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Sources and Consequences of Competitive Inertia: A Study of the U.S. Airline Industry

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This paper investigates the causes and consequences of competitive inertia in the U.S. airline industry. Competitive inertia is defined as the level of activity that a firm exhibits when altering its competitive stance in areas such as pricing, advertising, new product or service introductions, and market scope. Inertia is argued to be driven by managers' incentives to act, their awareness of action alternatives, and the constraints on their capacity to act. These three sources of inertia were assessed, respectively, by past performance and market growth; by competitive experience and the diversity of the market environment; and by company age and size. We found that good past performance contributed to competitive inertia, whereas a diversity of markets discouraged it. Antecedents for inertia differed in tactical versus strategic actions, the former being driven more by performance and market diversity, the latter by growth in markets. These results suggest the operation of two distinct models of organizational learning, one reactive, the other experimental. Although inertia in strategic actions had mildly positive implications for near-term performance, the benefits from inertia in all kinds of actions diminished with increases in market diversity.[*]

The notion of inertia has received much attention from organizational theorists over the last two decades. At first, inertia was viewed as stagnation—a hyperstability in products, methods, and policies that often underlies inadequate adaptation to a changing environment (Hedberg, Nystrom, and Starbuck, 1976; Hedberg, 1981). Later work recouched the inertia idea as resistance to fundamental reorientations in policy (Tushman and Romanelli, 1985; Hinings and Greenwood, 1988) or to reversals in the thrust of organizational evolution (Miller and Friesen, 1980). It was argued that inertial organizations do in fact change but that they do so mostly by elaborating an existing core policy. Although these initial studies viewed inertia as dangerous, later research paid more attention to its potential benefits (Nelson and Winter, 1982; Hannan and Freeman, 1984; Amburgey and Miner, 1992). These benefits were believed to include greater reliability in delivering a sound and comprehensible product and many economies of efficiency and routine (Miller, 1982).

Gaps in the Literature

Most past studies have concentrated on inertia inside organizations—inertia in structures (Miller and Friesen, 1984), policies (Boeker, 1989; Lant, Milliken, and Batra, 1992), and managerial ideologies (Hinings and Greenwood, 1988)—but there has been little research on inertia in a competitive context. Given that so much has been written about the dangers posed by inertia for adapting to the demands of the environment, this lack of attention to the way in which an organization competes in its marketplace is a serious omission (Chen, 1988; Chen, Smith, and Grimm, 1992; Haveman, 1993).

Another drawback of some of the literature is that inertia has been operationalized quite subjectively and abstractly. It is typically measured by managers' or researchers' perceptions

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of the absence of change in policies or structures (Hedberg, 1981; Miller and Friesen, 1984). Because such notions may be remote from an organization's actual day-to-day decisions and actions (Chen, 1988), they are very abstract and thus give rise to the rough measures that pervade otherwise informative studies of inertia in structure and process (Miller and Friesen, 1980; Fredrickson and Iaquinto, 1989). Firms may choose to compete by implementing many changes to their competitive stances or very few. They might earnestly attempt to seize opportunities and grapple with competitors or be totally passive. Yet researchers have rarely made such potentially vital distinctions and have failed thus far to examine the repertoire of concrete decisions made by an organization in dealing with its customers and rivals. They have ignored the most basic adaptive efforts employed by an enterprise to compete in its marketplace.

Competitive inertia in the form of a low level of market-oriented activity can have an important impact on performance. It can severely retard adaptation in contexts that pose a wide variety of competitive threats (Miller and Chen, 1993, 1994). But in simpler environments, inertia may facilitate a more effective and economical use of managerial skills and resources and allow managers to concentrate on the most important decisions (Miller and Friesen, 1984). It also minimizes the costly blunders that come from making changes under conditions of incomplete information (Hannan and Freeman, 1984). Given the potential impact of inertia on performance, it is useful to try to understand both its effects and its determinants. Using notions from the literature on change, decision making, and especially organizational learning, this study investigates the sources and performance implications of inertia in the repertoire of activities used by firms to compete.

Definition and Scope of Competitive Inertia

Competitive inertia refers to the level of activity that a firm demonstrates in altering its competitive stand. It reflects the number of market-oriented changes a company makes in trying to attract customers and outmaneuver competitors. Inertia will be said to be high when, relative to rivals of similar scale, companies make few changes in competitive practices. These actions collectively make up a firm's repertoire of competitive behavior.

Competitive inertia, as defined here, pertains to major strategic and more minor tactical types of actions, both of which are essential components of all competitive arsenals (Chen, 1988; Chen, Smith, and Grimm, 1992). Our concern in both cases is with actions that are specific, concrete, and detectable. Tactical actions might include price changes, advertising campaigns, and incremental product or service adjustments. Strategic actions may include major facilities expansions, mergers and acquisitions, strategic alliances, and important new products or services. In essence, strategic actions involve a larger expenditure of resources, a longer time horizon, and a greater departure from the status quo than do tactical actions (Galbraith and Kazanjian, 1986; Dutton and Duncan, 1987). Although most of our hypotheses

apply to both tactical and strategic actions, we make distinctions among these types whenever necessary.

Sources of Competitive Inertia

The literatures on organizational change, learning, and decision making suggest three essential classes of factors that underlie organizational action and, hence, competitive inertia. First is the incentive to act, the motivational component of action discussed mostly by political decision theorists and scholars of managerial attribution (Allison, 1971; Schelling, 1971; Staw, 1976; Milliken and Lant, 1991; Chen and Miller, 1994). Second is the awareness of action requirements and alternatives, the knowledge component of action discussed by most learning theorists (Cyert and March, 1963; Levitt and March, 1988; Huber, 1991; March, 1991). Third are the constraints on managerial action, the capability component of action discussed by writers on organizational change, structure, and momentum (Hannan and Freeman, 1984; Miller and Friesen, 1984; Tushman and Romanelli, 1985; Meyer and Zucker, 1989; Amburgey and Miner, 1992; Miller and Chen, 1994).

