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PERFORMANCE IMPLICATIONS OF DELAYED COMPETITIVE RESPONSES: EVIDENCE FROM THE U.S. RETAIL INDUSTRY

JENS L. BOYD and RUDI K. F. BRESSER*
Department of Business Administration, Freie Universität Berlin, Berlin, Germany

The timing of competitive actions and responses is a key management concern that has important performance consequences. This study focuses on the timing and consequences of competitive responses. Theory predicts a negative linear relationship between response delay and responder performance mirrored by an opposing positive linear relationship between response delay and first mover performance. In contrast, our study suggests that response delay has a curvilinear relationship with responder performance, and a linear relationship with first mover performance. We test our propositions using retail industry data and discuss the implications. Copyright © 2008 John Wiley & Sons, Ltd.

INTRODUCTION

First mover performance has been of substantial interest to economists (Reinganum, 1985; Hamilton and Slutsky, 1990), marketing (Carpenter and Nakamoto, 1989; Krider and Weinberg, 1998), and management scholars (Lieberman and Montgomery, 1988; Mitchell, 1989). First movers are ascribed superior market insight, entrepreneurial prowess, and competitive creativity, and are expected to perform better than their slower competitors. With the advent of new competitive landscapes where competitive advantage is difficult to sustain (Hitt, Keats, and DeMarie, 1998; Bresser, Heuskel, and Nixon, 2000), speed as a source of advantage has been reaffirmed by inductive research (MacMillan, 1988; D'Aveni, 1994; Brown and Eisenhardt, 1998) and top managers' accounts (Taylor, 1991; Stalk, 1988). While empirical evidence supports the idea of first mover advantages, the extent to which such advantages can be sustained is less clear (VanderWerf and Mahon, 1997; Lieberman and Montgomery, 1998; Boulding and Christen; 2003).

Attention has also been directed toward the timing scenarios of responders to explain the relative performance of first and later movers in competitive interactions (e.g., Fuentelsaz, Gomez, and Polo, 2002; Krider and Weinberg, 1998). Here too, theoretical explanations have emphasized speed by advocating quick responses to competitive attacks (Gal-Or, 1985; Hauser and Shugan, 1983; Porter, 1985). However, compelling empirical support in favor of a fast follower strategy is lacking (Smith, Grimm, and Gannon, 1992; Bowman and Gatignon, 1995; Ferrier, Smith, and Grimm, 1999).

Our article contributes to ongoing efforts to develop theory on first mover and follower advantages by revisiting the issue of response timing, that is, the consequences of fast versus delayed competitive responses. Developing a better under-

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*Correspondence to: Rudi K. F. Bresser, Freie Universität Berlin, Department of Business Administration, Garystrasse 21, 14195 Berlin, Germany. E-mail: rudi.bresser@fu-berlin.de

standing of the performance implications of different response timing scenarios is important because by focusing on quick responses and the risks of being lethargic, the literature overlooks the risks of responding too fast, that is, performance disadvantages that may result from hasty commitments and ill-devised responses (Staw, 1981; Dutton and Jackson, 1987). In fact, in light of such risks, assuming that the fastest responder will realize the highest performance may generate questionable managerial prescriptions.

Our research question is central to an understanding of competitive interactions between first movers and responders: What is the nature of the response timing-performance relationship?[1] Theoretical research has argued that the relationships between response timing and performance are linear for both the responder and the first mover (e.g., Glazer, 1985; Porter, 1980, 1985). However, by considering additional theoretical perspectives, that is, conscious choices and competitive 'blind spots' (Zajac and Bazerman, 1991), we suggest that the two functions could be shaped differently, only one being linear and the other curvilinear.

The article proceeds as follows: We first revisit and integrate the treatment of response timing in the economics, marketing, and management literatures, and develop theoretical reasons for expecting a curvilinear relationship between response delay and responder performance (Hypothesis 1), and a linear relationship between response delay and first mover performance (Hypothesis 2). The next section presents our research context: the U.S. retailing industry.

Thereafter, we specify our research design and provide methodological details. In particular in our analysis, we examine the stock market performance effects of response timing using a sample of competitive actions and responses from the U.S. retail industry. We then present our results with regard to different responder and first mover performance models. The article concludes by discussing research and practical implications.

[1] In first mover research, firm performance has been operationalized in different ways and for different time frames, for example, in terms of market share, accounting or stock market-based performance, or survival. This study uses a short-term market-based performance measure because it provides for a direct link between individual firm actions and performance effects.

THEORY AND HYPOTHESES

Response delay and responder performance

Theoretical background and evidence

The general proposition regarding response timing is straightforward: Theoretical first mover research in economics, marketing, and management advocates quick responses to competitive challenges to limit the first mover's ability to build competitive advantage (Gal-Or, 1985; Hauser and Shugan, 1983; Porter, 1985). The three streams of literature provide similar and complementary reasons for why quick responses are important.

Normative research in economics highlights the profit advantages of imitation, that is, a 'fast second strategy' is considered more profitable than acting first (Baldwin and Childs, 1969; Glazer, 1985; Gal-Or, 1985). The fast second firm may enjoy cost advantages because it can learn from a rival's mistakes and improve upon the original action before the first mover has had time to build a sizeable advantage (Baldwin and Childs, 1969; Teece, 1986). In marketing, theoretical research recommends response aggressiveness, that is, fast marketing mix reactions to entry (Hauser and Shugan, 1983; Kumar and Sudarshan, 1988). Aggressive marketing responses such as price or advertising adjustments are advocated to prevent the first mover from building major market share and profitability advantages. In management, theory emphasizes the importance of aggressive and fast responses, as well. Porter (1985) stresses two reasons why a quick response is important to profits. First, quick responses prevent the first mover from building barriers such as buyer switching costs that may be difficult for late responders to overcome. Second, quick responses are called for because they signal incumbent commitment to defend market positions. If a first-moving firm experiences vigorous retaliation, it may redirect its strategy, and as a result incumbents' profits and market shares will be protected. Porter (1985: 498) summarizes these ideas: 'As a general rule, quick and vigorous retaliation is necessary to limit an attack.' This view is shared by the competitive dynamics literature that has analyzed competitor actions and responses (Smith *et al.*, 1992; Smith, Ferrier, and Grimm, 2001a; Smith, Ferrier, and Ndofor, 2001b).

Generally, then, theoretical research on response timing argues that attacked incumbents need to respond as quickly as possible, because response performance will be increasingly limited as a first mover becomes more established. This reasoning suggests a negative linear relationship between response delay and responder performance.

Empirical research that has explored the advantages of fast responses generated mixed results. Some studies have found a negative linear relationship between the length of time a firm takes to respond to a challenge and its performance, for example, Mansfield (1968), Smith *et al*. (1989), and Lee *et al*. (2000).

However, other studies suggest that the evidence for a negative relationship is far from clear-cut. In the money market mutual fund industry, for example, Makadok (1998) found that response delay and market share were negatively related as predicted but, unexpectedly, response delay was also associated with higher expense ratios in terms of what the funds charged to their shareholders. In further contrast to predictions, response delay was positively related to accounting-based performance measures in the U.S. airline industry, suggesting that, on average, slow-moving carriers outperformed fast-moving ones (Smith *et al*., 1991, 1992). This picture reversed when response order was considered (the responder's position in a temporal series of responses) rather than response delay (the amount of time it took a firm to respond). Response order and responder performance were negatively related (Smith *et al*., 1991, 1992). In a more fine-grained analysis that distinguished between first movers, fast, medium, and slow second and third movers, as well as late movers, Smith *et al*. (1992) found negative performance consequences for the fast and medium second and third movers, whereas the slow second and third movers did well and even outperformed the first mover. As predicted, late movers had the worst performance. Lilien and Yoon's (1990) study of the timing of competitive market entry into French industrial goods markets also suggests a more complicated relationship. Specifically, they found that the success of new products was lower for first and second entrants, higher for third and fourth movers, and again lower for fifth and sixth movers and all subsequent entrants.

While empirical evidence suggesting that a fast follower strategy may be effective is mixed, there is some empirical support favoring delayed responses. Response delays may be advantageous because they allow firms to collect more information about a pioneer's action. Delays may allow for the resolution of market or technological uncertainties, and the development of more effective responses such as a better product or a superior marketing program (Lieberman and Montgomery, 1988; Mascarenhas, 1992; Lilien and Yoon, 1990; Shamsie, Phelps, and Kuperman, 2004).

A curvilinear relationship

The inconclusive evidence and the fact that both fast and delayed responses can be advantageous suggest a nonlinear relationship. Such nonlinearity is also implied in the results of Lilien and Yoon (1990) and Smith *et al*. (1992) who report that firms with intermediate response delays perform better than firms who move or respond very quickly or relatively late. However, both studies have theoretical limitations because they fall short of providing reasons for why a curvilinear relationship might exist.[2]

We focus our theorizing on dynamic, competitive environments as has been the norm in previous studies that explored the performance effects of response timing (e.g., Smith *et al*., 1989, 1991, 1992; Lilien and Yoon, 1990). In such industries, firms are motivated to compete aggressively because industry structural conditions offer little protection for market positions (Scherer and Ross, 1990). However, when firms jockey for position (Porter, 1980) in highly competitive industries, they are likely to make errors in their choices of defensive strategies and response timing (Porter, 1985: 512). A response timing decision is always a balancing act, and its effectiveness depends on a firm's ability to assess market dynamics correctly and develop an effective response. A balance has to be found between the risks of premature entry against missed opportunity (Lilien and Yoon, 1990; Mitchell, 1989). If a firm responds too early because it has not waited long enough for uncertainties to subside or to develop an effective response, its performance is likely to suffer. If a firm responds too late, it may not be able to expand successfully because earlier movers will

[2] Both studies also have methodological constraints because they do not establish a direct link between firm moves and performance, and they also do not separate first movers from responders when analyzing the performance effects of response delay.

have gained enough leadership to dominate the market (Mitchell, 1991; Mitchell and Singh, 1993).

