

The Impact of Performance Distress on Aggressive Competitive Behavior: A Reconciliation of Conflicting Views¹

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Prior research on how *ex ante* performance impacts competitive behavior has led to conflicting conclusions. Prospect theory, for example, suggests that poor performance promotes aggressive behavior, whereas threat–rigidity theory predicts the opposite. We attempt to reconcile these conflicting views by incorporating a contingency perspective that empirically tests, specifically, how top management team heterogeneity and a favorable industry context moderate the relationship between poor performance and competitive aggressiveness. Our findings suggest that performance-distressed firms managed by heterogeneous top management teams are less likely to compete aggressively. However, contrary to predictions, performance-distressed firms competing in competition-buffered industries are more likely to compete aggressively. Copyright © 2002 John Wiley & Sons, Ltd.

INTRODUCTION

In today's dynamic competitive environment, some market-leading firms are able to sustain their strong market positions, above-average profits, and shareholder wealth by competing aggressively, proactively, and forcefully initiating and responding to competitive attacks (D'Aveni, 1994; Ferrier, 2000, 2001; Ferrier and Lee, forthcoming; Lee *et al.*, 2000). Indeed, dominant firms such as Intel, Microsoft, and Wal-Mart are noted for their aggressive behavior, which has resulted in a strong market position for these firms. This view of competition is most closely associated with Schumpeter (1950) and the Austrian school of economics. For the Austrians, and certainly these market-leading firms, '...the term *competition*

undoubtedly conveys the notion of men vigorously competing with another, each striving to deliver a performance that outdistances his rivals' in their 'incessant race to get or to keep ahead of one another' (Kirzner, 1973, pp. 89–90, 20).

However, it is surprising to observe that other market-leading firms have failed to take an aggressive competitive stance vis-à-vis rivals. For instance, IBM was slow to enter the personal computer market, permitting Microsoft and Intel to appropriate most of the industry's value and wealth. Similarly, Sears, constrained by its weak financial condition, failed to adapt to changes in the discount retail industry, losing out to Wal-Mart. Indeed, despite the apparent advantages that accrue to market-leading firms, they fall prey to challengers far more often than is commonly thought (e.g., Caves and Porter, 1978; Ferrier *et al.*, 1999; Mueller, 1986; Weiss and Pascoe, 1983). Moreover, once decline begins, it precipitates into a 'downward spiral' from which few firms are able

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to recover (see Furman and McGahan, this issue; Hambrick and D'Aveni, 1998).

Despite a wealth of research in strategic management and decades of research in I/O economics and finance that has traditionally considered financial and market performance as strategic outcomes, another important, yet underdeveloped area of study explores how past performance influences the firm's future action (Thompson, 1967). Indeed, given the prevalence of hard-hitting rivalry and the dethronement of market-leading firms, it is important to explore why firms that experience financial or market share decline—in relative or absolute terms—are not motivated or able to attempt the strategic changes necessary to rebound. Further, empirical research has yielded conflicting results. On the one hand, some studies suggest that *successful* firms compete more aggressively and proactively (e.g., Chattopadhyay *et al.*, 2001; Chevalier, 1995; Daily, 1994; Staw *et al.*, 1981; Young *et al.*, 1996). On the other hand, other studies have found that firms that experience *decline* are motivated to compete more aggressively (e.g., Bowman, 1982; Ferrier, 2001; Fiegenbaum, 1990; Fiegenbaum and Thomas, 1988; Hambrick *et al.*, 1996; Lant *et al.*, 1992; Miller and Chen, 1994).

Given the opposing views in the literature and the inconsistent empirical results, we believe it is important to reconcile the various viewpoints. In particular, when the predictive validity of our theories is under controversy, the underlying paradigm which supports the theory becomes open to question (Kuhn, 1970). Moreover, given the normative orientation of most strategy research, such reconciliation is paramount. Thus, the fundamental research questions examined here are: Do market-leading firms that experience performance distress compete more or less aggressively than market-leading firms which experience good performance? What are the key managerial, organizational, and environmental contingencies that influence the performance–strategy relationship?

Prefatory Note on Key Concepts

Because we draw from a wide range of theoretical perspectives and a rich, yet varied body of empirical research, we feel compelled to clearly elucidate the key conceptual foundations of our study. Further, because our research questions are

so fundamental to our understanding of the relationship between the financial- and market-related feedback managers often attribute to their *past* strategies and the development and implementation of *future* strategy, it is our aim to define (and subsequently measure) these concepts in the widest, most generalizable terms possible.

Performance distress. Recognizing the multi-dimensional, complex nature of the performance construct, researchers have argued that multiple and/or multidimensional measures of performance should be used to advance and add breadth to our understanding of the relationship between firm behavior and performance (Bagozzi and Philips, 1982; Chakravarthy, 1986; Lumpkin and Dess, 1996). Also, it is important to move beyond framing performance as an absolute measure of successful strategic outcomes—profit as opposed to loss; growth as opposed to decline (McKinley, 1993; Kahneman and Tversky, 1979). Indeed, firm behavior may lead to favorable outcomes on one performance dimension and unfavorable outcomes on a different performance dimension (Lumpkin and Dess, 1996). For example, proactive and aggressive product innovation may enable a firm to rapidly gain market share. However, such innovation may require costly investments in R&D activities that may diminish short-run profitability. Indeed, firms that adopt an emphasis on increasing market share at all cost are likely to be less profitable than firms that set profit-oriented strategic objectives in developing strategy (Armstrong and Collopy, 1996).

Therefore, consistent with these views, we aim to test whether strategic behavior is influenced by two distinct measures of poor *ex ante* performance that capture elements of a firm's internal financial condition as well as its market position vis-à-vis its main rivals. First, we use Altman's *Z-score*, a multidimensional, composite measure of profitability, cash flow, slack, and stock market factors (Altman, 1968; Chakravarthy, 1986). We believe that poor performance on any single performance indicator does not provide a sufficiently strong informational cue that signals to managers that the full breadth of their strategy is not yielding expected results. Instead, owing to its comprehensiveness, low Altman's *Z-scores* cannot escape managerial notice. For the remainder of this paper, we define *financial distress* as low Altman *Z-scores*.

Second, market share gain is a key organizational objective and a measure of relative standing that managers often *believe* to be associated with better performance (Armstrong and Collopy, 1996). Further, declines in market share—especially among market-leading firms—may also give rise to psychological or emotional attachments to maintaining (if not increasing) market share. For example, after being dethroned as the No. 1 athletic shoe company by Nike in 1991, Reebok CEO, Paul Freeman, ‘vowed to re-take the lead’ (Ferrier, 1997). Thus, we consider *market share erosion* as an important dimension of performance distress.

Competitive aggressiveness. Building on the Austrian view of competition, the idea of competitive aggressiveness serves as the conceptual core among three related streams within strategic management research. First, research within corporate entrepreneurship views strategy, in general, and competitive action, in particular, as behavior that is overt, demonstrable, and aggressive towards competitors and is carried out to improve competitive position and outperform competitors in the marketplace (Covin and Slevin, 1991; Lumpkin and Dess, 1996). In particular, competitive aggressiveness is defined as the firm’s ‘propensity to directly and intensely challenge its competitors to improve its competitive position; ...to outperform competitors in the marketplace beating competitors to the punch; ...being responsive to competitive challenges’ (Lumpkin and Dess, 1996, pp. 148–149). Aggressive firms, relative to conservative firms, have higher scores on variables representing the following constructs: external financing, service, warranties, advertising, innovative marketing, price, product quality, patents, innovative operations (Covin and Slevin, 1991).

