IJMR INTERNATIONAL JOURNAL OF MANAGEMENT REVIEWS
British Academy of Management

International Journal of Management Reviews (2009)
doi: 10.1111/j.1468-2370.2008.00246.x

A review of empirical research on dynamic competitive strategy

Thomas Hutzschenreuter and Sascha Israel

Beginning with Chandler's 1962 seminal work, researchers have emphasized that competitive strategy is not a static phenomenon, but rather a sequence of interconnected actions and reactions unfolding over time. This paper reviews the empirical research on dynamic competitive strategy published between 1986 and 2005 in nine leading strategic management journals. An integrated framework is used to showcase the research in terms of antecedents, strategic actions and outcomes. The literature review demonstrates that significant progress has been made in the field of dynamic competitive strategy, and yet that there are still many promising lines of inquiry for future theoretical and empirical research, particularly in the areas of strategic action timing and path dependency.

Introduction

Understanding how businesses use competitive strategies to succeed has been at the core of strategic management research for decades (Hitt *et al*. 2004). In the 1960s, 1970s and 1980s, Chandler (1962),[1] Hofer and Schendel (1978)[2] and Galbraith and Schendel (1983)[3] stressed that competitive strategy was not a static phenomenon, but a sequence of interconnected actions and reactions unfolding over time.

The relevance of such a dynamic perspective is exemplified through a variety of practical observations. The car manufacturer Porsche, for example, is often cited as an example of a superior competitive positioning in the automotive industry – yet this positioning is the outcome of a steady adaptation process that has spanned almost a decade. Other relevant examples can be seen in the behavior of firms during periods of intense competitive rivalry (Chen and Miller 1994; Ketchen *et al*. 2004), in their responses to environmental changes (Banker *et al*. 1996; Goodstein and Boeker 1991; Lee and Grewal 2004; Smith and Grimm 1987), and in their attempts to modify their industry positions or reach new ones (Lee 2003; Nair and Filer 2003).

These aspects of dynamic competitive strategy have implications for researchers in the field. First, they must study how firms behave over time to gain insight into the causes and consequences of competitive strategy (Bergh 1993; Menard 1991). Second, they need to observe the timing and duration of strategic activities. Third, they need to account for the long-term path characteristics of strategic change as well as the path dependencies that result from strategic choices. In short, these three dynamic aspects of competitive strategy represent a compelling argument for the use of longitudinal research in this field. It is no wonder, then, that such studies have steadily

gained in popularity with leading business journals (Bergh 1993), and that strategy researchers are carrying them out despite the challenges they present.

We feel that the time is right for a careful review of the progress that has been made in empirical research on dynamic competitive strategy, and that such a review should center on longitudinal studies. We evaluate them from three angles: First, how they improve understanding of antecedents and outcomes of dynamic competitive strategy. Second, how they broaden perspective on the timing of strategic actions. Third, the degree to which they address long-term path characteristics of strategic actions. Based on our analysis of the progress that has been made with respect to all three angles, we shall turn our attention to possibilities for future research.

We begin the second section by outlining the methodology, describing how we identified the relevant literature for the review, and setting out the framework that we use to showcase how that literature addresses antecedents, strategic actions and adaptations, and outcomes. The third section includes a review of the literature and a discussion of applications using the organizing framework. We make suggestions for future research, discuss methodological challenges, and outline implications for managers in the fourth section. The final section presents our overarching conclusions.

Methodology

Scope of the Review

In an effort to reflect the progress that the field of strategic management has made with respect to dynamic competitive strategy, this review will focus specifically on longitudinal studies on competitive strategy content (Rajagopalan and Spreitzer 1993). For the purpose of this review, we see longitudinal studies as ones in which (a) the variables are collected at two or more distinct points in time, (b) the subjects or cases that are analyzed are the same, or at least comparable, from one time period to the next, and (c) the analysis includes some comparison of data either between or among time periods (Bergh 1993; Menard 1991).

The strategy content perspective was chosen based on the large increase in relevant research emphasizing a dynamic perspective over recent decades (Bergh 1993). Rather than taking a static theoretical and methodological approach, many studies take a historical approach to central concepts such as strategic fit and organizational alignment (Zajac *et al*. 2000). Advances in the field have been made, building on the resource-based view of the firm (Barney 1991), using alternative approaches to strategic change (Kraatz and Zajac 2001), and with studies on short-term and long-term competitive dynamics (Ketchen *et al*. 2004), all of which have since then strongly intensified the interest in dynamic phenomena and longitudinal research approaches. As a result of these developments, we consider a review on dynamic strategy content a warranted choice for this review.

Identification of Literature

We began by looking at many articles in academic journals and their quality rankings (Extejt and Smith 1990; Franke *et al*. 1990; Johnson and Podsakoff 1994; MacMillan 1989, 1991; Podsakoff *et al*. 2005; Tahai and Meyer 1999). We also looked at the scope description in the *Business Source Premier* database. After weighing information on quality and impact, topical appropriateness and empirical orientation, we selected nine journals as a basis for the review (see Table 1 for an overview). Because of the selection process, the need for a consistent set of keywords, and to prevent a proliferation of results, specialty journals focusing, for example, on specific industry sectors or aspects of organizational development were not included in the search.

We then looked at several reviews of the competitive strategy and dynamics literature done previously (e.g. Fahey and Christensen 1986; Ginsberg and Venkatraman 1985;

Table 1. Results of structured database search by journal and keyword

		Competitive strategy	Business strategy	Dynamic* strategy	Dynamic* competiti*	Change strateg*	Competitive advantage	Total hits	Disjoint articles	Relevant articles
1	*Academy of Management Journal*	15	21	6	10	29	19	100	82	15
2	*Adminstrative Science Quarterly*	2	6	4	8	18	4	42	34	9
3	*Journal of Business Research*	33	59	16	13	54	40	215	152	4
4	*Journal of Management*	19	28	11	8	21	22	109	86	8
5	*Journal of Management Studies*	32	48	23	13	78	21	215	157	9
6	*Journal of Marketing*	23	30	9	10	24	28	124	87	4
7	*Management Science*	46	27	37	23	38	22	193	155	6
8	*Organization Science*	19	26	13	19	47	30	154	107	14
9	*Strategic Management Journal*	127	131	42	39	154	129	622	433	68
	Total	316	376	161	143	463	315	1,774	1,293	137

*was used as a variable, allowing for any ending, such as 'dynamics' or 'dynamic'.
Search conducted within abstract or author-supplied abstract; publication period 1986–2005; results restricted to articles.

Ketchen *et al*. 2004; Rajagopalan and Spreitzer 1993), and also read a number of the studies that were identified in those reviews. During this process, we listed possible search terms, such as 'strategic alignment', 'organizational contingency' and 'strategic adaptation'. We eventually narrowed the list down to six keywords that were then used for a computerized search (Brynjolfsson 1993) of article abstracts in the *Business Source Complete* database to find potentially relevant articles published between 1986 and 2005. We chose 1986 because only a small part of strategy research done before that date was dynamic (Bergh 1993), and because what was done before then had already been extensively reviewed (Fahey and Christensen 1986; Ginsberg 1988; Ginsberg and Venkatraman 1985).

The database search identified 1293 separate articles from 1774 keyword hits. We read the abstract of each article, looking for an indication that a longitudinal analysis was performed on an aspect of competitive strategy. If we believed this was the case, we did a cursory reading of the article itself. In actuality, this process yielded 137 articles with longitudinal studies pertaining to competitive strategy (see Table 1 for a summary of the results of this process). The final step was to scan selectively the reference lists of the articles, looking for any indication that our keywords, or the journals we selected, might have led to systematic biases, but could find no evidence that this was the case.

Review Framework

Following previous reviews, we relied on an organizing framework to structure the existing literature. In order to develop such a framework, we followed a sequential two-step process. In the first step, we consolidated classification schemes from the fields of competitive strategy/strategic change (e.g. Fahey and Christensen 1986; Ginsberg and Venkatraman 1985; Ketchen *et al*. 2004; Rajagopalan and Spreitzer 1993) in order to identify the relevant linkages between (1) antecedents to competitive

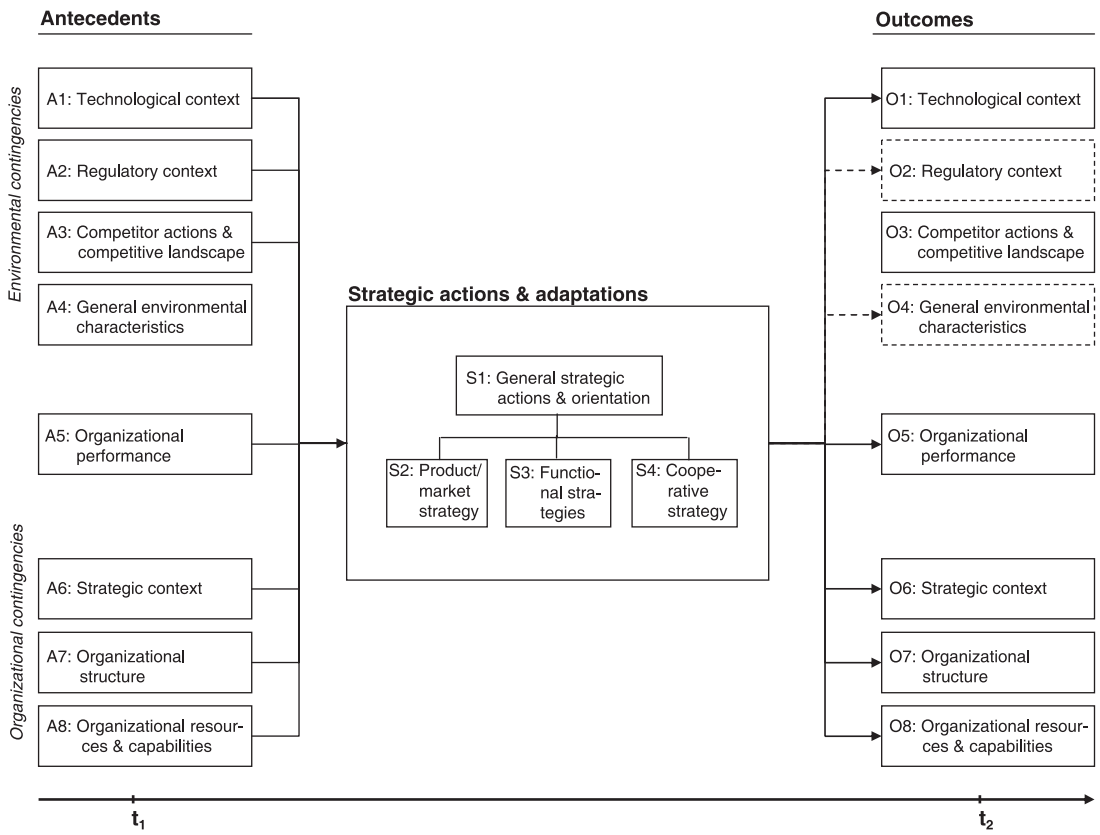

Figure 1. A framework for research on dynamic competitive strategy.

strategic actions, (2) strategic actions and adaptations as the focus of the review and (3) strategy outcomes. The initial classification schemes were adapted to a dynamic context and consistently refined during the course of the review. As a result of this first step, Figure 1 summarizes the relevant antecedent, competitive strategy and outcome linkages.

The goal of competitive strategy is to find the optimal match between environmental and organizational contingencies (Zajac *et al*. 2000). It is logical then that these variables are seen as antecedents to dynamic competitive strategy. Environmental contingencies include the historical evolution and the current values of the technological, regulatory, competitive and general environmental contexts. The technological context refers to the characteristics and development of the technologies that a firm relies on to conduct its business (Tripsas 1997). The regulatory context includes aspects of legislation, regulation and deregulation in the industry (Barr and Huff 1997; McCutchen 1993). The competitor action and competitive landscape subcategory encompasses not only the competitive activities of a firm and its direct competitors, but also the structural conditions for such behavior, such as the strategic group structure of the industry (Smith *et al*. 1997), entry into, and exit from, relevant product markets (Smith and Wilson 1995), and the degree of multipoint competition (Gimeno and Woo 1996). Finally, general environmental characteristics include the stage in the product life cycle (Mascarenhas and Aaker 1989), environmental dynamism (Fombrun and Ginsberg 1990), and a broad range of other conditions and uncertainties with which a firm must contend.

In addition to these antecedents of competitive strategy that relate to the environment in which a firm does business, there are contingencies that are part and parcel of the organization itself. One of these, organizational performance, is so central to research in dynamic competitive strategy that we consider it separately. We include in this subcategory the historical development of a firm's financial or non-financial performance, and the effect of performance on subsequent strategies.

There are several other organizational contingencies that exert influence on subsequent dynamic competitive strategy. The strategic context encompasses a firm's past corporate (Hoskisson and Johnson 1992) and competitive strategy (Washington and Ventresca 2004). Organization structure refers to the status of, and changes in, top management team (Barker *et al*. 2001), pay structure (Carpenter 2000), governance mechanisms and board processes (Golden and Zajac 2001) and size (Glen and Hambrick 1995). Finally, the organizational resources and capabilities subcategory captures the paths and positions of a firm's tangible and intangible resources, skills and organizational capabilities (Cockburn *et al*. 2000).

All the descriptions up to this point relate to antecedents. We come now to the crux of the matter, dynamic competitive strategy. In fact, the literature covered in this review looks at competitive strategy at two different levels, the first being general strategic actions and orientation, which captures the overall strategic posture of the firm, either by focusing on a broader set of strategic decision variables such as R&D, investment, marketing, and product and market scope (Caves and Ghemawat 1992), or by relying on broader constructs of competitive strategy such as differentiation and cost leadership strategies (Kotha and Nair 1995). We further suggest for the purpose of this review that the second level can be broken down by product or market strategy, functional strategy or cooperative strategy. Product and market strategy refers to competitive strategy decisions about the product portfolio, including decisions on target markets (Greve 2000), new product introductions and market entries (Baum and Korn 1996). Functional strategy refers to how the general competitive strategy is realized in distinct functional areas such as R&D, marketing or production. Finally, we look at cooperative strategy as a separate category because of its importance in the literature. It refers to the degree to which a firm relies for its strategies on inter-firm cooperation in one form or the other, including alliances (Eisenhardt and Schoonhoven 1996).

The environmental and organizational antecedents identified earlier, in combination with the strategic actions and adaptations of the firm, lead to performance-related and non-performance-related outcomes. If we look at strategic activity as a dynamic and recurring event, the outcomes of competitive strategic actions are the setting in which the next iteration of strategic activity is performed. Therefore, outcome factors, with the exception of the regulatory context and general environmental characteristics, are identical to antecedent factors. We exclude general environmental characteristics on the assumption that they evolve largely independently of individual firm activities. Furthermore, we do not include the regulatory context as a direct outcome because: (1) while firms can try to influence their regulatory context favorably through political processes (e.g. by lobbying), these activities are outside the traditional core of how a firm competes in each of its businesses in the marketplace; (2) to be complete in covering the regulatory context would require including literature that is outside the scope of typical strategic management journals; and (3) this literature offers little synergy with the remaining parts of our framework (see e.g. Grier *et al*. 1991 for further references on the political process).

To summarize the results of the literature review, we formed a review matrix by juxtaposing the elements of the framework. Rows represent independent elements and columns represent dependent ones. A three-digit key (001 to 137) is used to code the studies and sort them into relevant links, first between

antecedents and competitive strategy, then between strategic actions and adaptations and outcomes. Figure 2 represents the completed review matrix, which is intended to be a summary of the major research questions that we pursued.

We read each of the articles in order to assign them properly to the correct slot in the matrix according to our assessment of the links explored. While the analysis of article content was both consistent and comprehensive, we are aware that there is a certain amount of subjectivity involved. Table 2 therefore provides the detailed results of the categorizations as well as a summary of the period of time covered by the study, its sample size, the assessment of the links explored, and key findings for further reference.