Thus, the puzzle surrounding the performance effect of response timing may be resolved by proposing a curvilinear relationship: On average, there will be lower success for fast responders, higher success for responders with intermediate delays, and lower success for late responders. Responders with intermediate delays can be expected to outperform fast and late responders because a measured delay will allow for designing an appropriate response without moving too late.

The format battle in the videocassette recorder market provides an illustrative example of the risks of responding too early or too late from the highly competitive consumer electronics industry (Mitchell and Singh, 1993). On the one hand, some firms such as Sanyo and Toshiba followed early and invested in the pioneer's (Sony) Beta format, thus making the wrong technical choice because Matsushita's VHS format ultimately prevailed. On the other hand, the RCA Corporation waited too long and was unable to expand successfully once Matsushita and others had established strong market positions.

Bad luck, choices, and 'blind spots' in competitor analyses

Firms respond to competitive challenges too quickly or too slowly for several reasons: bad luck, conscious choices, and blind spots in competitor analysis (see Table 1). Bad luck refers to situations where a competitor makes an appropriate response timing decision based on available information at the time of the response. In hindsight, however, unforeseen developments invalidate this analysis. Conscious choices are also based on a correct analysis of the market dynamics, but the responder consciously chooses to deviate from the appropriate response timing scenario, and thus accepts the risk of responding too early or too late. In the case of blind spots, response timing errors occur because a firm's response timing is based on an incomplete and/or incorrect analysis of the available information.

Some mistakes in response timing can be attributed to bad luck: in spite of having considered the relevant market dynamics, firms may still get their timing decisions wrong. For example, a responder may have concluded from his analyses that a first mover will quickly build up market share and thus responds fast. However, in retrospect this response is considered too fast because the first mover's action never gained acceptance in the marketplace. Or similarly, a responder may have concluded that there is ample time to develop an effective response to a competitor's move, but ultimately it turns out that the response is too late.

Sometimes firms consciously choose to respond fast although they know that a slower response might be more advantageous. For instance, clients,

Table 1. Reasons for too fast and too slow responses to competitive challenges

Too fast responses	Too slow responses
Bad luck	Bad luck
• After analysis, a responder incorrectly assumes that the first mover will build market share quickly	• After analysis, a responder incorrectly assumes that there is time to develop an effective response
Conscious choice to respond fast	Conscious choice to delay a response
• Important stakeholders expect fast responses	• Desire to obtain new resources
• Attempt to discourage the first mover	• Implement multiple interrelated changes to a firm's strategy and operational routines
Blind spots causing judgmental mistakes	Blind spots causing judgmental mistakes
(a) Problem framing limitations	(a) Problem framing limitations
• Overreactions resulting from framing a competitive move as a major threat	• Inertia due to bureaucracy, age, or size
(b) Escalation of commitment	(b) Escalation of commitment
• Low performance leading to an escalation of risk taking	• Threat-rigidity-responses
(c) Overconfidence in judgment	(c) Overconfidence in judgment
• Neglect or downplaying of time needed to develop an effective response by high performers	• Neglect or downplaying of competitive challenge by high performers

banks, and other important stakeholders often expect fast responses to competitive moves such as a price cut (Smith *et al*., 1992). In such situations, attacked incumbents may respond fast by, for example, also reducing prices to maintain customer loyalty. The responding competitors know that their fast responses may touch off a price war but hope that its impact will be limited. Yet, if a price war leads to a precipitous decline in industry profits, slower responses that focus, for example, on quality rather than price will in retrospect look more appropriate (Rao, Bergen, and Davis, 2000). Similarly, firms may choose to respond fast with easily accessible defensive moves such as increased advertising to hold position and to discourage a first mover from continuing an attack (Porter, 1985). Responders know, however, that fast reactions may also trigger countermoves that they hope will be of short duration, deterring and redirecting the attacker quickly. If the fast responders fail to contain the attack and initiate an advertising war or continuing countermoves, however, fast responses accelerate the responders' performance decline. In retrospect a slower, measured response might appear the more advantageous option (Kalra, Rajiv, and Srinivasan, 1998).

Firms may also choose to delay a response although they know that a faster response might be called for. Their hope is that a delay will not hurt their position. For instance, firms may realize that they need to obtain new resources before they can respond effectively, and so they may postpone their reaction to a competitive threat (Lieberman and Montgomery, 1998; Shamsie *et al*., 2004). Firms may also choose to delay responding because they understand that many interrelated changes to a firm's strategy and operational routines will be needed to respond effectively, and implementing such comprehensive changes requires time (Siggelkow, 2001; Zajac, Kraatz, and Bresser, 2000). Under these circumstances, delayed responses can be explained, but in retrospect, firms may realize they waited too long to respond.

Many inappropriate response timing decisions can be attributed to blind spots in competitor analysis. Blind spots are cognitive biases that lead to judgmental mistakes as when 'a competitor will either not see the significance of events (such as a strategic move) at all, will perceive them incorrectly, or will perceive them only very slowly' (Porter, 1980: 59). Three types of blind spots manifest themselves in strategic decision making: competitors use a limited perspective to frame their competitive problems, they engage in a nonrational escalation of commitment with respect to previously chosen strategic directions, and they show unjustified overconfidence in their judgment and abilities (Zajac and Bazerman, 1991).

As decision makers frame a competitive situation as a threat, limited framing perspectives can provoke responses that are too fast. When decision makers categorize a move solely as a threat, they may overreact with hasty and ill-devised responses (Dutton and Jackson, 1987). In contrast, if a move is perceived not only as a threat but also as an opportunity, competitors develop more measured, creative responses that effectively counteract initial moves (Zajac and Bazerman, 1991). Problem framing limitations can also cause too-late responses. For instance, inertia due to bureaucracy, age, or size (Hambrick, Cho, and Chen, 1996; Miller and Chen, 1996; Ferrier *et al*., 2002) is associated with problem framing limitations that make it difficult for firms to unlearn outdated world views and routines and thus slow down their responses to competitive situations (Mitchell and Singh, 1993; Siggelkow, 2001).

Escalating commitments also elicit responses that can be either too fast or too slow. Low performance and, again, perceptions of threat can cause nonrational escalations. On the one hand, poorly performing firms often escalate their risk taking to potentially destructive levels (Staw and Ross, 1987; Fiegenbaum, 1990). Hence, low-performing firms sometimes retaliate very quickly even though more measured responses might lead to higher returns. On the other hand, perceptions of threat, as well as leading to hasty overreactions, can also generate threat-rigidity-responses (Staw, Sandelands, and Dutton, 1981; McNamara, Moon, and Bromily, 2002), whereby firms escalate their commitment to prior decisions and actions and restrict the number of alternatives they consider. Once a process of escalating commitments has commenced, firms 'stay the course' and may not easily determine the needed course changes, and so may respond too late.

As competitors are overconfident, they are typically inappropriately optimistic as a result of past success about their ability to control a competitive situation (Milliken, 1990; Greve, 2003). Such overconfidence can again cause responses that are too fast or too slow. Highly successful firms may retaliate too swiftly because they are overconfident

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in their ability to ward off a competitive threat. Such quick responses may underestimate the time needed to develop an effective response, especially if interrelated organizational changes are also necessary (Sigglekow, 2001). Past success may also encourage firms to neglect or downplay the ability of first movers to establish market leadership (Hedberg, Nystrom, and Starbuck, 1976; Miller, 1992; Audia, Locke, and Smith, 2000). In such cases, overconfidence may elicit responses that are too late, and late movers may not be able to catch up.[3]

Our literature review shows that response timing is a complex issue. While it is generally appropriate to assume that firms will and should use fast responses when attacked, as has been done by traditional first mover research, we suggest that the term 'fast' should not be equated with the fastest possible response because perspectives such as conscious choices and blind spots in competitive decision making highlight why firms often respond to competitive challenges too fast as well as too late and as a consequence their performance will suffer. To reach this conclusion, we use related theoretical perspectives that are different in the specific mechanisms that may be at work but that converge in the overall prediction of a curvilinear relationship. Traditional first mover theory, in contrast, overemphasizes the advantages of fast responses and the disadvantages of responding slowly to competitive attacks. It has overlooked the risks of responding too fast and the potential nonlinearity of the relationship. As a result, we suggest:

> *Hypothesis 1: Responder performance and response delay are related in an inverted U-shaped manner: Lower performance will result for fast and late responders, and higher performance for firms with intermediate response delays.*

Response delay and first-mover performance

The literature that has suggested a negative linear relationship between responder performance and response delay, also argues that an opposing positive linear relationship exists for the first mover: the longer a first mover firm remains unchallenged, the greater the market shares and profits that accrue to this firm (Porter, 1980; Hauser and Shugan, 1983; Glazer, 1985; Carpenter and Nakamoto, 1989; Smith *et al*., 1989, 2001a, 2001b). Long response delays provide pioneers with an opportunity to establish first mover advantages such as technological leadership or buyer switching costs that lead to superior performance (Lieberman and Montgomery, 1988). These first mover advantages can be substantial and may not be easily overcome by later moving competitors. Indeed, Porter (1980: 98) suggests that a key principle of competitive interaction is to make moves that maximize delays in retaliation.

