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THE ROLE OF COMPETITIVE ACTION IN MARKET SHARE EROSION AND INDUSTRY DETHRONEMENT: A STUDY OF INDUSTRY LEADERS AND CHALLENGERS

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Market share erosion and dethronement of market leaders are examined through the lens of "Austrian" economics. Our results suggest that leaders are more likely to experience market share erosion and/or dethronement when—relative to industry challengers—they are less competitively aggressive, carry out simpler repertoires of actions, and carry out competitive actions more slowly. These findings, based on seven years of data collected in 41 industries, contribute to research on hypercompetition, organizational decline, and competitive dynamics.

> Alex Trotman's goal: To make Ford No. 1 in world auto sales.
>
> Kellogg's cutting prices . . . to check loss of market share.
>
> Amoco scrambles to remain king of the polyester hill.
>
> — Headlines from the *Wall Street Journal*

In the research presented here, we explored the extent to which dethronement and market share erosion are a function of the competitive behaviors or actions of industries' market share leaders and their respective number two challengers. More specifically, we developed and tested a set of hypotheses concerning the characteristics of competitive actions carried out by market share leaders and challengers and the impact of these competitive behaviors on the erosion of market share gap between the two and the likelihood of leader dethronement.

For many firms, sustaining industry leadership, dethroning the current leader in their industry, or closing the market share gap between themselves and the current leader are key organizational objectives. Other things being equal, market share leaders are more profitable because they exploit economies of scale and market power, as well as first-mover and reputational advantages (Armstrong & Collopy, 1996; Buzzell, Gale, & Sultan, 1975; Lieberman & Montgomery, 1988; Zeithaml & Fry, 1984). The headlines cited above are evidence of the importance of market leadership. Ford boldly proclaimed its intent to win the battle for industry leadership among the world's automobile producers. Kellogg's slashed prices in an effort to cling to its shrinking lead in the American breakfast cereal race. Finally, Amoco carried out an aggressive capacity expansion campaign to preempt a heavy attack by rivals on its market share lead in purified terephthalic acid—a raw material from which polyester is made. These examples illustrate both the importance of market share leadership for many firms and their need to fiercely defend their leading positions against challengers. Were these challengers ever to attain their goal of market leadership, incumbent leaders, exemplified here as General Motors, Kellogg's, and Amoco, would be dethroned.

There has been a significant amount of research on the persistence of market share leadership and changes in market share among leading firms. For instance, Weiss and Pascoe (1983) found that the market share leaders identified in 1950 were the same as those in 1975 for only 39 percent of the industry segments in their study. For this same time period, Mueller (1986) found market leadership stability in only 44 percent of the industries studied. Much of this research, however, is rooted in industrial organization economics and has focused on industry characteristics or the characteristics of dominant firms (see Scherer and Ross [1990] for a review of this literature). And although important management and marketing research has examined the effects of product innovation, pio-

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neer status, and entry order on market share or changes in market share (Banbury & Mitchell, 1995; Mitchell, 1989, 1991; Robinson, 1988; Robinson & Fornell, 1985; Robinson, Fornell, & Sullivan, 1992), there has been little emphasis on the dynamics of specific market-oriented actions carried out by leaders and challengers as determinants of market leadership and stability. This is surprising, because substantial theory posits that market process factors, or the competitive moves among firms, may be very important in predicting changes in market share and industry dethronement.

Years ago, the Austrian economist Joseph Schumpeter (1934) developed the concept of the "perennial gale of creative destruction" to explain the dynamic market process by which market leaders and challengers engage in "an incessant race to get or to keep ahead of one another" (Kirzner, 1973: 20). The outcome of this market process is the inevitable and eventual market share erosion and dethronement experienced by market share leaders over time through the process of competition (Schumpeter, 1934, 1950). In this study, we modeled this dynamic process in terms of four dimensions of competitive activity and used these characteristics to predict market share erosion and dethronement. In so doing, we hoped to contribute to theory within contemporary Austrian economics[1] (Kirzner, 1989, 1997; O'Driscoll & Rizzo, 1985), as well as to theories of organizational decline (Cameron, Sutton, & Whetten, 1988; McKinley, 1993). We also expected to contribute to research on competitive dynamics (Grimm & Smith, 1997) and hypercompetition theory (D'Aveni, 1994) by examining an entirely new research question—how the market process influences changes in market share and the probability of dethronement—with a broader sample of firms and industries than has been used in previous studies.

THE AFTERMATH OF THE MARKET PROCESS: AN AUSTRIAN VIEW

From the perspective of Austrian economics, to truly understand competition, one must examine the process and consequences of competitive activity among leading firms. Schumpeter described this market process as a perennial gale and stressed its "disequilibrating" nature, whereby large firms are swept into the turbulent confluence of competitive rivalry that creates clear winners and losers. Accordingly, no leadership position is secure or sustainable, per se. In fact, disequilibrium and the inevitable destruction of the competitive status quo through the dynamics of new competitive moves by rivals is the sine qua non of competition. Schumpeter argued that once a leading market position is won by alert competitive action, a leading firm inevitably finds itself dogged by imitators. That is, without further aggressive action of their own, all industry leaders will eventually succumb to the moves of more aggressive rivals.

For the Austrian economists, the central unit of analysis in describing the character of the market process is purposeful action. Schumpeter wrote: "Look for example at . . . an industry which consists of a few big firms—and observe the well-known moves . . . within it" (1950: 83). Indeed, Schumpeter emphasized the carrying out of actions, which he described as new combinations designed to seize market opportunities as they arise. Within management research, this view is consistent with the strategic choice perspective (Child, 1972), wherein "purposeful and adaptive . . . interaction" (Van de Ven & Poole, 1995: 516) involves the learning processes, decisions, and actions of key players.

We define competitive action as any newly developed market-based move that challenges the status quo of the market process (Jacobson, 1992: 787); status quo is defined here as routine, ordinary, and patterned competitive behavior (Nelson & Winter, 1982; O'Driscoll & Rizzo, 1985). Thus, our definition of newly created competitive action is intended to capture the Austrian view of competition as new, extraordinary, competitive behavior. We emphasize *new* actions of firms, because it is these competitive behaviors that have the potential to disrupt the competitive status quo, thereby causing disequilibrium (equilibrium is defined as the static state of affairs brought about by the absence of rivalry [Kirzner, 1997]).