Competitive inertia will be highest when there are few incentives to act. Such incentives may be internal or external to the organization. The former include poor performance that makes managers question the adequacy of their methods and motivates them to search for improvements (Starbuck and Milliken, 1988; Milliken and Lant, 1991). Incentives to act that come from outside the firm might include burgeoning markets that give managers the confidence to invest in the pursuit of new opportunities (Miller, 1993). Inertia may also prevail when managers perceive relatively few alternative ways of behaving (Huber, 1991). Again, there are internal and external sources that make managers aware of new ways of doing business. One such internal source is experience with a variety of competitive methods. The more extensive such experience, the more likely it is that managers will change their competitive posture (March, 1991). A diverse market environment with many different kinds of customers and competitors also may broaden managers' perspectives and make them aware of alternative ways to serve customers and attract clients (Levitt and March, 1988). Finally, inertia may be influenced by the constraints on action caused by bureaucratic rigidity, insularity, and institutional networks, all of which tend to be related to a company's age and size (Hannan and Freeman, 1984; Aldrich and Auster, 1986; Meyer and Zucker, 1989).

Incentives to Act

Past performance. It has been suggested that success can make managers so complacent, so content with the status quo, that they resist change (Miller and Friesen, 1984; Tushman and Romanelli, 1985). Failure, however, provides an incentive to improve things by altering prices, embarking on new promotional schemes, introducing new products, and so on (Cyert and March, 1963; Lant and Montgomery, 1987). There are several reasons why good performance may give rise to inertia.

Reinforcements: Rewards and punishments. Good performance induces managers to believe that they have "gotten it right"; it makes them reluctant to change (Lant and Montgomery, 1987; Milliken and Lant, 1991; Miller, 1994). Poor performance, by contrast, widens the gap between managerial aspirations and achievements and thus motivates remedial action (Cyert and March, 1963; Miller and Friesen, 1984; Lant and Mezias, 1992). It discourages inertia. Starbuck and Milliken's (1988) fascinating analysis of the *Challenger* tragedy suggests that NASA's repeated successes lulled managers into neglecting their safety procedures. It took a disaster to rouse the organization from its inertia and to convince managers of the need for change. Similarly, Meyer (1982), in his study of hospitals, found that the richest and most successful among them did the least to adapt to an environmental "jolt," whereas their troubled counterparts scrambled hard to update their practices.

Scanning and search. Success may be interpreted as a sign that less vigilance and less environmental scanning or search are required (Aguilar, 1967; March, 1981; Miller, 1994), and this attitude can blind managers to the need for action (Lant, Milliken, and Batra, 1992). Failure, by contrast, provides managers with an incentive to scan their environments to find out what is wrong (Cyert and March, 1963; Levinthal and March, 1981). Such problem-driven search can generate important information that will motivate corrective adjustments and promote new competitive activities.

Power, politics and managerial attributions. In successful companies, those in power remain strong while dissidents become disenfranchised (Pfeffer, 1981; Mintzberg, 1983). Success creates corporate cultures that make company or departmental leaders into power centers, into heroes with the status and resources to perpetuate both their stewardship and their policies (Miller, 1993). Thus managers resist change because they derive much status and respect from their celebrated strategies. And, since success gives incumbent managers the power to do what they want, they can easily fend off challenges to their methods (Mintzberg, 1983). Success thus makes power self-perpetuating, and this dampens new competitive initiatives.

Also, the managers of successful organizations often attribute success to their own actions (Staw, McKechnie, and Puffer, 1983; Salancik and Meindl, 1984). According to Milliken and Lant (1991: 152), "managers of organizations that have a recent history of success [may be] more likely to make internal attributions for their performance than managers of moderately successful or poorly performing organizations." Hence, members of the dominant coalition become reluctant to undertake new competitive initiatives or campaigns because they are wed so strongly to the old ones (Pettigrew, 1985).

Conflicts in the literature. The above arguments represent merely one side of a complex issue, and they require qualification. Some researchers believe that inertia is as much a product of failure as of success (Milliken and Lant, 1991). Poor results are said to threaten managers into trying to vindicate their policies and reputations by holding firmly to

a past course of action (Staw, 1976; Staw, Sandelands, and Dutton, 1981; Brockner, 1992). Executives may be reluctant to signal the defeat of their essential strategies by undertaking very large new projects or commitments at the first signs of failure. This is especially true if poor performance can be interpreted as temporary (Pettigrew, 1985; Hambrick and D'Aveni, 1988).

We believe that this conflict in the literature about the impact of performance on inertia can be resolved in part by making the distinction between tactical and strategic actions. Poor performance may induce tactical changes, as these are generally easy to make, entail few reversals in policy, and thus create little embarrassment. Changing prices or devising an advertising campaign, for example, are activities unlikely to threaten executives or provoke political resistance because these decisions do not usually alter the distribution of organizational rewards or power. Significant retrenchments or expansions into new lines of business, however, may well threaten the resources and bruise the egos of influential administrators. Such strategic decisions also may signal changes in policy that violate the preferences and reverse the fortunes of those in power. Even in the aftermath of poor results, then, managers may resist taking these actions. Strategic decisions will thus be less responsive to performance erosion than tactical decisions. These arguments suggest the first hypotheses:

Hypothesis 1a: For tactical actions, performance in the recent past will be positively associated with competitive inertia.

Hypothesis 1b: For strategic actions, performance in the recent past will not be related to competitive inertia.

Market growth. Incentives to change may also come from outside an organization (Delacroix and Swaminathan, 1991). Expanding markets, for example, may present opportunities that give managers the confidence to commit resources to new projects (Bylinsky, 1968). The emergence of competitive niches may motivate administrators to experiment with different tactics in order to capture additional business (Porter, 1980). It can induce managers to expand their facilities or to modify their offerings in the hope of attracting new customers before their competitors do. Such actions may garner valuable first-mover advantages (MacMillan and McCaffery, 1983; Porter, 1985; Lieberman and Montgomery, 1988; Shamsie, 1990).