The next section summarizes the content of the articles in more detail. Following the initial objective, we evaluate the contribution of each on three levels: (1) antecedents and outcomes; (2) timing of strategic actions; and (3) long-term path characteristics of strategic activity. In doing this, we hope to outline major findings and to draw conclusions about the contribution of longitudinal studies to competitive strategy.

Literature Review

Environmental Contingencies→Competitive Strategy

The longitudinal studies covered in this review have consistently found that environmental variables shape the path of strategic actions over time. In fact, dealing with the uncertainty associated with the environment in which a firm does business has long been seen as a primary focus of all entrepreneurial activity (Knight 1921). The most important variables studied under the heading of this link have been technological and regulatory contexts, competitor actions and the competitive landscape and, finally, a broad set of general environmental characteristics.

Technological context→Competitive strategy. The studies included in this link have been performed across a variety of industries and technological settings. They find that firms (1) react to disruptive technological changes and developments, (2) respond to continuous reductions in the recombinant search space in their current technological domain (Ahuja and Katila 2004), and (3) differ significantly in terms of their strategic responses, with speed and type of reduction varying considerably between firms (Lee and Grewal 2004). As suggested by Schumpeter (1934), researchers also found that technological change is an important factor in influencing entrepreneurial efforts to improve firm position through the introduction of new goods, services and production technologies. Firm-level changes occur at the general competitive strategy level (Banker *et al*. 1996) as well as in specific strategy domains such as alliances (Afuah 2000), and often significantly influence the overall competitive setting of an industry (Cool and Schendel 1987; Zúniga-Vicente *et al*. 2004).

Two studies included in this category have also focused on technological path dependency. In their study of a technological change in the banking industry, Pennings and Harianto (1992) show that accumulated experience in relevant technological areas increases the likelihood of a firm successfully incorporating a new technology into its competitive strategy, thereby suggesting that technological strategies are path dependent. Lee (2003) showed how the discovery of antibiotics in the pharmaceutical industry led to two alternative strategic responses, innovation and imitation, that created long-term divergent evolutionary paths that resulted in two different types of industry players, a split that exists even now, more than 40 years later.

Regulatory context→Competitive strategy. Changes in the regulatory context represent a second powerful antecedent to strategic actions, which must be properly monitored and reacted to in order to sustain a business's successful alignment with its environment (Barr and Huff 1997). Numerous practical examples, such as the discussion on CO_2 emissions or the ongoing regulatory issues in the European

	S1	S2	S3	S4	O1	O3	O5	O6	O7	O8
A1	009,035,065,126,137		001,002,084, 085,111	088						
A2	009,013,052,079,089, 116135,136,137	072	094	088						
A3	017,039,048,049,054, 060,061,063,097,104, 118,129,133,134,135	014,021,057, 064,071,117, 119,120,121	037,098, 130	043,053, 113,115						
A4	008,010,050,059,067, 091,092,125	062	038,098	043						
A5	007,010,023,044,050, 083,096,097	021,062,080								
A6	019,110,129,136		075	043						
A7	006,010,011,019,027, 044,049,050,055,059, 060, 061,066,079,083, 095,114,129,131	005,020,056, 057,058,062, 064,117	024,026, 033,074	043						
A8	010,022,044,050,061, 082,093,134,135	064,117	033,127, 130	068,113						
S1						030,031, 048	006,007,017,018,029,034,035,036, 039,041,044,045,046,047,081,082, 092,093,100,105,109,110,116,124, 125,126,128,133,135,137	129	011,131	
S2					123	015	012,014,040,072,076,086,090,099, 102,106,120,123		005	
S3					003,032, 122	004	001,024,025,028,033,051,073,077, 078,085,101,107,112,122,132		108	002,132
S4							016,070,087,115		069	042,087, 103

A1 – Techological content
A2 – Regulatory context
A3 – Competitior actions & comp. landscape
A4 – General env. characteristics
A5 – Organizational performance
A6 – Strategic context
A7 – Organizational structure
A8 – Organ. resources & capabilities
S1 – General strategic actions
S2 – Product/market strategy
S3 – Functional strategies
S4 – Cooperative strategy
Identical notation for antecedents (A) and outcomes (O)

Figure 2. Review matrix.

Table 2. Detailed results of study-by-study review

No.	Author(s)	Industry region	Sample size, period	Linkage(s)	Key findings
001	Afuah (2000)	Computer workstation makers US	23 firms, 1972–1992	A1–S3 S3–O5	Firms have to adjust their cooperative strategies after technological change in order to preserve their capabilities that reside in the network and to avoid negative performance implications.
002	Ahuja and Katila (2004)	Chemical industry US	'Leading US firms', 1979–1992	A1–S3 S3–O8	Technological exhaustion influences the subsequent R&D science-search intensity of a firm. The intensity of science search is related to firm innovativeness in a U-shaped manner.
003	Ahuja and Lampert (2001)	Chemical industry Global	97 firms, 1980–1995	S3–O1	Firms adhere to familiar paths and search patterns, or ones close to them, and hence are hindered in making breakthroughs. Strategies that allow for experimentation with novel, pioneering and emerging technologies foster breakthrough-innovation.
004	Ailwadi *et al*. (2001)	Consumer goods industry US	24 product categories, 1990–1996	S3–O3	Competitor responses to marketing mix changes are related to how strongly the competitor's market share is affected and to structural factors such as market position and multimarket contact.
005	Amburgey and Dacin (1994)	Mining and manufacturing industry US	262 firms, 1949–1977	A7–S2 S2–O7	There is a reciprocal relationship between strategy changes and structural changes. Strategy is a more important determinant of structure, than structure is of strategy.
006	Amburgey *et al*. (1993)	Newspaper industry Finland	1.011 firms, 1771–1963	A7–S1 S1–O5	Organizational change (in strategic and structural newspaper characteristics) increases failure rates. The strength of the disruptive effect as well as the overall level of inertia increases with the age of the organization. Organizations pass from periods of turbulence to periods of stability.
007	Audia *et al*. (2000)	Airline industry and trucking industry US	25/125 firms, 1974–1983/1976–1985	A5–S1 S1–O5	The better the financial performance of a firm before deregulation, the less likely it is to change its strategy after deregulation. The greater the degree of resistance to change, the greater the subsequent decline in performance.
008	Baird *et al*. (1988)	Office equipment/ electronic computing industry US	46 firms, 1977–1981	A4–S1	In settings with high environmental volatility firms exhibit changes in strategy as well as variations in the importance of strategic decision variables. Both have to be considered in strategic group analysis.
009	Banker *et al*. (1996)	Telecommunications US	35 firms, 1975–1987	A1–S1 A2–S1	Changes in telecommunication technology and market liberalization lead to changes in competitive strategies and the overall competitive situation.

010	Barker and Duhaime (1997)	Manufacturing firms US	120 firms, 1974–1988	A4–S1 A5–S1 A7–S1 A8–S1	Firms change strategies in response to declines in performance. The degree of change depends on the need for change (degree of decline; external events) and the capacity for change (management changes, firm-specific factors; resources).
011	Barker *et al*. (2001)	Heterogeneous industries US	154 firms, (1975–1989)	A7–S1 S1–O7	High levels of top management team replacements are positively associated with changes in a firms' competitive strategy during turnarounds. Top management team replacements vary with amount of time a strategic orientation has been in place.
012	Barnett and Freeman (2001)	Semiconductor manufacturer US	Entire industry, 1946–1984	S2–O5	Strategies oriented towards a large number of new product introductions lower organizational mortality. However, a large number of simultaneous new product introductions increase organizational mortality.
013	Barr and Huff (1997)	Pharmaceutical industry US	6 firms, 1950–1970	A2–S1	Firms adjust their strategies in response to regulatory changes. Faster firms cannot be distinguished by their attention to legislative changes. A necessary condition for action is that firms see their welfare directly affected and identify multiple effects of environmental change that are supported by other indicators.
014	Baum and Korn (1996)	Commuter air carriers US (California)	15 carriers 1979–1984	A3–S2 S2–O3	Increases in market domain overlap increase the rate at which competitors enter and exit markets. Increases in multimarket contact lower entry and exit rates, especially in markets dominated by a strong player.
015	Baum and Korn (1999)	Commuter air carriers US (California)	15 carriers, 1979–1984	S2–O3	Multimarket contact between competitors arises through uncoordinated 'chance' activities and purposeful strategic activity. Overall, uncoordinated chance activities are more likely to result in multimarket contact between competitors than are purposeful strategic attempts.
016	Baum and Oliver (1991)	Child care service Canada		S4–O5	Institutional links significantly increase survival. This effect depends on the characteristics of the organization, and increases with the intensity of competition.
017	Bettis and Weeks (1987)	Instant photography	2 firms (Kodak, Polaroid), 1976–1977	A3–S1 S1–O5	Competitive strategy consists of complex sequences of strategic actions and responses. Overall competitive strategy and individual strategic moves influence financial returns of companies.
018	Bierly and Chakrabarti (1996)	Pharmaceutics US	21 firms, 1977–1991	S1–O5	Knowledge strategy is an important element of competitive strategy. Knowledge strategy groups tend to be stable over time, and have performance implications.

Table 2. *(Continued)*

No.	Author(s)	Industry region	Sample size, period	Linkage(s)	Key findings
019	Boeker (1989)	Semiconductor industry US	51 firms, post-foundation period	A6–S1 A7–S1	The initial structural and strategic characteristics of a firm at founding imprint its strategy. Subsequent conditions, such as performance and the tenure of the founding entrepreneur, determine the degree to which the strategy continues.
020	Boeker (1997)	Semiconductor industry US	67 firms, 1976–1993	A7–S2	Product market strategies are shaped by executive migration. After migration the firm focus on prior areas of exposure of the migrated manager. This effect is strongest for managers with R&D and engineering backgrounds.
021	Boeker *et al.* (1997)	Hospital industry US	286 hospitals, 1980–1986	A3–S2 A5–S2	The degree to which competitors compete in similar markets negatively influences market exit. Organizations that experience CEO changes and poor performance trigger market exits.
022	Bogner *et al.* (1996)	Pharmaceutics EU firms in US	29 firms, 1969–1988	A8–S1	Foreign firms initially enter markets where entry barriers are lowest, build presence incrementally, and then choose long-term competitive positions and response patterns that reflect the parents' resource bases.
023	Bohman and Lindfors (1998)	Heterogeneous industries Asia/Pacific	90 firms, varying periods	A5–S1	Western and Chinese firms differ in their strategic responses to periods of poor performance.
024	Boyer (1999)	Metal working industries	112 plants, 1994–1996	A7–S3 S3–O5	Manufacturing involvement in business strategies increases strategic investment in advanced manufacturing technologies. Such investments increase subsequent performance.
025	Bruton *et al.* (2003)	Heterogeneous industries 3 Asian regions	90 firms, 1979–1989	S3–O5	Firms exhibit strategic changes in response to financial crisis. The nature of strategic adaptation differs between Western and Asian countries.
026	Capron *et al.* (1998)	Manufacturing companies Europe/America	190 firms, 1988–1992	A7–S3	Functional resources for competitive strategies (R&D, manufacturing, marketing, managerial and financial) are frequently redeployed after horizontal acquisitions.
027	Carpenter (2000)	Heterogeneous industries US	314 firms, 1991–1998	A7–S1	Strategic changes are influenced by changes in CEO pay structure. This effect varies with the prior performance level of the firm.
028	Cattani (2005)	Fiber optics US	206 firms, 1970–1995	S3–O5	Technological performance depends on a firm's stock of relevant resources, and the extent to which it can strategically build on them in new domains.

029	Caves and Ghemawat (1992)	Heterogeneous industries US	59 businesses, 1979–1983	S1–O5	Differentiation-related advantages tend to be more important for intra-industry profit differentials than cost advantages. Differentiation advantages influence profitability and market share, cost advantages primarily increase market share.
030	Chen and Miller (1994)	Airline industry US	32 airlines, 1979–1986	S1–O3	The visibility of an attack, and the centrality of the markets attacked, determine the number of competitive responses. The extent of competitive reactions will have a negative impact on firm performance.
031	Chen *et al*. (1992)	Airline industry US	32 airlines, 1979–1986	S1–O3	Competitive responses are influenced by the actions that invoke them. The number of competitors affected and the importance of markets attacked increases the number of responses. Implementation effort reduces the number, and delays the timing, of responses.
032	Christensen and Bower (1996)	Disk drive industry	6 firms, 1976–1990	S3–O1	Incumbents and new entrants differ in innovation strategies. Established firms tend to use existing technologies, while entrants lead in disruptive technologies.
033	Cockburn *et al*. (2000)	Pharmaceutical industry US	10/16 firms, 1965–1990/1980–1997	A7–S3 A8–S3 S3–O5	The adoption of a 'science driven' R&D strategy depends on initial firm conditions (organizational structure and resources) and the choice of strategic response to changes in the environment.
034	Cool and Dierickx (1993)	Pharmaceutical industry US	22 firms, 1963–1982	S1–O5	Conditions of rivalry within and between strategic groups affect performance.
035	Cool and Schendel (1987)	Pharmaceutical industry US	22 firms, 1963–1982	A1–S1 S1–O5	Changes in the strategic group structure of an industry are triggered by major environmental changes. The only performance differences can be observed in terms of market shares.
036	Cool and Schendel (1988)	Pharmaceutical industry US	22 firms, 1963–1982	S1–O5	Strategic group membership has performance implications. However, risk–return relationships vary between strategic periods.
037	Craig (1996)	Beer industry Japan	4 firms, 1979–1992	A3–S3	Constant and intense changes in the nature of competition create a need for significant organizational and strategic changes and influence the competitive landscape and firm profitability.
038	Curry and Riesz (1988)	Heterogeneous industries	62 product forms, varying time periods	A4–S3	Pricing strategies of competitors converge over product life cycles.
039	Deephouse (1999)	Commercial banks US	159 banks, 1985–1992	A3–S1 S1–O5	Firms determine how much they will deviate from industry competitors by balancing competition and legitimacy pressure. Intermediate positions seem to be the most profitable.
040	Dos Santos and Pfeffers (1995)	Banking industry US	2.534 banks, 1971–1979	S2–O5	First-mover strategies have a positive impact on performance and market share. Early followers do not benefit from similar effects.

Table 2. *(continued)*

No.	Author(s)	Industry region	Sample size, period	Linkage(s)	Key findings
041	Dreyer and Gronhaug (2004)	Fish processing industry Norway	70 firms, 1977–1995	S1–O5	Firms perform better in turbulent settings when they have a significant degree of strategic flexibility along four dimensions.
042	Dussauge *et al*. (2000)	Manufacturing industries US and Canada	227 alliances, varying time periods	S4–O8	Strategic 'link alliances' lead to greater levels of learning and capability acquisition, and are more likely to be reorganized or taken over than 'scale alliances'.
043	Eisenhardt and Schoonhoven (1996)	Semiconductor firms US	98 firms, 1978–1988	A3–S4 A4–S4 A6–S4 A7–S4	The degree to which a firm relies on strategic alliances depends on the number of competitors, maturity of the market, competitive strategy and top management team characteristics.
044	Ferrier (2001)	Heterogeneous	32 firms, 1987–1993	A5–S1 A7–S1 A8–S1 S1–O5	A firm's sequence of competitive actions (volume, duration, complexity, predictability), and hence its relative performance, are influenced by past performance, top management team heterogeneity, slack resources and industry characteristics.
045	Ferrier *et al*. (1999)	Heterogeneous	82 firms, 7 years of data	S1–O5	Industry leaders that pursue less aggressive strategies have simpler action repertoires, are slower to act and are more likely to experience market share erosion.
046	Fiegenbaum and Thomas (1990)	Insurance industry	33 firms, 1970–1984	S1–O5	Membership in a strategic group has performance implications. Group structure and membership change over time.
047	Fiegenbaum and Thomas (1993)	Insurance industry	33 firms, 1970–1984	S1–O5	The strategic group structure of an industry consists of stable and unstable groups. There are stable performance differences over groups and time. Change processes are best described by quantum changes. There is a low level of firm mobility between groups.
048	Fiegenbaum and Thomas (1995)	Insurance industry	33 firms, 1970–1984	A3–S1 S1–O3	Strategic groups act as a reference point for group members in formulating and adjusting competitive strategies. Member firms attempt to build and reinforce strategic group barriers.
049	Flier *et al*. (2003)	Financial service industry Europe	12 firms, 1972–1999	A3–S1 A7–S1	Environmental selection, institutional effects of other firms in the environment, and managerial intentions are factors that serve to explain the strategic renewal behavior of banks.
050	Fombrun and Ginsberg (1990)	Heterogeneous industries	352 firms, 1977–1984	A4–S1 A5–S1 A7–S1 A8–S1	Environmental volatility and prior performance have a curvilinear impact on the propensity of firms to change their strategic posture. Change is inhibited by firm size and prior resource deployments.
051	Fryxell (1990)	Heterogeneous US	744 firms, 1975–1983	S3–O5	The impact of R&D strategy on firm performance depends on whether firms follow differentiation or cost leadership strategies.