Thus, from the Austrian perspective on the market process, the study of competitive action is important because the newly created actions carried out by aggressive firms affect and, indeed, threaten rivals. This threat forces new actions on the rivals' part, which further disturb the status quo. Firms are also motivated to take *new* competitive actions as they learn that routine *past* actions are now ineffective (Miller, 1990) or were erroneous (Kirzner, 1997). In our view, a new competitive action might include the introduction of a new promotional campaign that disrupts a market by stealing market share from a rival. Or it may be the cultivation of a new upscale market segment that fragments a pre-

[1] Austrian economics is a school of thought that originated in Vienna in which competition is viewed as a dynamic process stemming from entrepreneurial alertness and purposeful action.

vious segment, leading customers to switch to the new segment and supplier. Moreover, it can include a whole series or a simultaneous thrust of new actions implemented in a short time frame to disturb and paralyze a rival (D'Aveni, 1994). Or a manager could carefully time new actions so as to disrupt the intentions of a challenger. Sequences or patterns of new actions can involve either a single action type or many different action types.

Our view of new competitive actions and the market process is consistent with several areas of recent strategic management research. First, D'Aveni's (1994) theory of hypercompetition also emphasizes competitive action and the market process. In describing his "new 7-S's of competition," D'Aveni emphasized such move characteristics as surprise, speed, signaling, shifting the rules of competition, and sequential and simultaneous strategic thrusts. Second, much of the research in corporate entrepreneurship has been heavily influenced by Schumpeter's (1934) view of creative discovery and competitive action as applied to the strategic behavior of large, complex organizations (Guth & Ginsberg, 1990). Thus, the market process is also a central and essential element in a behavioral model of corporate entrepreneurship. Third, the action view of the market process is also consistent with recent research in competitive dynamics that has explored the determinants of competitive action and action characteristics such as frequency, speed, simplicity, magnitude, and radicality (see Grimm and Smith [1997] and Smith, Grimm, and Gannon [1992]).

In the next section, we develop four hypotheses that explain how and why the market process of newly created actions relates to market share instability. More specifically, we examine four characteristics of leader-challenger competitive action aggressiveness that, theory suggests, relate to market erosion and industry dethronement: total competitive activity (Young, Smith, & Grimm, 1996), action timing (Chen, Smith, & Grimm, 1992; Chen & Hambrick, 1995; Lee, Smith, Grimm, & Schomburg, in press), action repertoire simplicity (Miller & Chen, 1996), and competitive dissimilarity (Gimeno, 1999; Gimeno & Woo, 1996).

HYPOTHESES

Our general proposition is that an industry leader's decline may be caused either by its own complacency and feelings of invincibility or by the aggressive behavior of challengers. Leaders that are relatively aggressive vis-à-vis challengers in terms of newly created actions are less likely to decline than leaders that become complacent, or are at least likely to decline more slowly. Thus, our four action characteristics were developed to capture firm aggressiveness or its inverse—competitive complacency. As our focus was on the competitive moves of leaders and challengers, we have framed our hypotheses in relative terms.

Total Competitive Activity

Total competitive activity was defined as the total number of new competitive moves a firm carried out in a given year. We argue that, in general, the greater the number of new competitive actions, the greater the competitive aggressiveness (D'Aveni, 1994; Young et al., 1996). The Austrian view suggests that all action is undertaken in the pursuit of discovered profit opportunities (D'Aveni, 1994; Kirzner, 1989, 1997). It follows, then, that a leader that is more aggressive in carrying out more newly created actions than rivals will be exploiting more opportunities and closing off the potential for action on the part of challengers. Conversely, leading firms sometimes decline when they rest on their laurels and become complacent, which renders them vulnerable to competitive challenges (D'Aveni, 1994). These firms may head toward failure when they reduce their level of activity, until all new activity ceases entirely (Schumpeter, 1934). In support of this idea, Miller and Chen (1994) found that good past performance contributed to competitive inertia and a lack of action aggressiveness.

Other research suggests that firms that remain competitively aggressive and alert stand a better chance of maintaining or improving their market share positions. For example, D'Aveni (1994) argued that in hypercompetitive environments, firm performance is an outcome of a continuous series of competitive actions. Researching rivalry in a sample of software firms, Young and colleagues (1996) found that firms that sustained competitive activity—those that carried out a high number of competitive moves—outperformed firms that were not as active. These authors argued that as a firm's cumulative competitive activity increases, the firm creates internal organizational assets in the form of action repertoires, routines, and knowledge about how to carry out action. Maintaining or enhancing this know-how requires continuously undertaking competitive moves, which generates dynamic learning through trial and error as to which combinations of actions work and which do not (Grimm & Smith, 1997; O'Driscoll & Rizzo, 1985). Indeed, through trial and error, the firm will learn which past actions are ineffective, prompting more new action. From this perspective, the cost of taking action is lower for the firm that has efficiencies

derived from a rich history of prior activity. Moreover, firms with a rich history of competitive activity are also capable of undertaking more moves in a given time period. Although Young and his coauthors (1996) examined the effects of competitive activity on performance, we see a parallel in market share erosion and dethronement. We therefore predict that the difference between leaders and challengers in their levels of total competitive activity will be related to the persistence of market leadership.

Hypothesis 1a. Leaders that carry out more competitive actions than challengers will have a lower rate of market share gap erosion.

Hypothesis 1b. Leaders that carry out more competitive actions than challengers will have a lower rate of dethronement.

Action Timing

Action timing is defined as the time elapsed between the actions carried out by a firm and those carried out by a rival. It has been argued that the faster a firm acts with regard to its rival's actions, the more aggressive are its intentions (Smith, Grimm, Young, & Wally, 1997). As noted, Schumpeter (1934) described the dynamic market process as a race in which there is a high payoff for speed of action. Moreover, speed is, as noted above, one of D'Aveni's (1994) new 7-S's of effective competitive action in hypercompetitive markets. Proactive and aggressive firms use the rapid timing of new actions to outmaneuver competitors, which in turn causes rivals to carry out actions more slowly by preemptively beating them to the punch (Chen & MacMillan, 1992; D'Aveni, 1994; Miller, 1983). Recent research suggests that firms that introduce new products quickly experience a gain in shareholder wealth (Lee et al., in press).

Overall, a key principle in dynamic competition is to move quickly and to find new competitive moves that will slow the competitive activity of rivals (Smith et al., 1992). The foregoing research suggests that firms that carry out actions relatively more quickly than rivals experience superior performance. Hence, we also expect that the timing of leaders' and challengers' competitive actions will be related to market share erosion and dethronement.

Hypothesis 2a. Leaders that are slower than challengers in their timing of newly created competitive actions will have a higher rate of market share gap erosion.

Hypothesis 2b. Leaders that are slower than challengers in their timing of newly created competitive actions will have a higher rate of dethronement.

Action Repertoire Simplicity

Firms can choose the types of actions they undertake. Some firms carry out a narrow range of actions, and others undertake a broader range of actions (Grimm & Smith, 1997). Action repertoire simplicity is defined as a firm's propensity to concentrate on carrying out a narrow range of action types in a given year, as opposed to a broad range of action types (Miller & Chen, 1996). We contend that firms that undertake a broader set of actions than their rivals will be more aggressive. Firms that carry out a broad set of action types will be perceived as more capable and, perhaps, as less predictable (D'Aveni, 1994). Schumpeter (1934, 1950) described competitiveness as the ability to carry out a *range* of competitive actions to capture and sustain a lead. Kirzner (1973) described this range of activity as a constellation of product qualities, prices, styles, sizes, color, packaging, and so on, to which firms can make systematic changes based on market forces. Thus, the Austrian view suggests that the breadth of a firm's repertoire of competitive actions has a broad influence on performance.