Other scholars have taken an opposite tack, arguing that shrinking markets, rather than growing ones, will motivate change. Market decline, so the argument goes, is just as threatening and challenging as poor performance, and it has similar motivational implications. It forces managers to adjust their ways of competing in order to keep their companies viable (Miller, 1990; Rogers, 1992).

Again, this disagreement may be resolved if we distinguish between tactical and strategic actions. The opposing arguments above suggest that there is no clear relationship between tactical actions and market growth: Tactical adjustments may be no more motivated by an expanding than by a declining market. But strategic actions, especially those involving costly improvements to facilities, major

expansions, or corporate acquisitions and joint ventures, will be far more likely when a growing market provides some basis for optimism. Most managers will be reluctant to make large commitments of resources if a shrinking market presages hard times ahead:

Hypothesis 2a: For tactical actions, market growth will be unrelated to competitive inertia.

Hypothesis 2b: For strategic actions, market growth will be negatively related to competitive inertia.

Awareness of Alternatives

There are at least two sources of competitive inertia that may inform managers of alternative ways of acting (Aguilar, 1967; March, 1991; Mezias and Glynn, 1993). A diversity of customers and competitors may instruct managers about new needs to be filled and new challenges to meet, thereby evoking a realignment of competitive practices. Past activity levels in competing can have similar effects (Delacroix and Swaminathan, 1991).

Market diversity. Market diversity exposes the organization to a great variety of ideas and events, some of which may prompt exploration and change (Khandwalla, 1973). Organizations competing with many different rivals or for a great variety of customers learn much about the demands and possibilities of their environments (Hambrick, 1982). They receive many kinds of information from many sources and are exposed to a broad gamut of competitive options. Such information may inspire experimentation. By contrast, organizations that compete in a narrow market against similar competitors or that have only one type of customer confront a more sterile and homogeneous learning environment, one that may foster inertia (Wright, 1979; Halberstam, 1986; Levitt and March, 1988; Levinthal, 1991; Miller and Chen, 1994). We therefore hypothesize:

Hypothesis 3: Market diversity will be negatively related to competitive inertia.

Competitive experience. Awareness of alternative ways of competing may be influenced not only by current conditions in the marketplace but also by managers' past experiences in taking actions (Levitt and March, 1988; Amburgey, Kelly, and Barnett, 1993; Hambrick, Geletkanycz, and Fredrickson, 1993). These experiences determine managerial knowledge bases, thereby influencing how and in how much detail managers perceive their environments (Aguilar, 1967; Hambrick, 1982). One key aspect of such experience is the past repertoire of actions that an organization has used. Organizations that recently have implemented many competitive initiatives are apt to be less inertial than those that have taken only a few actions (Miller, 1990, 1993; Delacroix and Swaminathan, 1991; Amburgey and Miner, 1992; Amburgey, Kelly, and Barnett, 1993). Active repertoires encourage managers to monitor market responses to a wide variety of their past moves and to respond adaptively to that information. Product improvements, aggressive advertising, and strategic alliances, for example, are likely to generate reactions from rivals and customers that in turn stimulate further action (Miller and Chen, 1993). In contrast, firms that have

implemented few competitive actions will have a narrow knowledge base. This paucity of experience causes managers to perceive and act on relatively few types of challenges or opportunities, thereby limiting the scope of their market-oriented activity (Levitt and March, 1988; Miller, 1993):

Hypothesis 4: The level of recent competitive activity will be negatively related to subsequent competitive inertia.

Constraints on Action

Age and size. A number of constraining forces in organizations may also contribute to competitive inertia. Aldrich and Auster (1986), Hannan and Freeman (1984), and Singh (1990) have reviewed a vast literature that indicates that inertia increases with organizational age and size. The rigid rules and routines that so profoundly permeate many older and larger companies may make change difficult (Miller and Friesen, 1984; Starbuck, 1985). Older firms are said to be especially apt to rely on precedent and to use entrenched formal routines and bureaucratic procedures (Thompson, 1961). These can make change more costly and render its need hard to detect (Starbuck, 1985; Tushman and Romanelli, 1985). Older firms are also the most likely to have institutional alliances that enhance their legitimacy and allow them to resist pressures to adapt (Meyer and Zucker, 1989).

Size, too, can breed inertia. Managers of larger firms may believe that they are powerful enough to ignore threats from their weaker rivals (Wright, 1979). Bigness is also associated with abundant slack resources that buffer firms from competition and promote insularity (March, 1981), and it affords economies of scale that capitalize on inertial routines. Finally, very large firms are often protected from competition because of their advantageous institutional contacts (Meyer and Zucker, 1989). Smaller, more vulnerable organizations, by contrast, must be constantly on the lookout for threats and opportunities (Aldrich and Auster, 1986), and this will prevent them from stagnating. Although the complacency that sometimes accompanies size may foster inertia, size itself may give organizations the influence, contacts, and resources to compete proactively and aggressively (Miller, 1990; Haveman, 1993). Powerful actors, then, are in a position to seize the initiative if they so desire. Given these conflicting positions, the following hypothesis is especially tentative:

Hypothesis 5: Competitive inertia will be positively related to an organization's age and size.