Second, the idea of aggressiveness is consistent with several of the ‘New 7-Ss’ of hypercompetition (D’Aveni, 1994), especially the *speed* of competitive attacks and a *simultaneous and sequential strategic thrusts* consisting of multiple competitive strategies and tactics. Here, aggressive firms quickly, proactively, and forcefully try to outmaneuver rivals in the marketplace.

Third, researchers in the competitive dynamics stream within strategic management have developed theory and empirical methods centering on a fine-grained conceptualization of firm strategy as *competitive action* (see Smith *et al.*, 1992, 2001;

Grimm and Smith, 1997 for overviews of this research stream). Consistent with corporate entrepreneurship and the hypercompetition views of aggressiveness, the *number of competitive actions* as well as the *timings/speed* with which they are implemented—in terms of either an initiated attack or a response to a rival’s attack—were found to be the strongest, most consistent, and robust constructs within the competitive dynamics stream (e.g., Chen and Hambrick, 1995; Chen and MacMillan, 1992; Ferrier, 2000, 2001; Ferrier *et al.*, 1999; Hambrick *et al.*, 1996; Lee *et al.*, 2000; Smith *et al.*, 1991, 1996, 1997; Young *et al.*, 1996, in press).

COMPETING THEORETICAL PERSPECTIVES

For the present research, we consider a firm’s financial and market scorecards as important drivers of decision-making that affects the firm’s choices about how to compete—that is, to be either aggressive or more passive in its competitive behaviors. In particular, we contend that the link between financial distress and market share erosion and the competitive behavior of market-leading firms operates through managerial decision-making or strategic choice (Child, 1972).

In this section, we offer two competing hypotheses that relate to the *direct* relationship between our two indicators of performance distress and competitive aggressiveness. We base our arguments on several important behavioral and decision-making theories that articulate how performance feedback is interpreted by managers and influences competitive behavior. The first set of arguments relates to how performance distress *increases* the level of competitive aggressiveness; the second set builds the case that performance distress *reduces* aggressiveness. We discuss each in turn.

Performance Distress Induces Competitive Aggressiveness

Prospect theory. Performance distress may have important psychological consequences in terms of how firms respond to their perception of external market threats or internal performance decline (Bowman, 1982; Chattopadhyay *et al.*, 2001;

Kahneman and Tversky, 1979; Fiegenbaum, 1990). According to prospect theory, decision makers operating in the domain of losses (or decline) are risk seeking, while decision makers protecting gains are risk averse (Kahneman and Tversky, 1979; Tversky and Kahneman, 1981). Early research on the behavior of weak firms suggests that 'troubled firms' are more prone to risk-seeking behavior (Bowman, 1982), while research by Fiegenbaum and Thomas (1988) and Fiegenbaum (1990) found that organizations behaved as risk takers when performance fell below a particular benchmark or reference point. Conversely, when performance exceeded the performance reference point, firms were risk avoiders.

Broadly, the findings of these studies are consistent with the notion that successful market-leading firms are likely to engage in risk-averse behaviors and compete passively. Conversely, firms suffering performance distress engage in relatively more aggressive behavior.

Corporate finance theory. In concordance with prospect theory, the corporate finance literature also suggests that firms experiencing performance distress have incentives to engage in aggressive product market strategies. For instance, Brander and Lewis (1986) argue that as firms take on more debt, they will have an incentive to pursue risky, aggressive output strategies that result in higher returns under favorable market conditions and lower returns under unfavorable market conditions. Given the limited liability provisions of equity financing, these higher returns accrue to equity holders, while the lower returns accrue to debt holders. Thus, equity holders gain more from aggressive, rather than passive behavior in the product market. This argument is further supported by Maksimovic and Zechner who state that 'firms with high debt levels choose technologies [competitive strategies] with risky cash flows', thus implying that financial distress acts as an incentive to engage in more aggressive competitive behaviors (1991, p. 1621, brackets added).

In sum, corporate finance theory reasons that as compared to their healthy counterparts, decision makers in distressed firms are likely to engage in aggressive competitive behavior in the area of pricing and output decisions.

Organizational learning theory. The literature on organizational learning suggests that as organiza-

tions evolve and grow, they tend to develop a set of routinized behaviors, thereby reducing the search for alternative problem-solving techniques (Nelson and Winter, 1982; Lant *et al.*, 1992; Miller, 1990). Literature on strategic persistence suggests that, over time, past success may give rise to complacency and a persistent reliance on well-learned organizational routines, thus inhibiting competitive action and strategic change (Audia *et al.*, 2000; Lant *et al.*, 1992; Miller, 1990; Miller and Chen, 1994). Conversely, poor performance provides the firm with strong incentives to aggressively search out new approaches to compete more effectively in the marketplace (Nelson and Winter, 1982; Miller and Chen, 1994).

In summary, the three theoretical views outlined above support the hypothesis that poor-performing large firms are likely to exhibit aggressive competitive behavior. In particular:

Hypothesis 1a:

Financial distress will be positively related to competitive aggressiveness.

Hypothesis 1b:

Market share erosion will be positively related to competitive aggressiveness.

Performance Distress Reduces Competitive Aggressiveness

Notwithstanding the theories that motivate Hypotheses 1a and 1b, a set of alternative theoretical perspectives from organizational theory and dominant firm behavior suggests a counter proposition—that performance distress reduces competitive aggressiveness.

Threat-rigidity theory. Threat-rigidity theory suggests that there may be a general tendency for decision makers to behave rigidly in threatening situations. For example, when individuals are placed in threatening situations, they tend to rely on a habituated, dominant response set (Zajonc, 1966). Similarly, groups engaged in decision-making may reduce their flexibility following crisis, sealing off new information and controlling deviant responses (Janis, 1972).

Staw *et al.* (1981) are the most influential contributors to the 'decline inhibits adaptation' school at the organizational level. These authors

argue that threat, such as that represented by deteriorating financial condition and/or market share erosion, leads decision makers to restrict information processing, centralize control, and conserve resources. Indeed, several other authors have identified a short-term orientation on the part of decision makers under conditions of distress, such as short-term responses to immediate crises. Smart and Vertinsky (1984) suggest that fewer sources of information are consulted in a crisis, which explains why there are fewer solutions available. Researchers have also described the tendency of decision makers to narrow cognitive processes and respond rigidly during crises (e.g., Cameron *et al.*, 1987; Daily, 1994; D'Aveni, 1989; D'Aveni and MacMillan, 1990; Starbuck *et al.*, 1978).

In summary, performance distress is expected to increase rigidity, reduce information flows, increase conservatism, and thereby constrain the organization's capacity to adapt (Daily, 1994; McKinley, 1993), which increases strategic paralysis (D'Aveni, 1989). This, then, implies that performance distress will give rise to passive or conservative competitive behavior.

Dominant firm behavior. Within industrial organization (I/O) economics, the literature on dominant firm behavior and dynamic limit pricing offers still another view suggesting that distressed market-leading firms may be less aggressive. This research stream examines the specific behaviors of market-leading industry incumbents on both their ability to limit entry and to maintain a position of market leadership (Scherer and Ross, 1990). Indeed, it is widely recognized in IO economics and strategic management that market-leading firms often enjoy economies of scale and scope, entry barriers, experience curve effects, lower marginal costs, strong resource positions (including financial resources), market position, and reputations (Grimm and Smith, 1997; Scherer and Ross, 1990). Yet, in order to maintain their market-leading position, such firms may undertake aggressive, deterrent behaviors such as: predatory pricing (e.g., Gaskins, 1971; Leblanc, 1992), product proliferation (e.g., Schmalensee, 1983), advertising (Comanor and Wilson, 1974), and increasing scale or capacity (e.g., Spence, 1977). Thus, healthy market-leading firms are motivated to carry out a pattern of aggressive behaviors.

In sum, both the threat–rigidity and dominant firm behavior theoretical views lend support to the following hypotheses:

Hypothesis 2a:

Financial distress experienced by leading firms will be negatively related to competitive aggressiveness.

