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SPEED, STEALTH, AND SELECTIVE ATTACK: HOW SMALL FIRMS DIFFER FROM LARGE FIRMS IN COMPETITIVE BEHAVIOR

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This study examined how small firms differ in their competitive behaviors from their large rivals in an industry and explored the implications of differences for performance. Data on competitive moves and countermoves exchanged by major U.S. airlines supported the predicted differences. The small airlines more actively initiated competitive challenges and were speedy but low-key, even secretive, in executing their actions. They were also less likely and slower to respond when attacked and, contrary to expectations, their responses were more visible than those of their larger opponents. Deviations from group norms hurt performance for both the large and small firms.

Strategic management concerns the health and survival of firms, and the pressure on chances of survival in an industry is certainly greater for smaller firms than for their larger rivals (Aldrich & Auster, 1986; MacMillan, 1980). Therefore, a basic understanding of how organizational size influences competitive behavior is of paramount importance.

Although researchers concerned with organizational size have noted that what applies to large firms may not apply to small ones (Blau & Schoenherr, 1971; Pugh, Hickson, Hinings, & Turner, 1968), they have generally stopped short of investigating small and large firms engaged in intraindustry competition. In contrast, the literature on small business and military tactics offers abundant normative recommendations to small firms, which are generally advised to "avoid meeting giants head-on," "be flexible and move fast," and "retain competitive initiative by mounting guerrilla attacks" (e.g., Cohn & Lindberg, 1974; MacMillan, 1980). Unfortunately, these strategic prescriptions for underdogs generally have not been grounded in empirical findings.

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Strategy researchers have approached this issue by focusing on how low-market-share firms compete against their large rivals (Hambrick, MacMillan, & Day, 1982; MacMillan, Hambrick, & Day, 1982; Woo, 1983; Woo & Cooper, 1981, 1982). Challenging the prevalent wisdom that market share has an unequivocal and universally positive effect on profitability—an idea derived from the Profit Impact of Market Strategy (PIMS) findings (Boston Consulting Group, 1974; Gale, 1972; Henderson, 1979; Strategic Planning Institute, 1977)—some scholars have demonstrated two important findings: (1) low-share firms can be as effective as their high-share counterparts and (2) low-share firms require different competitive strategies to be successful.

In spite of the importance of this stream of research, it has focused on the content of strategy profiles, on such issues as degree of focus and niche-seeking strategies, as represented in aggregate operating statistics. A systematic study of how size shapes actual competitive interaction has yet to appear, nor have researchers made any attempt to explore process-based rather than content-based attributes of strategy. Consequently, the behavioral differences between the small and large firms competing in an industry and the means by which they build advantage via day-to-day competition, have been left unexplored.

This study explored the basic, yet unanswered, question of how relatively small firms within a given industry should act and react to prosper in a competitive arena. Specifically, we explored two related questions: How do small firms differ from their large rivals in their competitive behaviors? and Do the competitive behaviors associated with good business performance differ for small and large firms? It should be noted that, as in previous strategy research (cf. Summer, 1980) and macro organizational theory (cf. Miles, 1980), competitive behavior here refers to the evidence of firm-level strategic decisions and actions. We did not directly observe actual decision making or human behavior.

Using data on actual competitive engagements in the U.S. airline industry, this study examined differences between small and large airlines in two important attributes of competitive actions: propensity for action and action execution speed. We also examined the following aspects of competitive responses: responsiveness, response announcement speed, and response execution speed.

THEORETICAL BACKGROUND

Significance of Organizational Size

A firm can be considered small in two different but related ways—in terms of sheer organizational size or in terms of its industry market share. Though size and market share are conceptually different, empirically they are correlated. Of course, within an industry composed primarily of single-business firms, like the focal industry in this study, the two tend to correspond greatly.

Organization size has long been considered one of the most significant

contingency variables in macroorganizational studies (Kimberly, 1976), and its relationship with other important constructs, such as structure (Singh, 1986), has been widely examined. As a result, Hofer (1975) identified size as a critical contingency variable moderating the relationship between strategy and performance, and Smith, Guthrie, and Chen (1989) supported this idea empirically. In addition, size has been shown to affect such variables as the probability of change in core features (Kelly & Amburgey, 1991), R&D expenditures (Cohen & Klepper, 1993), and innovation (Acs & Audretsch, 1988; Hitt, Hoskisson, & Ireland, 1990).

Large size has been seen as giving a firm such advantages as economies of scale, experience, brand name recognition, and market power (Hambrick et al., 1982; Woo & Cooper, 1981, 1982). Conversely, smallness has been credited with increasing flexibility in production (Fiegenbaum & Karnani, 1991) and price (MacMillan et al., 1982; Tellis, 1989) and with enhancing speed (Katz, 1970) and risk-seeking behavior (Hitt, Hoskisson, & Harrison, 1991; Woo, 1987). In addition, Bloom and Kotler (1975) argued that small competitors can initiate certain types of attacks against larger opponents, such as private antitrust suits, that larger companies cannot generally use. Cooper, Willard, and Woo (1986) provided further evidence of the effectiveness of this kind of competitive device.

Market share has long been identified as one of the most important contingency variables affecting a firm's strategy and the relationship between its strategy and performance (Ginsberg & Venkatraman, 1985; Hofer, 1975; Prescott, Kohli, & Venkatraman, 1986). Both the Boston Consulting Group (1974) and PIMS (1977) studies pointed to market share as a determinant of profitability. In contrast, Hamermesh, Anderson, and Harris (1978) suggested some successful low-share strategies, such as creative segmentation and targeted R&D. Empirically, Woo and Cooper (1981, 1982), using the PIMS database, established the existence of effective low-share businesses and identified the competitive strategies contributing to their success, which included a selective focus on price and quality. Hambrick and colleagues (1982) examined strategic attributes for both high- and low-share businesses using the PIMS database, finding that low-share businesses tended to have narrower domains and to be less vertically integrated. In a companion study, MacMillan and colleagues (1982) suggested such profitable low-share strategies as "going for the crumbs" (Katz, 1970).

The following ideas seem to emerge from the research outlined above: small firms in an industry can be as successful as their large rivals; however, their success is determined mainly by the competitive strategies they employ; and different strategies are required for small firms to compete effectively against their larger rivals in an industry.

However, in examining how small firms compete, previous research has focused predominantly on the content of their strategic profiles, such as selective focus and niche-seeking strategy. Instead of studying the actual strategic competitive behaviors of firms, researchers have examined organizational states, as represented by cross-sectional or year-end financial or

operational statistics (Harrigan, 1983). Although this approach provides a general sense of a firm's strategic posture, researchers adopting it run the risk of assuming that each firm pursues its own strategic objectives independent of its competitors' objectives.

In reality, competition is a dynamic process by which market participants engage each other through a series of moves and countermoves. As Porter noted, "A central characteristic of competition is that firms are mutually dependent . . . the outcome of a competitive move by one firm depends at least to some extent on the reactions of its rivals" (1980: 88). Thus, if researchers are ever to understand how small firms achieve competitive success, they must look in detail at how such firms fight their day-to-day battles and how they engage in the process of competition as well as at the aggregate content of their strategies.

