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LEARNING THROUGH ACQUISITIONS

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Research on acquisitions has typically focused on acquisitions per se, examining issues such as performance and implementation problems. This study moves beyond that perspective and studies the influence on a firm's later expansions. We argue that exploitation of a firm's knowledge base through "greenfields" eventually makes a firm simple and inert. In contrast, acquisitions may broaden a firm's knowledge base and decrease inertia, enhancing the viability of its later ventures. Over time, firms strike a balance between the use of greenfields and acquisitions. Various implications of this theory—tested with survival analysis and "logit" models—were strongly corroborated.

Acquisitions may have various benefits compared to "greenfields," or newly formed affiliates of a firm. Acquisitions allow firms to achieve greater market power, to overcome barriers to entry, to enter new markets quickly, and to acquire new knowledge and resources. However, acquisitions also imply additional costs for acquiring firms, such as a takeover premium of 20–40 percent, on the average (Eckbo & Langohr, 1989; Jarrell, Brickley, & Netter, 1988), and the costs of integrating the acquired firms into the acquiring organizations.

From the 1980s onward, researchers have made much progress in uncovering the dark side of acquisitions, including the above-mentioned costs and the time and attention that top management needs to spend on buying and implementing acquisitions, which is diverted from other activities (Hitt, Hoskisson, & Ireland, 1990; Hitt, Hoskisson, Johnson, & Moesel, 1996). They have also questioned the cognitions and incentives of top managers; it has been suggested that managers may act out of hubris, overvaluing their ability to manage acquired businesses (Hayward & Hambrick, 1997; Roll, 1986), imitating others that have made acquisitions (Haunschild, 1993), and pursuing personal goals that do not necessarily coincide with the interests of their shareholders (Jensen, 1986; Morck, Shleifer, & Vishny, 1990). It is consistent with this critical view that the shareholders of acquiring firms typically reacted negatively to new acquisitions in the 1980s (e.g., Jarrell et al., 1988). Yet, despite the critical stance of researchers and shareholders, the top managers of firms have continued to make acquisitions at a high rate worldwide.

Our study uncovers a neglected, yet positive, side of acquisitions: they may revitalize acquiring organizations and foster their long-term survival. Our study is anchored in a stream of research that emphasizes organizations' tendency to gradually become rigid, narrow, and simple (Miller, 1993) owing to the repeated use of their knowledge bases (Leonard-Barton, 1992; Levinthal & March, 1993; Miller, 1994). Their adaptation is thus hampered when, over time, external conditions change and alternative responses are required, a phenomenon known as a competency trap (Levitt & March, 1988). Population ecologists have asserted organizations have little scope to adapt to new circumstances, which ultimately leads to their demise (Hannan & Freeman, 1984). Radical change theorists (Tushman & Romanelli, 1985) have argued that long periods of inertia may be punctuated by short periods of heavy turmoil, painful restructuring, and radical change, which may again synchronize a firm's knowledge and routines with external circumstances. Our study extends a more recent stream of research that emphasizes that organizations may get exposed—or may expose themselves—to less radical shocks to their systems more regularly and that these shocks may also break through rigidity and inertia and infuse the firms with fresh knowledge. This new knowledge comes through technological renewal at regular time intervals (Brown & Eisenhardt, 1997), or through entering a variety of product environments and geographical environments (Barkema & Vermeulen, 1998; Miller & Chen, 1996), or through forging a chain or an alliance (Ingram & Baum, 1997; Noote-

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boom, 1999). These strategies may enable firms to maintain their ability to react adequately to changing external conditions and, consequently, to survive in the long run.

Our study adds to this research by advancing and testing the idea that acquisitions are another way for organizations to administer shocks to their systems and to counter the process of progressing simplicity. We argue that expansion through greenfields may contribute to progressing simplicity, but that acquisitions, in contrast, revitalize a firm and enhance its ability to react adequately to changing circumstances. Acquisitions may lead to cultural clashes and tensions when they are implemented (Haspeslagh & Jemison, 1991), which may cause immediate problems and unsatisfactory performance, but they may also enrich the knowledge bases and break the rigidities of acquiring firms—which enhances the viability of their later ventures. Clearly, if acquisitions serve to revitalize, the current critical stance of researchers and shareholders toward them may be exaggerated and, in fact, richer and perhaps more positive evaluations of these important strategic decisions may be needed.

Hypotheses were tested on data on the expansion patterns of 25 firms over a window of almost three decades (1966–94). A first set of hypotheses concerns the idea that acquisitions, contrary to greenfields, increase the viability of a firm's later ventures. These hypotheses were tested using survival analysis. A second set of hypotheses concerns the actual expansion strategies of these firms (greenfield or acquisition). A key implication of our theory is that it is the balance between prior acquisitions and greenfields that determines a firm's current need for revitalization through acquisitions. We tested hypotheses about how various types of prior expansion influence a firm's propensity to make acquisitions using logit analysis.

BACKGROUND

This research focuses on the distinction between acquisitions and greenfield investments. An acquisition is defined as the takeover of an existing company; a greenfield is defined as setting up a subsidiary from scratch. For reasons of simplicity, we follow existing literature in treating greenfields and acquisitions as dichotomous (e.g., Barkema & Vermeulen, 1998; Caves & Mehra, 1986; Hennart & Park, 1993). Greenfields include jointly owned greenfields. Acquisitions include partial acquisitions.