Performance Consequences of Inertia

Some authors have argued that inertia can hurt performance because it makes firms unadaptive (Miller and Friesen, 1984). In a competitive context, firms that fail to seize opportunities or respond to problems may become victimized by dated and irrelevant strategies. Sometimes, however, inertia as reflected by parsimony in the number of market-oriented decisions may be beneficial, especially in environments that are not very challenging (Miller and Friesen, 1982). It may give managers time to think about

their competitive actions and to choose these actions more judiciously. It can also stabilize product offerings so that customers will not be alienated by unpleasant surprises (Hannan and Freeman, 1984). And inertia minimizes the chances that a superabundance of competitive assaults will needlessly provoke costly retaliation from rivals (Chen and MacMillan, 1992; Chen and Miller, 1994). Moreover, parsimony in the number of competitive actions allows organizations to learn efficiently—to concentrate on and exploit what they do best (March, 1991). It also reduces the chances of error that come with making changes, especially major changes (Quinn, 1980; Hannan and Freeman, 1984). In short, competitive inertia may save costs, avoid disturbing customers and rivals, and help managers capitalize on their greatest strengths (Hannan and Freeman, 1984; Miller, 1990; Amburgey, Kelly, and Barnett, 1993):

Hypothesis 6: In the short run, competitive inertia will be associated with superior performance.

It seems reasonable that competitive inertia would have different implications for performance in different situations. For firms facing heterogeneous markets or confronting a diversity of competitive tactics from rivals, for example, inertia can impede effective adaptation. Contexts in which a diverse group of rivals compete with a wide variety of tactics require far more active and comprehensive responses than contexts characterized by few kinds of challenges (Chen, Smith, and Grimm, 1992). In the former settings, inertia can result in firms dangerously lagging their rivals or using practices that are too narrow or too stationary to cope with the range of competitive challenges (Hedberg, 1981). Conversely, firms that confront a homogeneous set of demands from clients and competitors may benefit from an economical repertoire of actions: one that presents customers with tried and true offerings and that avoids provoking rivals needlessly. Hence, market diversity, as represented by the multifacetedness of markets and competitors, may moderate the relationship between inertia and performance. Specifically, the interaction between inertia and market diversity will erode performance:

Hypothesis 7: The interaction between market diversity and competitive inertia will have a negative impact on performance.

We chose to study the airline industry to test our hypotheses because of its competitiveness and its rich diversity of competitive tactics (Chen and MacMillan, 1992; Chen, Smith, and Grimm, 1992). The industry also contains firms about whose strategies there is abundant public information. Moreover, because airlines receive almost daily feedback on their market performance, they are in a position to adjust their strategies very quickly in response to this information. This provides an excellent opportunity for testing our hypotheses about the impact of performance on inertia. Finally, because our hypotheses all pertain to business- rather than corporate-level strategy, it is also appropriate that all our airlines are single- or dominant-business firms, according to Rumelt's (1974) definition.

METHOD

Sample

Our initial sample consisted of all 32 U.S. domestic airlines with annual operating revenues of over $100 million. The period chosen for study was the postderegulation but premerger era of 1979 to 1986, a time during which airlines would have to discover the rules of the game in order to compete effectively (Levine, 1987). We expected this interval to display much impetus for competition and tactical adjustments, thereby producing much variation in most of the dependent and independent variables.

For practical research purposes, it is impossible to examine each and every action taken at all levels within an organization. Competitive inertia thus refers here only to implemented, public, market-oriented decisions, those significant concrete actions taken by an organization that are observable by customers, competitors, and other industry participants. Small-scale actions, such as unitary price adjustments, were too unimportant and invisible to fall within the scope of this study.

We selected all competitive actions reported between 1979 and 1986 in *Aviation Daily.* Methods of structured content analysis were used to identify and classify these moves (see Jauch, Osborn, and Martin, 1980; Miller and Friesen, 1984). *Aviation Daily* is widely known in the industry as the publication that provides by far the most comprehensive information on airline strategy (Chen and MacMillan, 1992; Chen, Smith, and Grimm, 1992).

Identification of Actions

An extensive eight-year review of every issue of *Aviation Daily* was conducted to document 21 types of competitive moves, listed in Appendix A, in the following categories: changes in price, promotional activities, product-line or service changes, distribution channel alterations, market expansions, vertical integration, intraindustry mergers and acquisitions, and strategic alliances. This focus was derived from the strategic-content research of Hatten, Schendel, and Cooper (1978), Khandwalla (1981), Porter (1980, 1985), and Scherer (1980). It incorporated all actions reported in *Aviation Daily* that airlines took in these categories. The types include all the important competitive moves identified by Levine (1987) in his comprehensive review of airline competition since deregulation. The only omission from his list was the use of computerized reservation systems. This action was unreliably reported in our data and relates mostly to internal operating practices that were beyond the scope of our hypotheses.

The total sample consisted of 963 actions. These were classified by one of the authors and by three Ph.D. students in the field of business strategy into the 21 generic action types listed in Appendix A. In addition, 106 experts from the airline industry were asked to classify seven of the most ambiguous moves into one of the types. The average

confirmation rate was 84 percent. The sample of respondents is described in Appendix B.

Several efforts were made to establish the comprehensiveness and reliability of the information reported in *Aviation Daily*. We surveyed a subset of the airline executives and experts described in Appendix B. Fifty-eight of the 129 executives approached replied, for a response rate of 45 percent after two follow-ups. The results of this survey, given in full in Appendix C, indicate that 85 percent of the respondents rated *Aviation Daily* as very comprehensive or totally comprehensive as a source of airline competitive activity; fewer than 8 percent of the respondents rated the reportage of the journal as less than reliable.

To further establish the accuracy of the information published in *Aviation Daily,* we drew a random subsample of 20 moves and were able to find and confirm the details of 17 of them (85 percent) in other business publications and newspapers. It is normal that *Aviation Daily* would be more exhaustive in its reporting of airline competitive exchanges, because it is a more specialized industry periodical (Chen, Smith, and Grimm, 1992).

Operationalization of Variables

Competitive inertia. As noted above, our concern was with the overall inertia that an organization demonstrates in a given year in its market-oriented actions. The index must be weighted to adjust for differences in the average frequencies of the various types of market-oriented decisions—pricing decisions, for example, are far more common than hub-creation decisions. The index must also take into account the scale of an airline's operations, hence it was necessary to estimate the relative inertia of each airline for each type of activity. These estimates could then be summed in calculating the overall index.