052	Galbraith *et al*. (1994)	Navy Information Systems US	16 firms, 1984–1989	A2–S1	Firms change their service and vertical integration strategies in response to regulatory changes.
053	Garcia-Pont and Nohria (2002)	Automobile industry	35 firms, 1980–1989	A3–S4	The probability of a firm following an alliance strategy increases with the density of alliances in their strategic group. Competitors with similar characteristics are used as reference points.
054	Gimeno and Woo (1996)	Airline industry US	48 airlines, 1984–1988	A3–S1	The intensity of rivalry decreases considerably with multimarket contacts, and increases moderately with strategic similarity. Both effects should be taken into consideration separately when analyzing the dynamics of competitive rivalry.
055	Glen and Hambrick (1995)	Airline industry US	28 airlines, 1985–1986	A7–S1	Small firms are more active in initiating, and faster in executing, their own competitive actions, but slower in responding to competitive attacks.
056	Golden and Zajac (2001)	Hospital industry US	3198 hospitals, 1985–1990	A7–S2	Strategic change is affected by board demography and board processes. The more powerful the board, the stronger the effect.
057	Goodstein and Boeker (1991)	Hospital industry US	327 hospitals, 1980–1986	A3–S2 A7–S2	Changes in ownership and changes in the board of directors both have significant independent and interactive effects on strategic change. Regulatory changes also trigger strategic change.
058	Goodstein *et al*. (1994)	Hospital industry US	334 hospitals, 1980–1985	A7–S2	The size and diversity of a board of directors affect its ability to initiate strategic change.
059	Gordon *et al*. (2000)	Furniture and computer software industry	120 firms, 1987–1993	A4–S1 A7–S1	Environmental volatility and CEO succession are antecedents to strategic reorientation. Low past performance does not increase the likelihood of strategic reorientation.
060	Greve (1995)	Radio stations US	560 stations 1984–1993	A3–S1 A7–S1	Strategic adjustments by organizations in a reference group are contagious. The degree of influence depends on market size and size of the organization.
061	Greve (1996)	Radio stations US	473 stations 1984–1993	A3–S1 A7–S1 A8–S1	Ownership or format changes reduce organizational inertia and increases the likelihood of strategic adaptation. Organizational resources can influence the direction of strategic change. Mimetic behavior is an important vehicle of spreading innovation in an industry.
062	Greve (1998a)	Radio stations US	160 markets, 1984–1992	A4–S2 A5–S2 A6–S2	Strategic decisions to change formats are guided by performance relative to the social aspiration level, opportunities presented by market dynamics and momentum through prior format changes.
063	Greve (1998b)	Radio stations US	US commercial radio stations 1984–1993	A3–S1	Recently innovated market positions are diffused through mimetic adoption by organizations that can easily observe them and see them as relevant to their market situations.

Table 2. *(continued)*

No.	Author(s)	Industry region	Sample size, period	Linkage(s)	Key findings
064	Greve (2000)	Banking industry Japan	Tokyo banks, 1894–1936	A3–S2 A7–S2 A8–S2	Entry strategy decisions are influenced by the local competitive environment, the actions of large organizations, organizational experience and size of the focal firm.
065	Greve and Taylor (2000)	Radio stations US	157 markets, 1984–1992	A1–S1	Innovations influence the rate of non-mimetic change in a market. Innovations in larger or closer markets have a greater effect, while those by larger organizations have a smaller effect.
066	Grimm and Smith (1991)	Railroad industry US	27 firms, pre-/ post-deregulation	A7–S1	The characteristics of a firm's managers determine the likelihood of changes in strategy after deregulation.
067	Gronhaug and Falkenberg (1989)	Heterogeneous industries	7 firms, 1977–1982	A4–S1	Perceptions of how a firm has changed its strategy following a change in the environmental differ across firms.
068	Gulati (1999)	Heterogeneous industries/regions	166 firms, 1980–1989	A8–S4	Accumulated network resources from participation in prior alliances positively influence the firms' strategic decision to enter new alliances.
069	Hagedoorn and Sadowski (1999)	Heterogeneous	2.848 firms, 1970–1994	S4–O7	Technological alliances do not usually result in M&As.
070	Hagedoorn and Schakenraad (1994)	Information technology and electronics	364 firms, 1982–1986	S4–O5	Content and direction of strategic alliance linkages influence profitability in several industries.
071	Haveman and Nonnemaker (2000)	Savings and loan industry US	321 firms, 1977–1991	A3–S2	Competitive market structure and the extent of multimarket contact influence a firm's product/ market strategy.
072	Haveman *et al.* (2001)	Hospital and savings and loan industry	119 hospitals, 1978–1991, 216 thrifts, 1977–1986	A2–S2 S2–O5	Regulatory change prompts changes in a firm's strategic scope of operations and executive leadership. Both changes affect post-regulatory performance.
073	Henderson and Cockburn (1994)	Pharmaceutical industry Europe, US	10 firms, 1975–1988	S3–O5	A firm's R&D resources, and the way it deploys them, are significant determinants of its R&D productivity.
074	Hitt *et al.* (1996)	Industrial firms	250 firms, 1985–1991	A7–S3	Firm structure changes and control mechanism influence strategic changes in internal and external innovation orientation.
075	Hoskisson and Johnson (1992)	Manufacturing industries	101 firms, 1979–1989	A6–S3	Changes in a firm's diversification affect its R&D strategy.
076	Huff and Robinson (1994)	Consumer goods industry	95 observations, 1960–1974	S2–O5	The longer the lag between the first mover and its follower, the larger the first mover's market share advantage. Subsequent years of competitive rivalry slowly erode this advantage.
077	Ingram (1996)	Hotel industry US	989 chains, 1896–1980	S3–O5	Naming strategies are the result of a trade-off between local adaptation and strategic consistency. Consistent strategies lead to lower failure rates.

078	Jones (2003)	Telecommunication switchings	56 firms, 1972–1994	S3–O5	Product line changes after radical technological change explain significant variations in firm performance.
079	Kelly and Amburgey (1991)	Airline Industry US	136 air carriers 1962–1985	A2–S1 A7–S1	Discontinuous regulatory change in the airline industry is not associated with an increased probability of change in strategic orientation. Strategic reorientation is less likely for longer-established organizations, weakly influenced by organizational size, and unrelated to organizational survival.
080	Ketchen and Palmer (1999)	Hospital industry US	39 hospitals, 1986–1990	A5–S2	Poor performance leads to subsequent strategic changes in products and services offered.
081	Kotha and Nair (1995)	Machine tool industry Japan	25 firms, 1979–1992	S1–O5	Competitive strategies of differentiation, cost efficiency, asset parsimony, and scale/scope influence firm performance.
082	Kraatz and Zajac (2001)	Educational sector US	400 colleges 1971–1986	A8–S1 S1–O5	Organizations that have greater stocks of historically valuable resources are less likely to engage in adaptive strategic change after environmental change. Resource-driven disinclination towards change may have positive performance implications.
083	Lant *et al*. (1992)	Furniture and computer software industry	103 firms, varying periods	A5–S1 A7–S1	Poor past performance, environmental awareness, top management team heterogeneity and CEO turnover increase the likelihood of strategic reorientation. The results are sensitive to different environmental contexts.
084	Lee (2003)	Pharmaceutical industry US	1920–1960	A1–S3	Persistent divergent strategic orientations (innovation and imitation) in the US pharmaceutical industry emerged as a result of how firms initially responded to the opportunity presented in the discovery of antibiotics.
085	Lee and Grewal (2004)	Retail industry	106 firms, 1992–2000	A1–S3 S3–O5	Firms exhibit strategic responses to technological change (introduction of Internet). Strategic responses and their timing positively influence firm performance. Use of slack resources and speed of adoption can enhance this relationship.
086	Lee *et al*. (2000)	Heterogeneous industries	105/77 firms, pre-/post-introduction phase	S2–O5	Early- and fast-mover strategies achieve greater positive stock market reactions than late- and slow-mover strategies. First movers suffer at the time of new product imitations as rivals undermine the pioneering effort.
087	Lorenzoni and Lipparini (1999)	Manufacturers of automatic packaging machiners Italy	3 firm histories	S4–O5 S4–O8	Collaborative strategies allow firms to access complementary competences. They lead to a co-evolution of internal and external resources.
088	Madhavan *et al*. (1998)	Steel Industry Global	130 firms, 1977–1993	A1–S4 A2–S4	Technological and regulatory changes influence the network structure and alliancing strategies of firms within an industry.
089	Maijoor and Van Witteloostuijn (1996)	Audit industry Netherlands	Entire industry, 1967–1990	A2–S1	Regulatory changes influence firm strategies and firm resource bases.

Table 2. *(continued)*

No.	Author(s)	Industry region	Sample size, period	Linkage(s)	Key findings
090	Makadok (1998)	Money market mutual funds	903 funds, 1987–1991	S2–O5	The first mover and early movers in a product category enjoy a highly sustainable pricing advantage and a moderately sustainable market share advantage. The results are influenced by structural industry characteristics.
091	Mascarenhas (1989)	Oil-drilling industry	Active rigs, 1966–1984	A4–S1	Strategic groups exhibit dynamics over periods of economic stability, growth and decline. Mobility rates are higher during decline and mobility is higher between similar than between different groups.
092	Mascarenhas and Aaker (1989)	Oil-well drilling	33 firms, 1973–1983	A4–S1 S1–O5	Firms adjust their competitive strategies systematically over the business cycle. Optimal strategies vary with different stages of the business cycle.
093	Mauri and Michaels (1998)	Heterogeneous industries US	264 firms, 1978–1992	A8–S1 S1–O5	Firm strategies vary with differences in firm-level resource characteristics. Firm performance is significantly influenced by advertising and R&D strategies.
094	McCutchen (1993)	Pharmaceutical industry	20 firms, 1973–1985	A2–S3	Firms respond to a legal change (R&D tax credit) by increasing their R&D intensity but try to maintain their relative positions *vis à vis* each other.
095	Miller (1993)	Heterogeneous Mostly US	36 companies, entire history per firm	A7–S1	Executive succession results in changes in structure and in the strategy-making process.
096	Miller (1994)	Heterogeneous	36 firms, varying time periods	A5–S1	Periods of good performance encourage firms to continue with current strategies.
097	Miller and Chen (1994)	Airline industry US	32 airlines, 1979–1986	A3–S1 A5–S1	Competitive inertia is increased by good performance and reduced by market diversity, but these two factors have a different impact on tactical vs strategic decisions.
098	Miller and Friesen (1983)	Heterogeneous Canada, US	62 firms, 5 years of data	A3–S3 A4–S3	Increases in environmental dynamism, hostility and heterogeneity are related to strategic changes in innovation and analysis.
099	Mishina *et al.* (2004)	Manufacturing industry	112 firms, 3 years of data per firm	S2–O5	Product expansion strategies slow firm growth. The relationship is positively moderated by financial slack. Human resource slack enhances short-term market expansion.
100	Mizik and Jacobson (2003)	Manufacturing industry	566 firms, 1980–1998	S1–O5	An increased emphasis on appropriation strategies relative to innovation strategies has a positive impact on stock prices. This effect is moderated by firm and industry characteristics.
101	Mosakowski (1991)	Computer industry	122 firms, 1983–1987	S3–O5	Contracting-out R&D influences firm performance. The effect is moderated by product market strategies.
102	Mosakowski (1993)	Software industry	86 firms, 1983–1984	S2–O5	Differentiation and focus strategies increase firm performance when established. Adoption of these strategies does not cause a temporary decline in performance.

103	Mowery *et al*. (1996)	Heterogeneous industries	792 alliances varying periods within 1980s	S4–O8	Alliance participation facilitates transfer of technological capabilities. The extent of transfer of technological capabilities in alliances depends on the type of alliance, and the initial firm level of absorptive capacity. Capabilities of partners become more divergent as a result of some alliancing contracts.
104	Nair and Filer (2003)	Steel industry Japan	8 firms, 1980–1999	A3–S1	Strategic adjustment paths are co-integrated within strategic groups and often show slow adjustment characteristics. Reactions to exogenous shocks in the system varied between firms and strategic groups.
105	Nair and Kotha (2001)	Steel industry Japan	12 firms, 1980–1993	S1–O5	Strategic group membership in two technology-based groups influences performance, however the relative advantage between groups is reversed between different strategic periods.
106	Nayyar (1995)	Heterogeneous industries	106 firms, prior/after service change	S2–O5	Increases in customer service strategy positively affect implications for firm performance.
107	Nicholls-Nixon and Woo (2003)	Pharmeceutical industry US	26 firms, 1981–1991	S3–O5	R&D strategies yielding more innovations that are broadly oriented and embrace high levels of internal and external activity increase subsequent technological output in an emerging technological regime.
108	O'Brien (2003)	Heterogeneous Mainly US	16.358 firms, at least 2 years of data between 1980–1999	S3–O7	Capital structure is influenced by a firm's competitive strategy. Financial slack is critical for an innovation strategy. Firms that fail to recognize the importance of financial slack and pursue an innovation strategy suffer negative performance consequences.
109	Olusoga *et al*. (1995)	PCT industry US	16 firms, 1973–1984	S1–O5	Strategic groups in an industry change over time. Some consistently outperform others.
110	Osborne *et al*. (2001)	Pharmeceutical industry US	22 firms, 1963–1982	A6–S1 S1–O5	Mental models shape strategic goals and subsequent firm performance and contribute to the stability of strategic groups over time.
111	Pennings and Harianto (1992)	Banking industry US	152 banks, 1977–1987	A1–S3	Adoption of innovations depends on prior experience with relevant technologies and inter-firm links.
112	Roberts and Amit (2003)	Retail banking industry Australia	19 banks, 1981–1995	S3–O5	Innovation strategies that are differentiated, consistent and actively pursued offer superior financial returns.
113	Sakakibara (2002)	Heterogeneous industries Japan	312 firms, 1969–1992	A3–S4 A8–S4	The rate of participation in R&D consortia is positively influenced by the level of competition, appropriability of returns, R&D capabilities and prior network participations.
114	Sakano and Lewin (1999)	Non-financial firms Japan	162 firms, 1988–1993	A7–S1	Governance structure influences organizational changes. CEO succession in Japanese companies does not necessarily lead to radical organizational change.
115	Singh and Mitchell (1996)	Hospital software systems industry US	973 businesses, 1961–1991	A3–S4 S4–O5	Business performance of a focal firm depends on how the strategies of its business partners evolve over time. Firms face a higher risk of dissolution if they do not react to either the addition or the withdrawal of a partner to an existing partnership.