Acquisitions

An important empirical insight of the last two decades is that acquisitions are often associated with implementation problems and unsatisfactory postacquisition performance. Ravenscraft and Scherer (1989) found that, on the average, the profitability of target firms declines after their acquisition. In fact, a large proportion of acquired companies are again divested or sold off (Porter, 1987; Ravenscraft & Scherer, 1987), with the prime reason being their unsatisfactory performance (Ravenscraft & Scherer, 1991; Roll, 1986). An important reason for the disappointing performance is the problems that are associated with the integration of acquisitions (Haspeslagh & Jemison, 1991). Such problems are avoided in the case of greenfields. Indeed, several studies have found that greenfields usually perform better than acquisitions (Li & Guisinger, 1991; Nitsch, Beamish, & Makino, 1996; Simmonds, 1990; Woodcock, Beamish, & Makino, 1994).

The integration of an acquired company into a parent firm is complicated by the differences between the organizations involved. Various studies, for instance, have found that differences in organizational culture and management style damage postacquisition performance (Chatterjee, Lubatkin, Schweiger, & Weber, 1992; Datta, 1991). Acquisitions in new lines of business may be particularly problematic (e.g., Hopkins, 1987; Singh & Montgomery, 1987), since the dominant logic differs considerably across businesses (Prahalad & Bettis, 1986). Acquisitions in unrelated businesses are therefore often given a high level of autonomy (Datta & Grant, 1990). Differences between acquired firms and acquiring companies are not necessarily detrimental; several researchers have emphasized that differences rather than similarities between organizations create opportunities for synergies and learning (Harrison, Hitt, Hoskisson, & Ireland, 1991; Krishnan, Miller, & Judge, 1997). However, the combined theory and evidence suggest that the differences between the organizations involved are only beneficial if they are not so large that they prevent synergies, learning, and the creation of value.

A related stream of research has studied how acquisitions influence acquiring companies. Hitt, Hoskisson, Ireland, and Harrison (1991) emphasized that acquisitions require both funding and the time and attention of top management, which is diverted from internal growth and innovation. In keeping with this idea, these authors found that acquisition intensity was negatively related to the innovation levels of acquiring firms. This finding

implies a real danger for acquiring companies: they may not only become more skilled in the acquisition process, but may, eventually, also lose the ability to innovate and grow internally (Hitt et al., 1990, 1996). As a result, they may get locked into a trajectory of making acquisitions only, rather than establishing greenfields. In practice, however, firms often appear to follow a diversity of strategies; they do not pursue either internal growth or acquisitive growth but combine the two (Lamont & Anderson, 1985). Apparently, in addition to the influences that push firms to the extremes—a strategy of either acquisitive or internal growth—there are also forces that push them to the middle, toward a strategy of making both greenfield investments and acquisitions. Building on insights developed in the organizational literature on progressing simplicity, we sought to provide a better understanding of why firms strike a balance between greenfields and acquisitions over time and how it helps them to survive in the long run.

Progressing Simplicity

A key insight from the literature on organizational learning and adaptation is that, over time, firms need to strike a balance between exploration, or the search for new knowledge, and the exploitation of existing knowledge resources (Levinthal & March, 1993; March, 1991). Exploitation, or the ongoing use of a firm's knowledge base,[1] helps an organization to refine its routines in the domains of product and process technology, marketing, logistics, and so on and allows it to recoup the initial investment and to become profitable. Exploration, in contrast, enables a firm to renew its knowledge base, but it is a costly process.

Through exploitation, a firm focuses on the knowledge and routines that contribute most to its success and filters out those routines that are less successful in the current setting (Cyert & March, 1963) Each time the knowledge base is applied, opinions about what works and why are more firmly settled in the minds of managers, and routines are more firmly established in an organization (Levitt & March, 1988; Nelson & Winter, 1982). Gradually, knowledge that is less successful in a particular setting will disappear from the organization's memory (Levitt & March, 1988). Information processing and search are limited, which in turn hampers the creation of new knowledge and routines (Huber, 1991). A strong, homogeneous culture begins to dominate the organization (Harris, 1994; Leonard-Barton, 1992; Miller, 1994), and secondary skills are lost because their practitioners fail to garner power and respect (Milliken & Lant, 1991). Other parties lose influence, "infosystems" and routines increasingly reflect only a narrow range of skills and concerns, and the lion's share of resources goes to one central tactic or activity. Step-by-step, exploitation and fine-tuning reduce variety in the firm's knowledge base and promote ossification and *simplicity*—an overwhelming preoccupation with a single goal, strategic activity, department, or worldview that increasingly precludes consideration of others. In the words of Miller: "Before long, there is no more noise left in the system: no court jesters, no devil's advocates, no iconoclasts with any say, no countervailing models of the world. This progressing conformity decreases flexibility, engenders myopia and blocks learning and adaptation" (1993: 134).

THEORY AND HYPOTHESES

The Effect of Greenfields on Subsequent Subsidiary Survival

We will argue that ongoing expansion through greenfields may contribute to this process of ossification and progressing simplicity. When a firm sets up a subsidiary from scratch, it will be inclined to implement its habitual ways of organizing and managing (Hedberg, 1981; Levinthal & March, 1993). Especially if the acquisition concerns an affiliate in a familiar market in which the firm is already active, it will tend to concentrate on those aspects of its repertoire that appeared to have been most successful in the old situation (Miller, Lant, Milliken, & Korn, 1996), replicate those, and transfer them to the new subsidiary. As a result, the same (limited) set of technical systems (Leonard-Barton, 1992), competitive actions (Miller & Chen, 1996), and functional departments (Miller, Droge, & Vickery, 1997) will be installed. Greenfields may partly be staffed by new recruits, but organizations tend to hire people who fit their existing culture; the newly hired are then socialized to fit the culture even more (O'Reilly, Chatman, & Caldwell, 1991), a process that will get even more emphatic when the organization's culture becomes simple and compelling. Hence, due to repeated replication, the company's knowledge base narrows and the organization becomes increasingly simple.