Empirical evidence supports a positive linear relationship between first mover performance and the length of time it takes for competitors to respond. VanderWerf and Mahon (1997) performed a meta-analysis of studies of first movers and found that they enjoyed significant market share advantages over later entrants. In fact, the empirical evidence in support of this relationship is so extensive that Kalyanaram, Robinson, and Urban (1995) consider it to be an 'established empirical generalization.' Evidence also supports profitability advantages for first moving firms. Covin, Slevin, and Heeley (2000) found higher profit margins for pioneering firms in competitive industries based on a sample of nondiversified manufacturing firms, for example. Makadok (1998) reported that first movers and early movers were able to sustain not just their market share but also their pricing advantages in the money market mutual fund industry. Makadok's results also suggest that first mover advantages may persist even in industries where barriers to entry are low.

We agree with the literature that there is a positive linear relationship between actor performance and response delay because we do not expect the actor performance effect to be a mirror image of the responder performance effect. In competitive environments, the first mover's ability to reap the benefits of a move is time dependent: the later the first moving firm faces competitive responses, the more time it has to absorb first mover benefits. A fast response is likely to leave the first mover less well off because the period available for establishing first mover advantages is cut short (Porter, 1980).

[3] The demise of the fashion apparel company Liz Claiborne during the early 1990s provides an example of overconfidence in judgment. Past success had caused insensitivity to environmental changes so that the firm's management erroneously believed that it had ample time to introduce comprehensive changes to its business model. This overconfidence led to several years of declining sales and profits (Siggelkow, 2001).

This predicted positive linear relationship for first movers is not affected by response timing errors, that is, responses that are too slow or too fast and so of less value to the responder. Conscious choices or blind spots that lead to late responses, for example, simply provide the first mover with more time to claim benefits. If responders move too fast due to conscious choices, or blind spots, these ill-conceived responses nevertheless harm the first mover. As fast responses often imitate the original first mover action (Chen and MacMillan, 1992; Smith *et al*., 1992), they directly counteract the first mover's attempts to build market share or achieve other gains. Even if a fast imitation is qualitatively inferior to the original action, it will take time to differentiate quality, and therefore, at the time of the fast imitation, the first mover cannot expand as planned and thus suffers a performance disadvantage.[4] As a result, we propose:

Hypothesis 2: First mover performance and response delay are related in a linear manner: As response delays are longer (shorter), performance decreases are smaller (greater).

In sum, the joint contribution of our two hypotheses to the first mover literature is the prediction that the performance effects of response timing for the responder and the first mover are different and not the mirror image of one another. Our theoretical reasoning suggests that the first function is curvilinear and the second linear.

INDUSTRY CONTEXT AND DATA

The U.S. retail industry

In order to test for the performance effects of competitive responses, we chose an industry setting characterized by (1) a high level of competitiveness, (2) a rich diversity of competitive interactions, and (3) a broad coverage of competitive moves in the media (Miller and Chen, 1994; Young, Smith, and Grimm, 1996). The U.S. retail industry exhibits these competitive dynamics and, therefore, is well suited to test for the performance effects of competitive responses in accordance with our hypotheses (Ghosh, 1990; Cox and Brittain, 2000).

Rivalry in the U.S. retail industry is intense and stems from several sources. First, customer loyalty is weak because buying decisions are often spontaneous (Berman and Evans, 1998). Second, Wal-Mart's dominant market position, repeated innovations (Stalk, Evans, and Shulman, 1992), and continued growth have created considerable and continuing competitive pressures on all incumbents. Third, the time frame of our study, the period of 1994 to 2000, incorporates the rise of Internet-based retailing business models that posed an additional new and major threat to established retailers (Evans and Wurster, 1997). Fourth, we observed substantial performance variability over the time of our study. For example, Kohl's Corporation tripled its revenues from $2 billion in 1995 to $6 billion in 2000. In contrast, Sears Roebuck & Company's revenues grew from $35 billion to $40 billion during the same period, barely in line with general inflation. In combination, these factors created a high level of competitiveness within this industry. Ghosh (1990) aptly summarizes his account of the U.S. retail industry by stating: '. . .the level of competition among the top chains in this market is, however, very intense. Any competitive move, such as price cuts or double couponing, initiated by one chain is apt to be quickly imitated by the other chains' (Ghosh, 1990: 42).

Firms in the U.S. retail industry use a diverse range of strategic and tactical competitive moves. For example, growth into other segments of the market or better regional coverage can be achieved by strategic moves such as mergers and acquisitions or organic geographical expansion. In addition, retailers use a wide range of tactical moves to pursue their growth objectives, for example, price changes, advertising, and service adjustments.

The U.S. retail industry is also sufficiently large to receive daily attention from the media and financial analysts. Additionally, retailers constantly inform the public of their competitive moves, for example, with regard to new product offerings or concepts, shop openings, or price changes. Media attention and firm public relations efforts ascertain that abundant information on competitive moves within this industry is publicly available. For our

[4] Thus we predict performance disadvantages from fast responding for the first mover and the responder but for different reasons. For the first mover, negative performance consequences follow because s/he faces competition early on and has little time to absorb the benefits of his/her move. While the fast responder is likely to harm the first mover, s/he does so at a cost because the faster response is also more likely to be inappropriate or inefficient, that is, too early.

study, media attention to the industry was an important consideration since the identification of competitive moves relied on a structured content analysis of press articles and newswire reports.

Sample

The sample consists of the 17 largest U.S. department (standard industrial classification [SIC] 5311) and variety (SIC 5331) stores (see Appendix A). We combine the two SICs because they include close and direct competitors that are influenced by identical industry trends, and, consequently, are treated as one industry—the retail industry—by financial analysts and the business press. (Weinswig, Tang, and Dixon, 2004; Rozhon, 2004). With the time frame of 1994 to 2000, our sample corresponds to 119 company years. Smaller retailers were excluded because of their limited geographic and competitive scope and because of the limited media attention that they attract (Fombrun and Shanley, 1990).

To test for sample selection bias resulting from our focus on large companies, we compared return on assets (ROA) and return on sales (ROS) averages in our sample to the industry averages in the overall Standard & Poor's (S&P) 500 population representing our two SICs. These comparisons revealed no significant performance differences (ROA: $t = 0.285$, $p = 0.785$; ROS: $t = -0.133$, $p = 0.899$), suggesting no sample selection bias. Our sample of industry firms controls a total market share (total sales volume) of between 65 and 75 percent of U.S. retail sales in any sample year.

METHODOLOGY

Structured content analysis

We employed structured content analysis of press articles (Boyatzis, 1998; Weber, 1990), consistent with the methodology used extensively in competitive dynamics research. One constructs datasets by grouping the competitive moves occurring within an industry into types and defining a coding scheme to search electronic databases for reports of these types of actions and responses. Some types of competitive moves are found generally in most industry settings, but there are also industry-specific types that must be coded in order to cover all relevant competitive behaviors. Our study includes nine move types (see Appendix B): pricing moves, marketing moves, service improvements, range moves, format moves, geographical growth, direct sales moves, mergers and acquisitions (M&A), and legal moves. Pricing, marketing, M&A, and legal moves are generally established in competitive dynamics studies (e.g., Ferrier *et al.*, 1999) and existing coding approaches could be used. Service moves and geographic growth (usually market entry) required a specific coding for the retail industry. Range and format moves are also retail-specific moves. Range refers to the choice of brands carried in stores, and format to the different physical layouts of stores. Direct sales moves include catalog operations and Internet-based retailing. The coding excluded moves with respect to internal firm operations, for example, organizational restructurings or changes in logistics, because research has shown that business media do not provide reliable accounts of internal operations (Miller and Chen, 1996).

Identifying competitive actions and responses is a major challenge in competitive dynamics research (Chen, Smith, and Grimm, 1992), and our approach uses consistent steps and procedures to proceed with the utmost caution. We identified and accessed press articles and newswire reports utilizing *Factiva*, a division of Dow Jones & Company that provides research and business information via products (databases) that access over 10,000 publications. The coding scheme was pretested by randomly choosing a three-month period within our seven-year time frame. Two lists of articles were produced for each month. The first list was based on the coding scheme. The second list included all articles that referred to the sample firms. The first list identified all relevant moves taken during the test months as compared to the second unfiltered request. A comparison of the two lists confirmed our initial coding scheme. However, two additional keywords were included in the final coding scheme to identify more articles with relevant and specific moves and one keyword was deleted because it did not identify the moves it was intended to code.