Therefore, it is important to move the level of analysis to the basic building blocks of competitive strategy: actions and responses. Of course, in order to carry out a study at the firm level, it is necessary to aggregate data. However, a more meaningful representation of a firm's strategy is possible if the data aggregated are based on the actual competitive exchanges between firms, the approach taken in this study.

Competitive Interaction: Actions and Responses

Researchers have recently started to examine empirically factors that shape actual competition at an action-response level (Chen & MacMillan, 1992; Chen, Smith, & Grimm, 1992; MacMillan, McCaffery, & Van Wijk, 1985; Smith, Grimm, Gannon, & Chen, 1991). The action-response dyad is theoretically consequential because it is at this level that actual competitive engagement occurs—where competitors enact their strategies, secure new customers, test their opponents' mettle and capabilities, defend their reputations, and signal their toughness (Chen & MacMillan, 1992).

An action is defined in this study as a specific and detectable competitive move initiated by a firm, such as introducing a new product or entering a new market, that may lead to the firm's acquiring its rivals' market shares or reducing their anticipated returns. Similarly, a response is a specific and detectable countermove, prompted by an initial action, that a firm takes to defend or improve its share or profit position in its industry (Chen et al., 1992; Chen & MacMillan, 1992).

Previous research has identified some specific attributes of competitive actions and responses that are critical to understanding strategic interaction, competitive behaviors, and their performance implications. For instance, MacMillan and colleagues (1985) found that the greater the degree of an action's visibility, the faster the competitive response, but that the greater the organizational complexity of a responder, the more delayed the response. Chen and colleagues (1992) also found that strategic (as opposed to tactical) actions, and actions requiring lengthy execution time, tended to

reduce the number and speed of rivals' responses. Moreover, Chen and MacMillan (1992) demonstrated that competitive interactions are directly relevant to performance, as evidenced by market share gains by action initiators and early responders.

These previous studies have investigated either competitive interactions at the action-response level or competitive repertoires (Miller & Chen, 1994) at the firm level. Examining the differences in the competitive behaviors of different types, or classes, of firms within an industry is a logical extension of this research. As noted earlier, size is one of the most important classification, or contingency, variables in organization and strategy research. This research represents the first effort to study how two groups of firms within an industry, different in organizational size, vary in their competitive behaviors. Specifically, this study builds on earlier research by characterizing firms' competitive behaviors along attributes of actions and responses, to explore the important question of how small firms act and respond differently to competition than do their larger rivals in the industry.

Characterizing a Firm's Actions and Responses

In line with previous research on competitive interaction, this study examined the competitive behavior of firms in terms of important attributes of the actions and responses they undertake. The selected attributes reflect three key strategic constructs emerging from this research stream and emphasized in the strategy literature: propensity for competitive engagement, speed, and visibility.

Propensity for competitive engagement indicates how active and responsive a firm is in its arena. A firm that initiates many actions or always responds when actions are launched against it, or both, can be said to be highly competitively engaged. The significance of this concept can be traced to strategy researchers such as Hitt and colleagues (1991), Katz (1970), Lieberman and Montgomery (1988), MacMillan (1980, 1982), and Porter (1980, 1985). These authors have suggested that a firm should be both proactive and responsive in its environment in terms of technology and innovation, competition, customers, and so forth. Proactiveness involves taking the initiative in an effort to shape the environment to one's own advantage; responsiveness involves being adaptive to competitors' challenges. We used two specific attributes to capture this construct: Propensity for action, a firm's tendency to initiate competitive attacks, and responsiveness, its tendency to move against competitors' attacks.

Speed has emerged as one of the most important strategic constructs in recent strategy research (Eisenhardt, 1989, 1990; MacMillan et al., 1985; Smith & Grimm, 1991), and its practical significance has been very well recognized (Stalk, 1988; Vessey, 1991). This study examined speed on three fronts that have been demonstrated to be critical in competitive interaction: action execution speed, the length of time required to implement an action; response announcement speed, the length of time used to prepare and an-

nounce a response; and response execution speed, the length of time required to implement an announced response.

Visibility indicates the amount of information available about a competitive move, whether action or response. Highly visible moves tend to elicit competitive responses (Chen & Miller, 1994). This idea is rooted in the behavioral theory of the firm, which includes the assumption that time and attention are scarce resources and that managers will attend only to those moves that draw salient external attention, particularly the attention of key stakeholders (March & Olsen, 1976; Weick, 1976). Moreover, the coalitional composition of firms (Cyert & March, 1963) further suggests that the greater the attention drawn to a move, the more the marketplace is alerted to it and its implications. The social control is often so strong that a firm's decision to react or counterreact to visible moves may not be the result of preference "but . . . the result of demands, constraints, or forces that the social actor may have little control over or even cognizance of" (Pfeffer, 1982: 8). In this study, we examined the visibility of both actions and responses.

It should be noted that the attributes we selected for study were those for which objective indicators could be developed. Given the great sensitivity of information about competitive interaction, not all phenomena of potential interest are amenable to direct or reliable measurement (MacMillan et al., 1985). Thus, these seven attributes represent only a subset of all potentially important variables capturing competitive behavior.[1]

HYPOTHESES

The focus here is on the differences in competitive behaviors between small and large firms within an industry; in the context of our study "small" and "large" thus indicate relative rather than absolute size.[2] Although some of the arguments used to develop our hypotheses may be more relevant to absolute size, they are nonetheless also applicable to relative size. That is, firms that differ greatly in size will exhibit differences in competitive behavior—perhaps not of the magnitude of differences between absolutely large and small organizations, but significant differences nonetheless.

To develop our hypotheses, we drew from the work of various researchers who have made assertions or offered explanations about the tendencies of large and small firms and the issues each faces. These posited explanations may reasonably affect or cause the relationships we expected to observe, although we did not have the data to examine the underlying causal phenomena themselves. We did not attempt to test any of the suppositions

[1] This limitation explains, for example, why there is no parallel to response announcement speed on the action side—information on the length of time that an initiator takes to formulate and announce an action is generally not available.

[2] Most theorists would consider the large airlines in our sample to be absolutely large organizations; the small airlines, although much smaller, would not be considered absolutely small.

drawn from these prior studies, but rather, turned to some of these theories to develop arguments and predictions. We first consider the descriptive differences between small and large firms along several attributes of competitive actions and responses and then explore performance implications.

