

# Performance Consequences of Convergence and Divergence in Strategic Positioning\*

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## Abstract

This paper investigates the performance consequence of strategic changes when firms move closer to or further away from other firms in the industry. The study suggests a theoretical framework and hypotheses on the effect of strategic convergence and divergence on performance, and tests hypotheses with firm-level longitudinal data on the U.S. food processing industry during the period of 1985-2000. The study shows that strategic divergence is negatively related to performance, and that organizational size and firm-specific uncertainty significantly influence the effect of strategic convergence and divergence on financial performance. Particularly, high uncertainty seems to be conducive to financial performance improvement for organizations undergoing significant strategic changes converging toward other competitors. On the other hand, big organizational size seems to be beneficial for firms implementing strategic changes diverging from other competitors.

Keywords: Strategic Positioning, Convergence, Divergence, Uncertainty, Organizational Size

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## 1. INTRODUCTION

A number of scholars with different theoretical origins have been studying on the performance consequences of strategic changes (E.g., Hannan & Freeman, 1984; March, 1981). Rather than focusing on process than content, studies found substantial evidence of structural inertia theory from empirical contexts (Amburgey, Kelly, & Barnett, 1993; Baum & Singh, 1996b; Greve, 1999). Although the literature made a great contribution to the understanding of the sources for strategic change and its performance, mostly survival, there exists a dearth in the extant literature. There are a relatively small number of studies on the effect of strategic change with directions, e.g., converging toward others or diverging from others. As an exception, Baum & Singh (1996a) indirectly touched the performance issue of directive strategic changes by showing that the greater competition increases the hazard rates of failure of organizational niche changes, differently depending on the nature of change, i.e., expansion or contraction. The study fills the gap in the literature by emphasizing the performance consequence of strategic change with a direction based on other competing firms' strategic position, i.e., the extent to which a firm adjusts its strategic profile closer toward others or further away from others. That is, the study investigates the question what is the performance consequence of strategic change such as convergent and divergent strategic changes. Another contribution the study makes is to suggest moderating variables on the above relationship. Thereby, it advances the frontier of the knowledge on the complex mechanism determining performance of directive strategic changes. Furthermore it suggests practical guidelines for managers to decide where their companies should move forward, and how they should change their strategic profiles.

## 2. THEORY AND HYPOTHESES

### 2.1 Definitions of Strategic Change, Strategic Convergence and Strategic Divergence

To proceed further, we need clear definitions for constructs concerning strategic changes.

**Strategic change.** The extent to which a focal firm changes its strategic profile at the next time period vis-à-vis one at the previous time period, i.e., strategic dissimilarity or

distance between the current strategic profile and the past one in a temporal dimension within a firm. This construct has no connotation about the direction of strategic change, thereby including several kinds of strategic change. Distinction between strategic convergence and strategic divergence is one way to categorize strategic changes vis-à-vis other competitors' strategic position. Strategic convergence and divergence are mutually exclusive but not comprehensive over strategic changes, so that a firm may implement strategic changes of which the direction is neutral vis-à-vis other competitors, i.e., neither convergence nor divergence.

**Strategic convergence.** Strategic convergence is defined as the extent to which a focal firm changes its strategic profile at the next time period more similar to other firms' strategic profiles at the previous time period, i.e., decrease in strategic dissimilarity or distance between the current strategic profile and the past one of other firms within the industry.

**Strategic divergence.** Strategic divergence is defined as the extent to which a focal firm changes its strategic profile at the next time period more dissimilar to other firms' strategic profiles at the previous time period, i.e., increase in strategic dissimilarity or distance between the current strategic profile and the past one of other firms within the industry.

## 2.2 Effect of Strategic Change on Financial Performance

**Strategic changes are beneficial?** One stream of organizational studies on inertia in structure, policies, and managerial ideologies provide support for the benefits of inertia, which is greater reliability and accountability in delivering services and products, avoiding competitive rivals' retaliations and securing customers' attention and public legitimacy (Amburgey et al., 1993; Barnett, 1994; Chen & Miller, 1994; Hannan et al., 1984; Miller & Chen, 1994), especially in stable environments (Miller & Friesen, 1984). Structural inertia theory focuses on the performance consequence of the change process, rather than the content of the change, which disrupts the internal routines and external exchange relationships during the period of reorganization into another strategic configuration (Hannan et al., 1984). The degree of strategic change in strategic positioning increases the risks of unexpected assaults from rivals, of dealing with malfunctions of unproven routines, and of rising adjustment costs. Also, theories of organizational learning suggest that organizations need a balance

between exploitation and exploration in searching for organizational solutions (March, 1991). However, the benefit of exploitation is about efficiency rather than effectiveness, and is short-term rather than long-term. For short-term financial performance, an exploitative search will be more beneficial than an explorative one. If the higher level of strategic change is related to more explorative than low level of strategic change, firms undertaking radical strategic changes will be subject to the liabilities of exploration. Therefore, irrespective of the content or direction of strategic change, performance will decrease when the strategic distance between a firm's previous position and the next position increases. This hypothesized relationship would be a baseline argument for structural inertia theory.

*Hypothesis 1 (H1). To the greater extent that a firm changes its strategic profile, the lower the financial performance, i.e., strategic change is negatively related to financial performance.*

**Mimetic firms are successful?** A number of scholars have been studying on the performance effect of strategic change, whether it is core or not for organizations (Amburgey et al., 1993; Greve, 1999). However, few studies exist on the performance effect of the direction of strategic change, e.g., whether it is better to converge toward other firms or not, although some exceptions exist (E.g., Deephouse, 1999; Kennedy, 2002; Miller & Chen, 1996)<sup>1)</sup> The motivation to follow others comes from a lack of knowledge, competitive motivation, or career concerns (Abrahamson & Rosenkopf, 1993; Bikhchandani, Hirshleifer, & Welch, 1992; Knickerbocker, 1973; Scharfstein & Stein, 1990). Although the effect of mimetic strategic change in the population level as well as in the organization level has a complex and dynamic implication (Herriott, Levinthal, & March, 1985; Levitt & March, 1988), there is a general benefit in following others in terms of informational benefit. Mimetic strategic change is neither random nor blind, but guided by prior experience and wisdoms from other firms, not requiring a specific investment and risky experiments (Miner & Raghavan, 1999). Thus mimetic strategic change is a typified response for organizations facing uncertainty and ambiguity (DiMaggio & Powell, 1983). The informational effect is negative in the region that a firm diverges from others, because firms change its current position into a relatively new and unfamiliar position, which provides little guidance for the firm to choose and implement the strategic position.