The index is based on the number of decisions in each of the j ($= 1, \ldots, 21$) categories for each of the i ($= 1, \ldots, 32$) airlines in year t ($= 1979, \ldots, 1986$): $x_{i,j,t}$. Because the average number of decisions in each of the j categories differs, we wished to avoid overweighting the most common types. Thus for each of the j types of actions, individually, scores were standardized across all airlines/years. These $z_{i,j,t}$ standardized scores have the effect of weighting rare decisions like hub creations more heavily than common decisions such as price cuts. Three price cuts per year, for example, might be unusually few and thus would yield a standardized score of less than zero; three hub creations might be exceptionally many and so would yield a highly positive score.

The Activity index is calculated as the sum over j of the $z_{i,j,t}$ standardized scores. This sum is divided by the log of revenue passenger miles (RPM), a common industry measure of scale of operations, to render the index comparable across firms of different scale. The quotient was converted to a positive number by adding a constant large

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enough to allow the natural log to be taken, thereby normalizing the distribution of the variable:

$$\text{Activity index} = \ln\left[\left(\text{sum}_j z_{i,j,t}\right)/\ln\ (\text{RPM}_{i,t})\right].$$

The correlations among the 21 types of actions used to construct the index produce a Cronbach alpha reliability of .79. The sign of the Activity index is reversed so that it measures competitive inertia rather than activity level.

Tactical and strategic actions. To test hypotheses 1 and 2, we distinguished between tactical and strategic actions. An action was defined as strategic if it involved significant investments in fixed assets, people, or structure. In some cases, strategic actions represent a major departure from industry norms. Seven kinds of actions were deemed to be strategic: mergers and acquisitions, hub creations, feeder and interindustry alliances, new services, frequent flyer programs, and new airplane purchases. These actions involve relatively long time horizons, considerable financial expenditures, and represent important and relatively irreversible departures from the status quo. Tactical actions were defined as not involving significant long-term commitments of fixed assets and were deemed to have a less permanent impact on the firm. Using these definitions, the 21 generic types of actions were classified as strategic or tactical by three raters working independently. There was total agreement among the raters in making the classification.

To confirm the validity of the classification, a questionnaire was distributed to six management professors with expertise in both competitive strategy and the airline industry. The respondents were asked to categorize various types of actions as strategic or as tactical, using the above definitions. Interrater reliability was 1.0 for 20 items and .83 for one item. There was only one misclassification in the exercise.

Performance. Performance was measured by operating revenue per available seat mile flown: R/ASM. This index has the advantage of reflecting not only the load factor of an airline—the percentage of seats it fills—but also the revenue produced thereby. In addition, it avoids counting as good performance high load factors that come at the cost of inadequate revenues. Revenue per available seat mile is also very appropriate for our analyses, as it is updated for most airline executives very frequently and thus can have a rapid impact on strategy. Measures such as return on equity or return on assets were not used because they are calculated too rarely. Also, they are influenced by factors such as interest rates, debt-equity ratios, tax anomalies, depreciation policy, and other factors having little direct connection with the actions incorporated into our inertia measure. Profitability and cost indexes of performance are also less relevant, as this study looks only at external, market-oriented actions, not internal operating decisions such as scheduling, cost management, or compensation.

Environment and organization. A company's *breadth of competitive experience* was assessed as competitive inertia during the previous year. This measure provides an overall

assessment of a company's level of activity in the past. To establish robustness, we also assessed experience using simply a count of the number of types of actions made by a firm in the preceding year. The results were almost identical to those reported below. *Market diversity* was measured by a composite index assessing the number of different airports served by each airline and the number of competitors faced by each airline. Information was obtained from the U.S. Department of Transportation's publication, *Airport Activity Statistics of Certified Route Carriers.* These numbers provide some indication of the variety of markets and passengers served and, hence, of the diversity of competitive conditions and customer demands that airlines must confront (Levine, 1987). *Market growth* was measured by the level of growth in total industry business volume, an indicator of the degree to which new markets or niches are opening up (Levine, 1987). This was assessed by the annual change in total revenue passenger miles for the entire domestic airline passenger business. Finally, *firm age* was measured in years, and *size* was simply the natural log of the number of full-time employees.

Analyses

Multiple regression analyses were used to test the hypotheses. As this study uses pooled cross-sectional observations, it was important to correct the data for any autocorrelation and heteroscedasticity (Sayrs, 1989). To do this, we used Kmenta's (1986: 618–622) autoregressive heteroscedastic model for pooled time-series cross-sectional data. The model is as follows:

$$Y_{it} = b_1 X_{it,1} + b_2 X_{it,2} + \cdots + b_k X_{it,k} + e_{it},$$

where i equals 1, 2, . . . , N, t equals 1, 2, . . . , T, k equals 1, 2, . . . , K. K equals the number of explanatory variables, N equals the number of cross-sectional units (18), and T equals the number of time periods (7). Because the model requires an equal number of observations for each airline, we had to exclude from the sample any airlines with years of missing information. This left us with 126 observations—18 firms for which we had data for each of the seven years (one of the eight years was lost due to our lagging of some of the variables).

We applied Kmenta's model to data corrected for autocorrelation and heteroscedasticity. To correct for first-order autocorrelation the Cochrane-Orcutt transformation was applied to each unit (firm) individually. In a second step, the data were corrected for heteroscedasticity by dividing dependent and independent variables by the firm-specific error variance obtained from the regressions on the autocorrelation-corrected data. Subsequent plots of residuals revealed no autocorrelation or heteroscedasticity. The twice-transformed data could then be pooled and analyzed using OLS regression (see also Buse, 1973; Judge et al., 1988: Sec. 11.5).