Competitive Actions

Propensity for action. Depending on their size compared to competitors, firms are likely to vary in their basic propensity to initiate competitive moves. Largeness is often associated with abundant slack resources (Singh, 1990), which may give a firm a greater ability to attack competitors. However, behaviorally, size is likely to breed complacency and inertia (Hannan & Freeman, 1984): managers of large firms may feel that they are rich and powerful enough to ignore their rivals (Cyert & March, 1963; Halberstam, 1986). Largeness is also associated with structural complexity and bureaucracy, which often protect firms from competition (Singh, 1990) and promote insularity (March, 1981). The institutional legitimacy that such firms enjoy also allows them to resist or defy pressure for adaptation (Aldrich & Auster, 1986; Meyer & Zucker, 1989). Finally, large firms tend to be risk-averse (Hitt et al., 1990), and they are more likely to be under regulatory and public scrutiny, which may limit their competitive leeway (Bloom & Kotler, 1975; Cooper et al., 1986; Fombrun & Shanley, 1990; Scherer, 1980).

Small firms, by contrast, are motivated to constantly seek threats and opportunities in order to survive and prosper (Aldrich & Auster, 1986; Katz, 1970). They have a greater need than their larger rivals to act aggressively in the market and to challenge the status quo by initiating competitive actions. Small firms also have some competitive devices at their disposal that are typically not available to their larger rivals (Bloom & Kotler, 1975; Cooper et al., 1986). Small firms are also noted for their use of guerrilla warfare tactics, constantly engaging in attacks to "retain the competitive initiative" (Harrigan, 1985; MacMillan, 1980).

Hypothesis 1a: Small firms will show a greater propensity for action than their larger rivals.

Action execution speed. Size is also likely to affect the way small firms behave when initiating competitive attacks. Structural simplicity and streamlined operations allow small firms to be flexible and to execute attacks quickly. In addition, small firms often focus on certain market niches (Carroll, 1984) and hence tend to make competitive moves in limited domains, enhancing swiftness. Strategically, they may have a greater need than their larger rivals to surprise their competitors and maximize market impact via rapid execution. Therefore, the competitive moves small firms initiate often resemble guerrilla attacks in their rapidity of execution and their tendency to prevent wars of attrition, which require substantial resources and a prolonged period of confrontation (Harrigan, 1985; MacMillan, 1980).

In contrast, large firms are noted for a high degree of structural complexity and bureaucracy (Mintzberg, 1979), which will constrain their infor-

mation-processing capacity (Galbraith, 1977) and the speed of their competitive activity (Smith et al., 1991).

Hypothesis 1b: Small firms will execute actions faster than large firms.

Action visibility. Another essential component of guerrilla tactics is secrecy. Small firms are more likely to engage in indirect and subtle attacks that the marketplace may not initially recognize as competitive challenges (MacMillan, 1980). They are also likely to attempt to turn their relative obscurity to their own advantage by engaging in covert actions.

In contrast, large firms will often attempt to make their competitive moves as visible as possible in order to signal their commitment, in the hope of intimidating competitors and deterring response (Ghemawat, 1991). Large firms are also more likely to initiate highly visible, direct, and massive attacks on their competitors (MacMillan, 1980). In addition, in order to meet their obligations to a wide variety of stakeholders, large firms tend to make their competitive decisions public. Large firms may even capitalize on and accentuate their visibility (Fombrun & Shanley, 1990) by making formal, widely publicized announcements of their actions, even using their star executives to intensify the message.

Hypothesis 1c: Competitive actions initiated by small firms will show a lower degree of visibility than those initiated by larger firms.

Competitive Responses

Responsiveness. Large and small firms under direct competitive attack will vary in their responsiveness. Previous research has demonstrated that firms with more slack resources are more likely to respond (Smith et al., 1991). Large firms generally have more slack resources than their smaller counterparts. Their size and stature allow them to be responsive followers instead of initiators, who have to bear the risk of being first. IBM, for example, acquired the reputation of being an aggressive responder in the early days of the PC industry, letting others make the first move and jumping in quickly. In contrast, smaller firms under attack often cannot retaliate, even if they desire to do so, because of resource constraints.

Moreover, firms are sometimes propelled to respond to attacks to protect their reputations (Camerer & Weigelt, 1988; Fombrun & Shanley, 1990; Pfeffer, 1982; Porter, 1984; Weigelt & Camerer, 1988). The larger the firm, the greater the reputation (Fombrun & Shanley, 1990; Sobol & Farrelly, 1988), and thus the greater the pressure to respond. A competitive action directed toward a large firm generally receives wide industry publicity because such firms are associated with many stakeholders (Fombrun & Shanley, 1990; Pfeffer, 1982); thus, the marketplace is fully alerted to the challenge. If a large competitor feels that everyone is watching it being assaulted, it may be especially motivated to show that it is not passive. Few large firms can afford to ignore a direct and public competitive challenge. In some cases, the pres-

sure to respond—and to respond quickly—may even be so strong that the response decision may not make rational economic sense (Kreps, 1990; Porter, 1984; Weigelt & Camerer, 1988). Small firms, on the other hand, do not lose as much face or credibility if they abstain from responding to adversaries' actions.

Hypothesis 2a: Small firms will show a lower degree of responsiveness to competitive actions than their larger rivals.

Thus, as noted earlier, large firms may have less propensity for action but more propensity for response than small firms. Slack and inertia dampen the large firms' proactive actions, but the same slack and more important, the need to protect reputation, increase the likelihood—and, as argued below, the announcement speed—of response. When poked, the lion responds.

Response announcement speed. Both Schelling (1960) and Axelrod (1984) noted that speed of retaliation also has important signaling properties—the longer the delay between action and response, the dimmer the signal. Although common sense may suggest that small firms can maneuver and respond more quickly than large ones (Katz, 1970), the latter may be more strongly motivated to mobilize their extensive resources and to announce their response plans very quickly. To maintain reputation in the public's eyes, to show toughness, and even to prevent further attacks—by the attacker and other competitors—the defending large competitor will often feel obliged to retaliate quickly (Axelrod, 1984; Schelling, 1960). Finally, large firms will also be able to speed up the announcement process by offering a response drawn from the "pre-established routines" (Allison, 1971) that result from the bureaucracy common in large firms (Mintzberg, 1979).

Conversely, small firms will be more hesitant to make a mistake in announcing a response; they tend to be circumspect and "hold their fire" longer than large firms. Because of limited resources, they may have to be more selective in responding and more deliberate in making such decisions. Finally, the response announcements of small firms may have less deterrent impact than those of large firms, so the motivation to respond quickly is less than it is for the latter.

Hypothesis 2b: Small firms will be slower to announce responses than their larger rivals.

Response execution speed. Although they may be slower to announce responses, small firms should be able to execute their responses more quickly than larger firms, because of their flexibility. To maximize the impact of guerrilla counterattacks (Harrigan, 1985; MacMillan, 1980), small firms under attack will attempt to delay public revelation of their plans as long as possible and will then to execute responses very rapidly.

Conversely, the structural complexity and slower information processing of large firms impairs their execution speed (Galbraith, 1977;

Mintzberg, 1979). In addition, small firms are often niche players and thus need not offer responses affecting an industry's whole market; but large firms very often need to analyze and coordinate many markets and executive offices to implement an effective and coherent response (Porter, 1980).

