Hambrick and Mason (1984) and Datta and Rajagopalan (1998), CEO functional backgrounds were classified into "throughput" and "non-throughput" categories. CEOs with dominant functional experience in production and operations, process R&D, and accounting were categorized as having "throughput" functional backgrounds, and those with dominant functional experiences in all other functional areas (e.g., marketing, merchandising, product R&D, finance, and law) were categorized as having "non-throughput" functional background. *CEO throughput background* then was coded 1 if a CEO had a throughput background and 0 otherwise. These data were obtained from the *Dun & Bradstreet Reference Book of Corporate Management*, corporate proxy statements, and *Who's Who in Finance and Industry*.

Data analysis

Our data are structured as a pooled cross section and time series. The data are unbalanced because the number of observations varies among CEOs. We used the generalized least squares (GLS) regression method to analyze the pooled cross-sectional time-series data (xtgls, Stata 8, 2003). In all models, the predictor variables and controls lagged the dependent variables by one year. The dependent variables (firm performance) are likely to be autocorrelated within a panel (each CEO is considered as a panel), and the autocorrelation coefficient may be different across panels. Hence, we corrected for panel-specific autocorrelation using the option of corr(psara), where psar1 stands for panel-specific auto-correlation coefficient: AR(1). When corr(psar1) is specified, each panel is assumed to have errors that follow a different AR(1) process.

Following Aiken and West (1991), variables were mean-centered prior to the creation of the interaction term in order to reduce the potential problem of multicollinearity. Because our

models include multiple two-way interaction terms and a three-way interaction term, we further applied the residual centering procedure (Jong, Ruyter, and Wetzels, 2005; Lance, 1988) to handle multicollinearity between the interaction term (e.g., X_1X_2) and its constituent parts (e.g., X_1 and X_2). This procedure had two stages: first, each interaction term was regressed on its components, and then we saved the residuals and used the residuals instead of the original interaction terms in the data analyses (Jong, et al., 2005).

In our models, prior firm performance was included to control for regression to the mean. Because some variables might be related to both prior firm performance and current firm performance, using the observed values of prior firm performance in the equations of firm performance could yield biased estimates (Johnston, 1984). We corrected for this bias by generating reduced-form estimates of prior firm performance and then included the predicted value of prior performance as an instrument variable in estimating current firm performance (Westphal, 1999).

RESULTS

Table 1 reports the means, standard deviations, and correlations of variables in this study, and Table 2 reports estimates of firm performance models. Model 1 included controls; Model 2 added the effects of outside CEO, strategic change, and its squared term; and Model 3 added “outside CEO’s” interactions with strategic change and with the squared term. Overall chi-squares for these models indicate significant explanatory power.¹

[Insert Tables 1 and 2 about here]

In Model 2 of Table 2, the effect of strategic change is positive and significant ($b = 0.070$, $p < 0.01$), and the effect of its squared term is negative and significant ($b = -0.056$, $p < 0.001$). These results strongly support Hypothesis 1, which predicted that the level of strategic change in

¹ In additional analyses, we included the squared term of CEO tenure. It was not significant and did not change the coefficients for other variables. Considering the high correlation between CEO age and CEO tenure, we excluded one of them alternately, but the results did not change.

the pattern of resource allocation would have an inverted U-shaped relationship with firm performance.

Hypothesis 2 predicted that outside CEO origin would amplify the inverted U-shaped relationship between the level of strategic change and firm performance. In Model 3 of Table 2, the interaction of strategic change and outside CEO is not significant ($b = 0.14$, n.s.) but the interaction of strategic change squared and outside CEO is negative and significant ($b = -0.069$, $p < 0.001$). These results suggest that while CEO origin does not moderate the linear effect of the level of strategic change on firm performance, it does moderate the curvilinear effect of the level of strategic change on firm performance, as we predicted in Hypothesis 2. To further probe this finding, we plotted the results in Figure 1. To create this figure, all of the variables in Model 3 in Table 2 except strategic change (and strategic change squared) and outside CEO were constrained to their mean values. Strategic change took values ranging from three standard deviations below the mean to three standard deviations above the mean (and strategic change squared was calculated accordingly). Outside CEO took the values one and zero. Figure 1 shows at lower levels of strategic change, the positive effect of strategic change on firm performance increases more steeply for outside CEOs than inside CEOs; similarly, at higher levels of strategic change, the negative effect of strategic change on firm performance is also steeper for outside CEOs than for inside CEOs. Overall, these results are consistent with the prediction of Hypothesis 2.