Table 2. *(continued)*

No.	Author(s)	Industry region	Sample size, period	Linkage(s)	Key findings
116	Smith and Grimm (1987)	Railroad industry US	27 railroads, prior to/after deregulation	A2–S1 S1–O5	Most firms change their strategies in response to deregulation. Firms that change their strategies outperform those that do not adjust their strategies. Overall innovation and contingency strategies are most profitable.
117	Smith *et al*. (1991)	Airline industry US	32 airlines, 1979–1986	A3–S2 A7–S2 A8–S2	The likelihood, type, and timing of a firm's response to competitor actions depends on its external orientation, the structural action complexity, slack resources and management characteristics.
118	Smith *et al*. (1997)	Airline industry US	All domestic airlines, (1976–1986)	A3–S1	Strategic groups can be used to predict the manner in which firms compete with each other as well as the frequency with which they undertake competitive actions.
119	Smith and Wilson (1995)	Airline industry US	10 airlines, 1983–1984	A3–S2	Incumbent firms use six strategies to respond to entry by competitors. The type of response can be predicted by industry-specific factors (e.g. risk of response, barriers to entry).
120	Sorenson (2000)	Computer workstation manufacturers US	175 firms, 1980–1996	A3–S2 S2–O5	Product variety depends on the competitive ecology of the industry, and influences organizational viability.
121	Stephan *et al*. (2003)	Hospital industry US	395 hospitals, 1980–1986	A3–S2	There is an inverted U-shaped relationship between multimarket contact and market entry. CEOs of longer tenure are influenced more by their multimarket relationships than newer CEOs.
122	Stuart and Podolny (1996)	Semiconductor industry Japan	10 firms, 1982–1992	S3–O1 S3–O5	Search trajectories influence the evolution of technological positions of firms in an industry. Local search strategies constrain the technological development of firms.
123	Suarez and Utterback (1995)	6 Heterogeneous industries US	Complete history per industry	S2–O1 S2–O5	The evolution of a dominant technological design is shaped by the competitive strategies of incumbent and entering/exiting players. The survival of firms is substantially affected by entry time and evolutionary status of an industry's core technology.
124	Sudharsan *et al*. (1991)	Pharamceutical industry US	22 firms, 1974–1980	S1–O3	Competitive strategy variables serve different roles and follow varying mobility patterns over time. Scope and financial strategy variables serve as mobility barriers. There is significant inter-group and inter-temporal mobility in the marketing and production strategy variables.
125	Tan and Tan (2005)	Electronics industry China	104 SOEs, 12 years	A4–S1 S1–O5	Firms change their strategies in response to changes in the environment. Aligning strategies with the evolving environment improves performance.

126	Tripsas (1997)	Typesetter industry	Entire industry, 1886–1990	A1–S1 S1–O5	In a regime of technological change, strategic investments, technical capabilities, and investments in specialized complementary assets determine the relative performance of incumbents vs. new entrants.
127	Tsai (2000)	Heterogeneous industries	1 firm, 36 business units 1996–1998	A8–S3	Social capital and strategic relatedness increase reliance on an alliancing strategy.
128	Tushman and Rosenkopf (1996)	Cement Industry US	59 firms, 1918–1986	S1–O5	Strategic reorientations cause discontinuous organizational change and are negatively associated with subsequent performance in stable contexts, and significantly more positively associated with organizational performance in turbulent contexts.
129	Washington and Ventresca (2004)	Educational sector US	553 colleges, 1874–1995	A3–S1 A6–S1 A7–S1 S1–O6	Organizations are likely to incorporate strategies that are consistent with their existing dominant logic and governance mode, or are observed in other organizations or the segment-specific network.
130	White (2000)	Pharmaceutical industry China	87 firms, 1992–1994	A3–S3 A8–S3	Firms consider external competitive- and internal capability-related factors in choosing their R&D strategy.
131	Wiersema (1992)	Manufacturing firms	146 firms, 5 year periods	A7–S1 S1–O7	Executive succession triggers strategic change, with successors coming from outside the firm increasing the likelihood of a significant change. Prior strategy does not influence executive succession.
132	Yeoh and Roth (1999)	Pharmaceutical industry	20 firms, 1971–1989	S3–O5 S3–O8	R&D and sales force expenditures increase firm capabilities and both directly and indirectly influence differentiation in the marketplace.
133	Young *et al*. (1996)	Software industry	345 observations, 1983–1991	A3–S1 S1–O5	Cooperative mechanisms increase a firm's competitive activity, which is in turn positively related to firm performance. The overall industry-level of competitive rivalry negatively affects firm performance.
134	Young *et al*. (2000)	Computer software industry US	20 firms, 1987–1991	A3–S1 A8–S1	As multimarket contact increases, firms move less frequently, but more quickly, to the moves of rivals. Competitive rivalry (timing and frequency of action) increases with resource dissimilarity.
135	Zajac *et al*. (2000)	Savings and loan industry US	4000 institutions, 1980–1988	A2–S1 A3–S1 A8–S1 S1–O5	The timing, direction and magnitude of strategic changes can be predicted based on changes in the general and competitive environment of the firm and its organizational resources. Deviation from a normative strategic fit has negative performance implications.
136	Zajac and Shortell (1989)	Hospital industry US	570 hospitals, 1983–1984	A2–S1 A6–S1	Firms commonly change generic strategies in response to a regulatory change. Firms that follow a defender strategy are most likely to change strategy. Generic strategies are not perceived as equally viable across environments and time.
137	Zúniga *et al*. (2004)	Banking industry Spain	136 banks, 1983–1997	A1–S1 A2–S1 S1–O5	Technological and regulatory change significantly affects the structure of strategic groups. Performance differences between groups are not stable over time.

telecommunication, power generation and rail transportation sector demonstrate the high relevance of this linkage. Researchers have found that firms frequently change their generic strategies in response to regulatory changes (Smith and Grimm 1987; Zajac and Shortell 1989), and make significant adjustments in their competitive posture along key operational ratios (Banker *et al*. 1996; McCutchen 1993) if they (1) think that their welfare is directly affected, and (2) are able to identify multiple indicators and effects of the need for strategic change (Barr and Huff 1997).

Despite the fact that there are a considerable number of studies that fall under this link, there are few findings that focus on path dependency or the timing of strategic actions. One study by Barr and Huff (1997) does focus on the timing of strategic responses. That study of six pharmaceutical firms showed that strategic changes are not predominately achieved in a timely way, as the pressure to change builds only gradually while firms struggle to align the different beliefs and mental models about cause and effect of alternative strategic adaptations. The findings also suggested that firms which monitored legislative changes were not quicker to change than their less attentive counterparts (Barr and Huff 1997).

Competitor actions and competitive landscape→Competitive strategy. How competitor actions influence a firm's competitive strategy is one of the most important, and certainly most extensively studied stream of research in the matrix. The recent and intense competitive interplay with multiple strategic moves in the domain of pricing and entry timing surrounding the introduction of the Microsoft XBOX 360 and Sony's Playstation 3 represents a powerful and well-known example of the relevance of this linkage. Not surprisingly, researchers within this field have consequently addressed the linkage from a variety of different theoretical angles. It is hardly surprising, then, that researchers have addressed it from a variety of different theoretical angles.

At the most basic level, researchers found that, when a rival makes a strategic move, firms often will counterattack (Smith and Wilson 1995), and when faced with an increase in the intensity of competition, firms will increase the number of competitive actions (Goodstein and Boeker 1991; Miller and Chen 1994), and adjust strategy content (Craig 1996). In addition, strategic adaptations by competitors can also serve as reference points and increase the likelihood that a firm incorporates a similar strategy itself (Washington and Ventresca 2004).

Other researchers that have focused on strategic groups have found that they also act as reference points. Firms are motivated to reinforce group structure by pursuing strategic actions that build mobility barriers (Fiegenbaum and Thomas 1995) and react to deviations by adjusting their strategic actions towards the group reference point (Fiegenbaum and Thomas 1995; Nair and Filer 2003). Strategic groups also seem to influence the type of strategic response. However, differences in speed of competitive response and the general likelihood of competitive responses could not be predicted by group membership (Smith *et al*. 1997).

Multipoint or multimarket competition also influences dynamic competitive strategy. Faced with multipoint competition, a firm must evaluate and react to rivalry in several geographic or product markets simultaneously (Karnani and Wernerfelt 1985). As in the case of strategic groups, multipoint competitors can serve as reference points to steer a firm's competitive product/market strategy (Greve 2000). This relationship increases as levels of multipoint contact increase, and then decreases at moderate to high ranges, thus following an inverted U-shape (Baum and Korn 1999; Boeker *et al*. 1997; Havemann and Nonnemaker 2000). As multimarket contact increases, firms also move less frequently but more quickly, following the moves of rivals (Young *et al*. 2000). The effect of multimarket contact on firm-level action is greater for firms with dissimilar resources relative to their rivals, with resource

dissimilarities also influencing the timing and frequency of response (Young *et al*. 2000).

Cooperative links within an industry also seems to be an important contingency in the environment–strategy link. First, an increase in alliances within an industry decreases competitive intensity (Young *et al*. 1996). Second, firms are more likely to engage in firm-level alliances if competition increases (Eisenhardt and Schoonhoven 1996; Sakakibara 2002). Third, firms react to alliance extension by partners by forming a new collaborative relationship of their own (Singh and Mitchell 1996). Similar results have been suggested for small companies or new ventures, where the owner's personal network influences competitive strategy (Ostgaard and Birley 1996).

In conclusion, there has been substantial coverage of the competitor actions and competitive landscape→competitive strategy link, with several identified studies also focusing on timing issues. However, path characteristics, for example the history of strategic interactions, do not seem to have been considered often.

Organizational Performance→ Competitive Strategy

A history of favorable performance builds a level of confidence that encourages managers to continue past strategies. This persistence is caused by several distinct mechanisms. For instance, managers generally face less pressure from a deviation of aspiration level and actual performance after periods of good performance (Greve 1998a). Additionally, persistence often permits the reliance on proven routines (Lant *et al*. 1992; Miller 1993) and increases viability through confidence and fit with existing mental models (Barr *et al*. 1992; Lant *et al*. 1992).

Empirical studies covered in this review have demonstrated strategic persistence after historically good performance to exist in terms of stickiness in core operational ratios (Audia *et al*. 2000), corporate aggressiveness (Fombrun and Ginsberg 1990) and product portfolio additions and divestitures (Goodstein and Boeker 1991; Ketchen and Palmer 1999). Results also show inertia to affect tactical as well as strategic actions (Miller and Chen 1994), and to persist in the face of radical technological change (Audia *et al*. 2000). Ferrier (2001) extends these results by studying the effect of good performance on the yearly number of competitive attacks, their complexity, and their average duration and found a negative relationship between past periods of good performance and attack duration. Nonetheless, despite the considerable number of studies identified in this review, we found little work on how past performance influences the timing of strategic actions or its effect on long-term path characteristics.

Organizational Contingencies→ Competitive Strategy

In addition to environmental variables and past performance, research on dynamic competitive strategy has identified three different types of organizational contingencies: (1) strategic context; (2) organizational structure; and (3) organizational resources and capabilities. We describe each of them briefly.

Strategic context→Competitive strategy. Here, the focus is the firm's history of competitive and corporate strategic decisions. Researchers in this area have found that a dominant strategic logic can reduce the propensity for strategic change (Boeker 1989), and that managers tend to pursue strategic actions that follow those taken in the past (Eisenhardt and Schoonhoven 1996; Washington and Ventresca 2004), therefore past decisions influence subsequent decisions. Changes in the strategic context, such as acquisitions or diversifications will, on the other hand, often trigger changes in competitive strategy variables and so serve as a source of momentum (Hitt *et al*. 1996; Hoskisson and Johnson 1992). Consequently, studies in this area are beginning to account for path dependencies in terms of past decisions and how they shape the direction of

future competitive activity. However, there still seem to be comparatively few studies that deal with how the strategic context influences the timing of strategic actions.

Organizational structure→Competitive strategy. This review identified many studies on how organizational structure impacts competitive strategy. Generally, static organizational characteristics have been seen as sources of inertia. Overcoming such obstacles to strategic adaptation is therefore often cited as a manager's key task (Cyert and March 1963). Inertia can result from structural characteristics such as formalized control mechanisms (Hannan and Freeman 1977, 1984; Reuf 1997), set decision-making rules, paradigms (Pfeffer 1982) and organizational routines (McKinley 1992). In addition, many researchers also consider firm size as one of the most important sources of inertia (Glen and Hambrick 1995; Gordon *et al*. 2000; Greve 2000). On the flipside, some studies of structural organizational change have found that it facilitates the strength and duration of subsequent strategic adaptations. The structural changes that have been studied include a wide range of variables, such as changes in ownership (Capron *et al*. 1998; Goodstein and Boeker 1991), and in the board of directors (Golden and Zajac 2001; Sakano and Lewin 1999), as well as CEO succession (Goodstein and Boeker 1991; Miller 1993) or changes in CEO compensation (Carpenter 2000). In terms of the characteristics of strategic change, studies in this link seem to rely almost entirely on the general likelihood or the type of strategic adaptation as dependent variable. As far as we can determine, only Glen and Hambrick (1995) investigate the impact of organizational size on the timing of strategic adaptation, finding that small firms tend to be faster in executing their own competitive moves, but slower in responding to those of their rivals. However, despite a promising start using organizational size as a broadly defined proxy variable for structural organizational characteristics, no other study we know of has extended the findings with respect to the timing of strategic actions. Furthermore, none of the studies we identify has focused on the influence exerted by long-term structural development on competitive strategy decisions.

Organizational resources and capabilities→ Competitive strategy. This is the last of the organizational contingencies that we shall discuss. According to the resource-based view of the firm (Barney 1991; Peteraf 1993) and dynamic capability theory (Eisenhardt and Martin 2000; Teece *et al*. 1997; Teece and Pisano 1994), this group of organizational contingencies is the foundation of competitive advantage. Consequently, longitudinal research on dynamic competitive strategy includes studies that explore how resource stocks as well as accumulation and depletion processes shape the intensity and direction of strategic actions.

First, this research focuses on path dependencies by suggesting that businesses tend to shape paths of strategic actions that reinforce and extend their existing resource base. For example, Apple's move into the mobile phone business represents a competitive strategy that tries to build on its superior customer understanding and design capabilities to enter new but technologically related market segments. This has been shown in terms of alliance formation patterns (Gulati 1999; Sakakibara 2002; Tsai 2000), research trajectories in drug innovation (White 2000) and market entries (Greve 2000), where firms initially enter where barriers are lowest, but then move towards long-term positions that reflect their resource base (Bogner *et al*. 1996).

Second, resources can be at the heart of both inertia and persistence (Leonard-Barton 1992) particularly after radical environmental changes, when a history of successful exploitation not only makes it attractive to managers to sustain the current focus, but also means that they have had no relevant alternative experiences (Kraatz and Zajac 2001).

Third, researchers have built on the fact that resources and capabilities are often accumulated through collective trial and error, or arise through idiosyncratic situations and

circumstances (Mauri and Michaels 1998). Consequently, the stock of resources at any given point in time can either limit or expand the strategic options of a firm relative to its competitors, and so represents a powerful source of sustained heterogeneity among firms (Lee 2003).

Finally, resources and capabilities exert effects beyond the boundaries of the firm. Differences between the resource bases of competitors determine the intensity and timing of competitive moves. This is exemplified by Young *et al*. (2000), who suggest that the frequency and speed of competitive moves among multimarket rivals increases with increasing resource dissimilarity.