Hypothesis 2b:

Market share erosion will be negatively related to competitive aggressiveness.

Towards a Reconciliation of Conflicting Perspectives: A Contingency Framework

Considering the inconsistent theoretical predictions and recognizing the strong underlying research traditions that support these competing views, we are challenged to reconcile these opposing views. Quite possibly, *both* of the initial propositions—distress induces aggressiveness versus distress attenuates aggressiveness—are correct under certain conditions. Thus, we attempt to reconcile these countervailing arguments by adopting a contingency perspective. Indeed, Baum and Dutton (1996) assert that an investigation of firm context can add much to understanding how strategic processes work. Accordingly, we aim to examine the moderating effect of context variables at two levels: the managerial level and the external environment or industry level. These moderated relationships are depicted in Figure 1.

Drawing from research on learning, decision-making, and organizational change, there are three implicit, yet essential influences on strategic action and change (Chen, 1996). These are: factors that influence the *awareness* of the context and challenges stemming from competitive interdependence, factors which induce or impede the *motivation* to take action, and the cognitive and resource-based factors which influence the firm's *ability* to take action. For the current research, we argue that these three implicit drivers serve as a refractive filter, of sorts, that attenuates the role that performance distress plays as an informational cue or signal. Consequently, we argue that the relationship between performance distress and competitive aggressiveness is moderated by top management heterogeneity and the extent to which firms compete in a competition-buffered industry.

Top management team (TMT) heterogeneity. Upper echelons and strategic decision-making theory suggest that the composition of the TMT

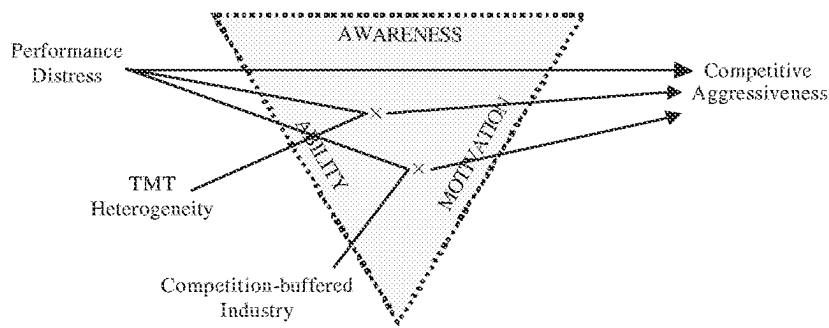


Figure 1. Implicit factors that impact strategic decision-making.

influences three key managerial activities: problem sensing facilitated by greater awareness, interpretation and enactment of environmental cues and signals, and decision-making that capably matches perceived problems with strategic solutions (Ama-son, 1996; Barr *et al.*, 1992; Cyert and March, 1963; Finkelstein and Hambrick, 1996; Hambrick and Mason, 1984; Kiesler and Sproull, 1982). Thus, depending on the composition of the TMT, performance distress is a key informational cue that will be interpreted and processed differently by firms in the decision-making process, which, in turn, impacts the firm's level of competitive aggressiveness.

Heterogeneous TMTs often develop a conflictual decision-making style characterized by debate, devil's advocacy, and dialectical inquiry (Mitroff and Emshoff, 1979; Simons *et al.*, 2000). Further, TMT heterogeneity reduces agreement-seeking behaviors, and reduces both social cohesion and informal communication in the context of strategic decision-making (Knight *et al.*, 1999; Simons *et al.*, 2000; Smith *et al.*, 1994). We believe that such characteristics of the decision-making process are likely to impact the firm's level of competitive aggressiveness. Indeed, the 'upper-echelons approach would acknowledge that the human and social biases, filters, and idiosyncratic processes at the top of the organization substantially influence competitive behavior' (Hambrick *et al.*, 1996, p. 660; Hambrick and Mason, 1984).

Prior research found that heterogeneous TMTs decide on and implement competitive actions (and responses) slower than homogeneous TMTs (Hambrick *et al.*, 1996). Similarly, Ferrier (2001) found that heterogeneous TMTs were less capable of sustaining competitive attacks of significant duration. However, no research to date has

explored the *interactive* effects of TMT heterogeneity and performance distress on competitive behavior. Thus, we believe that performance distress will magnify or exacerbate the conflictual decision-making processes and their attendant outcomes described above. More specifically, when faced with performance distress (as opposed to achieving a high level of success), a heterogeneous TMT will be even more likely to vigorously and comprehensively debate the various causes of poor performance, as well as possible courses of action. Consequently, decision-making speed and the firm's ability to carry out a large number of competitive actions are likely to be diminished. Therefore, we predict:

Hypothesis 3a:

Financial distress will be negatively related to competitive aggressiveness for leading firms with heterogeneous TMTs.

Hypothesis 3b:

Market share erosion will be negatively related to competitive aggressiveness for leading firms with heterogeneous TMTs.

Competition-buffered industry context. Similar to our logic regarding the interaction between performance distress and TMT heterogeneity above, we believe that performance distress will serve as a less important informational signal and input in the decision-making process when characteristics of a favorable industry context are prevalent. According to the structure-conduct-performance view within I/O economics, high levels of industry growth, barriers to entry, and industry concentration each buffer industry participants from intense competition (Scherer and Ross, 1990). Further, prior research in strategic management suggests that industry characteristics influence managerial *awareness* and perception related to intensity of

competition within a industry which, in turn, influences the firm's strategic choices (Dess and Beard, 1984; Keats and Hitt, 1988; Sutcliffe, 1994). Consistent with Chen's (1996) framework, these industry characteristics are also likely to influence the firm's *motivation* to compete aggressively.

First, managers equate industry growth with munificence (Dess and Beard, 1984), which is less likely to provide feedback that disrupts managers' causal explanations between the efficacy of their own market actions and positive competitive outcomes (Harper, 1994; Lant *et al.*, 1992). Slow growth, on the other hand, is likely to increase the intensity of competition, which reduces industry profitability. This, in turn, motivates strategic aggressiveness and change (Fombrun and Ginsberg, 1990; Porter, 1980; Smith *et al.*, 1992). Indeed, prior research in competitive dynamics suggests that firms in low-growth industries respond to competitive challenges more quickly (Smith *et al.*, 1992) and carry out an unpredictable sequence of competitive actions (Ferrier, 2001).

Second, industry concentration reduces the level of intra-industry competition (see Scherer and Ross, 1990). Indeed, Young *et al.* (1996) found that higher levels of industry concentration resulted in fewer competitive moves carried out among incumbent firms. Thus, a high level of industry concentration also reduces the firm's *motivation* to compete aggressively.

Third, the intensity of rivalry is also diminished as a result of high levels of capital intensity, R&D intensity, and advertising intensity (Scherer and Ross, 1990). Such barriers to entry were found to have a positive impact on industry performance principally because the intensity of competition among incumbents does not increase due to entry (Caves, *et al.*, 1984). Therefore, firms competing in industries characterized as having high barriers to entry are also less motivated to compete aggressively.

In sum, we predict that firms experiencing performance distress that compete in a competition-buffered industry environment—high levels of growth, concentration, and/or barriers to entry—will compete less aggressively.

Hypothesis 4a:

Financial distress will be negatively related to competitive aggressiveness for leading firms competing within competition-buffered industries.

Hypothesis 4b:

Market share erosion will be negatively related to competitive aggressiveness for leading firms competing within competition-buffered industries.