Paradoxically, organizational success may cause strategic simplicity, which, in turn, may become a cause of organizational decline (Miller, 1990; Miller & Chen, 1994, 1996). Successful firms, such as those that have attained market share leadership, sometimes become strategically simple over time as managers narrow the range of actions to only a few that have worked in the past (Miller, 1990; Miller & Chen, 1994, 1996; Milliken & Lant, 1991). However, persistent market leadership may not be based on the repetitive execution of a particular action type, but may instead stem from continuous and diverse competitive activity (D'Aveni, 1994). Indeed, the Austrian perspective points to the constant development of new action types by industry incumbents (Kirzner, 1973). Grimm and Smith (1997) argued that the effective deployment of a competitive move will depend on the underlying resources of a firm. A firm that carries out a narrow, simple range of actions may be exploiting a relatively simple resource base. By contrast, a firm that carries out a broader set of actions may have a more complex resource base that confers multiple advantages.

In sum, these arguments highlight the possible danger in specializing in a very narrow or concentrated range of new action types; poor performance is likely to result for either leaders or challengers

that choose or are forced to carry out a limited range of new action types. Thus, we predict that the relative degrees of action repertoire simplicity a leader and a challenger display will affect their relative market share positions.

Hypothesis 3a. Leaders that have simpler action repertoires than challengers will have a higher rate of market share gap erosion.

Hypothesis 3b. Leaders that have simpler action repertoires than challengers will have a higher rate of dethronement.

Leader-Challenger Action Dissimilarity

Leader-challenger action dissimilarity is defined as the degree to which leaders and challengers differ in the actions they carry out. Whereas action simplicity focuses on the range of actions of a particular firm and is independent of rivals' actions, action dissimilarity is *relative* to rivals and captures the extent to which the actions of a particular firm (that is, an industry leader) are different from those of other firms (that is, the challengers).

We contend that newly created actions that differ from those of rivals will reflect an organization's aggressive attempt to break away from the norms of everyday competition. The Austrian economists have not only argued that a firm's set of new actions will deviate from its past actions, but also that these actions will be different from rivals' actions. For example, Kirzner argued that "acting *differently* from one's competition—may appear to overlap or even coincide with Schumpeter's insistence that the important kind of competition in the market system is competition from the new commodity, technology, source of supply, and type of organizations" (1973: 125; emphasis in original). Thus, the Austrian perspective emphasizes the potential for the diversity of new action embodied in different perceptive abilities and purposive behaviors among individual managers. Indeed, D'Aveni (1994) more recently argued that dissimilarity or heterogeneity in actions may signal an aggressive attempt to shift the rules of competition.

For the present research, we extended Peteraf's (1993) and Chen's (1996) notion of resource heterogeneity among competing firms to describe differences among newly created actions as well. Such strategic differentiation was articulated years ago by Penrose, who argued this: "It is the heterogeneity . . . of the productive services [i.e., actions] . . . that gives each firm its unique character . . . which means that they can provide different kinds of service" (1959: 75).

Only a few studies have focused on the consequences of strategic (dis)similarity among rivals. For instance, Gimeno and Woo (1996) found that strategic similarity among rivals, measured in terms of three internal resource dimensions, increases the intensity of rivalry between them. Similarly, Gimeno (1999) found that strategic heterogeneity among airline industry participants contributed to changes in market share. Also, Caves and Ghemawat (1992) found that strategic differences among rivals constituted an important mobility barrier that contributed to market share gains. These authors found that among top firms in an industry, market share gains were more likely when these firms differed in their approaches to the breadth of product lines, technological leadership, and product image.

We argue that carrying out actions that differ from those of the competition will be most important for an industry's leader. This idea is consistent with the Austrian and hypercompetition theory views that an industry leader must continuously seek to take new actions that are different from challengers' so as to present a moving target (D'Aveni, 1994). In contrast, we propose that challengers can gain on slow-moving, complacent leaders by taking actions similar to the leaders' but being more aggressive in doing so. In essence, this formulation implies that although the leader establishes the competitive status quo within its industry, leaders that do not attempt to disrupt the status quo *themselves* are likely to experience decline (D'Aveni, 1994; Jacobson, 1992; Schumpeter, 1934).

Hypothesis 4a. High levels of leader-challenger action dissimilarity decrease the rate of market share gap erosion.

Hypothesis 4b. High levels of leader-challenger action dissimilarity decrease the rate of dethronement.

We tested the hypotheses while controlling for industry growth, concentration, and barriers to entry. In addition, firm size and the degree of previous market share dominance of a leader over challengers were used as controls.

METHODS

We used a longitudinal matched-pairs design to identify 41 industry leaders and their respective challengers over a seven-year time period. Because the hypotheses were framed in terms of a comparison between leaders and challengers along several action dimensions, our research model required data on both leaders and challengers, as well as data on the industries in which they competed.

Matched-Pairs Design and Research Sample

A matched-pairs design is ideal for examining the relative competitive activity of market share leader and second-place challengers. When subsets of a sample have similar individual and contextual characteristics, then variance due to their differences is probably present, and confounding influences can be systematically eliminated (Harnett, 1982; Kerlinger, 1973). For our research, we adopted Chen's (1996) notion of product and geographic market commonality and selected pairs of U.S. market share leaders and their second-place market share challengers competing in particular industries (as defined by four-digit Standard Industrial Classification [SIC] codes) over seven years. Thus, the unit of analysis for this research was the set of competitive actions of a *leader-challenger pair* for the years 1987–93.

To ensure that the preponderance of competitive actions studied in this sample occurred in the relevant product/geographic market, our sampling procedure established a number of screening conditions. First, we selected a sample of U.S. firms that had 1993 sales exceeding $500 million to facilitate identification of new competitive moves through media sources (the strategies of large, market-leading firms are likely to be the most visible in the media [Fombrun & Shanley, 1990]). Of these, only firms considered to be single-business or at least dominant-business firms—those having specialization ratios (Rumelt, 1974) greater than .70—were selected because firms confined to a particular industry are more likely to be keenly aware of competitors in the markets in which they are highly dependent (Chen, 1996). Second, candidate firms were grouped according to their respective four-digit SIC industries and ranked in descending order of their sales in these industries. Industry groups that did not contain at least two large, nondiversified U.S. firms—a leader and a second-place challenger—for each of the seven years were eliminated from further consideration. We cross-validated the leader-challenger pairs using the industry rankings list of *Ward's Business Directory*. Thus, the sample included relatively nondiversified U.S. firms so we could be certain that the competitive actions of leaders and challengers were taken to improve their respective competitive positions in their primary industries.