The pooled time-series models reported in Tables 3 and 4, below, incorporate inertia in period *t*-1 and performance in period *t*-1, respectively. These are lagged endogenous variables. To be certain that our estimates were free from

bias, we used instrumental variables as substitutes for the lagged regressors. For lagged inertia, we used as an instrument the number of types of actions taken in period t-1 (Kmenta, 1986: 621). For performance, we computed an instrumental variable by regressing performance on all the other current and lagged independent variables (Doran, 1989: 296–299; Greene, 1990: 448). We then substituted the lagged predicted values of this instrumental variable into the pooled time-series analyses. The results obtained were very similar to those reported in Tables 3 and 4 below and confirm the consistency of the original estimates.

In examining the moderating effects of diversity on performance shown in Table 4, the components of the interaction terms were standardized before multiplication to remove any multicollinearity with the main effects (Smith and Sasaki, 1979). Also, the significance levels of the interaction terms are those derived from the additional variance explained after all other variables had been added to the model.

There was only one potentially significant source of multicollinearity in the regression analyses—the correlation between the size of an airline and the diversity index. These variables had 67 percent of their variance in common. When we reran the analyses deleting the size measure, all of the major findings were preserved, and the hypotheses were even more strongly supported. Given the stability of the findings, the results are reported for the full equations.

RESULTS

Table 1 presents the descriptive statistics and Table 2 the correlations for the variables.

Table 1

Decriptive Statistics

Variable	Mean	S.D.	Range
Competitive inertia (natural logs)			
All actions t	−.31	.66	−2.1 to .97
All actions t-1	−.46	.70	−2.7 to .88
Tactical actions t	.07	.34	−.55 to .98
Tactical actions t-1	.01	.34	−.64 to .98
Strategic actions t	−1.19	.56	−1.9 to .05
Strategic actions t-1	−1.30	.51	−2.0 to −.16
Organization and environment			
Size (natural log)	9.24	1.23	5.3 to 10.9
Market diversity	21.3	8.24	2 to 35
Age	28	17	2 to 45
Market growth	3.96	7.84	−5.9 to 17.4
Breadth of experience	3.90	2.61	0 to 10
Performance			
Revenue/ASM t	.083	.016	.044 to .140
Revenue/ASM t-1	.082	.017	.036 to .140

Sources of Competitive Inertia

Table 3 displays the results of the multiple regression analyses taking inertia as the dependent variable. As

predicted by hypothesis 1a, good past performance is followed by high levels of inertia in tactical actions ($p <$ .001). In distinct analyses we found that current performance is also significantly related to tactical inertia. These results are available from the first author. Hypothesis 1b was supported as well, but not as decisively. We were surprised to find a relationship between lagged performance and inertia in strategic actions, but the relationship was only a modest one. Moreover, there was no association between performance in the current year and inertia in strategic actions. As anticipated, performance does have more of an impact on tactical than on strategic inertia.

Table 2

Pearson Correlation Matrix*

Variable	1	2	3	4	5	6	7	8	9	10	11
Inertia
1. All t	–
2. All t-1	.49	–
3. Tactical t	.90	.47	–
4. Tactical t-1	.44	.92	.45	–
5. Strategic t	.69	.27	.39	.23	–
6. Strategic t-1	.31	.69	.28	.44	.19	–
7. Size	-.53	-.55	-.51	-.53	-.30	-.28	–
8. Mkt diversity	-.55	-.60	-.49	-.53	-.39	-.41	.82	–
9. Age	-.48	-.51	-.48	-.50	-.30	-.28	.61	.62	–
10. Performance t	.40	.33	.40	.29	.17	.18	-.34	-.27	-.15	–
11. Performance t-1	.30	.19	.33	.23	.10	.06	-.24	-.11	-.15	.65	–
12. Mkt growth	-.24	-.26	-.08	-.17	-.36	-.22	-.03	.23	.01	.13	.18

* For the smallest sample size, all coefficients greater than .19 and .24 are significant at beyond the .05 and .01 levels, respectively.

Hypotheses 2a and 2b were also confirmed. For tactical actions, market growth was unrelated to inertia. But for strategic actions, market growth was negatively related to inertia ($p <$ .001). Expanding markets did promote significant new commitments of organizational resources.

Hypothesis 3 predicted that market diversity would be negatively associated with competitive inertia. In general, a broad constituency of customers and rivals appears to inspire action, although this tendency seems more pronounced for tactical than for strategic actions.

Hypothesis 4 was not well-supported: Competitive experience in the previous year was negatively (but weakly) associated with inertia in tactical actions but not with inertia in strategic actions. Competitive inertia seems to be driven largely by current conditions in a firm and its environment, not by historical experiences or precedents. Strategic actions may be so unusual and so different from one another that experiences with one kind of action have little bearing on any other types of actions.

Hypothesis 5 was not supported. Perhaps because of the significant correlations of firm size and age with diversity, the former variables were not good predictors of competitive inertia in this model. There was even a slightly negative relationship between size and inertia, especially strategic

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Table 3

Regressions of Competitive Inertia on Performance and Airline and Industry Characteristics

Variable	Standardized beta coefficients		
	All actions	Tactical actions	Strategic actions
Revenue/ASM t-1	.20****	.24****	.16**
Market diversity	−.27***	−.43****	−.18*
Market growth	−.16***	−.04	−.38****
Inertia			
All actions t-1	−.07		
Tactical actions t-1		−.11*	
Strategic actions t-1			.04
Firm age	−.12*	−.07	−.12
Firm size	−.22**	−.03	−.12*
R-squared	.42	.36	.25
F-ratio	14.6	11.3	6.5
p value	.000	.000	.000

d.f. for all equations: 6, 119

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

inertia. In the airline industry, some large and established firms were very active competitors, in part because of their strong market positions (Haveman, 1993). Moreover, size and age may bear only weak relationships to organizational insularity, bureaucracy, and rigidity—presumably more direct predictors of inertia that could not be measured in this study. Given the results of previous research (Hannan and Freeman, 1984), age and size appear to have more to do with structural than with competitive inertia.