METHODS

Sample

The focus of this study is to examine the relationship between leading firms' past performance and competitive aggressiveness, given TMT heterogeneity and industry factors as important contingencies. Thus, we aimed to develop a research design, sample, and as set of measures based on content analysis of published histories about the competitive actions of market-leading firms (Ginsberg, 1988). Our sample and the competitive actions carried out by each firm are based on that from prior research in competitive dynamics (Ferrier, 2001; Ferrier *et al.*, 1999). Because the strategies of the largest, market-leading firms are likely to be the most observable (Fombrun and Shanley, 1990), the sample consists of US market share leading firms among the *Fortune 500*, which were ranked No. 1 or No. 2 in their respective industries, as listed in *Ward's Business Directory*.

Second, to ensure that each firm's competitive actions were directed towards the line of business on which these firms are most highly dependent (Chen, 1996), only those classified as dominant or single business firms were selected (i.e., firms having Rumelt's (1974) specialization ratios greater than 0.70).

Finally, we eliminated firms from the sample if they did not have TMT data listed in *Dun and Bradstreet Reference Book of Corporate Managements* throughout the 1987–1993 time panel. Thus, the sample consists of pooled, 7-year cross-sectional database of pairs of market-leading firms (ranked Nos. 1 and 2) across 39 different industries (i.e., 273 firm-years as the unit of analysis).

Dependent Variable

Prior research in competitive dynamics defines competitive actions as: externally directed, specific, and observable competitive moves initiated by a firm to enhance its relative competitive position (Ferrier, 2001; Ferrier *et al.*, 1999; Smith *et al.*, 1991; Young *et al.*, 1996). As noted above, we used

the competitive actions and resultant action categories developed in previous competitive dynamics research (Ferrier, 2001; Ferrier *et al.*, 1999). Using structured content analysis (Jauch *et al.*, 1980), these authors identified and categorized the competitive actions of each firm into six *specific* action categories—pricing actions, marketing actions, new product actions, capacity-related actions, service actions, and overt signaling actions—based on the appearance of one of the keywords listed in Table 1 in the headlines and abstracts of news reports found in the US series of *F&S Predicasts*. The final data set contains a total of 4617 product-market actions. Table 1 lists the keywords used in the content analysis coding process and several example headlines from the news reports.

As noted above, the selection of these categories is consistent with the view that business strategy involves the firm's collection of competitive tactics that includes, among other things: new products, service, warranties, advertising, price policy, etc. (Covin and Slevin, 1991). Further, using the keywords listed in Table 1, two academic experts separately re-coded a representative sample ($N = 300$) of actions into each of the six categories listed above. The reliability of this categorization process was tested using Perreault and Leigh's (1989) index of reliability, which yielded an index value of 0.91 indicating a high degree of reliability (Rust and Cooil, 1994).

Competitive aggressiveness. As noted above, our definition of competitive aggressiveness accounts

for number of competitive actions carried out by a firm in a given year, as well as the speed/delay with which the firm responds to rivals' competitive actions. Therefore, we calculated the *number of actions* as the total number of competitive actions that a firm undertakes in a given year (Ferrier *et al.*, 1999; Smith *et al.*, 1997; Young *et al.*, 1996).

For each firm in the sample, we calculated *response speed/delay* as the annual average in the number of days elapsed between the dates of each competitive action carried out in a given year by, for example, the No. 1 firm and the dates of the competitive action carried out by the No. 2 firm that chronologically precede them. High scores indicate, for instance, that the No. 1 firm is slow to respond to its rival's competitive actions (more elapsed time between action and response); low scores indicate that the No. 1 firm is quick to respond (less elapsed time between action and response). However, whereas previous research measured response times within action–reaction dyads (e.g., Smith *et al.*, 1991), our measure accounts for cases where a firm carried out two or more successive moves before its rival responded to the attacker's series of actions (see Ferrier, 2000, 2001; Ferrier *et al.*, 1999). In such cases, we used the chronological midpoint in this series (i.e., uninterrupted sequence) of the firm's competitive actions to capture elapsed time.

Finally, we calculated *competitive aggressiveness* as the firm's number of competitive actions divided by its average response speed/delay. High scores suggest that firms are competitively aggressive, as

Table 1. Action Types, Coding Keywords, and Example Headlines

Action type	Content analysis coding scheme	Examples of headlines
Pricing actions	<i>Keywords:</i> price, rate, discount, rebate	FedEx offers rate discounts on 2nd day short haul service
Marketing actions	<i>Keywords:</i> ads, spot, promote, distribute, campaign	United launched ads to counter American's campaign
Product actions	<i>Keywords:</i> introduce, launch, unveil, rolls out [with product or service]	Merck introduces Mevacor, to reduce serum cholesterol
Capacity actions	<i>Keywords:</i> raises, boosts, increases [with capacity or output]	Mobil raises lube stock capacity 10% via recent improvements
Service actions	<i>Keywords:</i> service, warrantee, guarantee, financing	Sears offers KidVantage frequent buyer warrantee program
Signaling actions	<i>Keywords:</i> vows, promises, says, seeks, aims	Reebok's Fireman vows to retake lead in athletic shoe market by end 1995

they carry out more total actions in a fast pace. Low scores indicate that firms carry out few total actions and respond slowly.

Independent Variables

Financial distress. Here, we used Altman's Z-score, which is a weighted composite of financial indicators relating to profitability, revenue, slack resources, and market return (Altman, 1968; Chakravarthy, 1986).² Although this is a common predictor of bankruptcy, it is also an important multidimensional measure of strategic performance (Chakravarthy, 1986). High Z-scores indicate a condition of strong financial health; low Z-scores indicate financial distress. We used the lagged, reverse-coded Altman's Z-score (i.e., $-1 \times Z$) as our measure of financial distress in our analyses. Data for this measure were collected from *Compustat*.

Market share erosion. Consistent with prior research, we calculated market share erosion as the negative year-to-year change in percent of firm sales to total industry sales in the focal firm's primary industry (Caves and Ghemawat, 1992; Ferrier, 2001; Ferrier *et al.*, 1999). This measure also accounts for market share gain, measured as the positive annual change in market share. Data for this measure were also collected from *Compustat* and *Ward's Business Directory*.

Although our sample consists of market share leaders (i.e., No. 1 or 2) within their respective industries, it exhibits remarkable variation with respect to both financial distress and market share erosion. More specifically, of the 273 firm-years included in the analyses, we found Z-scores greater than 3.0 for 127 firm-years (54% of sample) and Z-scores less than 3.0 for 107 firm-years (46% of sample). Prior research suggests that Z-scores of 3.0 or lower signify cause for concern, whereas Z-scores of less than 1.8 suggest serious financial crisis.

Similarly, we found that market-leading firm in our sample experienced a loss of market share (avg. loss = 1.3 points, s.d. = 8.4 points) in 111 firm-years (47% of sample) and gained market share (avg. gain = 1.3 points, s.d. = 6.6 points) in 123 firm-years (53% of sample).

Top management team heterogeneity. We used Wiersema and Bantel's (1992) approach of measuring educational and functional heterogeneity to develop a two-dimensional composite measure of

TMT management team heterogeneity. Accordingly, we defined the TMT as those individuals at the highest level of management—the chairman, vice chairmen, CEO, president, CFO, and COO—as well as the next highest level identified by *Dun and Bradstreet Reference Book of Corporate Managements* (1987–93 volumes).

To calculate TMT educational heterogeneity, we used Blau's (1977) index of heterogeneity across six different degree categories: business, science, liberal arts, engineering, law, and other. High scores suggest that the TMT is educationally diverse. We also used Blau's index to calculate functional background heterogeneity, whereby functional experience was categorized as engineering/R&D, finance/accounting, legal, human resources management, manufacturing, logistics, purchasing, public relations, and general management. High scores indicate that the TMT is composed of members with different functional backgrounds.