The industry leader was defined as the *firm ranked number one* in its four-digit SIC industry segment for each of the seven years of the study. The challenger was defined as the *firm ranked number two* in its four-digit SIC industry for each of the seven years. The final research sample consisted of a pooled, seven-year time series database for 41 industries and comprised 287 leader-challenger pair-years.

Measurement of Market Share Erosion

We measured *erosion* or *loss* of market leadership—the dependent variable—in two different ways: as the continuous change in the market share gap in a given year between leader and challenger and as a discrete variable indicating whether or not the leader was dethroned.

Erosion of market share gap. First, we calculated individual market shares for both leader and challenger using sales totals reported in the business and geographic segment files (for four-digit SICs) of COMPUSTAT. Our measure of relative market share is derived from the logarithm of the ratio of leader's market share to challenger's market share, which reduces to a market share difference score for each time period:

$$Gap = \ln(MS_{leader}) - \ln(MS_{challenger}), \quad (1)$$

where MS_{leader} represents the leader's market share and $MS_{challenger}$ that of the challenger. Then, we calculated the rate of erosion of the market share gap as the change in market share gap from year to year as:

$$Erosion = (Gap_{t-1} - Gap_t), \quad (2)$$

where positive values indicate a narrowing gap and negative values represent a widening gap. Erosion measured in this manner is consistent with the concept of dethronement—both are what the leader wants to avoid and what the challenger hopes to accomplish—and with a similar measure that has been used in prior research (Caves & Ghemawat, 1992; Davies & Geroski, 1997). This measure is used in the generalized least squares (GLS) regression models described below.

Dethronement and time at the top. Turnover in market leadership within a leader-challenger-pair-year was defined as leader dethronement. Leader dethronement was a dichotomous variable coded 1 for industry-years in which a leader was dethroned and 0 for industry-years in which no dethronement occurred. The occurrence of dethronement also identified the leader's duration or tenure (in years) as the leader. As will be discussed below, this time measure is critical for event history analysis techniques.

Identification of Competitive Actions

Following previous research, we defined newly created competitive actions as *all externally di-*

rected, specific, and observable newly created moves initiated by a firm to enhance its competitive position (Chen et al., 1992; Smith, Grimm, Gannon, & Chen, 1991; Young et al., 1996). Our definition includes only actions that had been implemented and were observable to customers, competitors, and other industry players and described in the business press. That is, we assumed that if an action was reported as news in major media outlets, it represented a significant, newsworthy deviation from the acting firm's normal routines and actions. Therefore, we captured the competitive behaviors of market leaders and challengers according to the appearance of certain key words in the headlines and abstracts of published news reports found in the U.S. volumes of *F&S Predicasts* (Schomburg, Grimm, & Smith, 1994; Young et al., 1996). This comprehensive source consists of news article titles and abstracts from over 700 newspapers, business magazines, trade association publications, and business newsletters published in the United States.

Following the definition of newly created action described above, we content-analyzed nearly 5,000 headlines and articles and coded them into the following competitive action types: major new pricing actions, new marketing and promotional actions, new products, new capacity additions, new legal actions, and new signaling actions. This categorization approach is consistent with the approach used by Young and colleagues (1996). Table 1 contains the key words, sample headlines, and descriptive statistics for each of these action categories. These raw data were carefully screened for duplicates. Only the earliest chronological appearance of a particular news item was retained.[2] This unique data set contains a total of 4,876 actions.

To check the reliability of our coding of these newly created competitive actions, two academic experts in strategic management separately recoded a random subsample of individual firm actions (n = 300) into each of the six action categories. We tested coding reliability by using Perrault and Leigh's (1989) reliability index. This test yielded a value of 0.91, which indicates a high degree of coding reliability.

[2] Drawing a random subsample of 100 actions, we tested the reliability of the dates of the actions in our data in two different ways. First, we checked to see if, in fact, the dates we recorded were indeed the earliest chronological reports of actions in the subsample. An academic expert rater independently found the dates to be accurate for 97 percent of this subsample. For the remaining 3 percent, the rater found articles that reported the same action dated an average seven days earlier than we had recorded. Second, we checked to see if the text/body of each article in the subsample mentioned a specific date on which the actions were actually implemented. The rater found that 100 percent of the articles in which an action date was specified were in agreement with the date we recorded. Of those articles in which a date was not mentioned, we defined the date of an action by the publication date of that article.

Competitive Action Measures

The appropriate way to detect differences in competitive activity between leaders and challengers is to form difference scores for each independent variable of interest (Harnett, 1982). Thus, for each *individual* leader and challenger competitive activity measure described below, we calculated a difference score by subtracting the challenger's value from that of the leader. These scores, which measure *relative* competitive differences for each of the alternate competitive characteristics variables, were used to test our hypotheses. However, as we discuss in greater detail below, difference scores can be meaningfully interpreted only when the condition for "opposite equality" among the coefficients for the individual competitive activity measures is satisfied (Cronbach & Furby, 1970; Davies & Geroski, 1997; Edwards & Parry, 1993).

Total competitive activity. As noted, total competitive activity was defined as the total number of newly created competitive actions, regardless of type, carried out by each leader and challenger in a given pair-year (Young et al., 1996). Then a measure of relative total competitive activity was calculated as the number of total new actions for the leader minus the number of total new actions for the challenger. A positive relative total competitive activity score, for example, would indicate that the leader executed more competitive actions than did the challenger in the same industry-year.

Action timing. Action timing was defined as the time elapsed, measured in days, between the date of a competitive action carried out by the leader and the date of a preceding competitive action carried out by the challenger. A similar measure was calculated for the challenger. Whereas previous research has measured average response times within action and reaction *dyads* in a given year (cf. Smith et al., 1991), we, in contrast, accounted for cases in which a firm carried out *two or more successive moves* before the alternate firm (challenger or leader) undertook an action (cf. Young, Smith, & Grimm, 1997). In such cases, we used the chronological midpoint in the sequence of the firm's se-

TABLE 1
Definitions and Descriptive Statistics for Individual Leader and Challenger Measures