Then firms will face risk with little information and weak social proof. Therefore, the closer a firm moves toward others, the greater the informational benefit of the convergence. However there is another effect from competitive pressure when a firm converges toward others, opposed to information-based benefit. The more a firm converges toward others, the greater the competitive pressure from the increasing similarity, based on theories supporting the role of strategic similarity to increase rivalry among firms (Barney, 1991; D'Aveni, 1994; Gimeno & Woo, 1996; Peteraf, 1993). The negative effect of strategic similarity will lower firm performance converging toward others, while diverging firms will enjoy the weak competitive pressure from others. Thereby, as illustrated in Figure 2, the dashed line with a positive slope represents the combined effect of information-based benefit and competition-based cost. However, it is possible for the balance between information-based benefit and competition-based cost to shift to be negative against favoring strategic convergence. Therefore the total effect is subject to empirical testing.

On the other hand, strategic convergence and divergence are kinds of strategic change so that the performance consequences of firms undertaking either convergence or divergence will be subject to the effect predicted by structural inertia theory. Therefore, in Figure 2, the inverted V-shaped relationship between strategic convergence-divergence and performance will be added to the aforementioned combined effect of both information and competition.

Therefore, the inverted V-shaped effect from structural inertia theory and the line with a positive slope from information and competition effect in Figure 2 will shape together the downward decreasing performance line when a firm diverges from others, an unclear effect when converging, depending on the relative strength between information-competition benefit and liabilities of strategic change. Thus I hypothesize only for strategic divergence:

*Hypothesis 2a (H2a). When a firm moves further away from other firms in terms of strategic position, financial performance decreases, i.e., strategic divergence is negatively related to performance.*

As mentioned above, there is an alternative relationship due to the negative combined effect of both information-based benefit and competition-based cost.

Therefore, taking both the inverted V-shaped effect from structural inertia theory and the line with a negative slope into account together, we can predict the upward increasing performance line when a firm converges toward others, and an unclear effect when diverging, depending on the relative strength between information-competition benefit and liabilities of strategic change. Thus, alternatively I hypothesize only for strategic convergence:

*Hypothesis 2b (H2b). When a firm moves closer to other firms in terms of strategic position, financial performance decreases, i.e., strategic convergence is negatively related to financial performance.*

**Small vs. Big?** Organizational size will be an important moderator on the relationship between strategic change and performance. In the relationship between the direction of strategic change, i.e., convergence or divergence, and performance, organizational size does matter in both ways. First, for big firms, the more convergence toward others may not provide the same level of informational benefit as small firms may obtain. Big firms already have manpower and resource specialized for collecting information for competitive intelligence. Therefore, the marginal informational benefit of convergence may be lower for bigger firms. Second, competitive effects will become weak because the size of the firm takes a role of buffering threats from competitors. Thus, the increased performance effect from less competition may cancel out the decreased performance effect from the information effect. Therefore, the positive slope of information-competition line may not change significantly in Figure 2. Then the effect of structural inertia on performance is the only factor to be considered when we investigate the moderating role of organizational size on the performance effect of strategic convergence or divergence.

It seems reasonable that convergence and divergence would have different implications for performance in different situations. For larger firms, the liabilities of reorganization from strategic changes, whether from convergence or divergence, may be less influential because they have resource and contacts to compete proactively and buffer threats from rivals' unexpected attacks, confused customers, strategic errors, and rising costs (Haveman, 1993; Pfeffer & Salancik, 1978). Therefore, organizational size will attenuate the performance effect based on the structural inertia, i.e., the negative

effect of strategic change, whether it be convergence or divergence (Baum et al., 1996b).

*Hypothesis 3a. Interaction between strategic divergence and organizational size will be positively related to performance.*

*Hypothesis 3b. Interaction between strategic convergence and organizational size will be positively related to performance.*

On the other hand, in contrast with the above resource endowment effect, some scholars argue the moderating role of size will be limited to the death rate of organization, not for the short-term performance like market share (Greve, 1999). They suggested another possibility of the role of size as a buffer against failure, which is defined as depletion of accumulated resource (Levinthal, 1991). Thus, although organizational size will increase the survival rate, the organizational size will decrease short-term financial performance because organizational size is closely correlated to organizational inertia detrimental to performance of strategic change by extending the duration of reorganization after initiating strategic changes. Thus, alternatively, I propose:

*Hypothesis 3c. Interaction between strategy divergence and organizational size will be negatively related to financial performance.*

*Hypothesis 3d. Interaction between strategy convergence and organizational size will be negatively related to financial performance.*

***Mimetic firms are successful under high uncertainty?*** The role of uncertainty in the mimetic mechanism has been regarded as significant in inducing isomorphism among organizations. The uncertainty, here firm-specific ex-ante uncertainty, increases the value of information for organizations undertaking mimetic strategic changes, thereby increasing the negative effect of not following others or increasing the positive effect of following others. Thus, in convergence, the higher uncertainty will attenuate the negative effect of strategic change, while the higher uncertainty will accentuate the negative effect of strategic change in divergence. Thus, I propose:

*Hypothesis 4a. Interaction between strategic divergence and firm-specific uncertainty will have a negative impact on financial performance (i.e., the interaction term of CDI below zero and firm-specific uncertainty will be negatively related to financial performance.*