Consistent with prior research, we calculated overall TMT heterogeneity as the sum of the two standardized individual TMT heterogeneity measures noted above (see Amazon *et al.* (1997), for the conceptual arguments related to this composite measure; see Ferrier (2001), for an empirical application). High scores for this composite TMT measure indicate that the TMT possesses, overall, a diverse set of experiences, cognitive perspectives, and backgrounds. Low composite TMT scores suggest that the TMT's members are similar with respect to experience and background.

Competition-buffered industry environment. This concept is represented as three distinct common measures of industry growth and structure. We calculated a simple *industry growth* rate for each industry-year (year t) as the percentage change in industry gross sales from that of the previous year (year $t - 1$) for each 4-digit SIC industry. We used a Herfindahl Index for *industry concentration* for each 4-digit SIC industry for each year over the 7-year time panel. Because different industries are likely to possess different entry barrier characteristics (Mueller, 1986), we used a composite measure of each industry's *barriers to entry*. This was calculated as the sum of the year-by-year pooled industry means for investments in R&D, selling activities, and total assets (Ferrier *et al.*, 1999; Young *et al.*, 1996).

Data used to calculate these industry context measures were collected from *Compustat* and *Ward's Business Directory*.

Control Variable

TMT size. To control for the influence of TMT size on decision-making processes, we included it as a control variable in the analyses. Consistent with the definition of the TMT above, this was represented as the simple count of TMT members in each firm-year.

Table 2 reports the descriptive statistics and correlation coefficients among the variables included in the analysis.

ANALYSIS AND RESULTS

Because our data set is a cross-sectional time panel, we used the PROC MIXED regression technique in SAS, which allowed us to model the linear regression error term of each model into separate components that account for serial correlation and random firm-level effects (Wolfinger *et al.*, 1991). We report the estimates for both firm random error and serial correlation (AR1) for each model in Table 3.

Table 3 reports the results for three separate models.³ Linear regression model 1 reports the direct effects of each of the variables of interest, whereas moderated hierarchical regression models 2 and 3 report the interaction terms. Both interaction models exhibit a predictive and explanatory efficiency over and above that of the less restricted model, as evidenced by a

significant change in $-2 \log$ likelihood (tested by a significant chi-square value) relative to the direct effects of model 1. However, although the t -values for the interaction terms reported for models 2 and 3 are meaningful, the t -values for the direct effects variables that comprise the interaction terms are influenced by the linear transformations (i.e., interactions) of those variables (Cohen, 1978). Therefore, we do not report the significance levels for the direct effects variables in models 2 and 3 in order to discourage unjustified interpretation of those variables.

As argued above, we developed a set of competing hypotheses that facilitate a critical test of the relationship between performance distress and competitive aggressiveness. In particular, Hypotheses 1a and 1b predicted that performance distress and market share decline would be positively related to competitive aggressiveness; whereas Hypotheses 2a and 2b predicted a negative relationship between these dimensions of performance distress and competitive aggressiveness. Upon examination of the coefficients for financial distress ($b = -0.137$, $p < 0.01$) and market share erosion ($b = -9.807$, $p < 0.05$) in model 1, our results support the negative relationship between performance distress and competitive aggressiveness and support Hypotheses 2a and 2b.

We also found support for Hypotheses 3a and 3b, as indicated by the negative coefficient for the financial distress \times TMT heterogeneity interaction term in model 2 ($b = -0.254$, $p < 0.001$), as well as the negative coefficient for the market share erosion \times TMT heterogeneity interaction term in model 3 ($b = -15.989$, $p < 0.05$). These results suggest that performance-distressed firms with heterogeneous TMTs are less likely to compete

Table 2. Descriptive Statistics and Pearson Correlation Coefficients (N = 234)

Variable	Mean	s.d.	1	2	3	4	5	6	7
1. Financial distress	-4.211	3.608							
2. Market share erosion ^a	0.141	2.014	<i>0.182</i>						
3. Competitive aggressiveness	0.624	1.961	<i>-0.199</i>	<i>-0.182</i>					
4. TMT heterogeneity	1.487	0.310	<i>-0.222</i>	<i>-0.217</i>	0.097				
5. Industry growth	0.199	0.322	<i>-0.065</i>	0.025	0.024	-0.035			
6. Industry concentration	0.211	0.146	0.030	<i>0.140</i>	-0.051	0.048	0.115		
7. Barriers to entry ^b	2674	3593	<i>0.154</i>	0.054	0.035	-0.024	0.025	<i>0.136</i>	
8. TMT size	5.474	2.101	<i>-0.024</i>	0.067	-0.033	0.064	<i>0.195</i>	0.027	<i>0.334</i>

Notes: Correlation coefficients in italics are significant at the $p < 0.05$ level or better.

^aMeasured as market share percentage points.

^bNon-standardized descriptive statistics reported.

Table 3. Regression Results: Determinants of Competitive Aggressiveness (N = 234)^a

	Model 1		Model 2		Model 3	
	Estimate	Std. error	Estimate	Std. error	Estimate	Std. error
Financial distress	-0.137	0.061**	-0.042	0.050	0.013	0.065
Market share erosion	-9.807	5.495*	-1.825	3.126	-17.984	7.201
TMT heterogeneity	0.152	0.511	-0.708	0.312	0.390	0.582
Industry growth	-0.054	0.280	0.054	0.175	-0.106	0.347
Industry concentration	-0.149	1.783	0.534	1.439	0.008	1.859
Barriers to entry ^b	0.252	0.293	0.648	0.306	0.216	0.298
TMT size	-0.174	0.089*	-0.095	0.055	-0.204	0.106
Intercept	0.946	1.049	0.817	0.749	0.718	1.153
<i>Interaction terms</i>						
Financial distress × TMT heterogeneity			-0.254	0.018***		
Financial distress × Ind. growth			-0.062	0.040†		
Financial distress × Ind. concentration			0.649	0.122***		
Financial distress × barriers to entry			0.361	0.152**		
Market share erosion × TMT heterogeneity					-15.989	9.506*
Market share erosion × Ind. growth					3.936	27.418
Market share erosion × Ind. Concentration					57.959	41.134†
Market share erosion × barriers to entry					0.005	0.197
Model -2log likelihood	746.6 ^c ***		588.4 ^d ***		643.7 ^d ***	
Est. of firm random error	0.000		0.000		0.001	
AR(1)	0.747***		0.908***		0.715***	

^a Values are non-standardized coefficients accompanied by standard errors. One-tailed tests were used, which are directionally predicted in the hypotheses: † $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

^b Standardized measure of variable was used in analyses.

^c Significance for -2log likelihood obtained by comparing values to those obtained from a nested model containing only a constant.

^d Significance for -2log likelihood represents significant improvement of fit over Model 1.

aggressively than performance-distressed firms with homogeneous TMTs.

Hypotheses 4a and 4b predicted that performance distress and market share erosion, respectively, would be negatively related to competitive aggressiveness for firms competing in competition-buffered industries. As reported in models 2 and 3, the interaction terms for industry growth, industry concentration, and barriers to entry yielded a mix of supporting and contrary results. In particular, Hypothesis 4a received partial and marginal support as only the financial distress × industry growth interaction term in model 2 ($b = -0.062$, $p < 0.10$) was in the expected direction. This interaction term was not significant in model 3.

However, contrary to expectations, the coefficients associated with the interaction terms of the other dimensions that characterize the extent to which industries 'buffered' from competition do not support either Hypothesis 4a or 4b. More specifically, the coefficients for the financial distress × industry concentration interaction term in model 2 ($b = 0.649$, $p < 0.001$) and the market share erosion × industry concentration interaction

term reported in model 3 ($b = 57.959$, $p < 0.10$) yield results opposite of expectations. Further, the financial distress × barriers to entry interaction term ($b = 0.361$, $p < 0.01$) also yielded results opposite to that predicted in Hypothesis 4a. Overall, these results suggest that performance-distressed firms that compete in competition-buffered industries are *more* likely to compete aggressively than high-performing, successful firms competing in similarly protected industries.