Hypothesis 2c: Small firms will execute responses faster than their larger rivals.

Response visibility. Similar to Hypothesis 1c, the responses of small firms should be less visible than those of large firms. Strategically, the small firms also need to remain low-key or even secretive in counterattacking, even more so than when attacking, because of their overall objective of maximizing guerrilla effects.

Hypothesis 2d: The responses of small firms will be less visible than those of their larger rivals.

Implications for Performance

Our second major research issue concerns the implications of competitive behaviors for company performance. The findings from competitive interaction studies suggest that competitive actions and responses matter to performance: initiators of actions and early responders gain market share at the expense of late responders (Chen & MacMillan, 1992); the greater a firm's tendency to respond, the better its performance (Smith et al., 1991); and the more responses a firm's actions provoke, the worse its financial performance (Chen & Miller, 1994). However, the focus of these studies has been on the relationship between a strategic attribute and performance for firms in general, not for firms of different sizes.

Most of the early literature on competing from a small size or low-share position attempted to provide insights or prescriptions for performance (e.g., Hamermesh et al., 1978; Hofer, 1975; Woo, 1983). A consistent argument was that small and large firms each need different strategies to compete successfully in an industry (Hambrick et al., 1982; Woo & Cooper, 1981, 1982). However, the specific prescriptions set forth in the literature on strategies for low- and high-share positions vary widely and sometimes even conflict. For instance, Cooper and colleagues (1986) encouraged small competitors entering an industry to challenge their established opponents directly, but Katz proposed that "direct confrontation should be avoided" (1970: 364).

We could take the approach of making specific predictions for how each attribute is differentially associated with performance in small and large firms. It might be argued, for example, that to perform well, large firms have a greater need to be responsive to competitive attacks because of their stronger need to protect reputation. However, some behaviors may be universally beneficial for firms of all sizes: to be successful, both small and large firms may need to show a high degree of propensity for action. In short, prior guidance about how specific competitive behaviors are associated with performance is generally lacking or contradictory, and hypotheses so-based

would be very speculative. Thus, our interest in the performance implications must remain exploratory, posed as the following proposition: Competitive behaviors that contribute to favorable performance will differ for small and large firms.

RESEARCH METHODS

Sample

Data were gathered on the competitive moves of the 28 major airlines, those noted by the U.S. Department of Transportation as having annual operating revenues of $100 million or more. Table 1 lists the studied airlines. All these moves were identified from scanning *Aviation Daily* between 1985 and 1986. The data used in this study are part of a larger set also used by Chen and MacMillan (1992) and Smith and colleagues (1991) and gathered over the post-deregulation years 1979–86. However, as discussed below, because the competitive behaviors of airlines were inconsistent during the first six years after deregulation, this study used only 1985 and 1986 data.

The research method used in collecting the data, which is similar to Miller and Friesen's (1977), has been labeled "structured content analysis" (Jauch, Osborn, & Martin, 1980). The method is unique in that actual competitive interactions of sample firms were directly identified from an extensive review of public information. A predesigned, structured coding schedule was used to perform the content analysis.

The industry was chosen not only because of its well-established competitiveness and distinct boundary, but also because a set of competitors was clearly identifiable and a rich source of public information was available. Because our hypotheses all pertain to business-level strategy, it was also appropriate that all airlines are single-business or dominant-business firms (Rumelt, 1974).

After surveying various publications, we concluded that *Aviation Daily*, a 50-year-old industry journal, offered the most complete and detailed information on airline competition. Because the journal aims at objectively reporting airlines' announcements and actions, post hoc rationalization of competitive moves and bias toward covering only certain airlines' activities were expected to be minimal.

A series of steps was taken to evaluate the coverage and the impact of this journal. First, to assess the general perception of *Aviation Daily* among key informants in the industry, the first author conducted an extensive survey of 57 senior airline executives and industry experts (consultants and analysts). The results indicated that the respondents considered *Aviation Daily* to be not only comprehensive and accurate but also a significant source of information for the airlines themselves. There were no significant differences in the response of the executives of small and large airlines (as defined under "Measurement"). More important, an analysis revealed that the amount of space *Aviation Daily* devoted to reporting competitive moves

TABLE 1
Airlines and Competitive Moves Studied[a]

Airlines	Type of Move	Number
Small	Price cut	72
Air California	Promotion	38
Alaska	Service improvement	11
Aloha	New service	9
American West	Increase in commission rate for travel agents	5
Braniff	Feeder alliance with a commuter airline	15
Frontier	Cooperation with another major airline	11
Hawaiian	Merger and acquisition	15
Jet America	Co-promotion with non-airlines	16
Midway	Increase in daily departures	82
New York Air	Exit from a route	14
Ozark	Change in ticket purchase requirements	10
Pacific Southwest	Entry into a new route	12
People Express	Frequent flier programs	17
Southwest	Change in fare structure	57
Wein	Decrease in daily departures	5
World	Hub creation	7
Large	Total	396
American		
Continental		
Delta		
Eastern		
Northwest		
Pan Am		
Piedmont		
Republic		
TWA		
United		
U.S. Air		
Western		

[a] The years studied in this research are 1985 and 1986. Some of the airlines no longer exist. There were 16 small and 12 large airlines in the sample.

was influenced mainly by a move's type than the size of the firms involved. There was thus no evidence to suggest that the journal was biased toward greater coverage of large airlines' competitive activities.

Identification of Actions and Responses

As noted earlier, a competitive move was defined as one that had the potential effect of enabling acquisition of rivals' market shares or reducing their anticipated returns. To identify such moves, we undertook an extensive review of every issue of *Aviation Daily* to discover all the competitive moves in this industry (cf. Levine, 1987): price cuts, promotional activities, market expansions, and so forth. It was essential for this study to distinguish the actions from the responses. To accomplish that, the first author identified all entries in *Aviation Daily* that were responses by searching for the

following key words: "in responding to," "following," "match," "under pressure of," and so on.[3] The identification was straightforward and involved no significant degree of personal judgment.

Much care was taken in tracing streams of actions and responses back to initial actions. First, we read all *Aviation Daily* issues in chronological order to find all competitive moves. Second, using the above keywords, we first identified each response and then worked back to find the report of the initial action. By this method we were able to trace every initial action and all responses to it. All these moves ($N = 396$) were classified into 17 types to allow use of statistical controls for the types of moves taken. Table 1 also lists the types of moves studied.

Measurement

The unit of analysis was a firm's action and response behavior over a given year. Average annual company scores were calculated for each of the seven action and response attributes. Because for each measure we tried to use all pertinent data to control for moderating or intervening factors, the construction of the different measures varied. In addition, the measures used here, all indirect and based on public information, may only approximately capture the underlying constructs.

Propensity for action. We calculated this variable by dividing the total number of actions an airline initiated in a given year by its total number of routes in the same year. The control for scale of operation was necessary because airlines with many routes have more fronts on which to undertake actions.