Each time a firm expands through a newly

[1] We interpret knowledge base broadly, as the total articulated and tacit knowledge of an organization (Hedlund, 1994; Nonaka, 1994), "leading to a set of capabilities that enhance the chances for growth and survival" (Kogut & Zander, 1992: 384).

formed subsidiary, more and more things become governed by routines about what to replicate and install in an affiliate. As a result, it becomes less likely that the organization will perceive and respond to the stimuli that inevitably attend a new subsidiary (Starbuck & Hedberg, 1977). The increasing routinization and the dominance and narrowness of its mental models cause it to miss opportunities and overlook threats in the unique circumstances of the affiliate (Abrahamson & Fombrun, 1994; Prahalad & Bettis, 1986). Because of the firm's narrowness, the viability of newly formed affiliates decreases, and early terminations become more frequent (Ingram & Baum, 1997; Miller, 1994; Miller et al., 1997).

Each successive replication deteriorates the basis for the following venture, due to progressing simplicity. The survival chances of subsequent greenfields are affected by the narrower knowledge base and increasing routinization and rigidity of the expanding firm. The chances that new acquisitions will succeed, however, worsen too. Through repeated greenfields, a firm becomes more simple and rigid in terms of mental models, routines, and culture, a process that makes it less tolerant of different ways of doing things (Prahalad & Bettis, 1986). Further exploitation and greenfields may make an organization's culture stronger but may also lead to oppressive conformity, blindness, and intolerance (Miller, 1993). As a result, the parent may try either to change acquired companies in ways that do not fit their contingencies and administrative heritages or may try to consolidate them too extensively (Datta & Grant, 1990; Pablo, 1994). This makes it more likely that new acquisitions will fail and be terminated. Thus, we expect that repeated greenfields negatively affect the survival of subsequent ventures—both greenfields and acquisitions.

Hypothesis 1a. The survival rate of subsidiaries—greenfields and acquisitions—is negatively related to the number of a firm's preceding greenfields.

Hypothesis 1a states our general idea. However, not all greenfield investments are the same. Replication and exploitation of existing knowledge and skills will be more likely in the case of some subsidiaries than in others. For instance, if a subsidiary is established in a market that is already familiar to a firm, it can apply familiar ways of organizing and managing. In fact, the firm will likely have sought the expansion to further apply and exploit its competitive advantage. The conditions under which the affiliate is established are largely the same as previous conditions under which the firm has set up subsidiaries. Consequently, the expansion will advance the process of progressing simplicity in the firm, as described before.

If, on the other hand, the firm sets up ventures in new product or geographical markets, it is exploring new territory. Perhaps the organization is seeking new fields in which to exploit its capabilities, and it will likely encounter novel circumstances while doing so. The different circumstances in the new market may bring new information and incentives that trigger search and the creation of new knowledge (Barkema & Vermeulen, 1998; Chatman & Jehn, 1994; Miller & Chen, 1996). Moreover, it is not unlikely that the firm will hire outsiders with different skills relating to systems, tactics, technology, and so on. Due to all these influences, setting up ventures in new markets may not induce progressing simplicity, or at least not as strongly as extended expansion in familiar markets. Thus, we expect that the process of progressing simplicity and ossification will primarily be triggered by greenfields in familiar (product or geographical) markets.

Hypothesis 1b. The survival rate of subsidiaries is negatively related to the number of a firm's preceding greenfields in familiar markets rather than to the number of preceding greenfields in new markets.

The Effect of Acquisitions on Subsequent Subsidiary Survival

Acquisitions have a different effect. Acquiring and absorbing an existing organization may be a difficult, and sometimes painful, process. Like all companies, acquired companies have idiosyncratic sets of routines (Nelson & Winter, 1982). Hence, their integration often leads to clashes and tensions, owing to the confrontation of different cultures, structures, and systems (Chatterjee et al., 1992; Datta, 1991; Jones & Hill, 1988). These differences may also break rigidities in acquiring firms, counter progressing simplicity, and foster learning (Hambrick, Cho, & Chen, 1996; Krishnan et al., 1997). Sometimes acquired knowledge and practices may be directly assimilated and applied; for instance, an acquiring firm can implement marketing practices without changing other features (Hannan & Freeman, 1984). But even if an acquisition's practices are not seamlessly integrated, they may help to unfreeze mental maps, structures, and processes. As a result, the acquirer may preserve a healthy level of doubt, diversity, and debate (Miller, 1993) that also increases organization numbers' cognitive abilities (Calori, Johnson, & Sarnin, 1994;

Walsh, 1995). Moreover, the infusion of knowledge and practices will boost the development of new knowledge (Abrahamson & Fombrun, 1994; Bantel & Jackson, 1989; Walsh, 1995), as new knowledge often grows from combining existing forms of knowledge (Kogut & Zander, 1992).

Hence, organizations that make acquisitions tend to be exposed to a large variety of events and ideas, which causes them to develop richer knowledge structures (Levinthal & March, 1993; Levitt & March, 1988; March, 1991), and decreases the rigidity in their mental maps and routines. As a result it is more likely that these organizations will handle new settings adequately (Miller & Chen, 1996) Experience with acquisitions thus makes firms more flexible and more able to adapt to varying circumstances (Hitt, Harrison, Ireland, & Best, 1998). This will increase the viability of newly formed affiliates and make early terminations less likely. Thus, we expect that acquisitions gradually increase the survival chances of subsequent greenfields.