*Hypothesis 4b. Interaction between strategic convergence and firm-specific uncertainty will have a positive impact on financial performance (i.e., the interaction term of CDI below zero and firm-specific uncertainty will be positively related to financial performance.*

### 3. METHODS

To take the endogeneity of strategic change variables into account and include lagged dependent variable in the right-hand variables, I employed Arellano-Bond dynamic model by the generalized method of moments (GMM). In fact, strategic change related variables are not exogenous because the variable is endogenously determined by other variables such as past performance, uncertainty, and market rivalry. Therefore, the endogeneity of strategic change related variables should be considered in the estimation. Also, the financial performance is very often correlated to one in the previous year. To consider the dynamic effect, the study includes the lagged dependent variable, Return on Assets (ROA) in year  $t$ , in the right-hand side variables. This introduces another problem that lagged dependent variable is correlated with the disturbance, and that the usual panel data estimation results in inconsistent estimates. The general approach to cure this problem is to employ generalized method of moments (GMM) estimator (Arellano & Bond, 1991). The basic model is as follows:

$$\text{Performance}_{i,t+1} = \alpha \cdot \text{Performance}_{i,t} + \mathbf{x}_{it} \beta_1 + \mathbf{w}_{it} \beta_2 + \nu_i + e_{i,t} \quad (\text{E.q. 1})$$

where  $\mathbf{x}_{it}$  is a  $1 \times k_1$  vector of strictly exogenous independents of firm  $i$  in year  $t$ .  $\mathbf{w}_{it}$  is a  $1 \times k_2$  vector of endogenous variable.  $\text{Performance}_{i,t+1}$  is return on assets of firm  $i$  at year  $t+1$ .  $\nu_i$  is the random effects for each firm that are independent and i.i.d. over the panels with variance  $\sigma_\nu^2$ .  $e_{it}$  is i.i.d. over the whole sample with variance  $\sigma_e^2$ .

#### 3.1 Sample

The sample consists of 315 public firms in the U.S. food industry during the period of 1985-2000. For example, their average asset size is 1,880 million U.S. dollar in 1995. The total number of firms active in 1995 is 153. Most of the



financial data were collected from the COMPUSTAT database of Industrial Annual, Industrial Quarterly, and Segments. In the segment level, each firm's proportion of sales by SIC three-digit level was detected and only firms with fifty or higher percentage of sales in the food processing industry (i.e. of 200 to 209 SIC codes) were included in the analysis. The nature of the data is unbalanced panel data because some data are missing due to bankruptcy or acquisition and new firms are founded after 1985. To utilize all available data, data for defunct or new firms were also retained for analysis.

### 3.2 Dependent Variables

**Financial Performance ( $ROA_{it}$ ).** Performance is measured by using ROA (Return on Assets). In ROA, return is pre-tax return. To consider the reverse causality from ROA to independent variables, ROA is measured at the period of  $t+1$ . I discarded extreme outliers, e.g., loss of four hundred times of sales. Also, I treated the value of performance with  $ROA_{t+1}$  less than -20 as missing.  $ROS_{t+1}$  (Return in Sales) was also measured and used for alternative analysis. The correlation between ROA and ROS was .78 ( $p < 0.0001$ ). The result was consistent with each other so that I report only the result with ROA.

### 3.3 Independent Variables

**Strategic Change ( $Schange_{it}$ ).** Among various strategic dimensions, the current study focuses on resource allocation decisions. Like Finkelstein and Hambrick (1990) and Westphal, Seidel and Stewart (2001), the paper employed six dimensions in key resource allocation: advertising intensity, plant and equipment newness, research and development intensity, overhead efficiency (sales, general and administrative expenses divided by sales), financial leverage (total debt/equity), and inventory rate. On a multidimensional strategic space, a firm may move closer to the position of another firm, e.g., the industry leader. Strategic change is measured by the strategic distance between the strategic position at time  $t-1$  of firm  $i$ ,  $X_{i,t-1}$ , and the next strategic position of firm  $i$  at time  $t+1$ ,  $X_{i,t+1}$ , as follows:

$$Schange_{it} = d(X_{i,t+1}, X_{i,t-1}) \tag{Eq. 2}$$

$$d(X_{ip}, X_{jq}) \equiv \frac{1}{n(i, j, p, q)} \sum_{k \in n} |S_{i,p,k} - S_{j,q,k}| / \sigma_k \tag{Eq. 3}$$

where,  $S_{i,p,k}$  is the value on strategic dimension  $k$  for firm  $i$  at time period  $p$ .  $S_{j,p,k}$  is the value on strategic dimension  $k$  of the target firm  $j$ 's position at time period  $p$ .  $\sigma_k$  is the standard deviation of the values of all firms on strategic dimension  $j$ .  $n(i,j,p,q)$  is the number of strategic dimensions non-missing in both  $X_{i,p}$  and  $X_{j,q}$ . The strategic distance has been defined as long as the number of non-missing strategic dimensions is greater than or equal to four out of six.

**Strategic Convergence ( $CV_{it}$ ).** Convergence-Divergence Index of the firm  $i$  toward firm  $j$  during the time period  $t$  and  $t+2$ , i.e.,  $CDI_{ij,t,t+2}$ , or simply  $CDI_{ij,t}$ , is defined below as:

$$CDI_{ij,t} = 1 - d(X_{i,t+2}, X_{j,t}) / d(X_{i,t}, X_{j,t}) \tag{Eq. 4}$$

Based on the  $CDI_{ij,t}$  on the dyad level, the firm level strategic convergence is measured. The measure refers to the extent to which a firm converges toward other firms and its measure is defined as the positive part of the firm-level convergence-divergence index, i.e.,  $CDI_{it}$ , which is the average of dyad-level convergence divergence index of a focal firm relative to all other firms as follow:

$$CDI_{i,t-1} = (\sum_j CDI_{ij,t-1}) / (n-1) \tag{Eq. 5}$$

$$CV_{it} = CDI_{i,t-1} \cdot I(CDI_{i,t-1} > 0) \tag{Eq. 6}$$

where  $I(\cdot)$  is an index function of which the value is one if the logical statement inside the parenthesis is true, and zero otherwise.  $n$  means the total number of firms.