Competitive Inertia and Subsequent Performance

To assess the impact of inertia on future performance, multiple regression analyses were run that control for past performance as well as all of our organizational and environmental variables. The analyses presented in Table 4 take annual performance (revenue/ASM) as the dependent variable.

Hypothesis 6 was confirmed for inertia in strategic actions only. Actions committing resources to major projects or significant changes in policy seem to erode performance. This is in line with the thinking of population ecologists who have called attention to the risks in making significant changes (Hannan and Freeman, 1984). This relationship did not hold for tactical actions. The latter are, presumably, less hazardous and, hence, have fewer implications for performance. Also, the market risks of some tactical adjustments may be offset by the revenue-producing benefits of others, benefits that might not materialize nearly so quickly from strategic actions.

The findings in Table 4 show much stronger support for hypothesis 7 than for hypothesis 6: The interaction between lagged inertia and competitive diversity has the anticipated negative impact on performance for total, tactical, and strategic actions. These results were confirmed for two-year averages of inertia (available upon request). As expected, inertia is most damaging to airlines facing markets

Table 4

Regressions of Performance on Inertia, Airline and Industry Characteristics

Variable	Standardized beta coefficients		
	All actions	Tactical actions	Strategic actions
Inertia			
All actions t-1	.04		
Tactical actions t-1		.04	
Strategic actions t-1			.08**
Performance t-1	.63****	.61****	.60****
Market diversity	.05	.04	.08
Market growth	.19****	.20****	.20****
Firm age	−.18**	−.21**	−.21**
Firm size	−.07	−.13	−.13
Interaction terms			
Market diversity * inertia in			
All actions t-1	−.12***		
Tactical actions t-1		−.12***	
Strategic actions t-1			−.09***
R-squared	.60	.58	.58
F-ratio	24.8	23.5	23.6
p value	.000	.000	.000
d.f. for all equations: 7,118			

• $p < .10$; •• $p < .05$; ••• $p < .01$; •••• $p < .001$.

characterized by a diverse set of customer needs and competitive challenges. The normative implications of inertia appear to be very much a function of the competitive context.

Robustness of the Findings

To establish the robustness of these results, we conducted separate analyses, taking as the dependent variables for Tables 3 and 4, respectively, annual change in inertia and annual change in performance. The substantive findings all were replicated. Robustness also was confirmed by replicating all of the analyses relating to Tables 3 and 4 using OLS regressions on the complete sample of 167 observations in 32 airlines. Because OLS is not usually appropriate for use on cross-sectional time-series data, we first performed diagnostics to ensure there was no heteroscedasticity or autocorrelation. Residuals were plotted against estimates, against all independent variables, and against cross-sections and time, using procedures recommended by Sayrs (1989). No systematic patterns were evident in the residuals, nor was there any evidence of heteroscedasticity. To avoid using stochastic regressors, the OLS analyses used as a surrogate for lagged inertia the number of *types* of actions an airline made in period t-1. Also, the performance dependent variable was replaced by change in performance. The findings from these analyses replicate those derived from Kmenta's autoregressive, heteroscedastic model and are available from the first author.

DISCUSSION AND CONCLUSION

This study represented one of the first attempts to assess inertia in the way organizations compete. It concentrated on market-oriented decisions taken by firms—concrete actions that provide far more reliable indications of inertia than do managerial impressions. The literature on organizational change, learning, and decision making suggested that competitive inertia would be a function of the incentive to act, managers' awareness of action alternatives, and constraints on action. Our findings showed considerable support for sources of inertia based on incentives and awareness.

Conflicts in the literature, however, indicated a need to distinguish between tactical and strategic actions in studying competitive inertia. We found that although tactical adjustments were driven by poor performance, strategic actions, perhaps because they so threaten managerial egos and reputations, were not so easily influenced by performance. Moreover, while tactical actions displayed little association with market growth, the major resource commitments invoked by strategic actions appeared more palatable in the optimistic context of a growing market. We also found that strategic inertia had mildly positive implications for performance but that the benefits of inertia in all types of actions diminished with mounting market diversity.

It is important to remember that we studied the U.S. airline industry of the postderegulation era, a period of much rivalry, during which many firms were groping to understand and adapt to their strange new surroundings. Our results show just how responsive competitive repertoires were in this setting to poor performance and market challenges. Inertia appeared not to be much influenced, however, by the age and size of airlines. Nor did the potential dangers of inertia manifest themselves very clearly in this environment. These results are consistent with the intense rivalry produced by deregulation, when many firms were forever adjusting strategies to bolster success and meet new demands from the market. Perhaps in more placid and mature settings, inertia would be less influenced by short-term performance or competitive challenges and more by traditional determinants of complacency such as organizational age and size.

Competitive Inertia and Organizational Learning

Certainly, there are numerous possible explanations for our findings. Many of the results, however, can be interpreted through the lenses of two distinct models of organizational learning. Although this study focused on corporate actions rather than managerial thoughts, our findings suggest that competitive repertoires may be shaped by a blend of what might be called "reactive" and "experimental" learning (March, 1991; Miller et al., 1994).

Reactive learning is based on the rewards and punishments that drive the perceived need to act. These outcomes derive

mainly from organizational performance, which may influence competitive inertia through its impact on the gap between aspirations and achievement. Reactive learning recalls the problem-driven models of adaptation discussed by Lindblom (1959), Cyert and March (1963), Starbuck (1985), and March (1991). Consistent with these models, inertia in tactical actions was very much a function of organizational success. Tactical adjustments were more common when poor performance signaled the need to act (Cyert and March, 1963; Levinthal and March, 1981; Lant and Montgomery, 1987). They seemed to be initiated, at least in part, to keep an organization viable and on course, for such actions waned whenever firms were thriving. The reactive learning model worked less well, however, in predicting inertia in strategic actions. Organizational politics and managerial defensiveness may, at least in the short run, insulate strategic action from the influences of recent performance.