In addition, we expect prior acquisitions to increase the survival rate of subsequent acquisitions. Acquirers' openness to change (Hitt, Harrison, Ireland, & Best, 1998) reduces the likelihood of tensions and clashes when new acquisitions are implemented and, consequently, the likelihood of early dissolution of acquisitions. With acquisition experience, firms may also develop routines for screening and purchasing companies (Amburgey & Miner, 1992; Paine & Power, 1984), gain insight into what are suitable levels of acquisition integration (Pablo, 1994), and become more adept at solving administrative problems (Lubatkin, 1983). Thus, firms may learn from previous acquisitions how to handle new acquisitions.

Hypothesis 2a. The survival rate of subsidiaries—greenfields and acquisitions—is positively related to the number of a firm's preceding acquisitions.

Again, not all acquisitions are the same. Firms may learn more from some acquisitions than from others. Learning from acquisitions will only take place if knowledge, routines, skills, and people flow from the acquired firm to the acquiring company (Capron, 1999). When the differences between the organizations involved are too large, which is more likely if, for instance, the acquired company operates in an unrelated business, integration may not take place, and the acquired firm may be left autonomous (Datta & Grant, 1990). Learning from autonomous units is less likely.

In fact, whenever a takeover involves a country or an industry in which a firm is not yet active, the acquirer will find it difficult to understand and interpret the different knowledge and routines and, as a consequence, will have problems absorbing and learning from the acquisition (Barkema, Shenkar, Vermeulen, & Bell, 1997; Huber, 1991; Lane & Lubatkin, 1998). Although there are always problems when acquisitions are implemented owing to differences in idiosyncratic routines, we expect that learning—and, consequently, the beneficial effect on a firm's later expansions—will be particularly challenging and unlikely if acquisitions take place in domains that are unrelated (in terms of businesses or geography) to existing activities.

Hypothesis 2b. The survival rate of subsidiaries is positively related to the number of a firm's preceding acquisitions in related domains rather than to the number of preceding acquisitions in unrelated domains.

The Effect of Greenfields on the Likelihood of Subsequent Acquisition

Prolonged growth through greenfields gradually makes a firm simple and inert. As a result, the viability of newly formed affiliates decreases as, over time, external conditions change and new responses are required. The rigidity and simplicity of the firm's knowledge base make it increasingly difficult to build up subsidiaries from scratch (to do greenfields). Greenfields are usually grounded on the practices and skills of the parent company (Barkema & Vermeulen, 1998; Florida & Kenney, 1991; Nagarajan & Mitchell, 1998). Therefore, if a firm is left with a narrow and antiquated knowledge base, building up new subsidiaries from scratch becomes increasingly difficult and unattractive.

In fact, when an organization's knowledge base is deteriorating, the need for acquisitions increases, because they allow the firm to acquire new technological resources (Granstrand & Sjölander, 1990; Håkanson, 1995) and to adopt practices and skills in new domains as well. Acquisitions also promote constructive conflict in organizations, which act as shocks to the system, breaking rigidities and inertia, stimulating renewal and change, and enhancing the ability to adapt to new circumstances. Thus, the narrower a firm's knowledge base becomes, the greater its need for infusion with new ways of doing things. Consequently, the more greenfields a firm undertakes, the more inevitable and compelling it becomes that its next expansion be an acquisition. The chance that the firm's next expansion will be an acquisition will particularly increase if prior greenfields took place in familiar markets

(where the firm could implement habitual ways of organizing and managing, making it more likely that its knowledge base has eroded), rather than in new markets.

Hypothesis 3a. The likelihood of acquisition is positively related to the number of a firm's preceding greenfields.

Hypothesis 3b. The likelihood of acquisition is positively related to the number of a firm's preceding greenfields in familiar markets rather than to the number of preceding greenfields in new markets.

The Effect of Acquisitions on the Likelihood of Subsequent Greenfields

Acquisitions may create turbulence in organizations but also restore their diversity and enrich their knowledge bases. In turn, companies with superior knowledge bases often use greenfield investments to exploit their knowledge (Yip, 1982). Such companies are less inclined to take over other firms, because those other firms have relatively little to offer them (Prahalad & Hamel, 1990). They may find it easier to exploit firm-specific advantages that are difficult to separate out by replicating their capabilities in newly formed ventures.[2] The application of such capabilities in an acquired company would likely cause problems, because the target's existing technology, for instance, will be intertwined with its own strategies, systems, structures, and culture (Nelson & Winter, 1982). As a consequence, the acquirer's new, superior technology may not fit the target, and radical change will be needed. Such problems are avoided if the firm expands by establishing a greenfield (Barkema & Vermeulen, 1998).

Hence, if a firm with a rich knowledge base expands, it will likely do so through a greenfield. Since a firm's knowledge base is enriched by acquisitions, we expect that the larger the number of prior acquisitions, the more likely it is that the firm's next step will be a greenfield rather than an acquisition. However, learning from prior acquisitions is less likely if those acquisitions took place in unrelated domains, since it is less likely that the firm has absorbed these acquisitions. Thus:

Hypothesis 4a. The likelihood of a greenfield is positively related to the number of a firm's preceding acquisitions.

Hypothesis 4b. The likelihood of a greenfield is positively related to the number of preceding acquisitions in related domains rather than to the number of preceding acquisitions in unrelated domains.