Variables	Leader Mean	Leader s.d.	Challenger Mean	Challenger s.d.	Measure	Examples of Headlines
Market share	0.19	0.14	0.11	0.08	Market share	
Market share erosion[a]	−0.00	0.03	0.00	0.02	Market share$_t$ − market share$_{t-1}$	
New pricing action	0.52	1.64	0.40	1.12	Count of headlines containing one of these words: price, rate, discount, rebate	FedEx offers rate discounts on 2nd day short haul service
New marketing action	1.78	3.49	1.68	3.27	Count of headlines containing one of these words: ads, spot, promote, distribute, campaign	United launched ads to counter American's campaign
New product action	2.30	5.74	1.92	4.44	Count of headlines containing one of these words: introduce, launch, unveil, roll out [product or service]	Merck introduces Mevacor, to reduce serum cholesterol
New capacity action	0.45	1.19	0.50	1.21	Count of headlines containing one of these words: raises, boosts, increases [capacity or output]	Mobil raises lube stock capacity 10% via recent improvements
New legal action	0.42	1.09	0.32	0.82	Count of headlines containing one of these words: sues, litigate, court, settles, infringement	Microsoft sues Z-Nix for copyright infringement
New signaling action	2.14	4.42	1.62	3.20	Count of headlines containing one of these words: vows, promises, says, seeks, aims	Reebok's Fireman vows to retake lead in athletic shoe market by end 1995
Total competitive activity	10.20	20.18	8.46	14.58	Count of total actions in all categories taken in calendar year	
Action timing	191.00	253.80	188.80	258.10	Annual average time elapsed between midpoint of rival's action string to midpoint of focal firm's action string	
Action repertoire simplicity	0.30	0.30	0.31	0.30	Sum of squared action proportions across all categories	
Leader-challenger action dissimilarity					Sum of squared difference between leader and challenger action proportions across all categories	

[a] Herfindahl index.

quential moves to capture the elapsed time.[3] Then relative action timing was calculated as the annual average action timing measure for the leader (in days) minus the average annual action timing measure for the challenger (in days).

Action repertoire simplicity. We measured *within-firm* action diversity, or the degree to which a firm carried out a concentrated repertoire of competitive action types. The basis of this measure was the action analogue to the Herfindahl index, commonly used to measure the level of diversification across industry categories in the diversification literature (Montgomery, 1985). For our research, however, action categories served as the dimension of diversity. This approach is similar to Miller and Chen's (1996) action concentration index, yet our application of the Herfindahl is new to competitive dynamics research because it accounts for *all* of a firm's actions. First, the measure of the leader's action simplicity was calculated as follows:

Leader action repertoire simplicity

$$= \sum_a (N_a/NT_L)^2, \quad (3)$$

where N_a/NT_L is the share or proportion of competitive actions in the ath action category. Second, a similar measure was calculated reflecting the range of the challenger's competitive actions. Thus, a firm with a high action simplicity score favored just a few action types. Conversely, a firm with a low action simplicity score employed a broad range of action types. Finally, we calculated relative action repertoire simplicity by taking the *difference* between the individual leader and challenger action repertoire simplicity scores.

[3] We also ran models that used the first move of the sequence as well as the last move; there was no impact on the results.

Leader-challenger action dissimilarity. This variable measured *between-firm* action differentiation, or the extent to which leaders and challengers differed in the actions each carried out. In contrast to prior researchers, who have attempted to capture this dimension by using either a single dummy variable constructed from a composite of several dummy variables (Caves & Porter, 1978; Hambrick & D'Aveni, 1988), discrete classifications (Gimeno & Woo, 1996), or a set of industry-specific strategic variables (Gimeno, 1999), we applied a Euclidean distance measure across competitive strategies of many types.

To calculate leader-challenger action dissimilarity, we summed the squared differences in the proportions of competitive actions carried out across all action categories for each industry-year:

Leader-challenger action dissimilarity

$$= \sum_a \left(\frac{L_a}{L_T} - \frac{C_a}{C_T}\right)^2, \quad (4)$$

where L_a and C_a are the frequency of the leader's competitive actions in the ath action category and the frequency of the challenger's competitive actions in that category, respectively. The terms L_T and C_T represent leader and challenger total actions, respectively. Then, L_a/L_T and C_a/C_T are the proportions of leader and challenger actions in the ath action category, respectively. High dissimilarity scores indicate that the leader and challenger are different from one another in the competitive actions each implements. Low dissimilarity scores indicate that they are similar in their strategic choices.

Control Variables

Barriers to entry. We controlled for the influence of barriers to entry, because high (low) barriers have been found to dampen (accelerate) the loss of large firms' market shares (Caves, Fortunato, & Ghemawat, 1984; Mueller, 1986). Following Caves and colleagues (1984), we used a composite entry barrier measure for each industry-year computed as the sum of industry means for investments in research and development, selling activities, and total assets, taking industry-level data from the business segment files of COMPUSTAT.

Industry concentration. In a study similar to our own, Young and colleagues (1996) found that higher levels of concentration resulted in fewer rivalrous moves among incumbent firms. Also, in terms of the dynamic effects of concentration on changes in market share, concentration has been positively related to market share stability among leading firms (Caves & Porter, 1978; Gort, 1963). Thus, we controlled for concentration by using a Herfindahl index calculated from COMPUSTAT data for each four-digit SIC industry represented in the sample.

Industry growth. Studies examining the stability of market shares have suggested that high-growth industries experience less market share stability and greater turnover in industry leadership than low-growth industries (Caves & Porter, 1978; Gort, 1963; Mueller, 1986; Weiss & Pascoe, 1983). With specific regard to the level of competitive activity, firms in high-growth industries engage in more rivalrous actions than do firms in low-growth industries (Smith et al., 1992). Therefore, we calculated a simple growth rate for each industry-year (year t) as the percentage change in industry gross sales from the sales of the previous year (year $t - 1$), again using data for each four-digit SIC industry collected from COMPUSTAT.

Leader market share dominance. Previous research has showed that the higher the previous market share of an industry leader, the greater the market share erosion (Caves et al., 1984; Davies & Geroski, 1997). Therefore, we controlled for instances in which (1) the challenger held a distant second place and the market share gap represented a large portion of the total market and (2) the leader and challenger were closer together and the market share gap represented a small portion of the total market. We calculated this measure by dividing each previous year's market share gap between leader and challenger by their combined market shares for the same year.

Firm size. Prior research addressing the effects of firm size on rivalry has suggested that large firms have simpler competitive repertoires than small firms (Miller & Chen, 1996) and are slower in terms of action timing (Chen & Hambrick, 1995). Therefore, we used each firm's total number of employees as a measure of firm size; prior research in competitive dynamics has used this measure (Miller & Chen, 1996).

Table 1 provides the descriptive statistics for individual leader and challenger measures for these variables. Table 2 provides both descriptive statistics and Pearson correlation coefficients for the relative measures (difference scores) for the variables used in the analyses.