The database request generated 4,914 articles. All articles were rated independently by the first author and a Ph.D. student in a two-stage process: In the first stage, headings and first paragraphs were utilized to identify articles that reported on competitive moves and to exclude articles not relevant for our study. Excluded articles focused, for example, on earnings reports, executive succession events, or other firms not part of the sample. This process led to the exclusion of 3,768 articles by both raters. The full text of the remaining 1,146 articles was considered relevant by at least one rater and so was downloaded for further analysis. In the second stage, the raters identified move attributes by content-analyzing each of the 1,146 articles. These analyses led to the further exclusion of another 254 articles by both raters because the articles did not focus on competitive actions or responses. For the remaining 892 articles, the raters identified and recorded the date and a short description of each move, coded the move type, and identified whether a move was a response to a previous action.

Competitive dynamics methodology proposes two ways of identifying competitive responses, and both approaches are used in this study. The original method proposed by Chen *et al*. (1992) relies on an explicit reference to an earlier action in the press article. However, not all articles actually make such references because at the time of their publication, the original action may have been quite evident to readers and so required no additional mention. Therefore, an alternative coding approach is to focus on finding competitive moves that are similar to earlier actions. For example, Schomburg, Grimm, and Smith (1994) studied new product introductions, and considered all later introductions of the same type of product as the original to be responses to the original product introduction.[5] We defined similar moves as those moves that target the same customer groups (segments), geographical markets, or affect the same product category as the original action. This criterion for identifying similarity has two advantages. First, the criterion is stronger than just comparing moves by type, because in addition to being the same type, two moves also had to focus on the same product category, geographical market, or customer groups. Second, this criterion exceeds the same-type imitation logic, because two moves do not need to be of the same type to be similar.[6]

We defined twelve months as the time frame within which we expected a response to occur if it was going to occur. This choice reflects the seasonal nature of retailing that may persuade competitors to delay their responses by up to four quarters. Twelve months also happens to be a well-established time frame in competitive dynamics research (e.g., Miller and Chen, 1996). Additionally, Hayward (2002) suggested that any inferences drawn from specific competitor moves lose their validity after around twelve months.[7]

Our approach of identifying and coding actions and responses in a two-stage process allowed the two independent raters to concentrate on the content of full articles and to compare and assess cases that were difficult to code. After the second stage, 97.5 percent of the independent ratings (pertaining to the date, move type, and action versus response status of a move) were in agreement, and interrater reliability assessed by Cohen's kappa was 0.87 ($p < 0.001$). Cases coded differently were discussed and resolved either through mutual agreement or by excluding the case from the dataset. These procedures led to a dataset of 370 competitive moves including 105 responses. Appendix B presents the coding scheme, the distribution of move types in our dataset, and examples of the headlines associated with each move type.

We were also rigorous in tracing streams of actions and responses, adopting the established procedures used in competitive dynamics research (Smith *et al*., 1991, 1992). Initial actions were identified in a transitive manner by constructing chains of events for each of the 105 responses. If a preceding action was identified to a response, these two events became a two-element chain of action and response. If the initial action of such a two-element chain was itself the response in a different two-element chain, the two chains were merged into a three-element chain, etc. The longest chain in our data consisted of an initial action and five later responses. The earliest action in a chain was identified as the initial action for all subsequent

[5] An illustrative example from our data concerns Sears and Wal-Mart. One article reported that Sears had become the first national retailer to offer PCs. Two weeks later, another article reported an exclusive deal between Wal-Mart and Compaq to sell PCs. Both moves were of the same type, that is, range moves. Though the latter article did not explicitly mention Sears's earlier action, we coded Wal-Mart's move as a response.

[6] For instance, Ames substantially expanded its furniture department (a range move) in early 1997. A few months later, Federated added a large collection of private label furniture to their stores (a range move), and Saks introduced furniture boutiques in their stores (a format move). We considered the moves by Federated and Saks to be responses to Ames's initial action, although the response by Saks was of a different type than the original action. All three moves were similar in that they focused on the same product category: furniture.

[7] Note that the twelve months time frame is not the same here as a calendar year. For a move that occurred in October, for example, we would check for responses until October of the following year.

moves, even if a response was referred to as an action in a press article. As a result of these efforts of identifying streams of events, we identified 60 original actions to our 105 responses.

Event study methodology

Event study methodology is commonly used in financial market studies to determine changes in shareholder wealth, as indicated by the impact particular events have on stock prices (Campbell, Lo, and MacKinlay, 1997). The method has been widely used in management research (McWilliams and Siegel, 1997) including competitive dynamics research (Lee *et al*. 2000), where stock effects are used as a proxy for move performance. Event study methodology is particularly suited for our research because it is possible to link reported competitive moves directly to performance effects.

Stock effects were calculated from daily stock return data provided by *Commodity Services, Inc.* via their Yahoo!Financials Web portal. A two-day event window was constructed for every action in the dataset consisting of the day prior to the press release describing the competitive move and the day of the release itself. The day prior to the press release was included because information may have already reached the market during this trading day (Campbell *et al*., 1997; MacKinlay, 1997). Actual stock returns in the event window were compared with hypothetical returns calculated from a capital asset pricing model that was dynamically estimated for each move using the returns of the 120 days prior to the event window. The market return was modeled using S&P 500 index returns (MacKinlay, 1997), and deviations from these hypothetical returns were interpreted as wealth effects created by the move. In order to make these effects comparable across companies and time, they were standardized using the procedure proposed by Dodd and Warner (1983; McWilliams and Siegel, 1997). This procedure represents the stock effect as a deviation from the underlying market-imputed stock return in standard deviation units of a standard normal distribution under the null hypothesis that no stock effect has occurred. This procedure is conservative, as it attributes lower values for the stock effect of those events that do create additional returns because, in these cases, return variance is overstated.

Dependent variable

Stock effects of responses

In order to capture performance effects for actors and responders, two kinds of stock effects were calculated: To determine the wealth created for the responder by his/her response, stock effects were calculated for the responder at the day of his/her response according to the method described above. In order to avoid overlapping events, for example, reports on earnings or dividends that would invalidate the stock effects, 14 responses were excluded from calculation resulting in a remaining sample of 91 responses. Overlapping events were identified by checking *Factiva* for press releases about the focal company two days before and one day after the response under review. This procedure assured that none of our event windows overlapped.

The wealth effect of the response for the original actor was determined by calculating a stock effect for the first mover on the day of the response. We also had to check against overlapping events for first movers. This check for overlapping events led to the deletion of another 14 responses for models where the wealth effect of the response for the first mover is the dependent variable, resulting in a sample of 77 cases.

Independent variable

Response delay

Response delay is calculated in working days as the difference between the date of the action and the date of the response. We used working days to assess the number of exchange trading days between two events. However, we found that the response delays were severely skewed, as has been the case in prior studies (MacMillan, McCaffery, and van Wijk, 1985; Smith *et al*., 1992). In order not to violate regression assumptions, our analysis used the natural logarithm of response delay.

Control variables

To ensure the reliability of the effect of response delay on performance, we use three sets of control variables: two move-specific variables, namely imitation and tactical actions; three firm-specific variables, that is, firm size, financial performance and age; and two industry-specific variables, industry concentration and industry sales growth.

Imitation

A relevant contingency of the response timing decision is the type of response. A response can be an imitation of the original move or it can be more creative, that is, of a different kind. Smith *et al.* (1991) argued that a nonimitative response may erode a first mover's advantage more effectively because it is less likely to intensify competition. It is conceivable that the type of response may influence the assessment of competitive moves by the investment community and thus stock effects. However, we do not expect that the effects specified by our two hypotheses are influenced by whether a response is an imitation of the original move or of a different type. Imitations may be too fast or too slow, and so can nonimitative responses. Similarly, faster imitations or nonimitative responses are likely to hurt the first mover more strongly than later responses. Imitation is a dummy variable coded as 1 if the type of response is the same as the type of action, that is, an imitation, and as 0 if the response is of a different type, that is, a nonimitative response.

Tactical action

Competitive dynamics research has demonstrated that the type of action taken is related to response timing and a distinction is made between strategic and tactical actions. Strategic actions such as new product introductions or mergers require significant investments of specific resources and long time horizons, whereas tactical actions such as pricing or advertising changes involve fewer and less specific resources and are less difficult to implement and reverse. Research has shown that strategic actions lead to longer response lags than tactical actions (Smith *et al.*, 1991, 1992; Chen *et al.*, 1992). However, we suggest that this distinction does not affect the relationships specified by our hypotheses. Competitors can respond too fast or too late to both strategic and tactical actions, and early responses will be more harmful to the first mover regardless of whether competitors respond to strategic or tactical actions.[8]

We classified our nine move types as either tactical or strategic by adopting a procedure similar to that used by Smith *et al.* (1991) and Chen *et al.* (1992). Specifically, we obtained independent classifications from the two authors and two industry experts.[9] Three independent classifications led to a distinction that considers pricing, legal, marketing, service, and range moves as tactical, and format, geographic growth, direct channels, and M&A as strategic. One industry expert considered format moves as tactical, suggesting they are retail-specific. A discussion resolved the issue: Retail-specific format moves (e.g., the introduction of supercenters) typically involve significant resource commitments and major implementation efforts and thus are considered strategic.

We coded the variable 'tactical action' as a binary variable to indicate whether the original action in each action-response pair was tactical or strategic. The variable considers pricing, legal, marketing, service, and range moves as tactical actions (scores of 1), and format, geographic growth, direct channels, and M&A as strategic actions (scores of 0).