Our theory implies (Hypotheses 3a–4b) that acquisitions increase the probability of greenfields and that, in turn, greenfields increase the probability of acquisitions. Given this interplay, over time, firms will strike a balance between the two. They use greenfields to exploit superior knowledge and use acquisitions to revitalize eroded knowledge bases. Hence, we expect to see a pattern, a tendency to alternate greenfields and acquisitions.

METHODS

Sample

To examine how greenfields and acquisitions affect the viability of a firm's later expansions, as well as the likelihood of new greenfields and acquisitions, we constructed a longitudinal database containing data on the subsidiaries of large Dutch firms. We included the 25 largest nonfinancial companies on the Amsterdam Stock Exchange at the end of 1993 but excluded the 4 largest ones (Royal Dutch Shell, Unilever, Philips, Akzo) because these firms form a distinct group in terms of breadth of activities, scope, and size. The firms in our sample operate in a wide variety of industries and countries. They started expanding (rapidly) beginning in the late 1960s, but they generally have roots in the period before the second world war, which implies that, by 1993, many of these firms had survived for at least half a century. None of them are conglomerates. The 25 firms have sufficient size to have been making acquisitions throughout the entire window of analysis (1966–94) but are not so large that the impact of individual acquisitions is negligible.

The database contained all new affiliates (greenfields and acquisitions) included in the annual reports of these firms between 1966 and 1994. Data collection yielded 1,349 observations. Sixty-one percent of these affiliates were located abroad. For all subsidiaries, we traced how long they persisted. We obtained these data primarily from the annual reports of the firms; all companies provided information on the dissolution and sell-off of subsidiar-

[2] Japanese firms, for instance, have displayed a clear tendency to establish greenfields in foreign markets (Cho & Padmanabhan, 1995; Wilson, 1980). Producing clones of themselves appeared to be the most efficient way for these firms to transfer Japanese competitive advantages to foreign markets (Florida & Kenney, 1991; Hennart & Park, 1993).

ies. However, in case of doubt or incomplete information, we contacted representatives by telephone or fax to verify whether or not a subsidiary still existed. Thus, we did not evaluate different reasons for dissolution but focused on how long an affiliate had existed as a subsidiary (cf. Ingram & Baum, 1997; Mitchell, Shaver, & Yeung, 1994). Forty-one percent of the subsidiaries were terminated before the end of the period (1994).

Dependent Variables and Analyses

Survival. The hypotheses about the effect of expansions on the survival rate of subsequent expansions were tested, using a survival analysis, or event history, approach. We estimated a proportional hazard model following Cox's partial likelihood approach (Kiefer, 1988) because the dependence of subsidiary mortality on age is unknown, and this semiparametric model does not require assumptions about this effect. The dependent variable in this type of analysis is the instantaneous rate of subsidiary dissolution, which is based on the information on whether or not an affiliate is still in existence and how long it has persisted. Consistent with our hypotheses, our tables report the survival rate of subsidiaries, which is the dissolution rate's logical converse. A positive effect indicates that the variable enhanced the probability of survival of the observation (a subsidiary).

Survival analysis enabled direct measurement of survival rate in our tests of Hypotheses 1a, 1b, 2a, and 2b. To gain more insight into the validity of our interpretation of survival as an indication of success, we compared the survival rate with two different measures of subsidiary success. It was sometimes indicated in the annual reports of the firms in our sample whether they interpreted an expansion as a success or as a failure. This information yielded a binomial value—success or failure—for 468 subsidiaries in our sample. We estimated a survival model regarding the relationship between this value and our dependent variable. The parameter estimate (3.114, $p < .0001$) implies that expansions labeled as a success had a survival rate about 22.5 times (= exponent 3.114) higher than the survival rate of expansions regarded as failures. This estimate did not (significantly) differ for related and unrelated expansions. In addition, we asked executives of a subset of 5 firms to rate the success of a number of affiliates in our database on a seven-point Likert scale. This effort resulted in 40 observations. We estimated a survival model regarding the relationship between this rating and our dependent variable. The parameter estimate (0.241, $p < .01$) implies that each additional point on the scale was associated with an increase of 21.4 percent in the survival rate of the subsidiary. Clearly, these results should be interpreted with care. However, they are consistent with the idea that survival is an indicator of affiliate success.

Acquisition/greenfield. The hypotheses concerning the effect of previous expansions on a firm's propensity to acquire or establish a greenfield were tested using binomial logit models. The dependent variable captured the likelihood that an affiliate was an acquisition rather than a greenfield.

Independent Variables

Number of preceding greenfields and acquisitions. Measurement as the number of previous expansions of each type is consistent with our theory and hypotheses, which suggest that, for instance, the propensity to acquire increases with each successive greenfield. Thus, the number of times a certain way of organizing has been reinstalled through a new subsidiary is relevant (cf. Miller, 1993).

We began counting greenfields and acquisitions from 1966 onwards. What matters for an observation at a certain point in time is the balance between the two variables rather than the absolute number of preceding greenfields or acquisitions. Because the two variables are expected to have opposite effects, it is their proportion that determines a current subsidiary's chance of survival and a firm's preferences. Moreover, how many greenfields and acquisitions were completed before 1966—the starting point of our data collection—is captured by dummy variables for firm (see below).