Model Specification

Our hypotheses were framed in terms of changes in both the gap in leader-challenger market shares (a continuous variable) and leader-challenger mar-

TABLE 2
Descriptive Statistics and Pearson Correlation Coefficients for Relative Leader-Challenger Measures

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10
1. Market share erosion [a, b]	0.54	2.65										
2. Total competitive activity [b]	1.74	16.98	−.11									
3. Action repertoire simplicity [b]	−0.01	0.38	.18	.00								
4. Action timing [b]	2.23	155.20	.15*	−.01	.23*							
5. Leader-challenger action dissimilarity	0.42	0.47	−.01	−.08	−.06	−.04						
6. Barriers to entry	3,760.89	8,894.20	−.04*	−.22*	.05	−.02	−.17*					
7. Industry concentration	0.23	0.15	.14	.05	.05	−.02	−.10	.06				
8. Industry growth	0.19	0.31	.03	.05	.00	.06	.02	−.01	.17*			
9. Leader market share dominance	0.26	0.20	.22*	.08	.05	−.10	.12	−.06	.36*	.16*		
10. Leader firm size	72.50	105.33	.04	.13	.04	.05	−.23*	.07	.33*	.11	.30*	
11. Challenger firm size	52.76	95.13	−.08	.03	.01	.06	−.19*	−.02	−.10	−.00	−.07	.53*

[a] Market share erosion appears as the only dependent variable in this table because the other, the logarithmic hazard of dethronement, is an unobserved variable and cannot be correlated with the variables listed (Allison, 1984). The values shown represent market share points.

[b] These measurements represent leader-challenger *difference* scores used to test the set of hypotheses.

* $p < .05$, two-tailed test

ket positions (a discrete variable). This structure necessitated the use of two statistical techniques. First, we used linear regression analysis to test Hypotheses 1a through 4a, relating to market share gap erosion. The results from ordinary least squares (OLS) regression mirrored those reported in Table 3 below. However, this analysis produced a Durbin-Watson statistic of 1.59, which lies within the "indeterminate" range for testing for the presence of serial correlation. Nevertheless, we reran the model using GLS regression after transforming the data using a single iteration of the Cochran-Orcutt procedure (cf. Pindyck & Rubinfeld, 1981). As indicated in Table 3, the Durbin-Watson statistic ranged from 1.99 to 2.01, indicating an absence of serial correlation among these results. In addition, the strongest "pairwise" correlation among the independent variables indicated in Table 2 is that between the control variables for leader and challenger firm size ($r = .53$, $p < .001$). This finding suggests that multicollinearity was not a problem.[4] Finally, heteroscedasticity was not detected, as the "scatterplot" of standardized predicted values with the standardized residuals indicated an even randomness of the plot.

Second, we used Cox proportional hazards regression analysis to test Hypotheses 1b through 4b. This technique of event history analysis accounts for the occurrence or nonoccurrence of an event—here, dethronement—and the timing of the occurrence or nonoccurrence. We used it to relate the set of predictor variables to the logarithmic hazard rate of leader dethronement. Cox proportional hazards regression is superior to other event history techniques because it produces high-quality estimates in large-sample studies, even when the great majority of observations are censored (Tuma & Hannan, 1984). (Events that occur prior to a measurement window are left-censored; events that occur after the measurement window are right-censored.) This type of analysis also possesses "semiparametric" characteristics that obviate the need to specify a specific form of the hazard function (Morita, Lee, & Mowday, 1993). This technique also accounts for serial correlation through the use of time-varying covariates (Allison, 1984).

The event of interest here, leader dethronement, was defined as a firm's change of state from leader at time t to nonleader at time $t + 1$. Although the data were both left- and right-censored, the Cox proportional hazards model made use of the partial information on every case, as each was at risk during each year of the observation window (Allison, 1984).

RESULTS

Table 3 shows the results of the GLS regression analysis predicting market share erosion from both *individual* leader and challenger action variables (model 1) and *difference score* action variables for each leader-challenger pair (model 2). In our conceptual model, we explicitly predicted that the *difference* between leader and challenger competitive activity would be related to erosion in the market share gap between the two and the hazard of leader

[4] We note that a model lacking individual leader and challenger firm size controls produced results similar to those reported in Table 3.

dethronement. However, to provide assurance that our difference scores could be meaningfully interpreted, we ran a model containing *individual* leader and challenger action variables and tested for opposite equality among pairs of regression coefficients (see Pindyck and Rubinfeld [1981] for the *F*-test procedure and Davies and Geroski [1997] for an application).[5] As shown in Table 3, the model testing for erosion due to individual actions, model 1, was found to be significant ($F = 1.87$, $p < .05$), and the coefficients for all three pairs of individual leader and challenger variables were found to be opposite and equal.[6] Therefore, we could combine the variables relating to individual leader and challenger competitive activity into parsimonious difference scores that were used to test Hypotheses 1a through 4b.

Tests of the Action Hypotheses

First, Hypotheses 1a through 4a are framed in terms of the relationship between relative leader-challenger action characteristics and market share gap erosion. Model 2 in Table 3 contains results of the GLS regression used to test these hypotheses. Overall, model 2 is significant ($F = 2.31$, $p < .01$) and includes industry barriers to entry, growth, concentration, individual leader and challenger firm size, and degree of leader dominance as controls.

The results for the Cox proportional hazards analysis are reported in model 3 of Table 3 and represent tests of Hypotheses 1b through 4b. This model is also significant ($\chi^2 = 52.43$, $p < .01$). To test for potential bias due to censoring, we ran an alternative model using maximum likelihood binomial logistic regression analysis. These results mirrored those produced by the Cox method and suggest that neither right nor left censoring was a problem.

Hypothesis 1a predicts that leaders that carried out more total actions than challengers would be less likely to experience market share gap erosion, and Hypothesis 1b predicts they will experience less dethronement. These hypotheses are supported. The coefficient for relative total competitive activity in the relative actions and erosion model (model 2) is negative and significant ($b = -.0164$, $p < .05$). In addition, relative total competitive activity in the dethronement model (model 3) is also negative and significant ($b = -0.0241$, $p < .05$).

Hypothesis 2a, which predicts that leaders who are slower in the timing of newly created competitive actions than challengers are more likely to experience erosion, and Hypothesis 2b, which predicts that such leaders are more likely to experience dethronement, are also supported. The coefficients for relative action timing in both models are positive and significant (erosion, $b = 0.0028$, $p < .01$; dethronement, $b = 0.0029$, $p < .01$).

Hypotheses 3a and 3b are partially supported, as the coefficients for action repertoire simplicity in both models are positive but marginally significant (erosion, $b = 0.6862$, $p < .10$; dethronement, $b = 1.6860$, $p < .10$). These hypotheses predict that when leaders rely on an action repertoire that is simpler than their challengers', they are more likely to experience erosion (3a) and dethronement (3b).