Action execution speed. This was the average amount of time that a firm spent to execute an announced action. We first measured the time difference between the date the firm publicly announced or acknowledged the intended action, as reported in *Aviation Daily*, and the date that action began to be executed, as indicated in the journal.[4] An action was excluded if its execution was later reported to have been canceled. Then, since the time required to execute different actions varies (for example, a price cut can be made much faster than a new hub can be created), we controlled for this effect in order to be able to compare the scores across all airlines. Thus, for

[3] Similar competitive moves can be motivated by a common industry change rather than by other airlines. Thus, we supplemented the key word search method with a thorough reexamination of the entire database to ensure that the sample included only action-response pairs.

[4] If no further report appeared in *Aviation Daily* indicating a change, the date of execution initially announced was assumed to be valid. Otherwise, we recalculated this measure, adjusting for the difference between the actual and the announced execution date. For a move like hub creation, the measure for this variable was the difference between the date of announcement and the date operation began, according to *Aviation Daily*. This calculation reflects delay in action execution better than speed of execution. To be in line with the underlying theoretical arguments and to keep our terms parallel, we took "speed" to be the opposite of "delay" and developed the measure accordingly. The same logic underlies the measure of response execution speed.

each of the 17 types of moves, execution time scores were standardized over all years and airlines to have a mean of 0 and a standard deviation of 1. A positive value thus meant that an airline took longer than average to execute that particular type of action. Then, to indicate speed rather than time lag, we reversed the signs so that a large value implies great speed. We took the average standardized score across all the actions taken by an airline in a given year as its action execution speed for that year.

Action visibility. This variable was defined as the average amount of information available about a competitive action that a firm initiated. We first counted the number of lines *Aviation Daily* devoted to reporting an action when the firm first made it public. Since the number of lines reporting an action differs for different types of moves, we used the same standardization by type of move and averaging process as was reported for the previous measure.

Responsiveness. Defined as a firm's relative tendency to respond when attacked, this measure was determined through a comparison of the difference between the actual response behavior of a firm under attack and the firm's predicted tendency to respond. Two steps were involved in calculating the latter. First, we needed to determine, in general, the likelihood that a given action would provide a response from any competitor. Prior research suggested three influences on the likelihood that an action will provoke a response: (1) the type of the action—for example, price changes are more likely to elicit response than new hubs (Chen et al., 1992), (2) the visibility of the action (Chen & Miller, 1994), and (3) the degree to which the affected competitor depends for revenues on the markets under attack (Chen & MacMillan, 1992).[5] We performed logistic regression analysis, regressing response (coded 1 if the action provoked at least one response, 0 otherwise) on all these variables. The Appendix gives details and examples concerning this analysis. We then used the regression coefficients to construct a predicted likelihood of response for every competitor affected by an action.

Then, we calculated a firm's responsiveness rating for an action as the difference between the actual value of response (1, if the firm did respond; 0, otherwise) and the firm's predicted likelihood of response. A large positive rating indicated higher responsiveness. Finally, we averaged the ratings for all the incidents in which a firm was under attack in a given year to calculate a firm's overall responsiveness score for that year.

Response announcement speed. This variable was defined as the average amount of time it took a firm—relative to other responding competitors—to announce an intended response to an action. We first measured how long a responding airline took to announce a response to an action as the number of days between the action's announcement date and the date

[5] Airlines affected by each action were first identified through *Aviation Daily* for those providing service in at least one of the 37 "large air traffic hubs" affected by the action. An airline's dependence on affected airports was measured as the percentage of all passengers served by the airline in the year an action was taken affected by the action.

the responding airline publicly announced or acknowledged its intended response, as reported in *Aviation Daily*. As noted, a response was excluded if its execution was later reported to have been canceled. To construct this measure of relative speed, we then divided each firm's response announcement time by the response announcement time of the fastest other competitor responding to the same action. Thus, only cases with more than one response were used in constructing this variable. So, if an airline was the first to respond to an action, we divided its response announcement time by that of the second-fastest responder to the same action; in this case, the ratio would be less than 1. Conversely, if a firm was not the first responder, its response announcement time was be divided by that of the first responder, and the ratio would thus be greater than 1. We then used the average of all the responses taken by an airline in a given year as its response announcement time and inverted the scores so that large values implied greater speed.

The following examples demonstrate this measure: If airline A responded to an action two days after it was announced, but the next responder, airline B, responded six days after the action was announced, airline A received a rating of 2/6, which, inverted to connote speed, equals 3.0. Airline B would have had a rating of 6/2, inverted to .33. Let's say instead that A responded two days after the action and B, ten days after. Our measure acknowledges the differential, and A is seen as even speedier (and B as even slower) than in the prior case. This measure, based on the concept of competitive relativity, is a direct variation of the Boston Consulting Group's (1974) seminal expression of relative market share as the size of a focal firm divided by the share of the biggest other firm in the industry.

Response execution speed. This variable, defined as the average amount of time that a firm spent to execute a response, was measured the same way as action execution time. However, response execution time not only varies with the type of initial action but also with its execution time. Complex, time-consuming actions, for example, tend to evoke complex, time-consuming responses. To control for these effects, we first regressed response execution time on type of action and action execution time for all years and airlines.[6] The resulting residual indicated how much an airline's rating differed from the value we predicted on the basis of the action's type and execution time. We then used the average residual of all an airline's responses in a given year as that airline's response execution time for that year. We reversed the signs of these scores so that a large value implied greater speed.

Response visibility. This variable was defined as the average amount of information available about a response and was measured by the number of lines *Aviation Daily* devoted to reporting this response. Like response exe-

[6] Ordinary-least-squares (OLS) regression was used. In constructing response execution speed and response visibility, we used the full sample of 418 responses from the eight-year database . The resulting 1985–86 scores were then used as the measure in this study.

cution speed, the visibility of a response is affected by both the type and the visibility of the initial action. Thus, to control for these effects and to capture the extent to which a firm's rating differed from the value predicted on the basis of the action's type and visibility, we used the same process as we did for response execution speed.

Organizational performance. Because of the general desirability of assessing performance with a multidimensional measure (Dess & Davis, 1984; Hambrick, 1983; Venkatraman & Ramanujam, 1986), the high interrelationships between the individual measures, and the similarity of the results obtained from using each of these measures, we assessed organizational performance using an index composed of two market-related and two profit-related performance measures: (1) Net market share change (in share points) and percentage market share change (net market share change/initial market share) were measured for the airports an airline served—not for the whole U.S. industry—for each year. (2) Profit margin (operating profit/operating revenue) and total operating profit per revenue passenger mile (RPM) were also assessed.

We first performed a factor analysis of these four performance measures, choosing a one-factor solution on the basis of the scree test and the traditional eigenvalue cutoff criterion of 1.0. This factor accounted for 55.9 percent of the variance in the performance data and had an eigenvalue of 2.24. The loadings for the variables were as follows: .69 for net market share change, .81 for percentage market share change, .78 for profit margin, and .69 for operating profit/RPM. The Cronbach's alpha for these four measures was .79, with no difference between large and small airlines, which is above the minimum threshold of .70 recommended by Nunnally (1978). We then used the factor scores as airlines' performance indexes in the final analysis.