**Strategic Divergence ( $DV_{it}$ ).** In a similar way as strategic convergence is measured, strategic divergence is measured by the CDI. The construct refers to the extent to which a firm diverges from other firms and its measure is defined as -1 multiplied by the negative part of the firm level  $CDI_{it}$ , which is the average of dyad-level convergence divergence index of a focal firm relative to all other firms as follow:

$$DV_{it} = -1 \cdot CDI_{i,t-1} \cdot I(CDI_{i,t-1} < 0) \text{ (Eq. 7)}$$

where  $I(\cdot)$  is an index function of which the value is one if the logical statement inside the parenthesis is true, and zero otherwise.  $n$  means the total number of firms.

**Organizational size ( $SIZE_{it}$ ).** The study used the logarithm of sales as a measure for organizational size.

**Uncertainty of a focal firm ( $UNC_{it}$ ).** Uncertainty can be measured in various ways. However, the uncertainty we are interested in is firm-level uncertainty in decision making in strategic positioning, e.g., how strategic positions are related to performance. Therefore, the study measured ex-ante uncertainty of firms' earnings stream. Following previous studies (Bromiley, 1991; Wiseman & Bromiley, 1996), the study used standard deviations of analysts' forecasts of each firms' earnings from the Institutional Brokers Estimate System (IBES) during the period between 1984 and 2000.

**Average Multi Market Contact ( $AMMC_{it}$ ).** The firm level average market contact is measured by the mean of multimarket contact of a focal firm  $i$  with all other firms,  $MMC_{ijt}$ . The multi market contact  $MMC_{ijt}$  is measured by the segment sales-weighted number of 3-digit industries in which both firm  $i$  and firm  $j$  are present divided by the whole number of 3-digit industries participated by the firm  $i$ . Therefore, if a firm  $i$  has many market contacts with firm  $j$  but the sales weight of those businesses is relatively small, then market contact will be low. Following Baum & Korn (1999), I measured multimarket contact to capture the mutual forbearance depending on both firms perceiving the significance of their contacts. Thereby the measure should be symmetric,  $MMC_{ijt} = MMC_{jit}$ . The formula is as follows:

$$MMC_{ijt} = \left[ \sum_k s_{ikt} D_{ikt} D_{jkt} + \sum_k s_{jkt} D_{ikt} D_{jkt} \right] / \left( \sum_k D_{ikt} + \sum_k D_{jkt} \right) \text{ (Eq. 8)}$$

where  $s_{ikt}$  is the proportion of the sales of firm  $i$  in the 3-digit industry  $k$  in year  $t$  and  $D_{ikt}$  has a value of one if  $s_{ikt} > 0$ , zero otherwise. The firm-level multimarket contact is measured as the average of the multimarket contact with other firms as follows:

$$AMMC_{it} = \sum_{j \neq i} MMC_{ijt} / (n-1) \text{ (Eq. 9)}$$

**Firm attributes.** Focal firm effects are controlled by several variables. The effect of market power on performance is controlled by market share weighted by segment level sales, WMS.  $WMS_{it} = \sum_k w_{ikt} ms_{ikt}$ , where  $ms_{ikt}$  is a firm  $i$ 's market share in segment  $k$  in the year  $t$  and  $w_{it}$  is a sales weight of firm  $i$ 's sales for segment  $k$  over the total sales in the year  $t$ .

The effect of competition surrounding a focal firm is controlled by two variables: market rivalry and strategic similarity. The measure for market rivalry is segment sales-weighted average of adjusted *Herfindahl* index in each 3-digit market segment in food processing industry, i.e.,  $Rivalry_{it} = \sum_k s_{ikt} H_{ikt}$  where  $w_{ikt}$  is the proportion of the sales of firm  $i$  in the 3-digit industry  $k$  in year  $t$  and  $H_{ikt}$  is the adjusted *Herfindahl* measure for firm  $i$  in 3-digit market segment  $k$  in year  $t$ ,  $\sum_{i' \neq i} ms_{i'kt}^2$ . Strategic similarity is the negativity of the average of strategic distance of a focal firm with all other firms.  $SS_{it} = -1 \cdot \sum_{j \neq i} d(X_{it}, X_{jt}) / (n-1)$

**Other Controls.** In addition, I included dummies for other effects such as year effects, segment effects with dummies for different SIC 3-digit level industry, and strategic group effects with dummies for different strategic group that the study obtained<sup>ii</sup>. However, the results did not change estimates significantly. Including those effects made no improvement in explanatory power. Thus, the model is estimated without those dummies.

#### 4. RESULTS

Table 1 presents the descriptive statistics and correlations for the variables. The correlations are low to intermediate, and correlations between strategic change and strategic convergence or strategic divergence were relatively high. Strategic divergence was more correlated to strategic change, than strategic convergence. As expected, the correlation of performance ROA with strategic change, strategic divergence, or strategic convergence were negative. Organizational size was highly positively correlated to market share while the correlation between organizational size and market rivalry significantly negative. To check whether high correlations among variables result in

problems with multicollinearity, variance inflation factors (VIF) for the variables were examined for main variables. VIFs for variables averaged 1.75 and were below 2.72.

Overall, the multicollinearity issue seems not serious by the rule of thumb cutoff of ten (Neter, Wasserman, & Kutner, 1985).