Hypotheses 4a and 4b predict that higher levels of leader-challenger action dissimilarity will be

[5] As noted, the use of arithmetic difference scores sometimes creates methodological and interpretive problems (Cronbach & Furby, 1970; Edwards & Parry, 1993). Difference score relationships in regression analysis are generally specified as

$$Z = b_0 + b_1(X - Y) + e, \quad \text{(i)}$$

where X and Y represent two component measures comprising the difference. The regression coefficient of the difference score (b_1) is difficult to interpret because higher levels of X and/or lower levels of Y can lead to the same magnitude in the difference between them. However, expanding Equation i yields

$$Z = b_0 + b_1X + b_2Y + e. \quad \text{(ii)}$$

Specified in this way, Equation ii constrains Equation i so that the regression coefficients of the difference score components (b_1 and b_2) must be equal in magnitude and opposite in direction. Edwards and Parry (1993) recommended the use of polynomial regression analysis to relax this opposite equality constraint on the difference score components and allow detection of any nonlinear relationship between independent and dependent variables. This equation is specified as follows:

$$Z = b_0 + b_1X + b_2Y + b_3X^2 + b_4Y^2 + b_5XY + e, \quad \text{(iii)}$$

where X and Y and their polynomial and interactive variants can vary independently. We ran several polynomial regression models based on Equation iii and found only coefficients b_1 and b_2 to be significant. This finding suggested that the relationship between individual leader and challenger action variables and market share gap erosion was linear. Therefore, we report only the results based on Equation ii in the individual actions and erosion model (model 1) in Table 3. Finally, following a test for opposite equality of the coefficients derived from model 1, we report the results in model 2 in Table 3 (which corresponds to Equation i above).

[6] We also tested for the effects of different types of actions (such as new product and marketing actions) on market share erosion and dethronement. These models were not significant.

TABLE 3
Generalized Least Squares Regression and Cox Proportional Hazards Results [a]

Variable	Model 1: Individual Actions and Erosion		Model 2: Relative Actions and Erosion		Model 3: Relative Actions and Dethronement	
	b	s.e.	*b*	s.e.	*b*	s.e.
Constant	−0.1488	0.5203	−0.1839	0.4367†		
Barriers to entry	−0.0000	0.0000	−0.0000	0.0000	−0.0013	0.0004***
Industry concentration	0.8543	1.8637	0.9744	1.8440	8.3284	4.2629*
Industry growth	−0.6803	0.6747	−0.5828	0.6667	3.1032	1.1822**
Leader market share dominance $_{t-1}$	3.2452	1.0905**	2.9184	1.0565**	−10.9140	2.7061***
Leader size	−0.0017	0.0025	−0.0017	0.0024	0.0094	0.0027
Challenger size	−0.0017	0.0035	−0.0012	0.0034	0.0171	0.0067
Leader total competitive activity [b]	−0.0172	0.0105*				
Challenger total competitive activity	0.0199	0.0168				
Leader action repertoire simplicity [b]	0.8191	0.6764				
Challenger action repertoire simplicity	−0.4383	0.6340				
Leader action timing [b]	0.0020	0.0014*				
Challenger action timing	−0.0033	0.0012**				
Leader-challenger action dissimilarity	−0.3194	0.4463	−0.3455	0.4109	−1.2705	1.0832
Total competitive activity [c]			−0.0164	0.0098*	−0.0241	0.0138*
Action repertoire simplicity [c]			0.6862	0.4811†	1.6860	1.3720†
Action timing [c]			0.0028	0.0011**	0.0029	0.0014**
R^2		.13		.12		
F		1.87*		2.31**		
Durbin-Watson statistic		2.00		2.01		
−2 log likelihood						76.25
χ^2						52.43**

[a] $N = 246$.

[b] A test for opposite equality for individual leader and challenger coefficients suggested that they would be equal in magnitude, yet opposite in direction ($b_{leader} + b_{challenger} = 0$). This was found to be the case for all pairs of coefficients indicated. Therefore, a true difference score created for each leader-challenger pair could be interpreted meaningfully. However, the coefficients for leader and challenger firm size do not exhibit opposite equality. Therefore, we used the individual measures for size as controls in these analyses.

[c] These variables are leader-challenger *difference* scores representing relative competitive activity.

† $p < .10$
* $p < .05$
** $p < .01$
*** $p < .001$

negatively related to both erosion (4a) and the hazard of dethronement (4b). However, these hypotheses are not supported as the coefficient in neither model was found to be significant.

DISCUSSION

The reported study examined the phenomenon of market share erosion and dethronement through the lens of the market process described in the Austrian economics research tradition as captured by the newly created actions of industry leaders and their second-place challengers. The research examined the effects of nearly 5,000 competitive moves implemented by 41 industry market share leaders and challengers over seven years. Our results suggest that market share erosion and dethronement can be explained by the characteristics of leaders' and challengers' competitive actions, as captured by several new action measures. Thus, in contrast to previous research, which has focused on firm and industry characteristics, in the current research we focused on the competitive market process as an important means by which firms sustain or lose market leadership. We further note that these hypercompetitive effects emerged in a contextually rich data set encompassing 41 different industries and industry structure controls. These results have important implications for theories of organizational decline, entrepreneurship and renewal, and hypercompetition and competitive dynamics.

Schumpeter (1934) predicted that market leaders that fail to continually engage in newly created actions would eventually have their market positions eroded or destroyed by rival firms. Whereas previous research based solely on the computer software industry has demonstrated that high levels of competitive activity lead to superior firm profitability (Young et al., 1996), our research with a multi-industry sample suggests that aggressive and active firms also experience market share gains. These results support Jacobson's statement that "the forces of dynamic competition doom any firm that merely attempts to maintain its present position" (1992: 787). Thus, for market share leaders, Schumpeter's perennial gale of creative destruction may be internalized, as leading firms sometimes seek to destroy their own strategic positions through continual action. Paradoxically, in doing so these firms are better able to sustain their positions of market leadership by creating a moving target for rivals. This view of competition is similar to D'Aveni's (1994) view of hypercompetition, in which all advantages are temporary and no industry position is secure. We also learn from this research that organizations decline if they become self-contented and less aggressive. Sleepy or complacent firms—those that are less aggressive than rivals with new action—appear to have been caught off guard, as evidenced by market share erosion or dethronement. This observation lends support to previous research on organizational decline that has suggested the reciprocal argument that organizations in decline become less aggressive and slower (e.g., D'Aveni & MacMillan, 1990).

The action timing results are also important. The industry leaders in our study were more likely to maintain their market share leads and avoid dethronement by moving swiftly against competitive challenges. Conversely, challengers who acted faster than leaders tended to gain share. This finding highlights the importance of timing and speed. D'Aveni argued that speed is critical in hypercompetitive markets: "Speed allows companies to maneuver to disrupt the status quo, erode the advantage of competitors, and create new advantages before competitors are able to preempt these moves" (1994: 246). Previous competitive dynamics research has linked the timing of actions to financial measures of performance (Chen & Hambrick, 1995; Smith et al., 1991) and to stock market returns (Lee et al., in press). Our findings are consistent with this research and suggest that timing is also important to other outcome measures, such as market share and the battle for industry leadership. Moreover, the findings are consistent with previous market share studies in which rapid adopters of innovations and first movers (pioneers) experienced market share gains (Banbury & Mitchell, 1995; Mitchell, 1989, 1991). Together, all of these studies reinforce the idea that speed is an important competitive weapon.