Competitive Strategy→Environmental Contingencies

Researchers increasingly recognize that strategic actions are not only a response to changes in environmental and organizational contingencies, but that they also influence the path by which several of these contingencies evolve, thereby creating a dynamic framework of interactions as well as setting the stage for the next iteration of competitive activity.

Competitive strategy→Technological environment. We see studies of the technological environment as an outcome of strategic actions falling into a second subgroup. While there are many studies that focus on innovation outcomes, we have found only four that focus on how competitive strategy shapes the technological environment as a setting for subsequent strategic actions.

The results of these studies suggest that the competitive strategies of firms within an industry shape the evolution of competitive technological positions (Stuart and Podolny 1996), as well as the evolution of a dominant technological design (Suarez and Utterback 1995). However, path dependencies exert a strong influence on this development, as firms are often stymied in the creation of breakthrough inventions because familiar technology paths and local search patterns are so dominant (Ahuja and Lampert 2001; Stuart and Podolny 1996). The effect is particularly strong in incumbent firms which have a long history of exposure to existing technologies and consequently tend to sustain familiar technological development paths, and less pronounced in the case of new entrants, who tend to lead in disruptive technologies (Christensen and Bower 1996). Firms can stem negative tendencies in this area by changing their innovation strategies, consciously favoring experimentation with novel, pioneering and emerging technologies (Ahuja and Lampert 2001). This makes the *competitive strategy→technological environment* link another link that accounts for path dependencies. However, important characteristics such as the timing of strategic actions, as well as the long-term pace of strategic adaptation, still seem to offer potential with respect to their influence on the evolution of the technological environment.

Competitive strategy→Competitor actions and competitive landscape. Of the two relevant outcome variables, longitudinal research in this linkage has mostly focused on the link between competitive action and competitive response. Findings suggest that the likelihood and number of competitive responses increase with the external orientation of rivals, the visibility of a competitive move, and the centrality of the market under attack. However, the likelihood of a response decreases with the structural complexity and general difficulty of responding (Smith *et al*. 1991). The studies that also investigated the timing of competitive responses found that the external orientation of competitors was an important explanatory variable in predicting response speed (Smith *et al*. 1991). The number of actions carried out by rivals, the structural complexity of a preceding action, the effort required to retaliate and the strength of impact on the key markets of competitors were all found to decrease the response speed of a firm's competitors (Chen *et al*. 1992; Chen and Miller 1994; Smith *et al*. 1991). However, we found no

study in the literature covered by this review on competitive actions and response that focused specifically on how a history of competitive interactions might potentially shape subsequent competitive rivalry.

Another group of studies investigate how strategic actions shape the characteristics of the overall competitive landscape in the next period of strategic interaction. For example, firms' entry and exit moves will influence the degree of market domain overlap (Baum and Korn 1996) or the degree of strategic similarity (Gimeno and Woo 1996), which will in turn influence future competitive behavior. Other studies under this heading focus on the relationship between competitive strategy and industrial structure (Porter 1980), and find that strategic actions can create mobility barriers (Sudharsan *et al*. 1991) or change the distance between strategic groups or companies, thus significantly changing the conditions, and the intensity, of rivalry within and between strategic groups (Cool and Dierickx 1993).

In summary, progress in this link reveals a similar picture to that in the corresponding antecedent–strategy link. There is substantial coverage of the competitive landscape as an outcome of competitive strategy decisions, with several studies again focusing on the timing of competitive interactions. However, path characteristics of the history of strategic actions seem to have played only a minor role in analyzing competitor response profiles or the general evolution of the competitive setting.

Competitive Strategy→Organizational Performance

Just as we considered organizational performance a separate category in terms of antecedents, so do we consider it separate in terms of outcomes. Performance is often considered the most fundamental issue in strategic management research and, consequently, is the most studied phenomenon. Studies in this link can be further subdivided into several distinct theoretical perspectives.

The first of these takes a contingency perspective on the strategy–performance link, recognizing that performance implications depend on a focal firm's past and present internal and external environments. Findings indicate that significant environmental change will often disturb a firm's alignment with its environment and, if not corrected, will damage subsequent organizational performance. Generally, strategic adaptations seem to be positively associated with performance in turbulent or cyclical environments (Mascarenhas and Aaker 1989; Tushman and Rosenkopf 1996), and to be less desirable if they happen unexpectedly in an environment that is normally stable (Mizik and Jacobson 2003). Researchers have shown that firms that change strategies in response to deregulation will outperform those that do not adjust (Smith and Grimm 1987), and that firms that do not change their strategies following a radical technological change are more likely to experience decreases in performance (Audia *et al*. 2000). The need for adaptation and the magnitude of the decline in performance depend on the degree to which the change makes existing sources of competitive advantage obsolete (Afuah 2000). A similar need for timely strategic change has also been observed for small companies and new ventures in different settings (e.g. Park and Bae 2004; Pearce II and Michael 1997). Some research suggests that reactions are more beneficial if (1) they are specifically designed to negate detrimental effects of environmental change, e.g. through switching to a new supplier, if environmental change diminishes the capabilities of existing suppliers, or (2) they capitalize from arising opportunities, e.g. through increasing R&D expenses and/or the rate of new product introduction after technological changes (Jones 2003; Nicholls-Nixon and Woo 2003). To survive and perform well in turbulent and uncertain environments, firms should therefore attempt to adapt continuously by developing and trading off different types of flexibility, with the optimal capability profile depending on the factor uncertainty

causing the environmental turbulence (Dreyer and Gronhaug 2004).

The timing of strategic actions and the consequences of those actions on organizational performance have received considerably less attention in contingency studies on dynamic competitive strategy. As far as we know, only Lee and Grewal (2004) explicitly incorporate response speed as an independent variable. They study technological change by looking at the introduction of the Internet and find that both the type and speed of response positively affect performance, suggesting that adaptation speed remains a promising variable for future contingency studies.

A relatively small number of contingency studies have studied how the path chosen for strategic adaptation affects subsequent organizational performance. First, Barnett and Freeman (2001) show that the simultaneous introduction of too many products following a technological change will have a detrimental effect on performance, as such an effort causes significant disruption in proven routines. This finding is confirmed by Jones (2003), who finds a curvilinear relationship between new product introductions after radical technological change and organizational performance. In a study of entrepreneurial computer firms, Mosakowski (1993) also suggests that the strategic adaptation of a focus or customer service strategy will force firms to undergo a costly resource accumulation process. However, there was no evidence that this process will reduce organizational performance during the transformation process.

A wide variety of longitudinal studies explore the relationship between competitive strategy or specific strategic moves and organizational performance, which do not focus on specific contingency variables. One important subgroup of studies takes a strategic group perspective, and explores performance differences across strategic groups. While strategic group structure, despite some contradictory evidence, seems to have performance implications in cross-sectional studies, their stability and evolution over time are considerably less researched (Zúniga-Vicente *et al*. 2004). Because past strategies create path dependencies and enduring mobility barriers, and hence limit subsequent mobility between groups (Lee 2003), there is evidence that some performance differences between strategic groups do exist and persist over time (Fiegenbaum and Thomas 1990). However, as strategic group structure changes (Cool and Schendel 1987), some of these relationships break down, limiting the explanatory power of strategic groups to stable 'strategic time periods', and thus giving a more or less retrospective perspective.

Furthermore, several other factors also associated with existing and stable performance differentials seem to undergo significant changes over time. For example, even if performance does not change, neither the number (Olusoga *et al*. 1995) nor the membership of firms within groups (Fiegenbaum and Thomas 1990) necessarily remains stable over time. In addition, although performance differentials between groups can be attributed to differences in advertising or manufacturing strategies, these variables also seem to be unstable in respect to both the type and magnitude of the effect (Olusoga *et al*. 1995).

Extending these findings, Cool and Dierickx (1993) suggest that the stability of performance differentials between strategic groups is not accurately described by group structure alone, as the relative positions of firms *vis-à-vis* each other may change. This in turn can change the intensity of competitive rivalry between or within groups, even if the aggregate industry group structure remains intact.

Still other researchers have examined the competitive strategy→organizational performance link by focusing specifically on market entry strategies. Studies taking this perspective strongly emphasize the performance implications of timing. Cumulative evidence regarding market entry strategies suggests that being the first to enter a market or to introduce a new product may often have positive performance implications, but that these advantages erode over time. For instance, Lee *et al*. (2000)

show that the faster a firm introduces a new product, the higher the abnormal stock returns, but show too that imitations by competitors erode returns over time. Makadok (1998) studies a similar relationship, and finds that first and early movers in a product category command a larger market share and a higher price, with differences increasing as more time elapses between leader and follower. This finding is also confirmed by Huff and Robinson (1994), who show that followers are able to improve their position as time passes.

Ferrier *et al*. (1999) extend these findings by studying matched sets of leader–challenger pairs across several industries. They look at the time elapsed between competitive action and response and at other action characteristics such as similarity or complexity, to show that market leaders, who perform more actions, are faster to adapt to newly created competitive actions and have more sophisticated action repertoires, are better able to defend their positions. This suggests that the timing of strategic actions is an important driver of firm performance for other decisions besides entry.

Finally, a number of studies have focused on the impact on performance of specific strategic moves such as increases in innovation intensity (Roberts and Amit 2003), establishment of institutional links (Baum and Oliver 1991) and of inter-firm alliances networks (Hagedoorn and Schakenraad 1992; Lorenzoni and Lipparini; 1999), and increases in customer service (Nayyar 1995). However, while there certainly is a contribution made by these studies to understanding the phenomenon of dynamic competitive strategy, they often focus on very narrow phenomena or are rooted in a variety of different streams of research, thus not permitting a detailed summary in the course of this review.

Competitive Strategy→Organizational Contingencies

Similarly to environmental variables, competitive strategy shapes the internal characteristics of the firm, which in turn represent contingencies for subsequent strategic actions and adaptations.

Competitive strategy→Strategic context. Washington and Ventresca (2004) authored the only study identified in this review whose focus is on the impact of strategic actions on strategic context. Their results show that strategic actions influence the firm's 'dominant logic', which summarizes the firm's strategic orientation and reflects its history of past strategic decisions. Strategic actions shape this context by extending or revising past experiences, interpretation schemes or organizational routines, which in turn influences future strategic choices. We found little that would fall under this link in longitudinal studies. This may be due to the empirical difficulties of operationalizing constructs such as strategic context, as well as the traditional separation between strategy process and strategy content research.

Competitive strategy→Organizational structure. Amburgey and Dacin (1994) study the relationship between product market strategy and organizational structure and show that a change in strategy increases the probability of a change in administrative structure. The greater the magnitude of the change in strategy, the greater the likelihood of a change in structure, but the likelihood of change decreases as time passes (Amburgey and Dacin 1994). Competitive strategy can also influence the type and magnitude of subsequent structural change. However, the impact seems to vary considerably between different aspects of strategy and structure, and there is not yet a comprehensive picture. There is evidence that changes in R&D expenditures have specific capital structure implications (O'Brien 2003). On the other hand, there seems to be no relationship between type of strategic change and type of executive succession (Wiersema 1992).

In addition, actions in the domain of competitive strategy can set the stage for corporate strategic actions, which subsequently shape organizational structure. Hagedoorn and

Sadowski (1999) found this to be the case, showing that strategic alliances often evolve into mergers or acquisitions. Yet, despite the fact that Amburgey and Dacin (1994) have shown that strategy is a more powerful determinant of structure than structure is of strategy, broader studies of the structural implications of competitive strategy are missing.

Competitive strategy→Organizational resources and capabilities. Finally, researchers studying the strategy→organizational contingency link have acknowledged that strategic actions shape the evolution of a firm's stock of resources and capabilities. For example, the mobile phone manufacturer Nokia has recently announced the discontinuation of its in-house chip production. As it is no longer a core requirement of its current competitive strategy, the change will probably lead to a decline in Nokia's resources and capabilities in this domain. On the flipside, the example of Microsoft's entry into the search engine business provides an example of how a competitive strategy can require firms to extend their existing bases of resources and capabilities. Both examples are supported by the studies covered in this review. The findings present persuasive evidence that competitive strategy influences the accumulation of firm resources and capabilities, with the most prevalent focus being on R&D, sales and alliance strategies. Yeoh and Roth (1999) analyze the pharmaceutical industry and show that R&D and salesforce expenditure increase subsequent firm capabilities, which directly and indirectly influence the degree of differentiation in the marketplace. Ahuja and Katila (2004) focus on the chemical industry and show similar findings, arguing that firms engage in R&D activities in order to add new resources to prevent technological depletion. In the context of small and medium enterprises, Branzei and Vertinsky (2006) confirm this relationship, suggesting that the type of innovation strategy influences subsequent innovation capabilities.

Mowery *et al*. (1996) extend these findings by showing that alliances can facilitate the transfer of technological capabilities or grant access to complementary capabilities (Lorenzoni and Lipparini 1999), thereby enabling firms to augment their resource base. However, a firm's ability to access additional technological capabilities depends on the type of alliance (Dussauge *et al*. 2000) as well as on the firm's initial level of absorptive capacity (Mowery *et al*. 1996), and leads to a subsequent co-evolution of firm resources and resources within the network of partnerships. One consequence of this process is that the technology profiles of alliance partners often diverge, and firms become more technologically specialized over time (Lorenzoni and Lipparini 1999; Mowery *et al*. 1996). Hence, the studies included in this link pay significant attention to path dependencies in the evolution of the firm's resource base. However, both short-term timing of strategic actions and long-term pacing of strategic adaptations both still offer significant potential for an analysis of the shape of resource accumulation and depletion processes.

Suggestions for Future Research and Implications for Practice

An Overall Evaluation of Research across Links

Research on dynamic competitive strategy began in the early 1980s with a static interpretation of concepts and methodologies. It has greatly benefited since then from longitudinal research. We summarized research done over nearly two decades, highlighting insights on the causes and consequences of competitive strategy and the outcomes of strategic actions. We draw a differentiated conclusion regarding three different levels of analysis. First, we found that, by and large, studies in the field give broad and substantial coverage to relevant links, and we have used those in a framework that organizes the studies along the lines of antecedents, strategic actions and adaptations, and outcomes. We show, too, that headway has been made in understanding the timing of strategic actions. Yet, according to

what we have been able to find, this progress is restricted primarily to product market strategy, adaptation to organizational contingencies, and the strategy performance link, and has yet to spread out to other aspects covered in the framework. Finally, we find that path dependencies are the least studied aspect to date. Furthermore, what focus there has been on path dependencies is almost entirely on how past decisions influence future ones. Although this approach is a valid and important contribution, the empirical studies that we have uncovered still fall short in accounting for the performance implications of long-term path characteristics of strategic adaptations.

Progress has been driven by four main theoretical schools of thought (Ketchen *et al*. 2004): The resource-based view of the firm has had a considerable influence on research on dynamic competitive strategy. Therefore, we look at it from its own category of variables. Researchers who have taken this perspective have contributed most to our understanding of path dependencies in dynamic competitive strategy. Path dependencies arise because (1) resource accumulation processes often involve idiosyncratic situations as well as path-dependent learning or experimentation at the individual or firm level, so the stock of resources and capabilities subsequently limit or expand the firm's portfolio of strategic actions; and (2) firms are inclined to shape paths of strategic development that extend or sustain the existing resources base, and to move toward long-term positions that reflect their organizational resource base. These factors were used in several studies on dynamic competitive strategy to explain significant and enduring heterogeneity between competitors. However, while providing insights into path dependencies is a strength of this theoretical perspective, an understanding of the timing of strategic actions is still lacking.