#### **4.1 Strategic changes, strategic divergence, and strategic convergence: H1, H2a, H2b**

Table 2 shows the estimates from Arellano-Bold dynamic panel model. All coefficients are stable across models and the result shows a good statistics for fit with models. Model 1 tests Hypothesis 1 and the result strongly supports the hypothesis, i.e., a negative effect of strategic change. Thereby, the result supports structural inertia theory in general. Model 2 tests Hypotheses 2a and 2b together. The result supports the negative performance effect of strategic divergence, but not for strategic convergence. The result favoring H2a implies that information benefit for strategic convergence is overriding competition effect overall. Then we can infer that the net performance effect of strategic convergence be positive if we exclude the effect of structural inertia.

Also note that the estimate of the coefficient for strategic similarity was significant in Model 1 but became nonsignificant after including variables on strategic convergence and divergence. This may suggest the effect of direction of strategic change vis-à-vis other competitors is strong and substituting the effect of rivalry in strategic position, i.e., strategic similarity.

#### **4.2 The moderating role of organizational size: H3a H3b, H3c, and H3d**

Model 3 tests the hypotheses 3a, 3b, 3c, and 3d together. H3a and H3b are based on resource endowment effect, while H3b and H3b are based on the inertia effect of size. The result is more supportive for the resource endowment effect, i.e., a positive moderating effect of organizational size in strategic divergence. The estimate of coefficient of interaction effect of size and strategic convergence was not significant.

#### **4.3 The moderating role of uncertainty: H4a and H4b**

Model 4 tests the Hypothesis 4a (H4a) arguing for the negative effect of interaction of strategic divergence and firm-specific uncertainty, and Hypothesis 4b (H4b) for the positive effect of interaction of strategic convergence and firm-specific

uncertainty. The result supports the hypothesis for strategic convergence, but not for strategic divergence. However, the coefficient for the interaction term of strategic divergence and firm-specific uncertainty was negative (-0.7175) with weak significance.

#### 4.4 Control effects

The coefficients of controls are consistent partially with expectations. The coefficient estimates of organizational size are negative, suggesting diseconomies of scale or the existence of small niche markets with high profitability. The effect of market share was positive and significant implying the performance effect of market power. Overall, competition related control variables were not significant across models. In Model 1, the coefficient of strategic similarity was estimated as negative and significant as expected. Without dynamic effects such as performance effect of strategic convergence and divergence, the effect of strategic similarity was negative and significant.

#### 4.5 Sensitivity analysis

To investigate other possibilities of empirical modeling or measures, I tried other different models and measures. First, return on sales (ROS) was measured for performance variables and all models are estimated again. Overall, the result was consistent with the result based on return on assets (ROA). Also, I applied unbalanced fixed effect model based on panel data with lagged error term following AR1 process because endogenous variables in the current dynamic panel model are not influenced contemporaneous other explanatory variables and lagged error term model is also capturing the autocorrelation of ROA to the lagged ROA. Its result was consistent with the result from the dynamic panel model. Furthermore, the hypothesis 4 was weakly supported while preserving the coefficient of interaction term uncertainty and strategic divergence as positive and significant, of which magnitude is also about twice the other. This result also suggests the existence of influential informational benefit of strategic convergence under uncertainty.

## 5. DISCUSSION AND CONCLUSION

The study originally argued the direction of strategic change, relative to competitors, matters for performance improvement in strategic change. Especially, moving away from other firms in the industry is costly but moderated by big firm size. Opposite to common wisdom advocating differentiation strategy and changes diverging from competitors (Porter, 1996), there is no evidence that strategic convergence toward others worse than divergent strategy. On the contrary, greater strategic divergence resulted in bad performance on average. Strategic convergence was beneficial especially when firm-specific uncertainty is high.

The study investigated the effect of strategic change in strategic positioning of a focal firm vis-à-vis other firms on financial performance. Despite of popular words praising and emphasizing *change* and *speed* in the recent business world, structural inertia theory have been supporting for the liabilities of change and newness (Hannan et al., 1984). However, the study suggests an optimistic view of strategic change that not all strategic changes are hurting financial performance, and that the extent and direction of strategic change relative to competitors matters for performance improvement by accentuating or attenuating the effect from structural inertia. Therefore, the study added the important moderating variables on the relationship between strategic change and performance, which has been dominated by the structural inertia theory.

Secondly, a few exceptional studies have investigated the performance effect of herd-behavior or imitation at firm level, (Kennedy, 2002) and at individual analyst level (Rao, Greve, & Davis, 2001), also the performance effect of strategic similarity in the industry (Deephouse, 1999; Gimeno et al., 1996) and differentiation within a niche (Lawless & Anderson, 1996). While most of studies are inclined to emphasize the danger and cost of imitation or being similar, except the inverted U-shaped effect of Deephouse (1999), the study emphasizes more the danger of divergent strategic changes and suggests the contingency in which convergent (or divergent) strategic changes are greatly awarded. Therefore the study adds an important theoretical contribution to the extant literature by suggesting varying performance effects of divergent strategic change and convergent strategic change depending on organizational size and firm-specific uncertainty.

Thirdly, the study also provides guideline on when and how a firm should change its posture vis-à-vis other competitors. Some scholars emphasize organizational inertia and others are agnostic about the adaptive competence in a changing environment, attributing superior performance to persistence effect of luck or random events. The study takes a position that a profitable firm is neither just lucky nor well positioned at a right time. Only firms changing their strategic position vis-à-vis other competitors over time employing convergent and divergent strategy flexibly will achieve performance improvement. When managers want to change their firms' strategic position further away from others, they should be big enough, e.g., belonging to upper 15 percent.

There are a few avenues for future research on performance consequence of the extent and direction of strategic change vis-à-vis competitors. First, although I showed significant evidence from focusing on resource allocation dimension, there are other significant strategic dimensions such as corporate development dimensions of joint ventures and acquisitions. Therefore, it would be interesting to see if the future study on the performance effect of strategic convergence and divergence in a different category of strategic dimensions would result in the same conclusion as the current study or not.

Second, the study has its empirical focus on a single industry, i.e., the U.S. food processing industry. There are pros and cons of a single industry study. However, it would be worthwhile to investigate the multiple industry contexts or other more turbulent single industry context such as semiconductor or pharmaceutical industry.