Firm size

Size is measured as the total number of competitive actions and responses performed by a company in a given year. With regard to the responder model (Hypothesis 1), size is a count of the responder's total number of competitive moves, whereas the first mover model (Hypothesis 2) uses a count of the first mover's competitive moves. Prior research has shown that larger firms carry out more competitive moves than smaller firms (Young *et al.*, 1996; Smith *et al.*, 2001b), and so a firm's total number of competitive moves is a proxy indicator for its size. In this study, for example, the total number

[8] To realize how it is possible to respond too fast even to tactical actions, consider price moves, a prototypical tactical action associated with short response delays. One reason for delaying a response to a price cut is to avoid a price war that could hurt all contestants (Rao *et al.*, 2000; Smith *et al.*, 2001a). Another reason for delay is to prevent unfavorable changes in consumers' perceptions of quality (Kalra *et al.*, 1998). After a price cut by a first mover, there is often uncertainty about product quality, particularly if the first mover is a new entrant. If incumbents respond with fast price cuts, they would signal to consumers that the entrant's product is of high quality and thus help diffuse the entrant's product. Therefore, a measured response that avoids an immediate matching of a price cut may be the more appropriate response.

[9] Authors and experts used the following definition (Smith *et al.* 1992: 63): 'Strategic actions involve significant commitments of specific, distinctive resources and are difficult to implement and reverse. On the other hand, tactical actions are often designed to fine-tune strategy; they involve fewer and more general resources than strategic actions, are easier to implement, and are often more reversible.'

of competitive moves is positively correlated with other measures of size such as total sales volume and the number of firm employees at the 0.01 level of significance.

In addition to being an indicator of firm size, the total number of competitive moves reflects an ability to compete successfully and learn (Ferrier *et al*., 1999). Particularly active first movers may be less exposed to competitor responses as compared to firms that make fewer attempts to improve their competitive position. Likewise, particularly active responders are more experienced in making competitive moves and will, therefore, be better prepared to design more effective responses. Thus, size also controls for the experience of large competitors that investors may take into account and so this may be reflected in stock returns.

Financial performance (ROS)

When regressing on stock effects one must control for overall firm profitability. Investors might assume that a highly profitable company would yield more wealth effects from a particular competitive response than a less profitable one, and that highly profitable actors are better equipped to weather competitive attacks. We use measures of the responder's (Hypothesis1) and the first mover's (Hypothesis 2) return on sales (ROS) to control for financial performance (Smith *et al*., 1992; Ferrier, 2000).[10]

Age

Financial analysts may also consider a firm's age when evaluating specific competitive moves. On the one hand, age like size can be seen as an indicator of experience in dealing with competitive threats (Shamsie *et al*., 2004). On the other hand, age is a potential source of inertia that may curtail a firm's ability to initiate or cope with competitive moves (Stinchcombe, 1965). Age is measured as the number of years since incorporation. With regard to the responder model (Hypothesis1), age measures the age of the responder at the time of the response, whereas the first mover model (Hypothesis 2) captures the age of the actor at the time of the response.

Industry context

Industry context and, in particular, intra-industry structural variation affects the intensity of competitive interactions and so has performance implications (Smith *et al*., 2001b). As a result, financial analysts may consider the impact of intra-industry structure when they evaluate the performance implications of different competitive moves. We use two variables to control for industry context (Lee *et al*., 2000). The first variable, industry concentration, measures the share of industry sales generated by the four leading firms in the industry for each year of the analysis. The second variable, industry sales growth, captures the percent change in industry gross sales from the previous year's gross sales for each of the seven years of the analysis.

Research model

We constructed a model connecting stock effects for responders and first movers to response delay and our control variables. The model is of the general form:

$$\mathrm{SE_{ij}} = f\ (\beta \times \mathrm{RD_i};\ \beta \times \mathrm{MC_i};\ \beta \times \mathrm{FC_j};\ \beta \times \mathrm{IC_k}) + \mathrm{E_{ijk}}$$

where SE is the stock effect of a response for the responder (Hypothesis 1) or the first mover (Hypothesis 2). RD represents a vector of response delay variables. Since we hypothesize alternative shapes for the relationship, the RD vector either includes the response delay variable alone for the linear model (the model predicted by Hypothesis 2), the response delay variable and its squared term for the quadratic model (the model predicted by Hypothesis1 and validation model for Hypothesis 2), or an additional cubic term for the cubic model (the validation model for Hypothesis 1). Validation models were estimated to check that higher-level polynomials were not more effective than our predicted effects. MC refers to move-specific controls (imitation, tactical action), FC refers to the firm-specific controls regarding the responder or the original actor

[10] ROS is preferable to alternative accounting measures, for example, ROA or return on equity, for two reasons. First, ROS is less dependent on a firm's financial strategy. Second, since our study considers competitive moves that, typically, are directed at increasing sales volume, a sales-related performance measure is ideally suited to control for performance differences.

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(size, financial performance, age), and IC refers to industry-specific controls (concentration, growth); i stands for the response, $i = 1, \ldots, n$ ($n = 91$ for the responder models, $n = 77$ for the actor models), j stands for responder or first mover ($j = 1, \ldots, 17$), and k stands for the year of the response ($k = 1, \ldots, 7$). E_{ijk} stands for the random error term.

The model was estimated by means of panel data analysis (Hsiao, 2003). The nature of the dataset raises concern regarding the possibility of unobserved heterogeneity due to differences among responders or first movers in terms of omitted variables that may affect both independent and dependent variables. For example, different top management teams might favor specific but different response timing decisions that could also be related to differing stock effects. In order to test for unobserved heterogeneity, we introduced fixed or random firm effects. We conducted Hausman tests to determine whether fixed or random effects models were appropriate for the data. In both cases, the test statistics remained insignificant ($\chi^2 = 4.116$ [responder model/H1], $\chi^2 = 2.756$ [first mover model/Hypothesis 2]) suggesting that a random effects model was more suitable. We also tested for heteroskedasticity using White's general test, and for serial correlation using the Durbin-Watson test. We did not detect heteroskedasticity ($\chi^2 = 7.984$ [responder model/Hypothesis 1], $\chi^2 = 6.574$ [first mover model/Hypothesis 2]), but the Durbin-Watson statistics are in the inconclusive range ($d = 1.73$ [responder model/Hypothesis 1], $d = 1.68$ [first mover model/Hypothesis 2]). Therefore, we used Generalized Least Squares (GLS) estimation, which is less restrictive (Bergh and Holbein, 1997).

RESULTS

Table 2 presents means, standard deviations, and correlation coefficients for the responder (Hypothesis 1) and the first mover model (Hypothesis 2) respectively. The average response delay was 130 business days for the responder model and 136 business days for the first mover model. Most responses were imitations with less than one non-imitative response in five, indicating that many responders intend to copy to catch up, potentially further escalating competition. Strategic and tactical actions are balanced, that is, both types of competitive moves evoke responses at approximately equal rates. This confirms that retailers use a broad range of actions to succeed in the marketplace. The low levels of ROS, averaging around two percent, indicate that retailers need to compete vigorously to succeed. Both industry concentration and industry sales growth remained relatively stable over time.

Multicollinearity did not pose a problem, as the correlations among the independent variables are insignificant with three exceptions. First, response delay and tactical action are negatively correlated, as expected. Second, industry concentration is positively correlated to imitation, suggesting that changes of industry market shares that favor the leading firms encourage responders to imitate. Third, higher industry sales growth is associated with longer response delays, indicating that firms take more time to respond in industry growth environments. There is only one significant set of correlations between the dependent and independent variables, namely a negative correlation between stock effect and response delay in the responder model, and a positive correlation in the first mover model. These correlations are in line with the linear predictions of traditional theoretical research with respect to first mover advantages. However, and as our multivariate analyses below show, they are also misleading.

Table 3 provides the GLS estimates for three responder models (linear, quadratic, and cubic) and two first mover models (linear and quadratic). With regard to the responders, the quadratic model provides a statistically significant explanation ($F = 2.604$, $p < 0.05$) that is stronger than both the linear ($F = 0.894$; n.s.) and the cubic models ($F = 2.328$; $p < 0.05$). The coefficients for response delay show significant effects only in the quadratic model ($p < 0.001$). The negative coefficient for the squared response delay term confirms the inverse U–shaped relationship as proposed by Hypothesis 1: On average, there are lower stock effects for fast and late responders, and higher stock effects for responders with intermediate response delays. None of the control variables have significant effects in the responder models.