Preceding greenfields in familiar markets/new markets. The number of preceding greenfields in familiar markets versus the number of greenfields in new markets was measured in two ways: First, a new market was operationally defined as a new business, identified by the subsidiary's Standaard Bedrijfs Indeling (SBI) code (the SBI is the Dutch equivalent of the Standard Industrial Classification [SIC]). We assumed that exploitation was more likely if greenfields were in the same business as a firm's previous activities (had the same SBI code) rather than in another business. Second, a new market was defined as a new geographical market. Greenfields in countries to which the firm had expanded before were coded as greenfields in familiar markets, and those in new countries were coded as greenfields in new markets. The Appendix summarizes the measures of these and other variables.

Preceding acquisitions in unrelated/related domains. These two variables were also measured in two ways. First, a preceding acquisition was

coded as unrelated if the SBI code that characterized the acquisition differed from that for the acquiring firm's prior activities by at least two digits (cf. Pennings, Barkema, & Douma, 1994). We assumed that it was less likely that these acquisitions had been absorbed by the acquiring firm than the acquisitions in businesses that resembled the firm's operations more closely. Second, a preceding acquisition was classified as unrelated if it was in a new country. Prior research has shown that acquisitions in new countries are particularly difficult (as compared to greenfields) because they require "double-layered acculturation," whereby the expanding firm has to adjust to both an unfamiliar national culture and an unfamiliar corporate culture, which hampers the integration process and often leads to early terminations (Barkema, Bell, & Pennings, 1996). For an additional check, we also measured the latter variable using cultural blocks (groups of countries with similar cultures), following the nine groupings made by Ronen and Shenkar (1985). An unrelated acquisition was an acquisition in a new cultural block, as opposed to an acquisition in a cultural block where the firm was already operating. Absorption of an acquisition in a cultural block where the firm had no previous experience seemed particularly unlikely. Model estimations based on this alternative measurement (not reported here) led to similar results.

Control variables. We controlled for a firm's multinational diversity and product diversity because these variables may correlate with acquisitions and greenfields and may also evoke learning and organizational renewal (e.g., Barkema & Vermeulen, 1998; Miller & Chen, 1996). We also tested various more sophisticated models with squared variables and interactions between the two (not shown here); results of these tests did not decrease the support for the hypotheses. Other control variables at the firm level were firm size and profitability, used since these may correlate with rigidity and inertia (Hannan & Freeman, 1984). Control variables at the country level included cultural distance (cf. Barkema & Vermeulen, 1997) and a country's level of economic development. At the subsidiary level, we controlled for whether an expansion was foreign or domestic, whether the expansion took place in an unrelated or in a related business,[3] and whether the subsidiary was jointly or wholly owned by the expanding firm. Furthermore, we included calendar time to control for potential influences associated with trends such as progressing globalization, a rising acquisition wave, and aging of firms (Barkema & Vermeulen, 1998; Hannan & Freeman, 1984; Shleifer & Vishny, 1991). We also performed analyses in which calendar time was replaced by year-dummies. The results were highly robust for this alternative specification. Finally, we included firm dummies in all models to control for possible heteroscedasticity and for firm-specific preferences built up before the starting date for our sample (1966).[4] Summary statistics are presented in Table 1.

RESULTS

Hypotheses

The effects of greenfields and acquisitions on subsequent subsidiary survival. Hypothesis 1a predicts that greenfields decrease the survival rate of subsequent expansions, both greenfields and acquisitions. The corresponding survival analyses are presented in Table 2. The parameter estimate of the effect of prior greenfields (column 1) is negative and significant ($p < .01$), indicating that greenfields indeed have a negative influence on subsequent affiliates. To test whether greenfields have this negative influence on both subsequent greenfields and subsequent acquisitions, we split up the variable preceding greenfields (using interactions with dummies) into its effect on subsequent greenfields (preceding greenfields × greenfield) and its effect on subsequent acquisitions (preceding greenfield × acquisition). The results of this analysis (column 2) show that experience with greenfields decreases the survival rate of both new greenfields

[3] To assure that this dummy variable was not picking up some of the variance of preceding greenfields in familiar markets/new markets and preceding acquisitions in unrelated/related domains, we also estimated models without this control variable. These estimates were virtually identical.

[4] In the logit model presented in Table 3, 17 of the 24 firm dummies (not shown in the table) were significant. If these dummies are omitted from the model, acquisitions seem to cause a preference for acquisitions, and greenfields seem to increase the preference for greenfields. This exercise illustrates the importance of using a longitudinal research design while controlling for firm-specific influences. If firm dummies are omitted from the model, the experience variables merely show that a preference for a certain mode in the past implies a preference for that same mode today (cf. Amit, Livnat, & Zarowin, 1989). This suggests that cross-sectional data are inappropriate for examining effects of preceding expansions on a firm's current expansion preferences.

TABLE 1
Means, Standard Deviations, and Correlations[a]