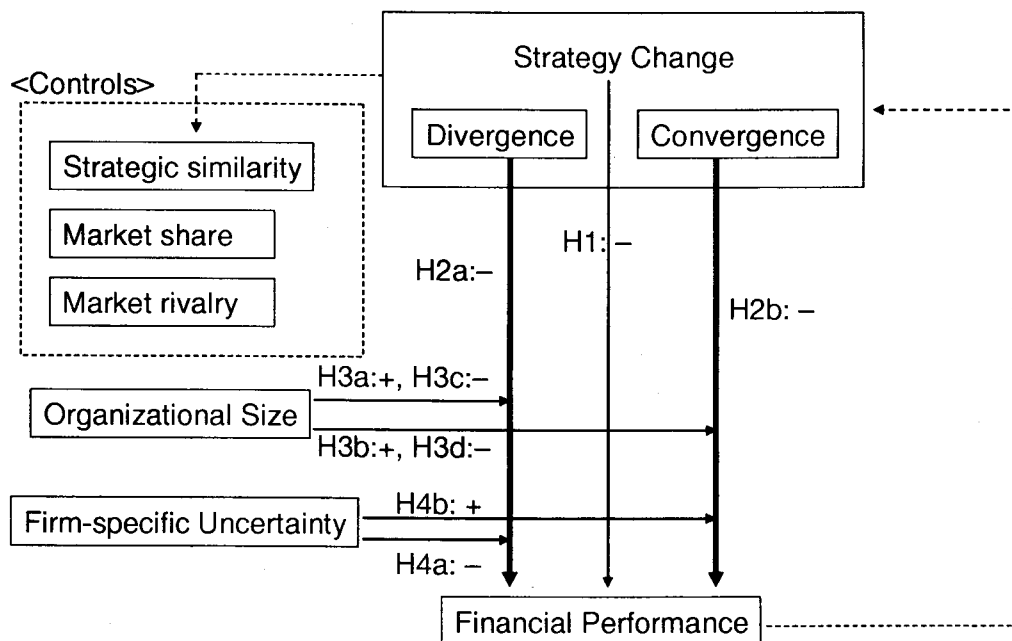
Third, the study assumed that a firm has a homogeneous routine to imitate or differentiate from others, i.e., aggregating the tendency to converge toward each firm over all target firms. Therefore, it does not capture the diversity of strategic change patterns among firms. After developing realistic and relevant routines, e.g., *follow the leader* or *follow the best*, as simple forms, we can cluster firms into several groups with distinct strategic change patterns will provide an interesting result on dynamics of competitive routines and performance.

To conclude, the study made a step to unveil the relationship between convergent or divergent strategic changes vis-à-vis competitors and financial performance. Performance consequence of strategic change is a complex phenomenon, involving environmental effect, firm endowed resources, and firms' strategic actions etc. What

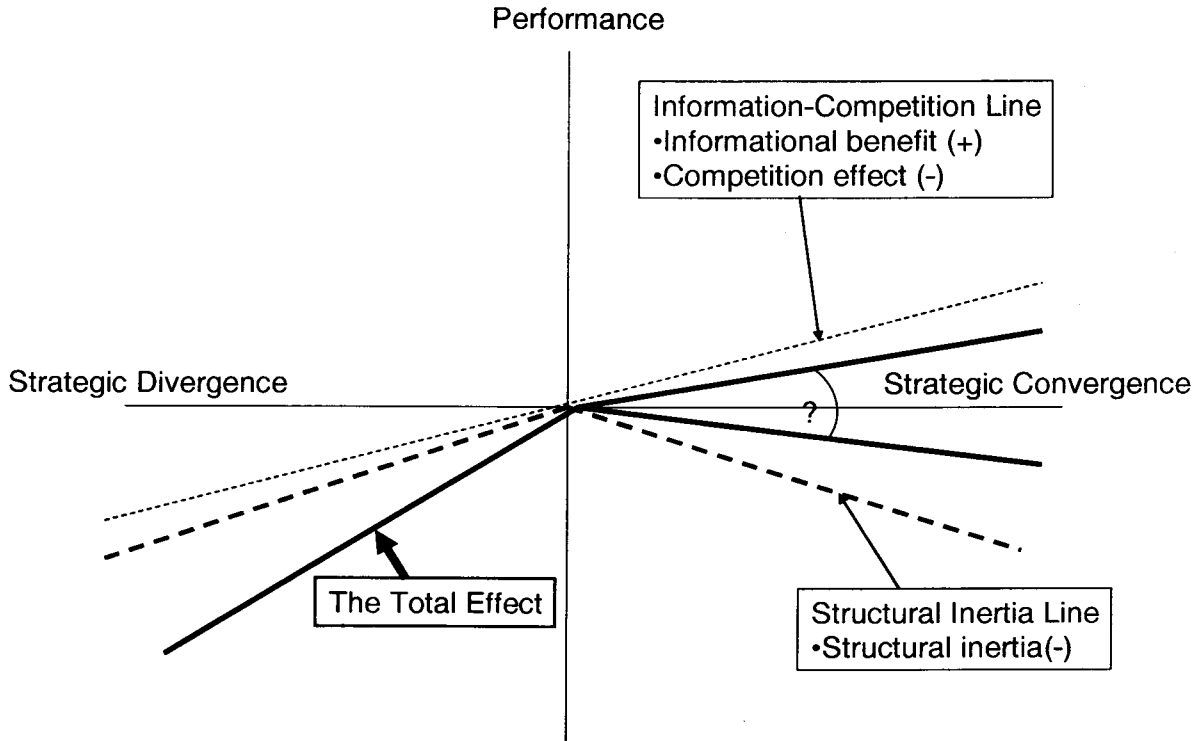


the study suggests is not that environment and state variables such as firms' resource level or strategic positions are little important for performance, but that it is critical to manage the extent and direction of strategic change vis-à-vis competitors, fit with firm-level characteristics. While the prevalent literature has emphasized the benefit of differentiation strategy, the study here suggests that differentiation as strategic change is risky and costly; convergence toward others would be better when uncertainty is high. Furthermore, blind differentiation is hurting performance especially when firms are small. Thereby, the diverse pattern among firms such as convergence and divergence influences cumulatively the heterogeneity among firms in performance and position, eventually shaping the competitive landscape over time.