The strategic group perspective has primarily been used to analyze the relationships between competitive strategy, competitive landscape and competitor actions, and organizational performance. The most important contributions from a dynamic perspective are twofold. First, a firm's strategic actions are different according to whether the firm is in a relatively stable period of competitive rivalry or a highly volatile one. During unstable periods, which are often triggered by significant environmental change (Zúniga-Vicente *et al*. 2004), nearly all the important characteristics of competitive strategy are potentially subject to change: Performance implications of competitive strategies and strategic group membership can break down (Nair and Kotha 2001), firms adjust their strategies (Olusoga *et al*. 1995), re-evaluate the importance of their key strategic variables (Baird *et al*. 1988) or change their rivalry *vis-à-vis* inter-group or intra-group competitors. Second, the evolution of strategic groups is influenced by the competitive actions of the firms within an industry as they try to set up additional mobility barriers and use strategic group positions as long-term reference points for strategic adjustment. Path dependencies, though often cited as reasons for sustained performance differentials as well as timing issues, are still seldom addressed in research that takes a strategic group perspective.

Studies that take a market entry perspective make the most important contribution in terms of antecedents and the implications of timing and strategic actions. First-mover and early-mover strategies are mainly triggered by, and were found to lead to, significant performance advantages in many instances (Lee *et al*. 2000). While there are positive effects in the short- and medium-term, imitation gradually erodes them (Makadok 1998). Yet, while results offer interesting insights in terms of the timing of strategic actions, they remain limited to product, market or innovation strategy, and focus mainly on the technological context as an antecedent to competitive strategy.

Finally, researchers have also taken a competitive dynamics perspective to focus on competitive interactions. The studies reviewed primarily cover the interaction between competitive strategy and competitor actions and competitive landscape, and focus either on general industry settings or on specific

Links		Suggestions for focus of future research
Environment	→ Strategy	• additional insights into the timing of strategic adaptation • characteristics of the history of environmental changes and their impact on type and speed of reaction
Past performance	→ Strategy	• impact of past performance patterns on 1) propensity to act quickly/slowly relative to competitors 2) relationship of reaction speed to performance decline
Organization	→ Strategy	• structures that lead firms to act fast/slow or adjust competitive strategy via steady/punctuated change • role of relative resource position in timing of strategic actions • limited managerial capacity and its implication for sustainability of periods of high strategic change
Strategy	→ Environment	• additional insights into the impact of proximity of action/reaction of competitive moves on industry competitive intensity • firm learning from historical reaction patterns of rivals
Strategy	→ Performance	• additional insights into the impact of speed of reaction to changes in environmental contingencies on firm performance • performance implications of steady/balanced patterns of strategic adaptations vs. radical/punctuated changes
Strategy	→ Organization	• additional insights into the implications of speed/pattern of adaptation on organizational structure • how specific strategic actions shape strategy context • competitive strategy and its influence on resource depletion

Figure 3. Research opportunities.

competitive circumstances such as multipoint competition, with results emphasizing for the most part the likelihood or type of strategic action. If it is considered, the timing of competitive actions is attributed to action characteristics such as complexity or observability, or to structural organizational characteristics. Path dependencies do not appear to play an important role in this perspective.

In summary, we suggest that there has been significant progress in identifying the antecedents and outcomes of competitive strategy decisions. Some progress has also been made in understanding what determines the timing of strategic actions, but advances made to date in this area are not broadly rooted in all the relevant aspects of competitive strategy. Path characteristics have received the least amount of attention, especially the pace of strategic change and the performance implications of alternative adjustment paths.

We also suggest that there are still significant opportunities for extending the understanding of timing and path characteristics. The following sections look at the underexplored fields of research within each link. These research opportunities are summarized in Figure 3.

Before progressing with a detailed discussion of Figure 3, it is worth noting that closing the gaps in the literature will pose significant methodological challenges. First, questions related to path dependencies and timing in particular will require detailed firm- and industry-level data over long periods of time. Second, many of the underlying strategy variables are causally ambiguous, and therefore difficult to measure. Relating competitive strategies to firm performance is a challenging task, especially in light of the time lags between cause and effect, and given that, within a single industry, there are many different viable

competitive strategies. In fact, the key to advances in this area may be the ability to meet the data requirements.

Research Opportunities within Links

Environmental contingencies→Competitive strategy. The studies reviewed show that environmental change is a powerful antecedent to strategic adjustment, as it often disturbs the strategic alignment of a firm. However, just one of the selected studies looked at how technological and regulatory change affects the timing of strategic adaptations (Lee and Grewal 2004). It would be interesting to explore further how environmental change shapes the timing and speed of strategic adjustment. For instance, how does the history, or path, of environmental changes influence the type and speed of strategic adaptations? Firms that have faced turbulent environmental changes can be expected to weigh the potential benefits of a fast and punctuated adaptation against the advantages of greater flexibility and the more informed decisions that come with slower and more gradual adjustment. However, as of today, we have only little understanding of the path characteristics of environmental and strategic changes that managers rely on in order to determine timing and pace of strategic adaptation.

This question is particularly relevant for the linkage between technology strategy and technological context. First, it would be interesting to analyze how fast different firms incorporate technological changes in their competitive strategy. Second, research on technology entrepreneurship could provide an interesting angle to understand how technology strategy can be used as an active (instead of reactive) tool to shape the technological and competitive development of an industry.

Organizational performance→Competitive strategy. The majority of empirical findings suggest that a history of good performance reduces the likelihood of strategic change (Audia *et al*. 2000), as good performance can lead to organizational inertia (Reuf 1997). However, none of the studies we identified attempt to extend the idea of strategic inertia, or to build on the notion that managers have a tendency to stick to tried and true routines to derive hypotheses regarding timing and pace of strategic actions. One fruitful avenue of research could be to address whether successful firms that do in fact change their strategy might be expected to react more slowly, but then more drastically, as they face higher barriers to change and so strive to create additional momentum through intensifying their path of strategic adaptation.

Furthermore, while we found in the review that several researchers have focused on historically positive or negative performance levels, we did not find them extending their inquiries to other path characteristics of historical performance. A study that looks at a firm that has had a highly volatile performance history, perhaps a firm in an industry where there are rapid fluctuations in demand, would be particularly interesting. Would such a history make it more difficult to interpret the significance of performance declines? Would it make it difficult to convince managers of the need for change, and would such reluctance to change be manifested in slow reaction times?

Organizational contingencies→Competitive strategy. We believe that the trend to include resource-based arguments in research on dynamic competitive strategy should be continued. First, additional progress could be made by merging resource-based arguments and other schools of thought. For example, resource-based arguments could be used in studies of strategic groups to derive *ex ante* predictions of their stability.

Second, there is room for studies of the implications that a firm's resource base holds for the timing of strategic actions. Young *et al*. (2000) show that resource dissimilarities influence reaction speed in multipoint competition. It would be interesting to extend those results to other competitive settings or to characteristics of a firm's stock of resources.

For instance, under what conditions does an advantageous resource position prompt a firm to react more quickly to competitive actions or new opportunities? Do superior resources give a firm a competitive edge and so allow it to move more quickly, or does a relatively safe position lull firms into maintaining their status quo? Does a difference in the ability of a firm to create or acquire new resources influence the timing of its strategic actions?

A significant number of studies have focused on top management team characteristics and changes in their composition as important antecedents to competitive strategy. However, we have found that many of these studies have been limited primarily to various aspects of either the likelihood or the type of subsequent changes in competitive strategy. One opportunity for future research would be to extend the findings to date by seeing strategic change as an activity that creates complexity (Boisot and Child 1999) and also necessitates adaptation of a firm's organizations routines and governance mechanisms, and hence requires considerable managerial resources (Gilbert 2005). The managerial resources of firms are limited by the ability of its team members to absorb and apply new information (Eisenhardt and Martin 2000), and to cope with increasing complexity (Mishina *et al*. 2004). They cannot be expanded easily, as most managerial tasks require firm-specific knowledge that is normally accumulated over time (Castanias and Helfat 1991; Dierickx and Cool 1989; Penrose 1959; Tan and Mahoney 2005). These arguments suggest that there is a limit to the amount of strategic change that a firm can handle successfully per period, implying that firms would have difficulty sustaining extensive strategic adaptation over longer time periods. Therefore, does extensive change in one period slow down strategic activity and adaptations in subsequent periods? Does a history of frequent strategic adaptations generate dynamic capabilities that increase a firm's ability to handle strategic changes?

Although some progress has been achieved in this area, we found comparatively little research on long-term path characteristics of strategic change processes. This is a promising area for future research.

Competitive strategy→Environmental contingencies. Few of the studies in the review covered this link. The work that has been done on the competitive landscape as an outcome variable has provided valuable insights, and should be built upon in future research. We believe that further extending the findings to date towards the timing of strategic actions would be particularly interesting.

The studies we reviewed suggest that the number and type of competitive actions determine the degree of rivalry (Chen *et al*. 1992), and that specific strategic actions can create mobility barriers between firms or strategic groups (Sudharsan *et al*. 1991). We know considerably less about how the speed of competitive reactions influences industry rivalry. For example, in industries where there tend to be slower reaction times, are there lower levels of competitive rivalry? Do firms learn from observing the timing of the competitive reactions of their competitors and adjust their reactions accordingly; that is, do reaction profiles depend on the historical path of competitive rivalry?

Similar questions may be asked regarding mobility barriers. How long does it take to create or reinforce mobility barriers within an industry? How fast and in what ways can other firms in the industry respond to such strategic actions? We found little evidence of research in this area. We therefore suggest that additional work might prove insightful.

Competitive strategy→Organizational performance. Researchers examining the implications for performance of competitive strategy have primarily characterized strategic actions by type of reaction. To the best of our knowledge, only a few studies have focused on how environmental changes affect the timing and speed of strategic response. We believe that research on the timing of strategic actions would lead to interesting results. When does

the timing of strategic reactions to changes in contingency variables have implications for firm performance? Which factors influence whether environmental change provides a window of opportunity for a fast mover? Does it depend on the type of environmental change and strategic action? To answer such questions, researchers might rely on arguments used by those focusing on market entries (Makadok 1998). This would mean identifying the factors that facilitate first mover advantages. Can a first mover benefit from early learning when it comes to new technologies or a new regulatory setting in ways that followers will not be able to match? Does a fast reaction lead to faster or more intense resource accumulation? Are there instances where later followers are cut off from resources or capabilities and, if so, which ones? Once such questions are addressed, future research could test more comprehensive contingency models that explain how both type and timing of strategic adaptations affect performance.

Furthermore, as far as we have seen, researchers following a contingency approach have not included the history of strategic activity as contingency variables, so there is relatively little understanding of how past strategic decisions influence performance. Does a firm's history of strategic activity influence its performance? Do periods of intense and volatile strategic change affect subsequent performance and, if so, how?

Some insights on innovation strategy (Barnett and Freeman 2001) and changes in strategic orientation (Mosakowski 1993) indicate that intense strategic change causes, at least initially, a decline in performance. Yet, mixed results have meant that, to our knowledge, there is no comprehensive picture that links the overall construct of path characteristics of strategic change to firm performance. Future research taking a sequential approach may help to resolve these issues. In a first step, exploratory research could identify and measure the path characteristics of strategic activity that are likely to have an impact on subsequent organizational performance. In a second step, data on these path characteristics could be matched with data on firm performance over longer periods of time.

Strategic choices that create path dependencies represent another potentially fruitful area for research. While many researchers have argued that path-dependent decisions generate mobility barriers that, in turn, create sustainable performance differentials (Fiegenbaum and Thomas 1993), and have provided meaningful single-industry examples of such choices (Lee 2003), most of the research we reviewed allows for only *ex post* identification of relevant decisions. A set of relevant characteristics that describe strategic decisions, which will most likely mark the starting point for a path-dependent development, and thus represent a potentially powerful source of sustained heterogeneity between firms, is still missing. Identifying these decisions and their implications *ex ante* would be highly relevant for researchers and managers alike, as such classification could lead to a better understanding of the circumstances that create path-dependent decisions in the first place, and also uncover the risks and rewards associated with those decisions, thereby significantly improving strategic decision-making for the long-term. We believe that the answer to these questions may lie in taking a resource-based perspective to collect evidence on the strategic decisions that create path-dependencies across industries. Such evidence could be used to identify how and why some firms are able to implement path-dependent decisions that lead to sustainable performance while other firms fail to do so.

Competitive strategy→Organizational contingencies. We propose three avenues for future research here. First, research on dynamic strategy content might be integrated with that on strategy process and with an organizational learning perspective to derive additional insights into how specific competitive actions and the overall history of competitive activity together shape the strategic context of organizations. We found just one study covering this link in the review (Washington and Ventresca

2004), and so see the possibilities for longitudinal studies as many and varied.

Second, several researchers have studied how competitive strategy shapes organizational structure (Amburgey and Dacin 1994) yet, from what we have found, the focus appears to have been mainly on strategic orientation and type of strategic action. The findings to date could be extended to the timing of strategic actions. Of particular interest is how a history of fast competitive reactions and many industry firsts might affect organizational structure. For this, researchers might draw on strategy process research (Rajagopalan *et al*. 1993). Third, while several studies have focused on how competitive strategy shapes resource accumulation processes, as far as we have found, none has focused on the impact of competitive strategy on resource depletion or on the timing of resource accumulation processes. Researchers might ask whether firms that pursue strategic actions that expose their resources, through increased visibility for instance, to intense competition indeed shorten the durability of those resources. The impact of the timing of strategic actions on resource accumulation processes also warrants additional investigation. Do fast reactions to technological change give businesses a head start in accumulating additional resources? Are other factors, such as the initial level of absorptive capacity, more important? Based on the review of existing studies, we suggest that these lines of inquiry are very promising.

Methodological Considerations

The research opportunities that we have outlined come with significant methodological challenges, the first and most important of which is data availability. Large samples of longitudinal data spanning years or decades are needed to analyze long-term path characteristics. The data must be free of managerial perception bias, and yet sufficiently rich to permit recognition of uniqueness and subtle changes in firm-specific competitive strategies. The available databases used within strategic management research do not necessarily meet these requirements. Either existing databases must be expanded, or other sources of data suitable for longer time periods found. The solution may lie in proprietary databases. Researchers might develop databases by conducting surveys and by following up on them at set intervals. It might also be possible to enrich these proprietary databases by collecting secondary data from other public sources such as annual reports.

The statistical analysis of data is also a challenge. There must be thorough application of longitudinal panel data methods, and the measurements of competitive strategy, strategic change and path characteristics must be similar, so that the results are comparable across studies. Using like measures would allow researchers to build on the work of one another, for instance to measure the variance of strategic change over the medium or long term to differentiate between balanced and imbalanced paths of strategic change. The development and refinement of such measures should be a priority.

Implications for Managers

There are several interesting implications for practice that stem specifically from longitudinal studies on dynamic competitive strategy.

The long-term objectives of competitive strategy imply some degree of instability and lack of continuity. Ever-changing environmental and organizational contingencies dictate that managers be adaptive. The work done to date can help managers weigh the opportunities and risks of alternative courses of action. Deciding on the right course of action requires decisions on type of action (What to do?) and timing (When?). Longitudinal research on dynamic competitive strategy has specifically shown that the timing of reaction to technological change (Lee and Grewal 2004), product entry (Lee *et al*. 2000) and competitor moves (Smith *et al*. 1991) has important implications for performance. Consequently, managers need to be aware of internal and external barriers to

change that might hinder quick and decisive implementation of strategic actions.

Strategic decisions that create subsequent path dependencies merit particular managerial attention. As long-term developmental paths in the pharmaceutical industry have shown (Lee 2003), such decisions can create sustained heterogeneity between firms, shape the direction of firm competitive development, and ultimately cause enduring intra-industry performance differentials. Managers are well-advised then to devote the time and necessary resources to making informed decisions.

Conclusion

How 'dynamic' is research on dynamic competitive strategy? In this review of the literature, we have answered this question by taking three different perspectives: (1) how longitudinal studies have broadened our understanding of the antecedents and outcomes of competitive strategy; (2) the importance of the timing of strategic actions; and (3) how longitudinal studies have accounted for the long-term path characteristics of strategic activity.