DISCUSSION AND CONCLUSIONS

As noted above, our findings related to the direct effect between performance distress and competitive behavior are consistent with the threat-rigidity view in general, and the results from prior research—that which measures *actual* competitive behavior—in particular (e.g., Ferrier, 2001; Hambrick *et al.*, 1996; Lant *et al.*, 1992). We found that poor-performing firms were less likely to exhibit aggressive competitive behavior. More specifically,

these firms carried out fewer total actions and were slower to respond to (and initiate) competitive attacks and challenges than high-performing firms. Thus, we believe that our focus on competitive action represents a significant step toward reconciling the conflicting views highlighted above.

However, our findings relating to the moderated effects of the performance–strategy relationship constitute one of the first empirical efforts to reconcile the current debate by exploring organizational and environmental contingencies. In particular, we found that although performance-distressed firms find themselves under pressure to improve performance, those managed by heterogeneous TMTs become more paralyzed than performance-distressed firms managed by homogeneous TMTs. Consistent with prior research, heterogeneous TMTs are more likely to debate and less likely to develop a consensus about the causes of and strategic responses to poor performance (Knight *et al.*, 1999; Simons *et al.*, 2000). Consequently, under crisis, heterogeneous TMTs are less capable of quickly deciding on and implementing a sufficient number of competitive actions and responses than homogeneous TMTs (Ferrier, 2001).

However, our findings involving the characteristics of the industry environment (as moderators) were generally opposite of expectations. More specifically, we reasoned that market-leading firms (performance-distressed or not) that competed in competition-buffered industries would be *less* motivated to compete vigorously than firms that competed in industries that were mature or declining, fragmented, and were prone to attacks by new entrants. We expected that this orientation toward complacency stemmed from the fact that managers of market-leading firms believed that performance distress was perhaps a temporary phenomenon and not generally attributed to the competitive pressures of the marketplace. Instead, we found that both high levels of industry concentration and barriers to entry strongly motivated managers of performance-distressed firms to compete *more* as opposed to less aggressively.

In concentrated industries, market-leading firms (Nos. 1 and 2) are necessarily more ‘dominant’ in terms of market share held vis-à-vis lower ranked rivals than market-leading firms in fragmented industries. Similarly, given high barriers to entry, market-leading firms are not likely to be attacked

by new entrants. Consequently, managers of performance-distressed market-leading firms in competition-buffered industries seem to make both internal and external attributions related to their distressed state. On the one hand, they know they should be doing better, recognizing perhaps that past strategies have not yielded expected results. On the other hand, they adopt the view that their direct competitors—particularly smaller firms—are eating their lunch, so to speak. This, in turn, may lead them to adopt a ‘competitor orientation’ that represents a shift in the emphasis of their strategy toward customers and especially rivals (Armstrong and Collopy, 1996). Either way, crisis begets aggressive action.

High rates of industry growth, however, reinforced manager’s complacency orientation. Consistent with our predictions, performance-distressed firms competing in growth industries were far more docile than performance-distressed firms in low-growth or declining industries. Apparently, managers perceive growth as room-for-all, thereby dampening the motivation to take aggressive corrective strategic action following poor performance.

Overall, our findings relating to the impact of industry context on strategy suggest that managers perceive, process, and act upon signals within the environmental context differently, as suggested in recent research (Chattopadhyay *et al.*, 2001). Future research could perhaps combine our emphasis on actual competitive behavior with a managerial cognition approach to flesh out the attributions and motivations associated with decline and subsequent competitive behavior in a more fine-grained and focused manner.

Our study contributes to the advancement of strategy theory in two important respects. Although different theoretical optics have indeed advanced the debate as to the impact of performance on firm behavior, the literature has heretofore lacked a point of integration and convergence between these disparate perspectives. By incorporating a contingency perspective, our study represents a new effort toward the untangling of the complex ways that *ex ante* performance motivates competitive behavior. Importantly, we find that depending on key factors relating to the firm’s organizational and environmental context, *either* of the competing theories highlighted above is valid.

Second, our study helps to bridge the gap between theory development and empirical testing of the performance–competitive behavior relationship by using constructs and measures that had not been previously combined. As such, our study is among the first to empirically test the direct and moderating relationships between financial distress (Z-score), market share erosion, elements of the firm's organizational and environmental context, and a firm's *actual* competitive behavior.

Managerial Implications

Our results also offer new insight for managers regarding the consequences of prior success or decline. For example, there is little doubt that managers of distressed firms face pressures to improve performance. However, consistent with the predictions of threat–rigidity theory, for example, we find broad support for the notion that performance-distressed firms are likely to become competitively docile, as they focus inwardly toward financial and efficiency concerns (D'Aveni, 1989). Yet, our findings suggest that managers should consider how both the industry and organizational context impact performance-distressed firms' ability and motivation to compete aggressively. For instance, TMT heterogeneity reinforces and magnifies the general threat–rigidity response. Indeed, as Jackson (1992) argues, heterogeneous teams better at creating, homogeneous teams better at deciding. So, when confronted with a performance-distressed competitor, for example, managers should base their expectations of the rival's competitive behavior, in part, on whether the TMT has the capability to quickly and confidently decide on a set of strategic responses while maintaining a focus on the market.

By contrast, important industry characteristics seem to negate the threat–rigidity response to poor performance. In other words, market-leading firms that experience poor performance while competing in competition-buffered industries—conditions that, for all intents and purposes, should favor *success*—are strongly motivated to compete aggressively in an attempt to facilitate a rebound. These findings are consistent with some discussion in the popular press. For example, it is the financially distressed airlines that 'create even greater havoc' by intensifying the competitive pressures within the industry (*Fortune*, March 23,

1992, p. 70). Indeed, the airlines industry may be characterized as being somewhat concentrated and having relatively high barriers to entry.

Limitations and Avenues for Future Research

Although this research advances our understanding, it also has limitations. First, we examined broadly defined characteristics of the industry and organizational context as potential moderators of past performance on competitive behavior. Accordingly, we opted for increased breadth, simplicity, and generalizability by selecting these general factors in lieu of an in-depth treatment of any one particular context area or domain. Future research should fruitfully examine how either industry structure and/or firm characteristics moderate the effects of financial condition on competitive behavior in a more fine-grained and detailed research design.

Second, our research sample includes large, market-leading firms. Further, firms in our sample are not broadly diversified. One obvious extension would be to study the relationship between past performance and competitive behavior in smaller firms. Or, future studies could explore the competitive relationship between small, niche-playing firms and large, distressed firms. Also, performance distress may not be uniform across all of a diversified firm's geographic or business units. Future studies could explore, for example, the extent to which business unit performance impacts strategic maneuvering and resource diversion (e.g., McGrath *et al.*, 1998) or purposeful multimarket contact (e.g., Gimeno, this issue).

Third, concentrating on a broad set of competitive actions limits our ability to examine specific kinds of competitive behavior among rivals (such as pricing behavior) in greater detail. This would also be another direction in which to extend the research. Another natural extension would be to address a greater variety of contingency variables. Some possible variables to consider include indicators of strategic turnaround and corporate governance. Furthermore, future research might examine non-linear relationships between performance and competitive behavior.

In conclusion, our findings suggest that a firm's past performance is an important predictor of its competitive behavior. However, our results also suggest that the relationship is very complex and

depends, in part, on important organization- and industry-level conditions.