[Insert Figure 1 about here]

Supplementary Analyses: The Role of CEO Tenure

We found that the level of strategic change has an inverted U-shaped relationship with firm performance and that outside CEO origin amplified these effects. We may pose an interesting follow-up question: Does the moderating role of CEO origin in this relationship vary across CEO tenure?

Prior studies have examined how CEO tenure may affect various aspects of strategic change and firm performance. Miller and Shamsie (2001), for example, found that (1) top

executive tenure has a negative effect on product line experimentation, (2) has an inverted U-shaped effect on firm performance, and (3) moderates the relationship between product line experimentation and firm performance. Wu, Levitas, and Priem (2005) found that CEO tenure has an inverted U-shaped relationship with firm invention and that this relationship varies with the level of technological dynamism in the environment. Henderson, Miller, and Hambrick (2006) found that (1) in a dynamic environment, CEO tenure has a negative relationship with firm performance; and (2) in a stable environment, CEO tenure has an inverted U-shaped relationship with firm performance. Simsek (2007) found that CEO tenure is positively related to the top management team's risk-taking propensity. While these studies have provided rich evidence of the organizational consequences of CEO tenure, the questions we posed above are more complex.² We do not think that, at this stage, we have strong logic or sufficient evidence to predict how CEO origin and CEO tenure may jointly moderate the inverted U-shaped relationship between the level of strategic change and firm performance. Therefore, we did not propose a formal hypothesis but instead explored this question on a post-hoc basis.

In supplementary analysis, we divided the entire sample into two subgroups: the early years of CEO tenure (i.e., the first three years) and the later years of CEO tenure (i.e., after the first three years). We re-ran Model 3 for each of the two subgroups, and the results are reported in Models 4 and 5 in Table 2. The results of Model 4 suggest that strategic change is positive and significant ($b = 0.237, p < 0.001$) and that its squared term is negative and significant ($b = -0.052, p < 0.01$). However, outside CEO's interaction with strategic change ($b = 0.420, n.s.$) and its interaction with strategic change squared ($b = 0.042, n.s.$) are not significant. These results suggest that while there is an inverted U-shaped relationship between the level of strategic change and firm performance in the early years of CEO tenure, this relationship does not differ between firms led by outside CEOs and those led by inside CEOs.

² Our study examines more complex effects because none of these previous studies have examined the curvilinear effect of the level of strategic change on firm performance and the moderating role of CEO origin when they examined the effect of CEO tenure on organizational outcomes.

The results in Model 5 suggest that while strategic change is not significant ($b = 0.013$, n.s.), its squared term is negative and significant ($b = -0.023$, $p < 0.05$). Further, outside CEO's interaction with strategic change is negative and significant ($b = -0.326$, $p < 0.001$) and its interaction with strategic change squared is negative and significant ($b = -0.051$, $p < 0.05$). These results are plotted in Figure 2, following an approach similar to that described above. As shown in Figure 2, in the later years of CEO tenure excessive strategic change has a much stronger negative effect on firm performance in firms led by outside CEOs than in firms led by inside CEOs.