We organized by theme 137 strategic management articles from nine journals. The comprehensiveness of the review yielded nuanced conclusions. First, the studies in the review cover a broad spectrum of antecedents and outcomes of competitive strategy. Second, the timing of strategic actions has been shown to be an important factor in competitive strategy. Yet, contributions that look at timing are, with few exceptions, studies of product and market strategies and competitive interaction dynamics. Third, long-term path characteristics have received the least amount of attention to date. While some studies, relying mostly on the resource-based view as their theoretical foundation, have generated promising insights regarding path dependencies, similar approaches have not yet spread to other aspects of competitive strategy. In addition, the majority of the studies covered in this review focus on how path dependencies influence the direction of future decisions. The pace of strategic change over longer periods of time and their performance implications remain important avenues for future research.

Notes

1 Strategy as 'the determination of the basic long-term goals and objectives of an enterprise, and the adoption of courses of action ... necessary for carrying out these goals' (Chandler 1962, 16).

2 Strategy as 'the fundamental pattern of present and planned resource deployments and environmental interactions that indicates how the organization will achieve its objectives' (Hofer and Schendel 1978, 25).

3 Strategy as 'a consistent pattern ... of managerial controllable or decision components ... ; and the direction in which these components are shifting over time ...' (Galbraith and Schendel 1983, 156).

References

Afuah, A. (2000). How much do your co-opetitors' capabilities matter in the face of technological change? *Strategic Management Journal*, **21**, 387–405.

Ahuja, G. and Katila, R. (2004). Where do resources come from? The role of idiosyncratic situations. *Strategic Management Journal*, **25**, 887–907.

Ahuja, G. and Lampert, C.M. (2001). Entrepreneurship in the large corporation: a longitudinal study of how established firms create breakthrough inventions. *Strategic Management Journal*, **22**, 521–543.

Ailwadi, D.J., Lehmann, D.R. and Neslin, S.A. (2001). Market responses to a major policy change in the marketing mix: learning from Procter & Gamble's value pricing strategy. *Journal of Marketing*, **65**, 44–61.

Amburgey, T.L. and Dacin, T. (1994). As the left foot follows the right? The dynamics of strategic and structural change. *Academy of Management Journal*, **37**, 1427–1452.

Amburgey, T.L., Kelly, D. and Barnett, W.P. (1993). Resetting the clock: the dynamics of organizational change and failure. *Administrative Science Quarterly*, **38**, 51–73.

Audia, E.A., Smith, K.G. and Locke, P.G. (2000). The paradox of success: an archival and a laboratory study of strategic persistence following radical environmental change. *Academy of Management Journal*, **43**, 537–553.

Baird, I.S., Sudharsan, D. and Thomas, H. (1988). Addressing temporal change in strategic group analysis: a three-mode analysis approach. *Journal of Management*, **14**, 425–439.

Banker, R.D., Chang, H. and Majumdar, S.K. (1996). A framework for analyzing changes in strategic performance. *Strategic Management Journal*, **17**, 693–712.

Barker, V.L. and Duhaime, I.M. (1997). Strategic change in the turnaround process: theory and empirical evidence. *Strategic Management Journal*, **18**, 13–38.

Barker, V.L., Patterson, P.W. and Mueller, G.C. (2001). Organizational causes and strategic consequences of the extent of top management replacement during turnaround attempts. *Journal of Management Studies*, **38**, 235–269.

Barnett, W.P. and Freeman, J. (2001). Too much of a good thing? Product proliferation and organizational failure. *Organization Science*, **12**, 539–558.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, **17**, 99–120.

Barr, P.S. and Huff, A.S. (1997). Seeing isn't believing: understanding diversity in the timing of strategic response. *Journal of Management Studies*, **34**, 338–370.

Barr, P.S., Stimpert, J.L. and Huff, A.S. (1992). Cognitive change, strategic action, and organizational renewal. *Strategic Management Journal*, **13**, 15–36.

Baum, J.A. and Korn, H.J. (1996). Competitive dynamics of interfirm rivalry. *Academy of Management Journal*, **39**, 255–291.

Baum, J.A. and Korn, H.J. (1999). Dynamics of dyadic competitive interaction. *Strategic Management Journal*, **20**, 251–278.

Baum, J.A. and Oliver, C. (1991). Institutional linkages and organizational mortality. *Administrative Science Quarterly*, **36**, 187–218.

Bergh, D.D. (1993). Watch the time carefully: the use and misuse of time effects in management research. *Journal of Management*, **19**, 683–705.

Bettis, R.A. and Weeks, D. (1987). Financial returns and strategic interaction: the case of instant photography. *Strategic Management Journal*, **8**, 549–563.

Bierly, P. and Chakrabarti, A. (1996). Generic knowledge strategies in the US pharmaceutical industry. *Strategic Management Journal*, **17**, 123–135.

Boeker, W. (1989). Strategic change: the effects of founding and history. *Academy of Management Journal*, **32**, 489–515.

Boeker, W. (1997). Executive migration and strategic change: the effect of top manager movement on product market entry. *Administrative Science Quarterly*, **42**, 213–226.

Boeker, W., Goodstein, J., Stephan, J. and Murmann, J.P. (1997). Competition in a multimarket environment: the case of market exit. *Organization Science*, **8**, 126–142.

Bogner, W., Thomas, H. and McGee, J. (1996). A longitudinal study of the competitive positions and entry paths of European firms in the US pharmaceutical market. *Strategic Management Journal*, **17**, 85–107.

Bohman, H. and Lindfors, M.-B.J. (1998). Management for change: on strategic change during recession. *Journal of Business Research*, **41**, 57–70.

Boisot, M. and Child, J. (1999). Organizations as adaptive systems in complex environments: the case of China. *Organization Science*, **10**, 237–252.

Boyer, K.K. (1999). Evolutionary patterns in flexible automation and performance: a longitudinal study. *Management Science*, **45**, 824–842.

Branzei, O. and Vertinsky, I. (2006). Strategic pathways to product innovation capabilities in SMEs. *Journal of Business Venturing*, **21**, 75–105.

Bruton, G.D., Ahlstrom, D. and Wan, J.C. (2003). Turnaround in East Asian firms: evidence from ethnic overseas Chinese communities. *Strategic Management Journal*, **24**, 519–540.

Brynjolfsson, E. (1993). The productivity paradox of information technology. *Communications of the ACM*, **36**, 67–77.

Capron, L., Dussauge, P. and Mitchell, W. (1998). Resource redeployment following horizontal acquisitions in Europe and North America. *Strategic Management Journal*, **19**, 631–661.

Carpenter, M.A. (2000). The price of change: the role of CEO compensation in strategic variation and deviation from industry strategy norms. *Journal of Management*, **26**, 1179–1198.

Castanias, R.P. and Helfat, C.E. (1991). Managerial resources and rents. *Journal of Management*, **17**, 155–171.

Cattani, G. (2005). Preadaptation, firm heterogeneity, and technological performance: a study on the evolution of fiber optics, 1970–1995. *Organization Science*, **16**, 563–580.

Caves, B.E. and Ghemawat, P. (1992). Identifying mobility barriers. *Strategic Management Journal*, **13**, 1–12.

Chandler, A.D. (1962). *Strategy and Structure: Chapters on the History of the American Industrial Enterprise*. Cambridge, MA: MIT Press.

Chen, M. and Miller, D. (1994). Competitive attack, retaliation and performance: an expectancy-valence framework. *Strategic Management Journal*, **15**, 85–102.

Chen, M., Smith, K.G. and Grimm, C.M. (1992). Action characteristics as predictors of competitive responses. *Management Science*, **38**, 439–455.

Christensen, C.M. and Bower, J.L. (1996). Customer power, strategic investment and the failure of leading firms. *Strategic Management Journal*, **17**, 197–218.

Cockburn, I.M., Henderson, R.M. and Stern, S. (2000). Untangling the origins of competitive advantage. *Strategic Management Journal*, **21**, 1123–1145.

Cool, K. and Dierickx, I. (1993). Rivalry, strategic groups and firm profitability. *Strategic Management Journal*, **14**, 47–59.

Cool, K. and Schendel, D. (1988). Performance differences among strategic group members. *Strategic Management Journal*, **9**, 207–223.

Cool, K. and Schendel, D. (1987). Strategic group formation and performance: the case of the US pharmaceutical industry, 1963–1982. *Management Science*, **33**, 1102–1124.

Craig, T. (1996). The Japanese beer wars: initiating and responding to hypercompetition in new product development. *Organization Science*, **7**, 302–321.

Curry, D.J. and Riesz, P.C. (1988). Prices and price/quality relationships: a longitudinal study. *Journal of Marketing*, **52**, 36–51.

Cyert, R. and March, J.G. (1963). *A Behavioral Theory of the Firm*. Englewood Cliffs, NJ: Prentice-Hall.

Deephouse, D.L. (1999). To be different or to be the same? It's a question (and theory) of strategic balance. *Strategic Management Journal*, **20**, 147–166.

Dierickx, I. and Cool, K. (1989). Asset stock accumulation and sustainability of competitive advantage. *Management Science*, **35**, 1504–1524.

Dos Santos, B. and Pfeffers, K. (1995). Rewards to investors in innovative information technology applications: first movers and early followers in ATMs. *Organization Science*, **6**, 241–259.

Dreyer, B. and Gronhaug, K. (2004). Uncertainty, flexibility, and sustained competitive advantage. *Journal of Business Research*, **57**, 484–494.

Dussauge, P., Garette, B. and Mitchell, W. (2000). Learning from competing partners: outcomes and durations of scale and link alliances in Europe, North America and Asia. *Strategic Management Journal*, **21**, 99–126.

Eisenhardt, K.M. and Martin, J. (2000). Dynamic capabilities: what are they? *Strategic Management Journal*, **21**, 1105–1121.

Eisenhardt, K.M. and Schoonhoven, C.B. (1996). Resource-based view of strategic alliance formation: strategic and social effects in entrepreneurial firms. *Organization Science*, **7**, 136–150.

Extejt, M.M. and Smith, J.E. (1990). The behavioral sciences and management: an evaluation of relevant journal. *Journal of Management*, **16**, 539–551.

Fahey, L. and Christensen, H.K. (1986). Evaluating the research on strategy content. In Hunt, J.G. and Blair, J.D. (eds), *Yearly Review of Management of the Journal of Management*, **12**, 167–183.

Ferrier, W.J. (2001). Navigating the competitive landscape: the drivers and consequences of competitive aggressiveness. *Academy of Management Journal*, **44**, 858–877.

Ferrier, W.J., Smith, K.G. and Grimm, C.M. (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**, 372–388.

Fiegenbaum, A. and Thomas, H. (1990). Strategic groups and performance: the US insurance industry, 1970–84. *Strategic Management Journal*, **11**, 197–215.

Fiegenbaum, A. and Thomas, H. (1993). Industry and strategic group dynamics: competitive strategy in the UK insurance industry, 1970–84. *Journal of Management Studies*, **30**, 69–105.

Fiegenbaum, A. and Thomas, H. (1995). Strategic groups as reference groups: theory, modeling and empirical examination of industry and competitive strategy. *Strategic Management Journal*, **16**, 461–476.

Flier, B., Van den Bosch, F.A. and Volberda, H.W. (2003). Co-evolution in strategic renewal behavior of British, Dutch and French financial incumbents: interaction of environmental selection, institutional effects and managerial intentionality. *Journal of Management Studies*, **40**, 2163–2187.

Fombrun, C.J. and Ginsberg, A. (1990). Shifting gears: enabling change in corporate aggressiveness. *Strategic Management Journal*, **11**, 297–308.

Franke, R.H., Edlund, T.W. and Oster, F. III (1990). The development of strategic management: journal quality and article impact. *Strategic Management Journal*, **11**, 243–253.

Fryxell, G.E. (1990). Multiple outcomes from product R&D: profitability under different strategic orientations. *Journal of Management*, **16**, 633–646.

Galbraith, C. and Schendel, D. (1983). An empirical analysis of strategy types. *Strategic Management Journal*, **4**, 153–173.

Galbraith, C., Merril, G.B. and Morgan, G. (1994). Bilateral strategic groups: the market for nontactical Navy information systems. *Strategic Management Journal*, **15**, 613–626.

Garcia-Pont, C. and Nohria, N. (2002). Local versus global mimetism: the dynamics of alliance formation in the automobile industry. *Strategic Management Journal*, **23**, 307–321.

Gilbert, C.G. (2005). Unbundling the structure of inertia: resource versus routine rigidity. *Academy of Management Journal*, **48**, 741–763.

Gimeno, J. and Woo, C.Y. (1996). Hypercompetition in a multimarket environment: the role of strategic similarity and multimarket contact in competitive de-escalation. *Organization Science*, **7**, 322–341.

Ginsberg, A. (1988). Measuring and modeling changes in strategy: theoretical foundations and empirical directions. *Strategic Management Journal*, **9**, 559–575.

Ginsberg, A. and Venkatraman, N. (1985). Contingency perspectives of organizational strategy: a critical review of the empirical research. *Academy of Management Review*, **10**, 421–434.

Glen, M.-J. and Hambrick, D.C. (1995). Speed, stealth, and selective attack: how small firms differ from large firms. *Academy of Management Journal*, **38**, 453–482.

Golden, B.R. and Zajac, E.J. (2001). When will boards influence strategy? Inclination×power=strategic change. *Strategic Management Journal*, **22**, 1087–1111.

Goodstein, J. and Boeker, W. (1991). Turbulence at the top: a new perspective in governance structure changes and strategic change. *Academy of Management Journal*, **34**, 306–330.

Goodstein, J., Gautam, K. and Boeker, W. (1994). The effects of board size and diversity on strategic change. *Strategic Management Journal*, **15**, 241–250.

Gordon, S.S., Stewart, W.H., Sweo, R. and Luker, W.A. (2000). Convergence versus strategic reorientation: the antecedents of fast paced organizational change. *Journal of Management*, **26**, 911–945.

Greve, H.R. (1995). Jumping ship: the diffusion of strategy abandonment. *Administrative Science Quarterly*, **40**, 444–473.

Greve, H.R. (1996). Patterns of competition: the diffusion of a market position in radio broadcasting. *Administrative Science Quarterly*, **41**, 29–60.

Greve, H.R. (1998a). Performance, aspirations and risky organizational change. *Administrative Science Quarterly*, **43**, 58–86.

Greve, H.R. (1998b). Managerial cognition and the mimetic adoption of market positions: what you see is what you do. *Strategic Management Journal*, **19**, 967–988.

Greve, H.R. (2000). Market niche entry decisions: competition, learning, and strategy in Tokyo banking, 1894–1936. *Academy of Management Journal*, **43**, 816–836.

Greve, H.R. and Taylor, A. (2000). Innovations as catalysts for organizational change: shifts in organizational cognition and change. *Administrative Science Quarterly*, **45**, 54–80.

Grier, K.B., Munger, M.C. and Robertis, B.E. (1991). The industrial organization of corporate political participation. *Southern Economic Journal*, **57**, 727–738.

Grimm, C.M. and Smith, K.G. (1991). Management and organizational change. a note on the railroad industry. *Strategic Management Journal*, **12**, 557–562.

Gronhaug, K. and Falkenberg, J.S. (1989). Exploring strategy perceptions in changing environments. *Journal of Management Studies*, **26**, 349–359.

Gulati, R. (1999). Network location and learning: the influence of network resources and firm capabilities on alliance formation. *Strategic Management Journal*, **20**, 397–420.

Hagedoorn, J. and Schakenraad, J. (1992). Leading companies and network of strategic alliances in information technologies. *Research Policy*, **21**, 163–190.

Hagedoorn, J. and Sadowski, B. (1999). The transition from strategic technology alliances mergers and acquisitions: an exploratory study. *Journal of Management Studies*, **36**, 87–105.