A second, experimental kind of organizational learning is motivated not by performance problems or crises but by provocative information, market diversity, and the desire to seize opportunities. Such proactive learning is driven by forces that inspire rather than threaten managers to act. Having a diverse array of markets or customers, for example, may alert managers to potentially superior ways of competing. Similarly, abundant market opportunities and the bright future they portend can combat inertia by motivating managers to undertake more ambitious strategic actions. This response recalls March's (1991) experimental learning and is consistent with the exploratory playfulness and entrepreneurial forays noted by Collins and Moore (1970), Lant and Mezias (1992), and Mezias and Glynn (1993).

Superstitious learning. Scholars of organizational learning agree that past success shapes managerial behavior (Lant and Montgomery, 1987). Many argue, however, that such responses represent an irrational process frought with hazards (Milliken and Lant, 1992). Levitt and March (1988), for example, discussed the prevalence of superstitious learning, in which managers attribute success to policies or actions that in fact have little to do with performance. Hence, there is nothing to ensure that the changes made in responding to failure will be the appropriate ones. The competitive actions occasioned by market diversity or growth or by knowledge from previous experiments may miss the mark as well. Yet these appear to be major motivations for competitive activity.

Perhaps because of the significant possibility that competitive moves will fail, inertia, at least in strategic actions, is by no means anathema to good performance. Even tactical inertia showed no ill-effects in this study. It is important to bear in mind, however, that the performance implications of inertia seem to be very much a function of the environment: The greater its competitive diversity, the less salutary the effects of inaction. It may be, too, that in other industries in which the general tendency is to do too little reshaping of competitive repertoires rather than too much, the hazards of inertia will become more apparent.

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APPENDIX A: Types of Actions Studied

Price cut
Price increase
New promotion
Promotion with nonairlines
Service improvement
New service
Commission rate change for agents
Daily departures increase
Daily departures decrease
Route exit
Route entry
Entry price cut
Special fare advertisement
Ticket purchase requirement
Frequent flyer program
Fare structure
Acquisition of new plane
Hub creation
Feeder alliance
Cooperation with another airline
Intraindustry merger and acquisition

APPENDIX B: Selected Characteristics of Survey Respondents

Group	Title	Average length of industry experience (years)	Number of respondents ($N = 178$)
Major airlines	Senior VPs or above	25	44
Regional airlines	CEOs or presidents	24	34
Travel agents	CEOs or presidents	27	20
Aircraft manufacturers	Senior VPs or above	28	6
Consultants		32	36
Security analysts		21	16
Government officers	Managers	15	4
Academics	Professors & researchers	.3	18

The list of survey subjects was compiled from several directories, mainly the Winter 1989 edition of *World Aviation Directory* (*WAD*). The executives and experts selected were from the following eight categories: (1) senior VPs or above (excluding CEOs) of all major airlines with annual operating revenues greater than $100 million; (2) CEOs or presidents of all regional airlines listed in *WAD*; (3) airline consultants listed in *WAD*; (4) security analysts who follow the industry listed in the 1989 edition of *Nelson's Directory of Investment Research* and the October 1989 edition of *Institutional Investor*; (5) CEOs or presidents for the top 65 travel agents, in terms of sales revenues, in the U.S.A. (annual sales revenues greater than $20 million); (6) senior VPs or presidents (excluding CEOs) of Boeing and McDonnell Douglas; (7) senior managers of the Federal Aviation Administration; and (8) academics who were the first and second authors of articles in *Academy of Management Journal, Administrative Science Quarterly, Management Science, Organization Science,* and *Strategic Management Journal* in 1986–1991 that involved the airline industry or who were the authors of cases about the airline industry published in *Harvard Business School Catalogue of Teaching Materials.*

A total of 430 questionnaires was distributed. One hundred and seventy-eight were returned (a response rate of 42 percent).

A supplementary survey to confirm the validity of the authors' classification of types of sample moves was completed by 106 of the 178 participants of the study (a response rate of 77 percent).

Competitive Inertia

APPENDIX C: Survey on *Aviation Daily**

Frequency of reading. Respondents were asked to answer the following question, using a 5-point scale: "How often do you read *Aviation Daily?*" Responses were (1) every day (60.7 percent), (2) at least twice a week (16.1 percent), (3) once a week (8.9 percent), (4) once a month (1.8 percent), (5) not at all (12.5 percent). The mean is 1.89, and the standard deviation 1.38.

Significance. Respondents were asked to answer the following question, using a 5-point scale: "To what extent do you think that airlines rely on *Aviation Daily* in obtaining industry information?" Responses were (1) none (0 percent), (2) limited (18.5 percent), (3) moderate (35.2 percent), (4) substantial (40.7 percent), (5) very substantial (5.6 percent). The mean is 3.33, and the standard deviation is 0.847.

Comprehensiveness. Respondents were asked to answer the following question, using a 5-point scale: "How comprehensive is *Aviation Daily*'s coverage of competitive information of the industry?" Responses were (1) not at all comprehensive (0 percent), (2) not very comprehensive (3.8 percent), (3) moderately comprehensive (9.4 percent), (4) very comprehensive (50.9 percent), (5) totally comprehensive (35.8 percent). The mean is 3.189, and the standard deviation is 0.761.

Reliability. Respondents were asked to answer the following question, using a 5-point scale: "In general, how reliable is the information that you read in *Aviation Daily?*" Responses were (1) totally unreliable (0 percent), (2) not very reliable (7.8 percent), (3) moderately reliable (41.2 percent), (4) very reliable (47.1 percent), (5) totally reliable (3.9 percent). The mean is 3.47, and the standard deviation is 0.703.

* The total number of respondents is 57, with a response rate of 45 percent.