[Insert Figure 2 about here]

DISCUSSION AND CONCLUSION

In this study, we integrate the strategic change and CEO leadership literatures to examine how the relationship between the level of strategic change in the pattern of resource allocation and firm performance differs between firms led by outside CEOs and firms led by inside CEOs. We hypothesized and empirically found that the level of strategic change has an inverted U-shaped effect on firm performance. This finding is consistent with our theoretical argument that the overall impact of strategic change on firm performance is the net outcome of the adaptive effect and the disruptive effect of strategic change. At lower levels of strategic change, the adaptive effect dominates the disruptive effect, and the level of strategic change has an overall positive effect on firm performance. In contrast, at higher levels of strategic change, the disruptive effect dominates the adaptive effect, and the level of strategic change has an overall negative effect on firm performance. These results suggest that managing the “right” scale and scope of strategic change is central to creating and sustaining competitive advantage. Our findings can also help reconcile the inconsistent findings on the relationship between strategic change and firm performance found in many previous studies (Rajagopalan and Spreitzer, 1997).

More important, we demonstrated that the relationship between the level of strategic change and firm performance differs between firms led by outside CEOs and firms led by inside CEOs. As shown in Figure 1, both the positive effect of strategic change on firm performance at

lower levels of change and the negative effect of strategic change on firm performance at higher levels of change are more pronounced for outside CEOs than inside CEOs. It seems that both the benefits and costs of strategic change can be exacerbated by the leadership of outside CEOs. As for inside CEOs, because they have a deeper understanding of their firms' internal resource conditions and also because their visions tend to be constrained by their past experience within the firm, they are more likely to initiate and implement strategic changes that build upon existing organizational capabilities. Thus, strategic changes initiated and implemented by inside CEOs tend to benefit firm performance in a relatively incremental but continuous way. Furthermore, we explored how the difference between outside CEOs and inside CEOs with regard to the performance consequences of the level of strategic change may vary across CEO tenure. Interestingly, our results show that in the early years of CEO tenure (i.e., the first three years), the relationship between the level of strategic change and firm performance does not differ between inside and outside CEOs. It is possible that when a new CEO—whether an outsider or an insider—takes office, some levels of changes are expected. The new CEO may also make changes to signify that his or her era differs from that of the predecessor. A recent example can be found in the steps Jeffery R. Immelt took upon succeeding Jack Welch as the CEO of General Electric. Although he was promoted from within the firm, he initiated and implemented significant strategic changes quite soon after succeeding Welch (*BusinessWeek*, 2005). Moreover, our results show that in the later years of CEO tenure (after the first three years), the relationship between the level of strategic change and firm performance differs significantly between outside and inside CEOs. Specifically, during the later years of tenure, higher levels of strategic change have stronger negative effects on firm performance under the leadership of outside CEOs than inside CEOs.

Our findings closely parallel the findings of Chuck Lucier from the strategy consulting firm Booz Allen Hamilton. Lucier examined the performance of inside and outside CEOs over time and found that, “in general, outside chief executives do very well in the early part of their tenure and very badly in the latter part” and that “insiders have a ‘remarkably even’ performance

over time” (c.f., *The Economist*, 2004: 55). Although Lucier’s focus (i.e., how performance of outside and inside CEOs varies over tenure) was different from our focus (i.e., how the difference between outside and inside CEOs with regard to the performance consequences of the level of strategic change varies over time), both studies suggest that the relative disadvantage of outside CEOs is more pronounced in the later years of their tenure than in the early years of their tenure. As Lucier explained, “outsiders are good at doing the rapid cost-cutting and divestment often needed by firms in trouble, but they are less good at building and sustaining long-term growth” (c.f., *The Economist*, 2004: 56).

In a similar vein, we found that the relationship between the level of strategic change and firm performance does not differ between outside and inside CEOs in the early years of their tenure but differ in the later years of their tenure. One possible explanation is that outside CEOs are usually brought in when immediate changes are needed and in the early years of their tenure their strategic changes focus mainly on cost-cutting and divestment. As tenure increases, obvious opportunities for cost-cutting and divestment dry up, and new strategic initiatives become more focused upon developing long-term growth, an area where outside CEOs are likely to be less effective. Therefore, the disadvantage of outside CEOs relative to inside CEOs in initiating and implementing appropriate strategic changes becomes more pronounced in the later years of tenure. Another explanation (which is not necessarily inconsistent with the first explanation) is that changes in the resource allocation in some strategic dimensions (e.g., R&D) may take years to effect, and thus the first three years of tenure may not be long enough to observe the performance differences between strategic changes initiated by outside CEOs vis-a-vis those by inside CEOs. In this logic, outside CEOs may have made inappropriate strategic changes in their early years in office but the negative performance consequences of their changes are only observed later. Both explanations suggest that, relative to inside CEOs, outside CEOs may be at a disadvantage when it comes to initiating and implementing the right strategic change.