**FIGURE 1**  
**Research Framework**



**FIGURE 2**  
**The Relationship of Strategic Convergence and Divergence with Performance**



**TABLE 1**  
**Descriptive Sample Statistics and Pairwise Correlations†**

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9
1. ROA(t+1)	0.07	0.11	1.00								
2. Strategic change	0.22	0.19	-0.38	1.00							
3. Strategic divergence	0.08	0.14	-0.25	0.45	1.00						
4. Strategic convergence	0.04	0.08	-0.10	0.37	-0.26	1.00					
5. Organizational size	5.91	2.01	0.25	-0.35	-0.13	-0.12	1.00				
6. Uncertainty‡	-0.06	0.12	-0.11	0.26	0.08	0.00	-0.06	1.00			
7. Market share	0.04	0.06	0.22	-0.23	-0.11	-0.07	0.65	-0.07	1.00		
8. Market rivalry	0.15	0.07	-0.12	0.15	0.04	0.10	-0.44	0.07	-0.22	1.00	
9. Strategic similarity	-0.85	0.23	0.19	-0.30	-0.14	-0.15	0.23	-0.11	0.16	-0.16	1.00
10. Average multimarket contact	0.12	0.05	-0.01	0.00	-0.01	0.00	-0.05	-0.04	-0.12	-0.24	-0.14

†: All correlations that their absolute values are greater than 0.05 are significant ( $p < .05$ , two-tailed test)

‡ : standardized value

**TABLE 2**  
**Unbalanced Dynamic Panel Data Analysis<sup>†</sup>**  
**(Arellano-Bond GMM Estimation, Dependent Variable: ROA<sub>t+1</sub>)**

Variable	Model 1	Model 2	Model 3	Model 4
ROA	0.1330* (0.0514)	0.1556** (0.0442)	0.2195** (0.0413)	0.1863** (0.0403)
Strategic change (H1: +)	-0.0913** (0.0346)	-0.1062* (0.0418)	-0.0762* (0.0384)	-0.1292** (0.0385)
Strategic divergence (H2a: -) (DV)		-0.1070** (0.0393)	-0.7628** (0.1149)	-0.1365** (0.0458)
Strategic convergence (H2b: -) (CV)		0.0050 (0.0704)	-0.1646 (0.2188)	0.3200* (0.1247)
DV*SIZE (H3a: +) (H3c: -)			0.0924** (0.0159)	
CV*SIZE (H3b: +) (H3d: -)			0.0215 (0.0307)	
DV*UNC (H4a: -)				-0.7175 (0.4967)
CV*UNC (H4b: +)				3.8368* (1.6569)
Organizational size (SIZE)	-0.0666** (0.0134)	-0.0580** (0.0117)	-0.0535** (0.0109)	-0.0495** (0.0112)
Uncertainty (UNC)	0.0882 (0.1589)	-0.0870 (0.1498)	-0.2315 (0.1451)	-0.3972* (0.1767)
Market share	0.0646 (0.1078)	0.1992 <sup>†</sup> (0.1024)	0.2798** (0.0961)	0.2215* (0.0967)
Market rivalry	-0.0890 (0.0994)	-0.0366 (0.0924)	-0.0228 (0.0883)	-0.0315 (0.0892)
Strategic similarity	-0.1109** (0.0403)	-0.0470 (0.0384)	-0.0325 (0.0368)	-0.0510 (0.0374)
Average multimarket contact	-0.1873 (0.1518)	-0.0061 (0.1334)	0.0684 (0.1155)	-0.0519 (0.1190)
Wald Test	39.53**	89.76**	169.59**	141.33**
Sargan Test	287.05**	456.42**	536.62**	555.89**
Arellano-Bond Test	-9.48**	-10.87**	-11.28**	-11.24**
Number of Obs	656	654	654	654
Numer of Firms	107	107	107	107

<sup>†</sup>  $p < .10$  \*  $p < .05$  \*\*  $p < .01$  (two-tailed test), Coefficients of Intercept is omitted.

## REFERENCE

- Abrahamson, E. & Rosenkopf, L. 1993. Institutional and competitive bandwagons: using mathematical modeling as a tool to explore innovation diffusion. Academy of Management Review, 18: 487-517.
- Amburgey, T. L., Kelly, D., & Barnett, W. P. 1993. Resetting the clock: The dynamics of organizational change and failure. Administrative Science Quarterly, 38(1): 51-73.
- Arellano, M. & Bond, S. 1991. Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. Review of Economic Studies, 58(194): 277.
- Barnett, W. P. 1994. The liability of collective action: Growth and change among early American telephone companies. In J. V. Singh (Ed.), Evolutionary Dynamics of Organizations: 240-254. New York: Oxford University Press.
- Barney, J. B. 1991. Firm resources and sustained competitive advantage. Journal of Management, 17(1): 99-120.
- Baum, J. A. & Korn, H. J. 1996a. Competitive dynamics of interfirm rivalry. Academy of Management Journal, 39(2): 255-291.
- Baum, J. A. C. & Singh, J. V. 1996b. Dynamics of Organizational Responses to Competition. Social Forces, 74(4): 1261-1297.
- Baum, J. A. C. & Korn, H. J. 1999. Dynamics of dyadic competitive interaction. Strategic Management Journal, 20(3): 251-278.
- Bikhchandani, S., Hirshleifer, D., & Welch, I. 1992. A theory of fads, fashion, custom, and cultural change as informational cascades. Journal of Political Economy, 100(5): 992-1026.
- Bromiley, P. 1991. Testing a Causal Model of Corporate Risk Taking and Performance. Academy of Management Journal, 34(1): 37-59.
- Chen, M.-J. & Miller, D. 1994. Competitive attack, retaliation and performance: An expectancy-valence framework. Strategic Management Journal, 15: 85-102.
- D'Aveni, R. A. 1994. Hypercompetition: Managing the dynamics of strategic maneuvering. New York, NY: Free Press.
- Deepphouse, D. L. 1999. To be different, or to be the same? It's a question (and theory) of strategic balance. Strategic Management Journal, 20(2): 147-166.
- DiMaggio, P. J. & Powell, W. W. 1983. The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. American Sociological Review, 48(April): 147-160.
- Finkelstein, S. & Hambrick, D. C. 1990. Top-management-team tenure and organizational outcomes: The moderating role of managerial. Administrative Science Quarterly, 35(3): 484-503.
- Gimeno, J. & Woo, C. Y. 1996. Hypercompetition in a multimarket environment: The role of strategic similarity and multimarket contact in competitive de-escalation. Organization Science, 7(3): 322-341.
- Greve, H. R. 1999. The Effect of Core Change on Performance: Inertia and Regression toward the Mean. Administrative Science Quarterly, 44(3): 590-614.