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Acquisition	0.75	0 44																				
2. Previous greenfields	9 80	9 60	−.07																			
3. Previous acquisitions	24.60	22.90	.16	.34																		
4. Greenfields in new markets. Businesses	1 40	2.30	−.07	.48	.22																	
5. Greenfields in familiar markets: Businesses	8.70	8.90	− 07	.97	.32	.26																
6. Acquisitions in unrelated domains: Businesses	3.20	4.40	.02	.31	.53	.50	.22															
7. Acquisitions in related domains: Businesses	22.10	22 50	15	.31	.99	.14	.31	42														
8. Greenfields in new markets: Countries	5 20	4 70	− 13	.90	.22	31	.91	.25	.19													
9. Greenfields in familiar markets: Countries	4.60	5 70	−.02	.93	.40	.54	.88	.32	.37	.69												
10. Acquisitions in unrelated domains Countries	5.80	4.20	.00	.57	.57	.31	.54	.37	.55	.58	.47											
11. Acquisitions in related domains: Countries	18.90	20.10	.17	.27	.99	18	25	51	.98	.13	.35	.43										
12. Multinational diversity	7.40	5.90	−.06	73	.46	.23	.74	.30	.44	.84	53	.88	.33									
13. Product diversity	1.96	5.20	−.11	.47	.22	.40	.41	.58	.13	.41	.45	27	.19	31								
14 Firm size	12.60	3.23	01	03	.03	.15	−.01	.14	.01	−.01	.05	05	.03	01	14							
15. Return on equity	0.14	0.13	.19	.01	.45	.12	03	−.09	.51	−.05	.03	15	.46	.10	−.19	−.22						
16. Cultural distance	1.95	1.64	−.13	.22	.19	.06	.22	.10	.16	.28	.13	27	15	36	12	− 03	.07					
17. Foreign subsidiary	0.61	0.49	− 09	23	22	.06	.22	.10	.19	.28	.15	.27	.19	.35	11	.03	.09	.96				
18 Gross national product per capita	11 50	26 20	02	12	06	03	12	.06	05	15	08	09	05	13	07	- 01	04	02	03			
19. Unrelated expansion	0.13	0.33	−.02	−.09	−.06	.01	−.09	.12	−.08	−.10	−.06	−.06	−.05	−.10	.18	.12	-.11	−.16	.16	−.01		
20 Jointly owned venture	0.73	0.44	− 18	−.01	− 06	.09	03	.03	−.07	.01	- 02	.09	− 09	.05	.04	.12	− 12	.09	−.05	−.05	10	
21. Time	15 30	8.00	.20	.51	.72	.27	.49	.44	.70	.44	.50	.65	.67	.59	.18	.06	34	.22	−.25	.10	.10	.02

[a] n 1,349. Correlations with an absolute value greater than 05 are significant at the .05 level.

TABLE 2
Results of Survival Analyses and Logit Model: The Influence of Start-ups and Acquisitions[a]

Variable	Survival Analysis 1	Survival Analysis 2	Logit Model[b]
Intercept			−7 850* (3 400)
Preceding greenfields	−0.025** (0 011)		0.088*** (0.025)
Preceding acquisitions	0.033*** (0.004)		−0 031** (0 012)
Preceding greenfields × greenfield		−0.031* (0.014)	
Preceding greenfields × acquisition		−0 039*** (0 012)	
Preceding acquisitions × greenfield		0 038*** (0 008)	
Preceding acquisitions × acquisition		0.033*** (0.004)	
Multinational diversity	0 061*** (0.016)	0.074*** (0.017)	−0.215*** (0.044)
Product diversity	0.343*** (0 092)	0.357*** (0 092)	−0 520 (0 318)
Firm size	−0.283*** (0 061)	−0.427*** (0.079)	1.045*** (0.302)
Return on equity	−1.703*** (0.464)	−1.641*** (0.458)	2.490** (0.816)
Cultural distance	−0.204*** (0 093)	−0 231* (0.092)	−0 521*** (0.156)
Foreign subsidiary	0 700* (0 313)	0.781* (0.309)	1 105* (0.535)
Gross national product per capita	2.648* (1.085)	2 197* (1.097)	−2 552 (2 765)
Unrelated expansion	0.501*** (0.016)	0 466*** (0 126)	0.018 (0.238)
Jointly owned venture	0.394*** (0.098)	0 356*** (0.100)	−0.691*** (0 166)
Time	−0.056*** (0.013)	−0 052*** (0 013)	0.143*** (0 030)

[a] n = 1,349, firm dummies are not shown, numbers in parentheses are standard deviations.
[b] Acquisition = 1; R^2 = .21.
* $p < 05$
** $p < 01$
*** $p < .001$

($p < .05$) and of new acquisitions ($p < .001$).[5] Thus, Hypothesis 1a is corroborated.

Hypothesis 2a predicts that a firm's acquisitions increase the survival rate of subsequent acquisitions and greenfields. Consistent with predictions, the results of the survival analyses in Table 2 (column 1) show that acquisitions have a positive impact on subsequent expansions ($p < .001$), whether they are new greenfields (previous acquisitions × greenfield, $p < .001$), or new acquisitions (previous acquisitions × acquisition, $p < .0$).[6] Thus, Hypothesis 2a is also corroborated.

Independent variables in a survival model have a multiplicative rather than an additive effect on the dependent variable. However, the relative influence of different variables can be assessed by calculating the so-called multiplier, the exponent of the corresponding parameter estimates. For our variables, this calculation was as follows:

Effect of preceding greenfields on greenfield survival = $e^{-0.031} = 0.969$.

Effect of preceding greenfields on acquisition survival = $e^{-0.039} = 0.962$.

Effect of preceding acquisitions on greenfield survival = $e^{0.038} = 1.039$.

Effect of preceding acquisitions on acquisition survival = $e^{0.033} = 1.034$.

These effects imply that a greenfield decreases the survival chances of subsequent greenfields and acquisitions by 3.1 and 3.8 percent, respectively. An acquisition increases the probability that later greenfields and acquisitions will survive by 3.9 and 3.4 percent, respectively.