Our findings also suggest some important implications for firms’ human-capital development strategy (not only for the CEO position but also more generally for other important

positions). Kor and Leblebici (2005) argued that an internal human-capital development strategy allows for exploitation of the firm's existing knowledge whereas an external human-capital development strategy permits exploration of new knowledge available outside the firm. However, in the context of service firms, Kor and Leblebici's (2005) findings suggested that an external human-capital development strategy may not be effective because it is difficult for "professionals" to transfer human skills across firms. Our findings further highlight the possible downside of external human-capital development strategy, particularly when the firms are pursuing high levels of strategic change. It appears that the firm-specific human capital possessed by an insider CEO may buffer the firm from the disruptive effects of high levels of strategic change.

Contributions, Limitations, and Directions for Future Research

Our findings contribute to the strategic change literature by modeling a more complex relationship between the level of strategic change and firm performance than previous studies have suggested. Our findings also indicate the crucial importance of CEO leadership in influencing the relationship between the level of strategic change and firm performance. CEO competencies and skills that vary between inside and outside CEOs represent crucial organizational contingencies that may affect the performance consequences of strategic change (Rajagopalan and Spreitzer, 1997; Virany, et al., 1992). We hope that our theoretical recognition of and empirical evidence on the inverted U-shaped relationship between the level of strategic change and firm performance and the moderating impact of CEO origin in this relationship will contribute to a deeper understanding on how strategic change affects firm performance and the role of CEO leadership in this relationship.

Our findings also contribute to the CEO leadership literature. Previous studies have examined how CEO origin and CEO tenure may affect firm strategy and performance. We contribute to this literature by modeling a more complex relationship between CEO leadership and firm performance. Our results show that relative to inside CEOs, the leadership of outside CEOs can exacerbate both the benefits and costs of strategic change. Moreover, our findings

show that the difference between outside and inside CEOs with regard to the performance consequence of strategic change is more profound in the later years than in the early years of CEO tenure. Note that CEO origin reflects a CEO's pre-succession learning experience (where is the CEO from?), while CEO tenure captures the CEO's post-succession learning experience (how long has the CEO learned on the job?). Our results suggest that a CEO's pre-succession learning experience has an enduring effect, which becomes even more pronounced as his or her post-succession learning experience increases. In the organization theory literature, scholars have found strong evidence to support the idea that organization origin in terms of founding environmental conditions (e.g., Carroll and Hannan, 1989) and organizational models prevalent at the time of founding (e.g., Baron, Hannan, and Burton, 2001; Hannan, Burton, and Baron, 1996) can have imprinting effects on subsequent organizational consequences. Similarly, our findings suggest that CEO origin can have imprinting effects on a firm as well.

We acknowledge a few limitations of our study that, in turn, suggest some interesting avenues for future research. First, like most research on executive leadership, our study relied on archival data rather than direct observations of CEO behaviors. We relied upon CEO origin in terms of outsider and insider to indicate unobservable differences in human capital between CEOs. While we found compelling evidence on the differential effects of CEO origin on the relationships between the level of strategic change and performance, because of our reliance on archival data our study could not examine the underlying reasons. Perhaps outsiders choose different strategic changes from insiders or perhaps they choose different implementation processes (Greiner, et al., 2002). Future studies that use primary data (e.g., obtained through executive surveys and interviews) will contribute to a deeper understanding of the differences in the change dynamics between outside and inside CEOs.