- Hannan, M. T. & Freeman, J. 1984. Structural inertia and organizational change. American Sociological Review, 49(April): 149-164.
- Haveman, H. A. 1993. Organizational size and change: Diversification in the savings and loan industry after deregulation. Administrative Science Quarterly, 38(1): 20-50.
- Herriott, S. R., Levinthal, D., & March, J. G. 1985. Learning from Experience in Organizations. American Economic Review, 75: 298-302.
- Kennedy, R. E. 2002. Strategy Fads and Competitive Convergence: An Empirical Test for Herd Behavior in Prime-Time Television Programming. Journal of Industrial Economics, 50(1): 57-84.
- Knickerbocker, F. T. 1973. Oligopolistic Reaction and Multinational Enterprise. Boston, MA: Harvard University - Graduate School of Business Administration.
- Lawless, M. W. & Anderson, P. C. 1996. Generational technological change: Effects of innovation and local rivalry on performance. Academy of Management Journal, 39(5): 1185-1217.
- Levinthal, D. A. 1991. Random walks and organizational mortality. Administrative Science Quarterly, 36(3): 397-420.
- Levitt, B. & March, J. G. 1988. Organizational Learning. Annual Review of Sociology, 14: 319-340.
- March, J. G. 1981. Footnotes to Organizational Change. Administrative Science Quarterly, 26: 563-577.
- March, J. G. 1991. Exploration and exploitation in organizational learning. Organization Science, 2: 71-87.
- Miller, D. & Friesen, P. H. 1984. Organizations: A Quantum View. Englewood Cliffs: Prentice Hall.
- Miller, D. & Chen, M.-J. 1994. Sources and consequences of competitive inertia: A study of the U.S. airline industry. Administrative Science Quarterly, 39(1): 1-24.
- Miller, D. & Chen, M.-J. 1996. Nonconformity in competitive repertoires: A sociological view of markets. Social Forces, 74(4): 1209-1234.
- Miner, A. S. & Raghavan, S. V. 1999. Interorganizational imitation: a hidden engine of selection. In B. McKelvey (Ed.), Variations in Organization Science In Honor of Donald T. Campbell: 35-62: Sage.
- Neter, J., Wasserman, W., & Kutner, M. H. 1985. Applied Linear Statistical Models. Homewood, IL: Irwin.
- Peteraf, M. A. 1993. The cornerstones of competitive advantage: A resource-based view. Strategic Management Journal, 14: 179-191.
- Pfeffer, J. & Salancik, G. R. 1978. The External Control of Organizations: A Resource Dependence Perspective. New York, NY: Harper and Row.
- Porter, M. E. 1996. What Is Strategy? Harvard Business Review, 74(6): 61-78.
- Rao, H., Greve, H. R., & Davis, G. F. 2001. Fool's Gold: Social Proof in the Initiation and Abandonment of Coverage by Wall Street Analysts. Administrative Science Quarterly, 46(3): 502-526.
- Scharfstein, D. S. & Stein, J. C. 1990. Herd behavior and investment. American Economic Review, 80(3): 465.

- Westphal, J. D., Seidel, M.-D. L., & Stewart, K. J. 2001. Second-order Imitation: Uncovering Latent Effects of Board Network Ties. Administrative Science Quarterly, 46(4): 717-747.
- Wiseman, R. M. & Bromiley, P. 1996. Toward a Model of Risk in Declining Organizations: An Empirical Examination of Risk, Performance and Decline. Organization Science: A Journal of the Institute of Management Sciences, 7(5): 524-543.

### Endnotes

<sup>i</sup> Those exceptional studies investigate the performance effect of strategic position, but not of strategic change.

<sup>ii</sup> To get significant strategic groups, the study run Ward's minimum variance cluster analysis with ten strategic dimensions, each of which is regarded as significant in food processing industry. Ten variables are as follows: FBUSR (The ratio of food processing business sales to firm sales), FOCUS(the entropy measure of SIC 3-digit level diversification within the food processing industry), ForeignSales (The ratio of foreign sales from segment located in foreign countries to firm sales), RDI(R&D divided by firm sales), ADI(advertising expenditure divided by firm sales), PEN (new plant and equipment divided by firm sales) , BVI(backward vertical integration, food related agriculture sales/firm sales), WS(wholesales sector sales/firm sales) , FRET(food related retail business sales/firm sales), FDSIZE(food processing related sale). From the clustering analysis, the study obtained eight clusters or strategic groups. The result from testing whether the homogeneity of covariance structure across years suggests that covariance structure was homogeneous during the period between 1985 and 1995, but heterogeneous every one or two year after 1995. Therefore I got a meaningful strategic group dummies only between 1985 and 1995.