Organizational size: Large versus small. We used the Department of Transportation's dichotomous classification, which has been widely used as a key demarcation in airline industry research (Bailey, Graham, & Kaplan, 1985; Levine, 1987). Large airlines, or majors, were carriers with annual operating revenues of $1 billion or more, and small airlines, or nationals, were those with annual operating revenues of between $100 million and $1 billion. Our sample contained 16 small airlines and 12 large ones (see Table 1). The mean operating revenues in 1985–86 for the 16 small airlines was $333 million (s.d. = 204), and it was $2,591 million (s.d. = 1,705) for the 12 large airlines, indicating that the two size categories differed widely.[7]

Consistency Check in Annual Aggregation

Because the action and response attributes were aggregates, the extent to which the average score for a given attribute across all actions or responses represented a firm's behavior for an entire year was a concern. As Miller and

[7] The difference of the within-group variance in size for these two groups is not significant in either a Cochran's C or a Bartlett-Box F test.

Friesen (1984), among others, have noted, it is legitimate to describe a firm as having a characteristic only if it consistently exhibits that characteristic.

To check for the internal consistency of the airlines' moves for each attribute, we examined the intraclass correlation coefficients (ICCs) for each of the seven attributes in each year. Shrout and Fleiss described several types of ICCs; we used ICC (1,1), which applies to cases in which "each target [here, an airline] is rated by a different set of k judges [moves]" (1979: 421), because the number of competitive moves initiated by an airline in a year is not a constant. The ICC scores were all significant at the .05 level or better for all the attributes. Moreover, the ICCs were somewhat stronger for the 1985–86 two-year averages than for the two one-year periods separately, probably because of the increased number of actions and responses available for measure over the two-year period.[8] These results thus support aggregation and explain this study's use of only 1985–86 data derived from the more comprehensive eight-year database.

Analysis

As noted above, the construction of the seven action and response variables required various transformations and adjustments, making the eventual scales far removed from the original data and hence difficult to interpret. To resolve this problem, once we finished all the data transformations, we standardized all the variables for the two-year averages so that each had a mean of 0 and a standard deviation of 1.

A series of *t*-tests and a multivariate analysis of variance (MANOVA), were performed so that we could examine the differences between small and large airlines for each of the seven attributes. We used correlational analysis to examine performance implications.

RESULTS

Table 2 gives correlations for the action and response variables, organizational size, and performance.

Descriptive Differences in Action and Response Behaviors

Table 3 presents the means, standard deviations, and results of the MANOVA and *t*-tests for the three action attributes and four response attributes.

As mentioned above, all the variables were standardized to have a mean of 0 and a standard deviation of 1. Thus, for example, Table 3 indicates that small airlines' mean propensity for action is .40 (standard deviations) above the average of all the airlines, and the large airlines' mean propensity is −.47 below the overall average. The MANOVA result in the table revealed a sig-

[8] Paired *t*-tests did not indicate any significant difference on the whole between these two years of data for the attributes examined, which lends further support for the use of the two-year averages.

TABLE 2
Pearson Correlation Coefficients[a]

Variables	1	2	3	4	5	6	7	8
1. Propensity for action								
2. Action execution speed	−.22							
3. Action visibility	−.18	−.19						
4. Responsiveness	−.04	−.28	−.21					
5. Response announcement speed	−.29	−.60*	.26	.11				
6. Response execution speed	−.24	.20	−.06	.35	.20			
7. Response visibility	.48*	−.60*	.11	−.33	−.38†	−.38†		
8. Performance index	−.25	−.35*	.07	.05	.44†	−.25	−.10	
9. Organizational size								
Industry classification	−.44**	−.36*	.34*	.35*	.48*	−.06	−.56**	.27†
Operating revenues	−.35*	−.34*	.42*	.32*	.37*	.06	−.39†	.27†

[a] $N = 28$ for all variables except 5, 6, and 7 ($N = 16$), since some airlines had zero responses.

† $p < .10$
* $p < .05$
** $p < .01$

nificant group effect ($p < .05$), indicating that the scores for the action and response attributes, as a whole set, differ for the small and large airlines.

The *t*-tests of each of the seven attributes indicated that the small and large airlines differed significantly ($p < .05$) across all but one attribute—response execution speed (Hypothesis 2c).[9] All three hypotheses regarding differences in action attributes were supported: small airlines were found to have a greater propensity for action (Hypothesis 1a), faster action execution (Hypothesis 1b), and less action visibility (Hypothesis 1c) than their larger rivals.

There was also general support for the hypotheses predicting differences in response attributes: small airlines were less responsive to competitive attacks (Hypothesis 2a) and responded more slowly to announcements

[9] Mann-Whitney tests (Gibbons, 1993) were also conducted, and the results were almost identical to those of the *t*-tests. The only exception, probably a result of low power, is response announcement speed, where the *t*-test was significant but the Mann-Whitney was not.

TABLE 3
Descriptive Differences of Competitive Behaviors

Variables	Small Airlines		Large Airlines		
	Means	s.d.[c]	Means	s.d.	*t*
Action attributes					
Propensity for action	.40	1.20[d]	−.47	0.22[e]	2.48**
Action execution speed[a]	.32	0.93	−.38	0.99	1.87*
Action visibility	−.31	0.96	.37	1.00	1.80*
Response attributes					
Responsiveness	−.28	1.22[d]	.42	0.43[e]	−1.90*
Response announcement speed[a,b]	−.83	2.05[d]	.25	0.32[e]	−1.79*
Response execution speed[a,b]	.07	0.68	−.04	1.18	0.19
Response visibility[b]	.70	1.23[d]	−.42	0.55[e]	2.53**
F	13.83*				

[a] As indicated in the measurement section, the signs of the three variables involving speed were reversed to reflect speed rather than time lag.

[b] For these attributes, $N = 6$ for small airlines and 10 for large ones, since some airlines had zero responses.

[c] The superscripts "d" and "e" indicate significant differences in variances, or standard deviation as reported, in which the score marked "d" is significantly greater than its counterpart marked "e," in both Cochran's *C* and Bartlett-Box *F* tests. Thus, the table indicates that the standard deviation of four attributes for small airlines is significantly greater than that of the large ones. Except for response visibility, which is significant at the .05 level, all others are significant at the .001 level.

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

of actions (Hypothesis 2b) than larger firms. However, contrary to Hypothesis 2d, the responses of small airlines were more visible than those of larger airlines. One possible explanation for this surprising result is that large firms are expected to respond when attacked (Hypothesis 2a), and they may not feel any special need to make their responses visible when they do so. In contrast, when small firms retaliate, they may decide to amplify their responses publicly to maximize the impact.

In sum, the small and large airlines differed widely and extensively in their approaches to competitive interaction.