Turning to the first movers, the coefficient for response delay in the linear model is positive and significant ($p < 0.01$), supporting Hypothesis 2. In the quadratic model, none of the response delay effects are significant. The linear model provides a stronger source of explanation ($F = 2.246$;

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Table 2. Descriptive statistics for responder and first mover models

Responder model (H1) − $N = 91$			Pearson correlations							
Variables	Mean	S.D.	1	2	3	4	5	6	7	8
1 Stock effect	0.058	1.049								
2 Response delay	4.871	1.310	−0.216*							
3 Imitation	0.879	0.328	0.055	−0.062						
4 Tactical action	0.539	0.501	0.072	−0.358*	−0.073					
5 Size	7.550	4.267	−0.045	0.107	0.032	0.141				
6 ROS	0.022	0.023	−0.144	0.057	0.047	−0.042	−0.154			
7 Age	73.396	21.696	−0.085	0.132	0.026	0.053	0.103	−0.119		
8 Industry concentration	51.905	2.658	−0.011	−0.044	0.215*	0.038	0.206	0.013	−0.001	
9 Industry sales growth	9.206	2.064	−0.034	0.251*	−0.157	−0.124	−0.157	0.169	0.132	−0.162

* $p < 0.05$ (two−tailed)

First-mover model (H2) − $N = 77$			Pearson correlations							
Variables	Mean	S.D.	1	2	3	4	5	6	7	8
1 Stock effect	0.023	1.05								
2 Response delay	4.914	1.20	0.257*							
3 Imitation	0.857	0.352	0.037	−0.059						
4 Tactical action	0.494	0.503	0.066	−0.376*	−0.117					
5 Size	6.442	4.30	0.043	−0.210	0.129	0.074				
6 ROS	0.017	0.023	0.112	0.112	−0.017	−0.013	0.128			
7 Age	70.714	25.756	0.038	−0.161	0.123	0.148	0.098	0.076		
8 Industry concentration	51.895	2.630	−0.134	−0.044	0.238*	0.004	0.197	−0.219	−0.044	
9 Industry sales growth	9.231	2.074	0.071	0.270*	−0.167	−0.084	−0.114	0.243	0.137	−0.146

* $p < 0.05$ (two−tailed)

$p < 0.05$) than the quadratic model ($F = 1.910$; $p < 0.10$). Again, none of the controls reveal significant effects.[11]

DISCUSSION AND IMPLICATIONS

This study revisits the relationship between response timing and performance in the tradition of competitive dynamics research, drawing on discussions of first and late mover (dis)advantages developed in management, marketing, and economics. We propose and then present evidence that response delays have dissimilar first mover and responder performance effects in a competitive industry environment.

Our study's major contribution is to propose a curvilinear (inverted U-shaped) relationship between responder performance and response timing. Our results indicate lower performance for fast and slow responders, and higher performance for responders with intermediate response delays. Past research has often been an advocate for fast responses and has argued that a negative linear relationship should obtain between response delay and responder performance (e.g., Gal-Or, 1985; Porter, 1985; Smith *et al*., 2001a). In contrast, our theoretical reasoning and our findings suggest that as responders move too quickly or too slowly, this impacts their performance.

We have extended the theoretical treatment of response timing by integrating complementary

[11] To further validate our findings, we performed two supplementary analyses. First, we analyzed the data using alternative stock effect event windows: a three-day window (−1;+1), a seven-day window (−3;+3), and an 11-day window (−5;+5). The model results become increasingly insignificant with the longer event windows. In the three-day event window, however, we still observe the same predicted significant effects as in our two-day event window. Second, we ran regressions using the alternative classification of tactical actions, that is, treating format moves as a tactical action. The results are very similar for both classifications. These analyses are available from the authors.

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Table 3. Stock effects of responses: GLS results

Independent variables	First mover				Responder					
	Linear		Quadratic		Linear		Quadratic		Cubic	
Intercept	0.872	(2.959)	−0.742	(3.672)	0.855	(2.600)	-5.454^{+}	(2.901)	-6.063^{+}	(3.508)
Response delay	0.328^{**}	(0.116)	0.785	(0.623)	-0.163^{+}	(0.095)	1.704^{***}	(0.489)	2.220	(1.724)
Squared response delay			−0.053	(0.071)			-0.217^{***}	(0.056)	−0.347	(0.418)
Cubic response delay									0.010	(0.032)
Imitation	0.353	(0.369)	0.371	(0.371)	0.181	(0.353)	0.341	(0.328)	0.342	(0.330)
Tactical action	0.404	(0.276)	0.380	(0.279)	0.028	(0.241)	0.005	(0.223)	−0.009	(0.229)
Size	0.035	(0.036)	0.035	(0.036)	−0.018	(0.032)	−0.011	(0.030)	−0.010	(0.030)
ROS	0.906	(6.094)	1.064	(6.118)	−7.384	(5.041)	−4.596	(4.713)	−4.770	(4.772)
Age	0.003	(0.005)	0.003	(0.005)	−0.004	(0.005)	−0.005	(0.005)	−0.005	(0.005)
Industry concentration	−0.068	(0.052)	−0.057	(0.054)	0.005	(0.046)	0.041	(0.043)	0.040	(0.044)
Industry sales growth	0.015	(0.077)	0.029	(0.080)	0.014	(0.073)	0.092	(0.070)	0.096	(0.072)
N	77		77		91		91		91	
F	2.246^{*}		1.910^{+}		0.894		2.604^{*}		2.328^{*}	

R^2 not reported because GLS estimation was used
S.E. in parentheses
$^{+}$ $p < 0.10$ (two−tailed) * $p < 0.05$ (two−tailed) ** $p < 0.01$ (two−tailed)
*** $p < 0.001$ (two−tailed)

conceptual perspectives to explain why firms may respond too fast as well as too late to competitive challenges. As a general rule, it can be assumed that firms will attempt to respond fast to competitive challenges. While many firms will manage to respond with a measured response delay, others will commit errors at the extremes of the response timing continuum that can be detrimental to performance. For example, firms may choose to respond fast if they desire to discourage a first mover, and they may delay if they wish to obtain new resources before responding (Porter, 1985; Lieberman and Montgomery, 1998). In these situations, firms accept the risk of performance disadvantages that may result from their timing decisions, and, if they fail to control this risk, they will sustain such disadvantages. Firms suffering from blind spots, may also make inappropriately fast or slow response timing decisions due to their incorrect perceptions of the competitive situation. Performance disadvantages may result from firms using a limited perspective to frame a competitive problem, engaging in a nonrational escalation of commitment, or showing overconfidence in their judgment (Zajac and Bazerman, 1991).

By using multiple conceptual lenses (Schendel, 1994), our study offers a cohesive explanation predicting a curvilinear relationship between response timing and responder performance. While our theoretical extension is more complex than traditional explanations, it reconciles the historical treatment of response timing with the inconclusive empirical evidence.

Our second contribution concerns the performance effect of response timing for the first mover, and the relationship of this effect to the responder performance effect. We confirm previous research that has found a positive linear relationship between the actor's performance effect and response timing (e.g., Smith *et al*., 1991; Makadok, 1998; VanderWerf and Mahon, 1997). Thus, our research suggests that the performance effects of response delays for responders and first movers do not mirror each other, but are characterized by different functions, the first being curvilinear and the second linear.

Our study also makes a methodological contribution being one of the few that directly links the effects of response timing to stock market performance. Previous research has had difficulties in establishing a link between competitive moves and performance effects because, typically, it has relied on averages of quarterly or annual accounting performance data. The only other study that has used stock market performance effects as a dependent variable is by Lee *et al*. (2000), who, however, combined first and second movers into a single group and thus could not clearly separate first mover from responder performance effects.

Research implications and limitations

Our key research implication concerns the study of fast follower strategies where a more cautious and balanced treatment of fast competitive responses is needed. The literature has explored several organizational and environmental attributes that facilitate swift and aggressive responses, for example, organizational slack and a competitive industry environment (Miller and Chen, 1996; Ferrier, 2000; Ferrier *et al.*, 2002). The questions underlying this research require it to shift from studying the factors that facilitate fast and aggressive responses to include factors that might cause and prevent errors when responding quickly. Future research may investigate how conscious choices and blind spots in competitor analysis lead to premature or late responses. Specifically, studying the performance implications of different mechanisms associated with conscious choices, for example, attempts to discourage first movers or to implement interrelated changes to a firm's activity systems, and blind spots, for example, overreactions due to framing limitations or threat-rigidity responses, seem to be promising avenues of future research.

Response timing may also be influenced by a firm's resource positions (Barney, 1991; Lieberman and Montgomery, 1998; Smith *et al.*, 2001b). Are there strategically valuable resources and capabilities, for example, managerial experience, that moderate the response timing-performance relationship? Or, alternatively, are less uniquely valuable resources such as abundant financial resources sufficient in themselves to make successful response timing decisions?

Research on the antecedents and consequences of response timing might also benefit from applying institutional theory (Smith *et al.*, 2001b). The fact that competitors may choose to respond fast to meet stakeholder expectations, for example, suggests that institutional pressures may be at work (Scott, 1995). Institutional considerations also raise interesting questions about whether and when competitive moves are based on the desire to achieve economic gain versus an attempt to attain organizational legitimacy (Bresser and Millonig, 2003).

Our sample is composed only of large retailers operating in the United States. Since firms in different industries face varying degrees of competitiveness, they may display different competitive behaviors (Smith *et al.*, 1996) so that different results could surface in different types of markets. For example, in the retail industry, innovations typically involve incremental changes, for example, of the services provided to customers or the product range offered. These innovations spread rapidly because competitors can imitate them easily (Ghosh, 1990). A rapid diffusion of innovations is less common in manufacturing industries where technological innovations can be protected by patents, and reverse engineering is difficult and time consuming. Due to these differences, it is conceivable that the risks of responding too fast are less pronounced in manufacturing industries as compared to retailing or other service industries. Thus, further research should examine whether the relationships uncovered in this study hold in industries where the nature of competitiveness is different. Additionally, although our study directly links competitive moves and performance, research will have to explore whether our results extend to performance measures other than shareholder wealth effects.