D'Aveni (1994) also put forth arguments about the dangers of strategic simplicity. He noted that simple linear actions become too predictable and that successful firms "zigzag through a series of thrusts against competitors, or they hit the competitor from several different directions at once" (1994: 280). Similarly, Miller (1990) highlighted the danger of becoming overly simple. Our findings for action repertoire simplicity—that leaders more focused on a narrow range of actions than challengers will experience market share erosion and dethronement—support these views. The Austrian economists predicted this result long ago when Kirzner (1973) argued that sustained success depends on decision makers' range of action alternatives; that is, success depends not only on the choice about what commodity to produce, but also on choices about the style of the commodity, the quality of its materials, the sizes, the colors, the packaging, and the selling effort. This view lends support to the "success breeds failure" syndrome, whereby leaders that become overly dependent on a narrow set of strategic routines may experience decline (Nystrom & Starbuck, 1984). Our findings are also consistent with those of Miller and Chen (1996), who found a negative relationship between action repertoire simplicity and a revenue-based efficiency measure of performance. Yet our findings relating action repertoire simplicity and market share are robust across a more diverse set of industry contexts.

The nonsignificant results for leader-challenger action dissimilarity are surprising, given the value placed in the strategic management literature on differentiation (Porter, 1980), heterogeneity of resource profiles (Chen, 1996; Peteraf, 1993), and intertemporal heterogeneity of strategy (Gimeno & Woo, 1996; Jacobson, 1992). Perhaps the dissimilarity of actions would have been a more important predictor if we had included more than two firms in each industry. Thus, although our measure captures how different the action repertoires of leaders and challengers are from one another, it is quite possible that such differentiation is not an important pairwise variable as it relates to market share. Further, as noted above, we viewed action dissimilarity as shifting the rules of competition and assumed that the leader established the competitive status quo. Future research could perhaps explore conflicting effects relating to strategic dissimilarity by fleshing out the potential for directional asym-

metries from the leader's and challenger's perspectives.

To summarize the results, we examined the distinct effects of the action characteristics variables vis-à-vis firm and industry control variables on market share gap erosion with hierarchical regression analysis; the model was similar to that reported as model 2 of Table 3. The six control variables were entered in the first stage, which was not significant ($R^2 = .05$, $F = 1.67$). Then the four action characteristics variables were entered in the second stage and the model reached significance ($F = 2.31$, $p < .01$). Further, the addition of action characteristics variables provided a significant contribution to the total variance explained, which was beyond that of a model containing just industry controls and firm size ($\Delta R^2 = .06$, $p < .01$). Thus, a model including characteristics of newly created actions contributes significantly more to understanding market share decline than models including only variables measuring industry and firm characteristics. These findings support arguments made in previous research stating that factors capturing competitive dynamics within an industry are important predictors of firm performance (Jacobson, 1992; Smith et al., 1992; Young et al., 1996). Future research could perhaps explore the specific industry conditions in which competitive aggressiveness yields the highest payoffs.

Limitations and Future Research

The strengths of this research include its matched-pairs design, the cross-sectional time series sample of 41 different industries, the vast array of newly created actions studied, and the new measures of the market process. Nevertheless, this research is not without limitations. First, our sample selection criteria limited the research to United States–based, single-business firms and focused solely on the newly created actions of industry leaders and second-place challengers. Thus, one direction for further research is to expand the sample to include the actions of all firms within each industry, which would likely include firms that compete in multiple industries and/or geographic markets. In doing so, researchers adopting our action-oriented approach to measuring the market process in future studies could explore key ideas within the multimarket competition stream of research (e.g., Gimeno, 1999; Karnani & Wernerfelt, 1985) and in recent research on the competitive dynamics of strategic groups (Smith et al., 1997). Second, although we found substantial support for our hypotheses, we have no way of knowing the specific intent behind any action studied in this research. Subsequent research could adopt the "social construction of rivalry" view (e.g., Porac & Thomas, 1990) as a means of identifying a firm's intended target rival and the intended effects of competitive action by including subjective measures of the competitive importance or magnitude of different kinds of actions. Finally, a potentially fruitful extension of this research would be exploration of the contingency relationships between organizational characteristics, competitive actions, and performance. For example, the timing of competitive response has been found to be inversely related to a top management team's average years of industry experience (Smith et al., 1991) and educational background heterogeneity (Hambrick, Cho, & Chen, 1996). Hence, interactions between firm variables and action characteristics may be important predictors of market share decline.

Managerial Implications

Our findings have direct implications for managers. For market leaders, our study suggests that they can maintain their market positions and reduce the likelihood of being dethroned by (1) taking more new actions, (2) carrying out a broader range of actions, and (3) undertaking actions more quickly than challengers. The inverse is true for challenger firms. In other words, challengers can gain share on leaders and/or increase the likelihood of dethroning them by taking these same steps.

Our results reinforce the notion of competitor analysis whereby a manager must know, understand, and predict the competitive moves and responses of rivals (Porter, 1980). Indeed, the focus of this research on relative differences in the competitive behaviors of leaders and challengers implies that success in the battle for market share is, in part, a function of each firm's moves. In other words, the dynamic process of competitive moves provides the context for the battle for market share. Thus, managers should incorporate competitors' behavior into the formula for planning future strategic moves. Our findings also support Chen's (1996) notion that competitor analysis is best carried out on a pairwise basis.

Conclusions

One of the most powerful paradigms supporting strategic management research is the structure-conduct-performance model. A basic assumption of this model is that lower levels of industry rivalry are associated with higher performance (Porter, 1980). However, some writers (D'Aveni, 1994; Porter, 1991) have described this model as static and

cross-sectional. Our longitudinal study examined the competitive dynamics between industry leaders and challengers. A key finding of our study is that higher industry rivalry or aggressiveness on the part of a single firm *increases* the likelihood of market share gains. Like the findings of Young and colleagues (1996) and D'Aveni (1994), this finding suggests that scholars should take careful note of the unit of analysis they might best employ—industry versus firm—when assessing the rivalry–performance relationship in research and teaching.

In sum, our research broadly equates Schumpeter's notion of the perennial gale of creative destruction with the occurrence of market share erosion and dethronement. Our results suggest that competitive dynamics (the market process postulated in Austrian economics) among market-leading firms affect the market share positions of each. Schumpeter would perhaps have found it reassuring to observe that old-fashioned, head-to-head competition does matter in the battle for market share leadership. Thus, our research begins to contribute to a better understanding of the market process and its consequences by integrating Austrian-economics-based views of competition into strategic management.

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