Competitive Behavior and Performance

As the correlations in Table 2 indicate, two competitive attributes, action execution speed and response announcement speed, were significantly associated with performance for the sample. These results, which may reveal general prescriptions for all airlines, may also be masking critical differences between large and small airlines, our primary focus. The first, and perhaps most natural, step toward finding those differences was to examine the correlations for the two subsamples to find marginal differences between the large and small groups by testing for differences in correlations and for interactions in moderated regression. No single attribute's correlation with

performance was consistently significant, either positive or negative, for both size groups; thus, no universal performance implications emerged.

However, another approach with roots in institutional theory recommended itself (Abrahamson & Rosenkopf, 1993; DiMaggio & Powell, 1983; Oliver, 1991; Tolbert & Zucker, 1983; Zucker, 1987). Instead of expecting linear relationships between strategic attributes and performance (i.e., "more of X is better"), one might more reasonably expect that firms generally strive to behave optimally, that in fact their average behavior *is* optimal, and that deviations from group norms—in any direction—yield inferior performance (DiMaggio & Powell, 1983). The question then becomes, To what extent does a firm's deviation from, or conformity to, the norm for its size group affect its performance? From an institutional point of view, a firm's high performance may come from its adherence to the norm of its size group. For example, there may be an optimal and legitimate competitive profile for small (or large) airlines, and deviations from it may lead to poor performance. In contrast, strategy scholars who have advocated the advantages of differentiation (e.g., Porter, 1980, 1985; Prahalad & Hamel, 1990) might argue for the opposite: to conform is to be "stuck in the middle"; it is better to have some extreme distinguishing characteristics.

To test the performance implications of deviating from the typical competitive behavior of a size group, we took the mean of a group (as reported in Table 3) as its typical behavior. A firm's deviation on an attribute was then calculated as the absolute distance between its own behavior and the average behavior for its group. We then examined the correlations between the deviation ratings and the performance index for each attribute for each group. Table 4 provides correlations only for the four attributes for which we have information on all 28 airlines studied. (Since some airlines had no responses, we have only 16 observations for three response attributes.) Six of the eight correlations in Table 4 are negative, three significantly so at the .05 level. The results suggest that deviation from typical action execution speed was most detrimental to the small airlines and that deviation from typical levels of propensity for action and responsiveness was most harmful for the large airlines.

In addition, we also calculated the deviation as the Euclidian distance between a firm's overall profile on all four attributes and the average subsample profile and correlated it with the performance index. The correlation was $-.35$ ($N = 28$, $p < .05$). These results indicate that, in general, deviation from a group norm hurts performance. The implications seem to be that to perform well, small and large airlines should follow typical behavior for their groups and that failure to do so will erode performance.

DISCUSSION

This study examined how the competitive behaviors of the small firms in an industry differed from those of their larger rivals, and the performance implications of those competitive behaviors. A primary conclusion is that

TABLE 4
Correlational Analysis: Deviation from the Subgroup Average and Performance[a]

Competitive Attributes	Small Airlines	Large Airlines
Propensity for action	−.11	−.55*
Action execution speed	−.61**	−.10
Action visibility	.16	−.19
Responsiveness	.33	−.59*

[a] The table reports only those attributes for which we had observations for all 28 airlines. The statistics reported here are Pearson correlation coefficients for the performance index and deviation, measured as the absolute distance from the group mean. The results are almost identical if the group median is used.

* $p < .05$
** $p < .01$

small firms do differ descriptively from their larger counterparts in terms of competitive behaviors.

Descriptive Tendencies

As was expected, the small firms tended to be more active than the large ones in initiating competitive moves. This finding supports the normative suggestion that small firms should attempt to "retain the competitive initiative" by engaging in competitive attacks (MacMillan, 1980). It is also in line with the theoretical argument that size may breed complacency and inertia (Halberstam, 1986), insularity (March, 1981), and resistance to adaptation (Aldrich & Auster, 1986). In contrast, the large firms seemed to be more responsive when attacked. This difference in response behavior—a rather interesting contrast in light of the finding for action propensity—is perhaps due to large firms' greater need to protect their reputations (Fombrun & Shanley, 1990; Weigelt & Camerer, 1988).[10]

With respect to speed, another interesting pattern emerges. As predicted, smaller firms were faster implementors of the competitive actions they initiated. This finding is consistent with the flexibility and rapidity commonly ascribed to small firms (Fiegenbaum & Karnani, 1991; MacMillan, 1980) and with the liability large firms suffer as a result of their structural complexity, bureaucracy (Mintzberg, 1979), and unwieldy information-processing systems (Galbraith, 1977). Since the measure gauged the

[10] A generally accepted argument is that large firms have more slack resources than small ones. However, given the severe financial difficulties several large airlines encountered in the mid-1980s, this premise may not hold. To test for this possibility, we developed for each airline a slack index, taking the average of the two kinds of slack Smith and colleagues (1991) used: absorbed slack ("the amount of selling, general, and administrative expenses divided by total revenues") and unabsorbed slack ("the extent to which current liabilities covered the sum of cash and marketable securities"). No significant difference between large and small airlines on this slack index emerged.

gap between announcement and execution, this finding may also indicate that small firms delay their announcements as long as possible, even until well after they have started implementation.

The speed of small firms in executing actions seemed to be countered by the large firms' speed in announcing responses. The tendency of large firms to announce their responses quickly may reflect their stronger needs to protect reputation (Fombrun & Shanley, 1990), to clearly signal stakeholders (Pfeffer, 1982) and competitors (Axelrod, 1984; Schelling, 1960) that they are not passive, and to prevent further attacks (Chen & MacMillan, 1992). This finding runs counter to Katz's (1970) proposition that small firms will respond more quickly than large ones.

As for action visibility, the results were consistent with the prediction that small firms are likely to be low-key and even secretive. This finding supports Katz's (1970) and MacMillan's (1980) suggestions that small firms be as inconspicuous and guerrilla-like as possible. However, contrary to expectations, the responses of the small firms were more visible than those of their larger rivals. It would seem that large firms register their responses in unvarnished, matter-of-fact terms, whereas small firms try to enhance the visibility of their responses as a way of showing their assertiveness.

When the findings on response announcement speed and visibility are taken together, it appears that small airlines tend to hold their fire, calculating well-developed, visible responses; large airlines act quickly but in rather straightforward, unexciting ways.

Prescriptive Tendencies

Our second major avenue of inquiry, though only preliminary and suggestive, focused on the performance implications of competitive behaviors for the large and small firms in an industry.

At a general level, our results highlight the relevance of industry norms to strategic thinking. Institutional theorists have long appreciated the importance of industry conventions and the salutary effects of appearing and acting normal within a competitive field (DiMaggio & Powell, 1983; Meyer & Rowan, 1977). Stakeholders seek assurances that they are dealing with a reliable firm, and adherence to central industry tendencies is a convenient, powerful test of such reliability (Hambrick & D'Aveni, 1992).