NOTES

1. An earlier version of this paper was presented at the Academy of Management Annual Meeting, August 1998, Business Policy and Strategy Division, San Diego, CA.
2. Altman's Z-score is calculated as follows: $Z = 0.012X_1 + 0.014X_2 + 0.033X_3 + 0.006X_4 + 0.999X_5$, where, X_1 = Working Capital/Total Assets; X_2 = Retained Earnings/Total Assets; X_3 = Earning Before Interest and Tax/Total Assets; X_4 = Market Value of Equity/Book Value of Liabilities; and X_5 = Sales/Total Assets.
3. We also ran each of these models using the major components of Altman's Z-score: ROA, working capital to total assets, and equity to debt. In each case, at least two Z-score components produced results consistent with those reported in Table 3. We also ran these models using the two individual components of the composite TMT heterogeneity measure: functional heterogeneity and educational heterogeneity. In each model, at least one of the interaction terms involving functional and educational heterogeneity was significant and consistent with our reported results.

REFERENCES

- Altman EI. 1968. Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *Journal of Finance* 589–609.
- Amason A. 1996. Distinguishing the effects of functional and dysfunctional conflict on strategic decision making: resolving the paradox for top management teams. *Academy of Management Journal* 39: 123–148.
- Amason A, Shrader R, Thomson G. 1997. Relative newness, top management teams, and new venture performance: Contingencies in new ventures. *Paper Presented at the Annual Academy of Management Meeting*, Boston, MA.
- Armstrong JS, Collopy F. 1996. Competitor orientation: effects of objectives and information on managerial decisions and profitability. *Journal of Marketing Research*, May: 188–199.
- Audia P, Locke E, Smith KG. 2000. The paradox of success: An archival and laboratory study of strategic persistence following radical environmental change. *Academy of Management Journal* 43: 837–853.
- Bagozzi RP, Phillips LW. 1982. Representing and testing organizational theories: A holistic construal. *Administrative Science Quarterly* 17: 459–489.
- Barr P, Stimpert L, Huff A. 1992. Cognitive change, strategic action, and organizational renewal. *Strategic Management Journal* 13: 15–36.
- Baum JAC, Dutton J. 1996. The embeddedness of strategy. In Baum JAC, Dutton A (eds). *Advances in Strategic Management*, Vol. 13, JAI Press: CO, 1–15.
- Blau PM. 1977. *Inequality and Heterogeneity*. Free Press: New York.
- Bowman EH. 1982. Risk seeking by troubled firms. *Sloan Management Review* 23: 33–42.
- Brander JA, Lewis TR. 1986. Oligopoly and financial structure. *American Economic Review* 76: 956–970.
- Caves R, Fortunato M, Ghemawat P. 1984. The decline of dominant firms: 1905–1929. *The Quarterly Journal of Economics* August 99: 523–546.
- Caves, R, Ghemawat P. 1992. Identifying mobility barriers. *Strategic Management Journal* 13: 1–12.
- Caves, R., Porter, M. 1978. Market structure, oligopoly, and stability of market shares. *Journal of Industrial Economics* 26: 289–313.
- Chakravarthy BS. 1986. Measuring strategic performance. *Strategic Management Journal* 437–458.
- Chattopadhyay P, Glick W, Huber G. 2001. Organizational action in response to threats and opportunities. *Academy of Management Journal* 44: 937–955.
- Chen M.-J. 1996. Competitor analysis and interfirm rivalry: toward a theoretical integration. *Academy of Management Review* 21: 100–134.
- Chen M.-J, Hambrick DC. 1995. Speed, stealth, and selective attack: how small firms differ from large firms in competitive behavior. *Academy of Management Journal* 38: 453–482.
- Chen M, Smith K, Grimm C. 1992. Action characteristics as predictors of competitive responses. *Management Science* 38: 439–455.
- Chevalier J. 1995. Do LBO supermarkets charge more? An empirical analysis of the effects of LBOs on supermarket pricing. *Journal of Finance* 50: 1095–1112.
- Child J. 1972. Organizational structure, environment and performance: the role of strategic choice. *Sociology* 6: 1–22.
- Cohen J. 1978. Partialled products are interactions; partialled powers are curve components. *Psychological Bulletin* 85: 858–866.
- Comanor W, Wilson T. 1974. *Advertising and Market Power*. Harvard University Press: Cambridge, MA.
- Covin J, Slevin D. 1991. A conceptual model of entrepreneurship as firm behavior. *Entrepreneurship Theory and Practice* Fall 16: 7–25.
- Cyert R, March J. 1963. *A Behavioral Theory of the Firm*. Prentice-Hall: Englewood Cliffs, NJ.
- Daily CM. 1994. Bankruptcy in strategic studies: past and present. *Journal of Management* 20: 263–295.
- D'Aveni RA. 1989. The aftermath of organizational decline: a longitudinal study of the strategic and managerial characteristics of declining firms. *Academy of Management Journal* 32: 577–605.
- D'Aveni RA. 1994. *Hypercompetition: Managing the Dynamics of Strategic Maneuvering*. The Free Press: New York.
- D'Aveni RA, MacMillan I. 1990. Crisis and the content of managerial communications: A study of the focus of attention of top managers in surviving and failing firms. *Administrative Science Quarterly* 35: 634–657.