Second, consistent with prior research, we used a combined index of strategic change that captured changes in the pattern of resource allocation in multiple key strategic dimensions (Carpenter, 2000; Finkelstein and Hambrick, 1990; Zhang, 2006). While this approach allows us to examine the performance consequence of the change in the firm's overall pattern of resource

allocation, it does limit our ability to understand how individual dimensions of strategic change affect firm performance. The performance effects of changes in different strategic dimensions may also vary depending on the industry as well as the time period observed. Future studies that unpack the effects of different dimensions of strategic change will help contribute to a more fine-grained understanding of how strategic change impacts organizational performance.

Third, we used a sample of large, non-diversified manufacturing firms. This sample may limit the generalizability of our findings to other contexts (e.g., diversified firms, service firms, and small firms). Future research needs to replicate and extend our model in other organizational contexts.

In conclusion, to the best of our knowledge, ours is the first multi-industry, large-sample study to investigate an inverted U-shaped relationship between the level of strategic change and firm performance and how CEO origin moderates this relationship. We hope that our findings contribute toward a more completely specified theory of strategic change and CEO leadership.

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Table 1. Means, Standard Deviations, and Correlations^a

Variables	Means	S.D.	1	2	3	4	5	6	7	8	9	10	11
1. Firm performance	0.09	0.28	-										
2. Strategic change	0	0.47	.20	-									
3. Outside CEO	0.39	0.48	-.04	.08	-								
4. CEO tenure	8.97	7.08	.04	-.01	-.10	-							
5. Prior firm performance	0.09	0.29	.50	.18	-.03	.10	-						
6. CEO duality	0.61	0.48	.01	.00	-.20	.20	.02	-					
7. CEO age	56.55	7.14	-.11	-.04	-.15	.40	-.07	.15	-				
8. CEO education level	4.00	1.01	-.02	.05	.14	-.01	-.02	-.06	-.13	-			
9. CEO throughput background	0.57	0.50	.02	.01	-.04	-.16	.01	-.04	-.09	.04	-		
10. Firm size	6.60	1.29	.07	-.05	-.15	-.02	.11	.12	.16	-.15	-.03	-	
11. Board size	9.86	2.84	.03	-.03	-.18	-.02	.08	.06	.16	-.06	.02	.45	-
12. Outside director percentage	0.74	0.12	.01	-.04	-.10	-.06	-.06	.13	-.14	-.08	.02	.18	.32

^aN = 1,600.

Correlations greater than 0.05 are significant at $p < 0.05$.