However, it may not be at the overall industry level that norms are established, but rather at the subgroup or subclass level. In this vein, Hambrick, Geletkanycz, and Fredrickson (1993) found evidence that executives with long tenure in an industry come to adhere psychologically to the industry's "recipes" for success (Spender, 1989); these researchers acknowledged that different classes of firms in the industry should follow different approaches. As they stated, "Industry wisdom may accumulate about the ideal profiles of different sub-classes of firms within the industry (e.g., regional airlines, money-center retail banks, large ethical pharmaceutical firms), such that their chosen strategies are largely 'scripts' for their widely-accepted roles in the industry" (1993: 413).

Our results provide preliminary support for applying the logic of institutional theory to the study of interfirm competition. In particular, we found that both small and large airlines performed better to the degree that their competitive behaviors resembled those of the average, or typical, small and large airline. And particular behaviors seemed to distinguish the high and low performers in both size groups: For large airlines, it seemed to be critical to conform to the typical propensity for both action and responsiveness, and for small airlines, it appeared to be most crucial to stay close to the typical action execution speed.

If we assume that small firms generally face severe problems of legitimacy (Aldrich & Auster, 1986; Meyer & Zucker, 1989), it makes sense that they must go to lengths to appear reliable and normal; engaging in competition that conforms to the average behaviors of small airlines is a way to achieve that appearance. It is also possible that the typical behavior of small airlines indeed represents an ideal, deviations from which amount to strategic mistakes.

Large firms, conversely, do not face problems of legitimacy: they are well established and usually have significant resources and track records. However, their size attracts wide attention from a great variety of stakeholders. To maintain the confidence and support of stakeholders and the respect of competitors, a large firm is also well advised not to engage in unconventional competitive behavior. Acting in extreme or deviant ways may alienate stakeholders and send signals of weakness or confusion to competitors; thus, a large firm does best to conform to the standard profile of large firms.

It is important to note, in the context of the airline industry, that the 1985–86 period that we studied was several years after the initiation of airline deregulation in 1978. Enough time had passed for norms and conventions to develop and firms may have begun to comprehend the optimal behaviors for their size group (DiMaggio & Powell, 1983; Spender, 1989).

Although firms benefit from adhering to group norms, they may have a natural inclination to compete in innovative ways by deviating from those norms. The behaviors of small firms in particular are more varied than those of large firms, as evidenced by the significantly larger standard deviations indicated in Table 3 with the superscripts "d" and "e." This finding suggests that, descriptively, small firms tend to be more varied; yet prescriptively, they generally benefit (as do large firms) from staying close to the average for their size group. This very provocative finding, though preliminary, suggests that small firms would benefit from conforming rather than from following inclinations to deviate. We cannot begin to do justice to an exploration of this paradox, but we can say emphatically that theory and research on competitive conformity—its causes and effects—should be a high priority for the field of strategy.

Of course, causality could be the opposite of what we have asserted. It may be that performance triggers certain kinds of competitive tendencies, rather than the reverse. If so, the phenomena are similarly intriguing. For instance, it may be that small (or large) firms that are doing badly are in-

clined to engage in extreme, deviant behavior but that those performing well tend to engage in risk-averse conformist behavior (Bowman, 1982; Hambrick & D'Aveni, 1992). This explanation is generally in line with prospect theory, whose proponents (Fiegenbaum & Thomas, 1988; Kahneman & Tversky, 1979) argue that when returns have been below target, most decision makers are risk-seeking, and that when returns have been above target, most are risk-averse. Unfortunately, we did not have a large enough sample or a long enough time frame to be able to disentangle the causality of our observed associations.

Limitations and Future Directions

This study was constrained by the small number of airlines used. Even though this research included all major airlines active in the industry during the research period (except regional and commuter airlines, for which competitive data are very sparse), the number of data points (especially for response attributes) was not generous and restricted the choice of analytical methods and the statistical significance of the research findings. This constraint is, of course, common to most single-industry studies (Cool & Schendel, 1987; Fiegenbaum & Thomas, 1990; Hatten, Schendel, & Cooper, 1978).

Second, the measures used here are all indirect and based on industry press and public information. Because of this constraint, the measures and their corresponding labels may not fully capture the phenomena that we intended to investigate. For instance, our measures of action and response execution speed may not correspond perfectly to the ideas that we intended to study because we lacked internal information and company cooperation; with our data, we could not gauge the actual amount of time firms took to execute actions and responses, although we believed our measures to be generally accurate surrogates.

Similarly, the primary information from which the measures were developed was derived mainly from the airline press. Like most research using secondary data, this study may not be immune from reporting bias with respect to focus, company, and event, however credible and objective the data source seems to be.

Future research could make several extensions of the present work. First, the findings suggest that different forces drive action and response behaviors, so different theories may be needed to explain each. Second, our main interest was the effect of a firm's size on its competitive behaviors; a more complex analysis could study the interactive effects of the sizes of the attacking and targeted competitors. Finally, it has been traditional to expect a linear relationship between a given strategy construct and performance. The finding that deviation in either direction from the group norm may hurt performance seems to suggest a new institutional conceptualization of performance, with important roles for industry and group central tendencies. Such a new framework could entail radical new thinking about such concepts as strategic differentiation and being "stuck in the middle" (Porter, 1980).

In summary, this article is one of the few systematic studies of the differences in the actual competitive behaviors of the large and small competitors in an industry, as well as their performance implications. The research highlights the significance of organizational size in shaping competitive dynamics, indicating a need and an opportunity for much more research on this important strategy topic.

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APPENDIX
Measure for Responsiveness

Step 1. To examine the likelihood that an action would provoke a response from any competitor, we performed logistic regression analysis, regressing response (1, if the action provoked at least one response, 0, otherwise) on the following variables: (1) type of action (a 0/1 categorical variable for each of the 17 action types), (2) action visibility (number of lines reporting the action in *Aviation Daily*), and (3) the average percentage of passengers involved for all the airlines at the airports affected by the action (see footnote 5 for the measure). In performing the regression analysis and constructing this variable, we used the full sample of 1,027 actions from the eight-year database. We then used the resulting 1985–86 responsiveness scores (see step 4 below) as the measure in this study.

Step 2. To construct the predicted likelihood that a given firm affected by an action would respond to it, we used the coefficients from the above regression analysis and the firm's percentage of passengers affected.

Step 3. A firm's responsiveness rating for an action was calculated as the difference between the actual value of response (1, if the firm did respond, 0, otherwise) and the firm's predicted likelihood of response. A positive value would indicate that the firm was "excessively" responsive to the attack.

For instance, assume the action is a price cut (so the value is 1 for price cut and 0 for all other types of actions), there were 20 lines in *Aviation Daily* reporting the action, 30 percent of the airline's passengers were affected, and the firm did respond. The firm's responsiveness rating for this particular action is then $1 - .75 = .25$, where .75 is the predicted likelihood of response obtained from step 2, given the values of the three predictive variables.

Step 4. We then averaged the results for all the incidents in which the firm was under attack in a given year to calculate overall responsiveness index for that year.

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