- Dess GG, Beard DW. 1984. Dimensions of organizational task environments. *Administrative Science Quarterly* **29**: 52–73.
- Ferrier W. 1997. 'Tough talk' and market leaders: the role of overt signaling and reputation-building behaviors in sustaining industry dominance. *Corporate Reputation Review* Summer **1**: 98–102.
- Ferrier W. 2000. Playing to win: the role of competitive disruption and aggressiveness. In *Winning Strategies in a Deconstructing World*, Bresser R, Hitt M, Heuskel D, Nixon R (eds). Wiley: New York; 163–189.
- Ferrier W. 2001. Navigating the competitive landscape: the drivers and consequences of competitive aggressiveness. *Academy of Management Journal* **44**: 858–877.
- Ferrier W, Lee H. (forthcoming). Strategic aggressiveness, variation, and surprise: how the sequential pattern of competitive rivalry influences stock market returns. *Journal of Managerial Issues*.
- Ferrier W, Smith K, Grimm C. 1999. The role of competitive action in market share erosion and industry dethronement: a study of industry leaders and challenger. *Academy of Management Journal* **42**: 372–388.
- Fiengenbaum A. 1990. Prospect theory and the risk–return relationship. *Journal of Economic Behavior and Organization* **14**: 187–203.
- Fiengenbaum A, Thomas H. 1988. Attitudes towards risk and the risk return paradox: Prospect theory explanations. *Academy of Management Journal* **31**: 85–106.
- Finkelstein S, Hambrick DC. 1996. *Strategic Leadership: Top Executives and Their Effects on Organizations*. West: Minneapolis/St Paul.
- Fombrun C, Ginsberg A. 1990. Shifting gears: enabling change in corporate aggressiveness. *Strategic Management Journal* **11**: 297–308.
- Fombrun C, Shanley M. 1990. What's in a name: reputation building and corporate strategy. *Academy of Management Journal* **33**: 233–258.
- Furman J, McGahan A. 2002. Turnarounds. *Managerial and Decision Economics* **23**: 283–300.
- Gaskins D. 1971. Dynamic limit pricing: optimal pricing under threat of entry. *Journal of Economic Theory* **3**: 306–322.
- Gimeno J. 2002. The performance effects of unintended and purposeful multimarket contact. *Managerial and Decision Economics* **23**: 209–224.
- Ginsberg A. 1988. Measuring and modeling changes in strategy: theoretical foundations and empirical directions. *Strategic Management Journal* **9**: 559–575.
- Grimm CM, Smith KG. 1997. *Strategy as Action: Industry Rivalry and Coordination*. Southwestern College Publishing: Cincinnati, OH.
- Hambrick DC, Cho TS, Chen M.-J. 1996. Action-making and response-taking as executive choice: how competitive behaviors of firms are influenced by top management team heterogeneity. *Administrative Science Quarterly* **41**: 659–684.
- Hambrick DC, D'Aveni M. 1998. Large corporate failures as downward spirals. *Administrative Science Quarterly* **33**: 1–23.
- Hambrick EC, Mason PA. 1984. Upper-echelons: The organization as a reflection of its top managers. *Academy of Management Review* **9**: 193–206.
- Harper D. 1994. A new approach to modeling endogenous learning processes in economic theory. In *Advances in Austrian Economics*, Boettke PJ, Rizzo MJ (eds). JAI Press; Grenubri CT; Vol. 1, 49–79.
- Jackson S. 1992. Consequence of group composition for the interpersonal dynamics of strategic issue processing. In *Advances in Strategic Management*, Shrivstava P, Huff A, and Dutton J. (eds). JAI Press: Greenwich, CT; 345–382.
- Janis IL. 1972. *Victims of Groupthink*. Houghton-Mifflin: Boston.
- Jauch LR, Osborn RN, Martin TN. 1980. Structured content analysis of cases: complementary method for organizational research. *Academy of Management Review* **5**: 517–526.
- Kahneman D, Tversky A. 1979. Prospect theory: an analysis of decision under risk. *Econometrica* **47**: 262–291.
- Keats B, Hitt M. 1988. A causal model of linkages among environmental dimensions, macro organizational characteristics, and performance. *Academy of Management Journal* **31**: 570–598.
- Kiesler S, Sproull L. 1982. Managerial response to changing environments: perspectives on problem sensing form social cognition. *Administrative Science Quarterly* **27**: 548–570.
- Kirzner I. 1973. *Competition and Entrepreneurship*. The University of Chicago Press: Chicago.
- Knight D, Pearce C, Smith KG, Olian J, Sims H., Smith KA, Flood P. 1999. Top management team diversity, group process, and strategic consensus. *Strategic Management Journal* **20**: 445–465.
- Kuhn T. 1968. *The Structure of Scientific Revolutions*. The University of Chicago Press: Chicago.
- Lant TK, Milliken FJ, Batra B. 1992. The role of managerial learning and interpretation in strategic persistence: an empirical exploration. *Strategic Management Journal* **13**: 585–608.
- LeBlanc G. 1992. Signaling strength: limit pricing and predatory pricing. *Rand Journal of Economics* **23**: 493–506.
- Lee H, Smith KG, Grimm C, Schomburg A. 2000. Timing, order, and durability of new product advantages with imitation. *Strategic Management Journal* **21**: 23–30.
- Lumpkin GT, Dess GG. 1996. Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review* **21**: 135–172.
- McGrath R, Chen M.-J, MacMillan I. 1998. Multi-market maneuvering in uncertain spheres of influence: Resource diversion strategies. *Academy of Management Review* **23**: 724–740.
- McKinley W. 1993. Organizational decline and adaptation: theoretical controversies. *Organization Science* **4**: 1–9.
- Maksimovic V, Zechner J. 1991. Debt, agency costs, and industry equilibrium. *Journal of Finance* **46**: 1619–1643.

- Miller D. 1990. *The Icarus Paradox*. Harper: New York.
- Miller D, Chen M.-J. 1994. Sources and consequences of competitive inertia: a study of the US airline industry. *Administrative Science Quarterly* **39**: 1–23.
- Mitroff II, Emshoff JR. 1979. On strategic assumption-making: a dialectical approach to policy and planning. *Academy of Management Review* **4**: 1–12.
- Mueller D. 1986. *Profits in the Long Run*. Cambridge University Press: Cambridge, MA.
- Nelson ER, Winter SG. 1982. *An Evolutionary Theory of Economic Change*. Harvard University Press: Cambridge, MA.
- Perreault WD, Leigh LE. 1989. Reliability of nominal data based on qualitative judgments. *Journal of Marketing Research* **26**: 135–148.
- Porter ME. 1980. *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. The Free Press: New York.
- Rust RT, Coolil B. 1994. Reliability measures for qualitative data: theory and implications. *Journal of Marketing Research* **XXXI**: 1–14.
- Rumelt RP. 1974. *Strategy, Structure and Economic Performance*. Harvard University Press: Cambridge, MA.
- Scherer FM, Ross D. 1990. *Industrial Market Structure and Economic Performance* (3rd edn). Houghton Mifflin Company: Boston.
- Schmalensee R. 1983. Advertising and entry deterrence. *Journal of Political Economy* **91**: 636–653.
- Schumpeter JA. 1950. *Capitalism, Socialism, and Democracy* (3rd edn). Harper: New York.
- Simons T, Pelled L, Smith KA. 2000. Making use of difference: diversity, debate, and decision comprehensiveness in top management teams. *Academy of Management Journal* **42**: 662–673.
- Smart C, Vertinsky I. 1984. Strategy and the environment: A study of corporate responses to crises. *Strategic Management Journal* **5**: 199–214.
- Smith K, Ferrier W, Ndofofor H. 2001. Competitive dynamics research: Critique and future directions. In *Handbook of Strategic Management*, Hitt M, Freeman RE, Harrison J (eds). Blackwell Publishers: London; 315–361.
- Smith KG, Grimm CM, Gannon MJ. 1992. *Dynamics of Competitive Strategy*. Sage: Newbury Park, CA.
- Smith KG, Grimm CM, Gannon MJ, Chen M.-J. 1991. Organizational information processing, competitive responses, and performance in the US domestic airline industry. *Academy of Management Journal* **34**: 60–85.
- Smith KG, Grimm CM, Wally S, Young G. 1997. Strategic groups and rivalrous behavior: toward a reconciliation. *Strategic Management Journal* **18**: 149–158.
- Smith KG, Smith KA, Olian J, Sims H, O'Bannon D, Scully J. 1994. Top management team demography and process: the role of social integration and communication. *Administrative Science Quarterly* **39**: 412–438.
- Smith KG, Young G, Becerra M, Grimm C. 1996. An assessment of the validity of competitive dynamics research. *Best Paper Proceedings*, Academy of Management.
- Spence M. 1977. Entry, capacity, investment, and oligopolistic pricing. *Bell Journal of Economics* **8**: 534–544.
- Starbuck W, Greve A, Hedburg B. 1978. Responding to crises. *Journal of Business Administration* **9**: 111–137.
- Staw BM, Sandelands LE, Dutton JE. 1981. Threat-rigidity effects in organizational behavior: a multi-level analysis. *Administrative Science Quarterly* **26**: 501–524.
- Sutcliffe K. 1994. What executives notice: accurate perceptions in top management teams. *Academy of Management Journal* **37**: 1360–1378.
- Thompson JD. 1967. *Organizations in Action*. McGraw-Hill: New York.
- Tversky A, Kahneman D. 1981. The framing of decisions and the psychology of choice. *Science* **211**: 453–458.
- Weiss L, Pascoe G. 1983. The extent and permanence of market dominance. *Paper Presented at E.A.R.I.E. Meeting*, August.
- Wiersema MF, Bantel KA. 1992. Top management team demography and corporate strategic change. *Academy of Management Journal* **35**: 91–121.
- Wolfinger R, Tobias R, Sall J. 1991. Structuring calculations for mixed linear models. *Proceedings of the Statistical Computing Section*, American Statistical Association, Atlanta.
- Young G, Smith KG, Grimm CM. 1996. Antecedents of firm-level competitive activity and performance: Austrian and industrial organization perspectives. *Organization Science* **7**: 243–254.
- Young G, Smith KG, Grimm C, Simon D. 2000. Multimarket contact and resource dissimilarity: A competitive dynamics perspective. *Journal of Management* **26**: 1217–1236.
- Zajonc RB. 1966. *Social Psychology: an Experimental Approach*. Wadsworth: Belmont, CA.