Hagedoorn, J. and Schakenraad, J. (1994). The effect of strategic technology alliances on company performance. *Strategic Management Journal*, **15**, 291–209.

Hannan, M.T. and Freeman, J. (1977). The population ecology of organizations. *American Journal of Sociology*, **82**, 929–964.

Hannan, M.T. and Freeman, J. (1984). Structural inertia and organizational change. *American Sociological Review*, **49**, 149–164.

Haveman, H.A. and Nonnemaker, L. (2000). Competition in multiple geographic markets: the impact on growth and market entry. *Administrative Science Quarterly*, **45**, 232–267.

Haveman, H.A., Russo, M.V. and Meyer, A.D. (2001). Organizational environments in flux: the impact of regulatory punctuations on organizational domains,

CEO succession, and performance. *Organization Science*, **12**, 253–273.

Henderson, R. and Cockburn, I. (1994). Measuring competence? Exploring firm effects in pharmaceutical research. *Strategic Management Journal*, **15**, 63–84.

Hitt, M.A., Boyd, B. and Li, D. (2004). The state of strategic management research and vision of the future. In Ketchen, D.J. and Bergh, D.D. (eds), *Research Methodology in Strategy and Management*. Greenwich, CT: JAI Press, pp. 1–31.

Hitt, M.A., Hoskisson, R.E., Johnson, R.A. and Moesel, D.D. (1996). The market for corporate control and firm innovation. *Academy of Management Journal*, **39**, 1084–1119.

Hofer, C. and Schendel, D. (1978). *Strategy Formulation: Analytical Concepts*. St. Paul: West Publishing.

Hoskisson, R.O. and Johnson, R.A. (1992). Corporate restructuring and strategic change: the effect on diversification and R&D intensity. *Strategic Management Journal*, **13**, 625–634.

Huff, L.C. and Robinson, W.T. (1994). The impact of leadtime and years of competitive rivalry on pioneer market share advantages. *Management Science*, **40**, 1370–1377.

Ingram, P. (1996). Organizational form as a solution to the problem of credible commitment: the evolution of naming strategies among US hotel chains, 1896–1980. *Strategic Management Journal*, **17**, 85–98.

Johnson, J.L. and Podsakoff, P.M. (1994). Journal influence in the field of management: an analysis using Salancik's index in a dependency. *Academy of Management Journal*, **37**, 1392–1407.

Jones, N. (2003). Competing after radical technological change: the significance of product line management strategy. *Strategic Management Journal*, **24**, 1265–1287.

Karnani, A. and Wernerfelt, B. (1985). Multiple point competition. *Strategic Management Journal*, **6**, 87–96.

Kelly, D. and Amburgey, T.L. (1991). Organizational inertia and momentum: a dynamic model of strategic change. *Academy of Management Journal*, **34**, 591–612.

Ketchen, D.J. and Palmer, T.B. (1999). Strategic responses to poor organizational performance: a test of competing perspectives. *Journal of Management*, **25**, 683–706.

Ketchen, D.J., Snow, C.C. and Hoover, V.L. (2004). Research on competitive dynamics: recent accomplishments and future challenges. *Journal of Management*, **30**, 779–804.

Knight, F.H. (1921). *Risk, Uncertainty and Profit*. New York: Houghton Mifflin.

Kotha, S. and Nair, A. (1995). Strategy and environment as determinants of firm performance: evidence from the Japanese machine tool industry. *Strategic Management Journal*, **16**, 497–518.

Kraatz, M.S. and Zajac, E.J. (2001). How organizational resources affect strategic change and performance in turbulent environments: theory and evidence. *Organization Science*, **12**, 632–657.

Lant, T.K., Milliken, F.J. and Barta, B. (1992). The role of managerial learning and interpretation in strategic persistence and reorientation: an empirical exploration. *Strategic Management Journal*, **13**, 585–608.

Lee, H., Smith, K., Grimm, C.M. and Schomburg, A. (2000). Timing, order and durability of new product advantages with imitation. *Strategic Management Journal*, **21**, 23–31.

Lee, J. (2003). Innovation and strategic divergence: an empirical study of the US pharmaceutical industry from 1920–1960. *Management Science*, **49**, 143–159.

Lee, R.P. and Grewal, R. (2004). Strategic responses to new technologies and their impact on firm performance. *Journal of Marketing*, **68**, 157–171.

Leonard-Barton, D. (1992). Core capabilities and core rigidities: a paradox in managing new product development. *Strategic Management Journal*, **13**, 111–125.

Lorenzoni, G. and Lipparini, A. (1999). The leveraging of interfirm relationships as a distinctive competence. *Strategic Management Journal*, **20**, 317–338.

MacMillan, I.C. (1989). Delineating a forum for business policy scholars. *Strategic Management Journal*, **10**, 391–395.

MacMillan, I.C. (1991). The emerging forum for business policy scholars. *Strategic Management Journal*, **12**, 161–165.

Madhavan, R., Koka, B.R. and Prescott, J.E. (1998). Networks in transition: how industry events (re)shape interfirm relations. *Strategic Management Journal*, **19**, 439–459.

Maijoor, S. and Van Witteloostuijn, A. (1996). An empirical test of the resource-based theory: strategic regulation in the Dutch audit industry. *Strategic Management Journal*, **17**, 549–569.

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**, 683–697.

Mascarenhas, B. (1989). Strategic group dynamics. *Academy of Management Journal*, **32**, 333–352.

Mascarenhas, B. and Aaker, D.A. (1989). Strategy over the business cycle. *Strategic Management Journal*, **10**, 199–210.

Mauri, A.J. and Michaels, M.P. (1998). Firm and industry effects within strategic management: an empirical examination. *Strategic Management Journal*, **19**, 211–220.

McCutchen, W.W. (1993). Strategy changes as a response to alterations in tax policy. *Journal of Management*, **19**, 575–593.

McKinley, W. (1992). Decreasing organizational size: to untangle or not to untangle? *Academy of Management Review*, **17**, 112–123.

Menard, S. (1991). *Longitudinal Research*. Sage University paper series on quantitative applications in the social sciences. Newbury Park, CA: Sage Publications.

Miller, D. (1993). Some organizational consequences of CEO succession. *Academy of Management Journal*, **36**, 644–659.

Miller, D. (1994). What happens after success: the perils of excellence. *Journal of Management Studies*, **31**, 325–358.

Miller, D. and Chen, M. (1994). Sources and consequences of competitive inertia. *Administrative Science Quarterly*, **39**, 1–23.

Miller, D. and Friesen, P.H. (1983). Strategy-making and the environment: the third link. *Strategic Management Journal*, **4**, 221–235.

Mishina, Y., Pollock, T.G. and Porac, J. (2004). Are more resources always better for growth? Resource stickiness in market and product expansion. *Strategic Management Journal*, **25**, 1179–1197.

Mizik, N. and Jacobson, R. (2003). Trading off between value creation and value appropriation. *Journal of Marketing*, **67**, 63–76.

Mosakowski, E. (1991). Organizational boundaries and economic performance: an empirical study of entrepreneurial computer firms. *Strategic Management Journal*, **12**, 115–133.

Mosakowski, E. (1993). A resource-based perspective in the dynamic strategy–performance relationship: an empirical examination of the focus and differentiation strategies in entrepreneurial firms. *Journal of Management*, **19**, 819–839.

Mowery, D.C., Oxley, J.E. and Silverman, B.S. (1996). Strategic alliances and interfirm knowledge transfer. *Strategic Management Journal*, **17**, 77–91.

Nair, A. and Filer, L. (2003). Cointegration of firm strategies within groups: a long-run analysis of firm behavior in the Japanese steel industry. *Strategic Management Journal*, **24**, 145–159.

Nair, A. and Kotha, S. (2001). Does group membership matter? Evidence from the Japanese steel industry. *Strategic Management Journal*, **22**, 221–235.

Nayyar, P.R. (1995). Stock market reactions to customer service changes. *Strategic Management Journal*, **16**, 39–53.

Nicholls-Nixon, S.L. and Woo, C.Y. (2003). Technology sourcing and output of established firms in a regime of encompassing technological change. *Strategic Management Journal*, **24**, 651–666.

O'Brien, J.P. (2003). The capital structure implications of pursuing a strategy of innovation. *Strategic Management Journal*, **24**, 415–432.

Olusoga, S.A., Mokwa, M.P. and Noble, C.H. (1995). Strategic groups, mobility barriers, and competitive advantage: an empirical investigation. *Journal of Business Research*, **33**, 153–164.

Osborne, J.D., Stubbart, C.I. and Ramaprasad, A.R. (2001). Strategic groups and competitive enactment: a study of dynamic relationships between mental models and performance. *Strategic Management Journal*, **22**, 435–454.

Ostgaard, T. and Birley, S. (1996). New venture growth and personal networks. *Journal of Business Research*, **36**, 37–50.

Park, S. and Bae, Z.T. (2004). New venture strategies in a developing country: identifying a typology and examining growth patterns through case studies. *Journal of Business Venturing*, **19**, 81–105.

Pearce, J. II and Michael, S. (1997). Marketing strategies that make entrepreneurial firms recession-resistant. *Journal of Business Venturing*, **12**, 301–314.

Pennings, J.M. and Harianto, F. (1992). The diffusion of technological innovation in the commercial banking industry. *Strategic Management Journal*, **13**, 29–46.

Penrose, E.T. (1959). *The Theory of the Growth of the Firm*. New York: Wiley.

Peteraf, M. (1993). The cornerstones of competitive advantage: a resource based view. *Strategic Management Journal*, **14**, 179–191.

Pfeffer, J. (1982). *Organizations and Organization Theory*. Cambridge: Ballinger Publishing.

Podsakoff, P.M., MacKenzie, S.B., Bachrach, D.G. and Podsakoff, N.P. (2005). The influence of management journals in the 1980s and 1990s. *Strategic Management Journal*, **26**, 473–488.

Porter, M.E. (1980). *Competitive Strategy*. New York: Free Press.

Rajagopalan, N. and Spreitzer, G.M. (1993). Toward a theory of strategic change: a multi-lens perspective and integrative framework. *Academy of Management Review*, **22**, 48–79.

Rajagopalan, N., Rasheed, A.M. and Datta, D.K. (1993). Strategic decision processes: critical review and future directions. *Journal of Management*, **19**, 349–384.

Reuf, M. (1997). Assessing organizational fitness on a dynamic landscape: an empirical test of the relative inertia thesis. *Strategic Management Journal*, **18**, 837–853.

Roberts, P.W. and Amit, R. (2003). The dynamics of innovative activity and competitive advantage: the case of Austrian retail banking, 1981–1995. *Organization Science*, **14**, 107–122.

Sakakibara, M. (2002). Formation of R&D consortia: industry and competitive effects. *Strategic Management Journal*, **23**, 1033–1050.

Sakano, T. and Lewin, A.Y. (1999). Impact of CEO succession in Japanese companies: a co-evolutionary perspective. *Organization Science*, **10**, 654–671.

Schumpeter, J.A. (1934). *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle*. Cambridge, MA: Harvard University Press.

Singh, K. and Mitchell, W. (1996). Precarious collaboration: business survival after partners shut down or form new partnerships. *Strategic Management Journal*, **17**, 99–115.

Smith, F.J. and Wilson, R.L. (1995). The predictive validity of the Karnani and Wernerfelt model of multipoint competition. *Strategic Management Journal*, **16**, 143–160.

Smith, K.G. and Grimm, C.M. (1987). Environmental variation, strategic change and firm performance: a study of railroad deregulation. *Strategic Management Journal*, **8**, 363–376.

Smith, K.G., Grimm, C.M., Gannon, M.J. and Chen, M. (1991). Organizational information processing, competitive responses, and performance in the US domestic airline industry. *Academy of Management Journal*, **34**, 60–85.

Smith, K.G., Grimm, C.M., Wally, S. and Young, G. (1997). Strategic groups and rivalrous firm behavior: towards a reconciliation. *Strategic Management Journal*, **18**, 149–157.

Sorenson, O. (2000). Letting the market work for you: an evolutionary perspective on product strategy. *Strategic Management Journal*, **21**, 577–592.

Stephan, J., Murmann, J.P., Boeker, W. and Goodstein, J. (2003). Bringing managers into theories of multimarket competition: CEOs and the determinants of market entry. *Organization Science*, **14**, 403–421.

Stuart, T.E. and Podolny, J.M. (1996). Local search and the evolution of technological capabilities. *Strategic Management Journal*, **17**, 21–38.

Suarez, F.F. and Utterback, J.M. (1995). Dominant designs and the survival of firms. *Strategic Management Journal*, **16**, 415–430.

Sudharsan, D., Thomas, H. and Fiegenbaum, A. (1991). Assessing mobility barriers in dynamic strategic group analysis. *Journal of Management Studies*, **28**, 429–438.

Tahai, A. and Meyer, M.J. (1999). A revealed preference study of management journal's direct influences. *Strategic Management Journal*, **20**, 279–296.

Tan, D. and Mahoney, J.T. (2005). Examining the Penrose effect in an international business context: the dynamics of Japanese firm growth in US industries. *Managerial & Decision Economics*, **26**, 113–127.

Tan, J. and Tan, D. (2005). Environment-strategy co-evolution and co-alignment: a staged model of Chinese SOEs under transition. *Strategic Management Journal*, **26**, 141–157.

Teece, D. and Pisano, G. (1994). The dynamic capabilities of firms: an introduction. *Industrial and Corporate Change*, **3**, 537–556.

Teece, D., Pisano, G. and Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, **18**, 509–533.

Tripsas, M. (1997). Unraveling the process of creative destruction: complementary assets and incumbent survival in the typesetter industry. *Strategic Management Journal*, **18**, 119–142.

Tsai, W. (2000). Social capital, strategic relatedness and the formation of interorganizational linkages. *Strategic Management Journal*, **21**, 925–939.

Tushman, M.L. and Rosenkopf, L. (1996). Executive succession, strategic reorientation and performance growth: a longitudinal study in the US cement industry. *Management Science*, **42**, 939–953.

Washington, M. and Ventresca, M.J. (2004). How organizations change: the role of institutional support mechanisms in the incorporation of education visibility strategies, 1874–1995. *Organization Science*, **15**, 82–97.

White, S. (2000). Competition, capabilities, and the make, buy or ally decision of Chinese state-owned firms. *Academy of Management Journal*, **43**, 324–341.

Wiersema, M.F. (1992). Strategic consequences of executive succession within diversified firms. *Journal of Management Studies*, **29**, 73–94.

Yeoh, P. and Roth, K. (1999). An empirical analysis of sustained advantage in the US pharmaceutical industry: impact of firm resources and capabilities. *Strategic Management Journal*, **20**, 637–653.

Young, G., Smith, K.G. and Grimm, C.M. (1996). 'Austrian' and industrial organization perspectives in firm-level competitive activity and performance. *Organization Science*, **7**, 243–254.

Young, G., Smith, K.G., Grimm, C.M. and Simon, D. (2000). Multimarket contact and resource dissimilarity: a competitive dynamics perspective. *Journal of Management*, **26**, 1217–1236.

Zajac, E.J. and Shortell, S.M. (1989). Changing generic strategies: likelihood, direction and performance implications. *Strategic Management Journal*, **10**, 413–430.

Zajac, E.J., Kraatz, M.S. and Bresser, R.K. (2000). Modeling the dynamics of strategic fit: a normative approach to strategic change. *Strategic Management Journal*, **21**, 429–453.

Zúniga-Vicente, J.A., de la Fuente-Sabaté, J.M. and Suarez-Gonzáles, I. (2004). Dynamics of the strategic group membership-performance linkage in rapidly changing environments. *Journal of Business Research*, **57**, 1378–1390.

Thomas Hutzschenreuter and Sascha Israel are from WHU – Otto Beisheim Graduate School of Management, Burgplatz 2, 56179 Vallendar, Germany.