Due to the need to avoid overlapping events when calculating stock effects of responses, our sample consists of 91 responses in the responder models and of 77 responses in the first mover models. Arguably, future studies could benefit from larger sample sizes to yield more precise insights into the relationships between response timing and firm performance.

Practical implications

This study raises questions about the merits of a fast follower strategy. Much attention has been drawn to the dangers of being lethargic. Our study shows that managers also need to stay aware of the risk of responding too fast. A fast response is not necessarily the best response. Response timing requires a balance between the risks of premature entry against missed opportunity (Lilien and Yoon, 1990). In striking this balance, firms may commit errors that can be a basis for learning. Clearly, the idea is not that all firms should aim at intermediate response delays. Instead, if early or late moving firms realize that their response timing has led to inferior performance, this realization can prompt self-reflection and adjustments. If dissatisfied early movers recognize that overconfidence and insufficient competitor analyses led to early responses, for example, they can try to improve their analytic abilities so as to be better equipped for future competitive interactions.

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REFERENCES

Audia PG, Locke EA, Smith KG. 2000. The paradox of success: an archival and a laboratory study of strategic persistence following radical environmental change. *Academy of Management Journal* **43**(5): 837–853.

Baldwin W, Childs G. 1969. The fast second and rivalry in research and development. *Southern Economic Review* **36**(1): 18–24.

Barney JB. 1991. Firm resources and competitive advantage. *Journal of Management* **17**(1): 99–120.

Bergh DD, Holbein GF. 1997. Assessment and redirection of longitudinal analysis: demonstration with a study of the diversification and divestiture relationship. *Strategic Management Journal* **18**(7): 557–571.

Berman B, Evans JR. 1998. *Retail Management: A Strategic Approach* (7th edn). Prentice Hall: Upper Saddle River, NJ.

Boulding W, Christen M. 2003. Sustainable pioneering advantage? Profit implications of market entry order. *Marketing Science* **22**(3): 371–392.

Bowman D, Gatignon H. 1995. Determinants of competitor response time to a new product introduction. *Journal of Marketing Research* **32**(1): 42–53.

Boyatzis RE. 1998. *Transforming Qualitative Information*. Sage: Thousand Oaks, CA.

Bresser RKF, Heuskel D, Nixon RD. 2000. The deconstruction of integrated value chains: practical and conceptual challenges. In *Winning Strategies in a Deconstructing World*, Bresser RKF, Hitt MA, Nixon RD, Heuskel D (eds). Wiley: New York; 3–21.

Bresser RKF, Millonig K. 2003. Institutional capital: competitive advantage in light of the new institutionalism in organization theory. *Schmalenbach Business Review* **55**: 220–241.

Brown SL, Eisenhardt KM. 1998. *Competing on the Edge*. Harvard Business School Press: Boston, MA.

Campbell JY, Lo AW, MacKinlay C. 1997. *The Econometrics of Financial Markets*. Princeton University Press: Princeton, NJ.

Carpenter GS, Nakamoto K. 1989. Consumer preference formation and pioneering advantage. *Journal of Marketing Research* **26**(3): 285–298.

Chen M, MacMillan IC. 1992. Nonresponse and delayed response to competitive moves: the roles of competitor dependence and action irreversibility. *Academy of Management Journal* **35**(3): 539–570.

Chen M, Smith KG, Grimm CM. 1992. Action characteristics as predictors of competitive responses. *Management Science* **38**(3): 439–455.

Covin JG, Slevin DP, Heeley MB. 2000. Pioneers and followers: competitive tactics, environment, and firm growth. *Journal of Business Venturing* **15**(2): 175–210.

Cox R, Brittain P. 2000. *Retail Management*. Pearson: Harlow, UK.

D'Aveni RA. 1994. *Hypercompetition*. Free Press: New York.

Dodd P, Warner JB. 1983. On corporate governance. *Journal of Financial Economics* **11**: 401–438.

Dutton JE, Jackson S. 1987. Categorizing strategic issues: links to organizational action. *Academy of Management Review* **12**(1): 76–90.

Evans PB, Wurster TS. 1997. Strategy and the new economics of information. *Harvard Business Review* **75**(5): 71–82.

Ferrier WJ. 2000. Playing to win: the role of competitive disruption and aggressiveness. In *Winning Strategies in a Deconstructing World*, Bresser RKF, Hitt MA, Nixon RD, Heuskel D (eds). Wiley: New York; 163–189.

Ferrier WJ, MacFhionnlaoich C, Smith KG, Grimm CM. 2002. The impact of performance distress on aggressive competitive behavior: reconciliation of conflicting views. *Managerial and Decision Economics* **23**(4/5): 301–316.

Ferrier WJ, Smith KG, Grimm CM. 1999. The role of competitive action in market share erosion and industry dethronement: a study of industry leaders and challengers. *Academy of Management Journal* **42**(4): 372–388.

Fiegenbaum A. 1990. Prospect theory and the risk-return association: an empirical examination in 85 industries. *Journal of Economic Behavior & Organization* **14**(2): 187–203.

Fombrun C, Shanley M. 1990. What's in a name? Reputation building and corporate strategy. *Academy of Management Journal* **33**(2): 233–258.

Fuentelsaz L, Gomez J, Polo Y. 2002. Followers' entry timing: evidence from the Spanish banking sector after deregulation. *Strategic Management Journal* **23**(3): 245–264.

Gal-Or E. 1985. First mover and second mover advantages. *International Economic Review* **26**(3): 649–653.

Ghosh A. 1990. *Retail Management (Dryden Press Series in Marketing)*. Dryden: Chicago, IL.

Glazer A. 1985. The advantages of being first. *The American Economic Review* **75**(3): 473–480.

Greve HR. 2003. *Organizational Learning from Performance Feedback: A Behavioral Perspective on Innovation and Change*. Cambridge University Press: Cambridge, UK.

Hambrick DC, Cho TS, Chen M. 1996. The influence of top management team heterogeneity on firms' competitive moves. *Administrative Science Quarterly* **41**(4): 659–684.

DOI: 10.1002/smj

Hamilton JH, Slutsky SM. 1990. Endogeneous timing in duopoly games: Stackelberg or Cournot equilibria. *Games and Economic Behavior* **2**(1): 29–46.

Hauser JR, Shugan SM. 1983. Defensive marketing strategies. *Marketing Science* **2**: (Fall): 319–360.

Hayward ML. 2002. When do firms learn from their acquisition experience? Evidence from 1990–1995. *Strategic Management Journal* **23**(1): 21–39.

Hedberg BL, Nystrom PC, Starbuck WH. 1976. Camping on seesaws: prescriptions for a self-designing organization. *Administrative Science Quarterly* **21**(1): 41–65.

Hitt MA, Keats BW, DeMarie SM. 1998. Navigating in the new competitive landscape: building strategic flexibility and competitive advantage in the 21st century. *Academy of Management Executive* **12**(4): 22–42.

Hsiao C. 2003. *Analysis of Panel Data (Econometric Society Monographs)*. Cambridge University Press: Cambridge, UK.

Kalra A, Rajiv S, Srinivasan K. 1998. Response to competitive entry: a rationale for delayed defensive reaction. *Marketing Science* **17**(4): 380–405.

Kalyanaram G, Robinson WT, Urban GL. 1995. Order of market entry: established empirical generalizations, emerging empirical generalizations, and future research. *Marketing Science* **14**(3): G212–G221.

Krider RE, Weinberg CB. 1998. Competitive dynamics and the introduction of new products: the motion picture timing game. *Journal of Marketing Research* **35**(1): 1–15.

Kumar KR, Sudarshan D. 1988. Defensive marketing strategies: an equilibrium analysis based on decoupled response function models. *Management Science* **34**(7): 805–815.

Lee H, Smith KG, Grimm CM, Schomburg A. 2000. Timing, order and durability of new product advantages with imitation. *Strategic Management Journal* **21**(1): 23–30.

Lieberman MB, Montgomery DB. 1988. First-mover advantages. *Strategic Management Journal*, Summer Special Issue **9**: 41–58.

Lieberman MB, Montgomery DB. 1998. First-mover (dis)advantages: retrospective and link with the resource-based view. *Strategic Management Journal* **19**(12): 1111–1125.

Lilien G, Yoon E. 1990. The timing of competitive market entry: an exploratory study of new industrial products. *Management Science* **36**(5): 568–585.

MacKinlay AC. 1997. Event studies in economics and finance. *Journal of Economic Literature* **35**(1): 13–39.

MacMillan IC. 1988. Controlling competitive dynamics by taking strategic initiative. *Academy of Management Executive* **2**(2): 111–118.

MacMillan I, McCaffery ML, van Wijk G. 1985. Competitors' responses to easily imitated new products—exploring commerical banking product innovation. *Strategic Management Journal* **6**(1): 75–86.

Makadok R. 1998. Can first-mover and early-mover advantages be sustained in an industry with low barriers to entry/imitation? *Strategic Management Journal* **19**(7): 683–696.

Mansfield E. 1968. *Industrial Research and Technological Innovation*. Norton: New York.

Mascarenhas B. 1992. First-mover effects in multiple dynamic markets. *Strategic Management Journal* **13**(3): 237–243.