Table 2. Strategic Change and Firm Performance^{ab}

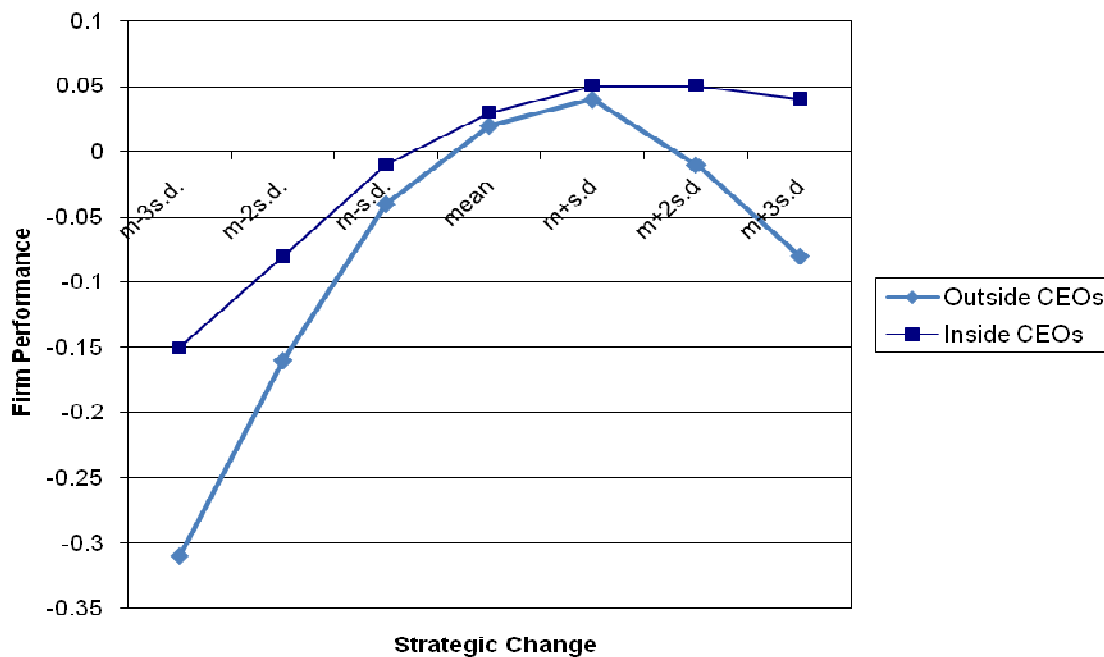
Variables	Full Sample			Early Tenure (≤3 years)	Late Tenure (>3 years)
	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	0.264 (0.189)	0.194 (0.192)	0.210 (0.194)	-0.299 (0.238)	0.685*** (0.206)
Controls					
Prior Firm Performance ^c	0.371*** (0.032)	0.338*** (0.033)	0.340*** (0.032)	0.513*** (0.062)	0.333*** (0.040)
Firm Size	0.027* (0.013)	0.030* (0.012)	0.028* (0.013)	-0.065** (0.021)	0.037*** (0.011)
Board Size	0.003 (0.006)	0.003 (0.006)	0.004 (0.006)	0.030** (0.011)	-0.007 (0.006)
Outside Director Percentage	0.245 (0.132)	0.241* (0.120)	0.260* (0.122)	0.521** (0.191)	0.113 (0.118)
CEO Duality	-0.049 (0.033)	-0.050 (0.032)	-0.047 (0.032)	-0.102* (0.042)	-0.018 (0.030)
CEO Age ^d	-0.008** (0.003)	-0.006* (0.003)	-0.006* (0.003)	0.004 (0.003)	-0.011*** (0.003)
CEO Education Level	-0.025 (0.015)	-0.028 (0.015)	-0.031* (0.015)	-0.058** (0.021)	-0.057*** (0.015)
CEO Throughput Background	0.008 (0.033)	0.007 (0.032)	0.004 (0.032)	0.121* (0.048)	-0.004 (0.031)
CEO Tenure	0.003 (0.003)	0.002 (0.003)	0.002 (0.003)	0.047** (0.017)	0.003 (0.003)
Predictors					
Outside CEO		0.007 (0.034)	-0.006 (0.034)	-0.014 (0.048)	-0.005 (0.036)
Strategic Change		0.070** (0.022)	0.067** (0.023)	0.237*** (0.050)	0.013 (0.028)
Strategic Change Squared		-0.056*** (0.008)	-0.043*** (0.008)	-0.052** (0.019)	-0.023* (0.011)
Interactions					
Strategic Change X Outside CEO			0.014 (0.045)	0.420 (0.221)	-0.326*** (0.060)
Strategic Change Squared X Outside CEO			-0.069*** (0.015)	0.042 (0.051)	-0.051* (0.020)
Log Likelihood	-902.61	-883.30	-875.94	-286.64	-466.98
Wald χ^2	179.60***	265.02***	292.88***	205.75***	209.02***
N	1600	1600	1600	521	1079

^a Standard errors are in parentheses (significance levels: *** p < 0.001, ** p < 0.01, * p < 0.05, two-tail tests).

^b The Wald χ^2 statistic is for the hypothesis that all of the independent variables of the model are jointly equal to zero.

^c Prior firm performance was an instrumental variable in these models.

**Figure 1: Strategic Change and Firm Performance:
The Difference Between Outside and Inside CEOs**



**Figure 2: Strategic Change and Firm Performance:
The Difference Between Outside and Inside CEOs at Late Tenure**