McNamara G, Moon H, Bromily P. 2002. Banking on commitment: intended and unintended consequences of an organization's attempt to attenuate irrational commitment. *Academy of Management Journal* **45**(2): 443–452.

McWilliams A, Siegel D. 1997. Event studies in management research: theoretical and empirical issues. *Academy of Management Journal* **40**(3): 626–657.

Miller D. 1992. The Icarus paradox: how exceptional companies bring about their own downfall. *Business Horizons* **35**(1): 24–35.

Miller D, Chen M. 1994. Sources and consequences of competitive inertia: a study of the U.S. airline industry. *Administrative Science Quarterly* **39**(1): 1–23.

Miller D, Chen M-J. 1996. The simplicity of competitive repertoires: an empirical analysis. *Strategic Management Journal* **17**(6): 419–439.

Milliken F. 1990. Perceiving and interpreting environmental change: an examination of college administrators' interpretation of changing demographics. *Academy of Management Journal* **33**(1): 42–63.

Mitchell W. 1989. Whether and when? Probability and timing of incumbents' entry into emerging industrial subfields. *Administrative Science Quarterly* **34**(2): 208–230.

Mitchell W. 1991. Dual clocks: entry order influences on incumbent and newcomer market share and survival when specialized assets retain their value. *Strategic Management Journal* **12**(2): 85–100.

Mitchell W, Singh K. 1993. Death of the lethargic: effects of expansion into new technical subfields on performance in a firm's base business. *Organization Science* **4**(2): 152–180.

Porter ME. 1980. *Competitive Strategy*. Free Press: New York.

Porter ME. 1985. *Competitive Advantage: Creating and Sustaining Superior Performance.* Free Press: New York.

Rao AR, Bergen ME, Davis S. 2000. How to fight a price war. *Harvard Business Review* **76**(2): 107–116.

Reinganum J. 1985. A two–stage model of research and development with endogeneous second-mover advantages. *International Journal of Industrial Organization* **3**(3): 275–292.

Rozhon T. 2004. Fall season looks solid for retailers, but holidays could be another story. *New York Times*, 18 August: C1, C4.

Schendel D. 1994. Introduction to the Summer 1994 Special Issue on Strategy: search for new paradigms. *Strategic Management Journal,* Summer Special Issue **15**: 1–3.

Scherer F, Ross D. 1990. *Industrial Market Structure and Economic Performance*. Houghton Mifflin: Boston, MA.

Schomburg A, Grimm CM, Smith KG. 1994. Avoiding new product warfare: the role of industry structure. *Advances in Strategic Management* **10B**: 145–173.

DOI: 10.1002/smj

Scott WR. 1995. *Institutions and Organizations*. Sage: Thousand Oaks, CA.
Shamsie J, Phelps C, Kuperman J. 2004. Better late than never: a study of late entrants in household electrical equipment. *Strategic Management Journal* **25**(1): 69–84.
Siggelkow N. 2001. Change in the presence of fit: the rise, the fall, and the renaissance of Liz Claiborne. *Academy of Management Journal* **44**(4): 838–857.
Smith KG, Ferrier, Grimm CM. 2001a. King of the hill: dethroning the industry leader. *Academy of Management Executive* **15**(2): 59–70.
Smith KG, Ferrier WJ, Ndofor H. 2001b. Competitive dynamics research: critique and future directions. In *The Blackwell Handbook of Strategic Management*, Hitt MA, Freeman E, Harrison JS (eds). Blackwell: Oxford, UK; 315–361.
Smith KG, Grimm CM, Chen MJ, Gannon MJ. 1989. Predictors of response time to competitive strategic actions: theory and preliminary evidence. *Journal of Business Research* **18**(3): 245–258.
Smith KG, Grimm CM, Gannon MJ. 1992. *Dynamics of Competitive Strategy*. Sage: Newbury Park, CA.
Smith KG, Grimm CM, Gannon MJ, Chen MJ. 1991. Organizational information processing, competitive responses, and performance in the U.S. domestic airline industry. *Academy of Management Journal* **34**(1): 60–85.
Smith KG, Young G, Becerra M, Grimm CM. 1996. An assessment of the validity of competitive dynamics research. Best paper proceedings *Academy of Management*: 61–65.
Stalk G. 1988. Time—the next source of competitive advantage. *Harvard Business Review* **64**(4): 41–51.
Stalk G, Evans P, Shulman LE. 1992. Competing on capabilities: the new rules of corporate strategy. *Harvard Business Review* **68**(2): 57–69.
Staw BM. 1981. The escalation of commitment to a course of action. *Academy of Management Review* **6**(4): 577–587.
Staw BM, Ross J. 1987. Understanding escalation situations: antecedents, prototypes, and solutions. *Research in Organizational Behavior* **9**: 39–78.
Staw BM, Sandelands L, Dutton J. 1981. Threat-rigidity effects in organizational behavior: a multilevel analysis. *Administrative Science Quarterly* **26**(4): 501–524.
Stinchcombe A. 1965. Social structure and organization. In *Handbook of Organizations*, March J (ed). Rand McNally: Chicago, IL; 142–193.
Taylor W. 1991. The logic of global business: an interview with ABB's Percy Barnevik. *Harvard Business Review* **67**(2): 95–105.
Teece DJ. 1986. Profiting from technological innovation: implications for integration, collaboration, licensing and public policy. *Research Policy* **15**(3): 285–305.
VanderWerf PA, Mahon JF. 1997. Meta-analysis of the impact of research methods on findings of first–mover advantage. *Management Science* **43**(11): 1510–1519.
Weber RP. 1990. *Basic Content Analysis*. Sage: Newbury Park, CA.
Weinswig D, Tang C, Dixon M. 2004. *Retailing-broadlines: it's back-to-school time for the broadlines retailers*. Citigroup Smith Barney report, 8 August: New York.
Young G, Smith KG, Grimm CM. 1996. 'Austrian' and industrial organization perspectives on firm–level competitive activity. *Organization Science* **7**(3): 243–254.
Zajac EJ, Bazerman M. 1991. Blind spots in industry and competitor analysis: the implications of interfirm (mis)perceptions for strategic decisions. *Academy of Management Review* **16**(1): 37–56.
Zajac EJ, Kraatz MS, Bresser RKF. 2000. Modeling the dynamics of strategic fit: a normative approach to strategic change. *Strategic Management Journal* **21**(4): 429–453.

DOI: 10.1002/smj

APPENDIX A: SAMPLE FIRMS

Company	Examples of store brands*
Ames Department Stores	Ames
Big Lots, Inc. *(formerly Consolidated Stores)*	Big Lots, Odd Lots, MacFrugal's, Pic'N'Save, K-B Toys, All For One, iTZADEAL!
Costco Wholesale Corp.	Costco
Dillard's Inc.	Dillard's
Dollar General Corp.	Dollar General
Family Dollar Stores, Inc.	Family Dollar
Federated Dept. Stores, Inc.	Macy's, Bloomingdale's, Bon Marche, Rich's, Burdines, Lazarus, Goldsmith's
JC Penney Co., Inc.	JC Penney
Kmart Corp.	Kmart, Bluelight.com
Kohl's Corp.	Kohl's
May Department Stores Co.	Lord & Taylor, Foley's, Filene's, Hecht's, Strawbridge's, Payless, David's Bridal
NeimanMarcus Group, Inc.	NeimanMarcus, Galleries of NeimanMarcus, Bergdorf Goodman, Contempo Casuals
Saks, Inc.	Saks Fifth Avenue, Off 5th, Parisian, Carson Pirie Scott, MacRae's, Younkers, Herberger's
Sears Roebuck & Co.	Sears, Parts America, HomeLife Furniture
ShopKo Stores, Inc.	ShopKo
Target Corp. *(formerly Dayton Hudson)*	Target, Dayton's, Hudson's, Marshall Field's, Mervyn's
Wal-Mart Stores	Wal-Mart, Sam's Club

* Do not always cover the entire period of 1994–2000.
Source: SEC, Company 10-Ks 1994–2000

APPENDIX B: CODING SCHEME

Move type	Frequency	Keywords	Examples of headlines
Pricing	3	cut(s)/lower(s)/slash(es)/reduce(s)... price(s), tag, cheap(er), rebate(s)	Sears will slash prices on some apparel
Marketing	33	spot(s), logo, marketing campaign, ad(vertising) campaign, ads	JC Penney launches new ad campaign to revive brand
Service	63	financing, delivery, card, membership, service, ATM(s), warranty; not: online	Wal-Mart introduces home shopping and delivery service
Range	87	introduce(s), feature(s), line, label, collection, shop; not: online	Arnold Palmer Sportswear line launched by Federated
Format	62	format, concept, design, station(s), space, display, boutiques, prototype	Kmart to introduce new Super format
Geographic growth	47	Open(s)/new/first... outlet/store(s)/market, enter(s), opening	Kohl's to enter Tennessee market
Direct channels	45	.com, online, virtual, Web, Internet, catalog, mail order, launch(es)	Wal-Mart goes online
M&A	27	acquire(s), acquisition, merge(s), merger, buy(s)	May to buy Strawbridge in $480 million deal
Legal	3	litigate(s), sue(s), suing	Sears suing Value City for trademark infringement
	370		