The estimation results regarding Hypothesis 1b, about the influence of prior greenfields in familiar/unfamiliar markets, and regarding Hypothesis 2b,

[5] This test is equivalent to a model with the variables "preceding greenfields" and an interaction between preceding greenfields and greenfield. The advantage of the specification in Table 3 is that it allows us to directly read whether preceding greenfields have a negative effect on subsequent greenfields as well as on subsequent acquisitions. The results obtained with the above-mentioned alternative specification merely indicate that greenfields have a negative influence on the survival rate of subsequent acquisitions (−0.035, $p < .01$) and that this effect does not significantly differ for subsequent greenfields (0.007, $p = .58$). The latter results, however, do not necessarily imply that the influence of greenfields on subsequent greenfields is individually significant.

[6] An alternative model using the variables preceding acquisitions and the interaction of preceding greenfields and greenfield indicated that acquisitions have a positive effect on subsequent acquisitions (0.034, $p < .001$) and that this effect does not significantly differ for subsequent greenfields (0.005, $p = .46$).

about the influence of prior acquisitions in unrelated/related domains, are presented in columns 1 and 2 of Table 3. The results corroborate both hypotheses. Prior greenfields in familiar product and geographical markets have a significant, negative influence on the survival of later expansions. Prior acquisitions in related domains have a significant, positive effect. No significant effects were found in the other cases (prior greenfields in unfamiliar markets and prior acquisitions in unrelated domains).

The effects of greenfields and acquisitions on the likelihood of subsequent acquisition. Hypotheses 3a and 4a predict that preceding greenfields increase a firm's propensity to make acquisitions, and vice versa. The results of the logit models are presented in Table 3, column 3. The parameter estimate of the effect of preceding greenfields is positive and significant ($p < .001$), which corroborates Hypothesis 3a. The coefficient of preceding acquisitions is also significant in the expected direction ($p < .01$), which supports Hypothesis 4a.

The combined findings for these hypotheses imply that, over time, firms strike a balance between the use of greenfields and acquisitions. The use of each mode pulls a firm back to a preference for the other mode. To illustrate these findings and to assess their impact on firm preferences, we conducted a simulation based on the estimates of the logit model. The logit function implies that the likelihood that a new subsidiary is the result of an acquisition is:

$$p(acquisition) = [1 + \exp(\beta_1 \times preceding\ acquisitions - \beta_2 \times preceding\ greenfields)]^{-1},$$

where

$$\beta_1 = 0.031 \text{ and } \beta_2 = 0.088.$$

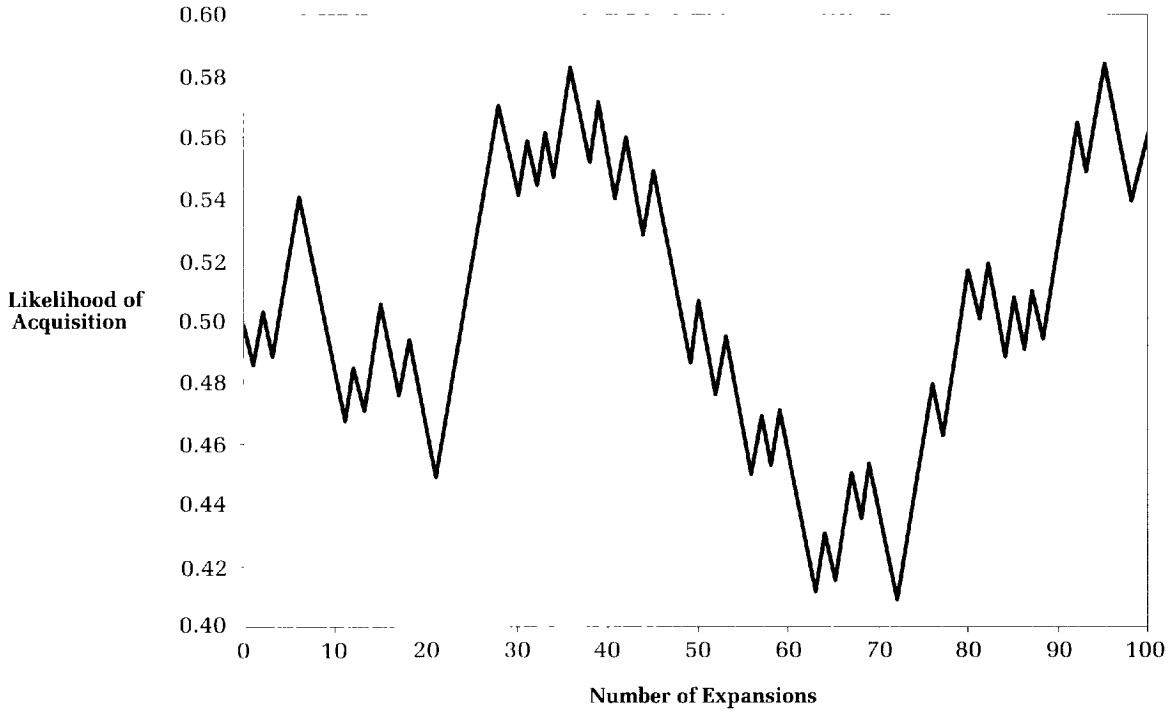
The computer generated an initial acquisition or greenfield probability according to this formula. Next, the score on the variable for preceding acquisitions or preceding greenfields was altered on the basis of the outcome. Drawing on the new configuration, the computer generated the mode (greenfield or acquisition) of the next expansion, and so on. Figure 1 shows the outcome of this simulation. The figure illustrates the development path of a firm in terms of its propensity to make acquisitions rather than greenfields. It shows that the propensity to make acquisitions does not escalate; it balances around a proportion less than 1, which implies that acquisitions and greenfields alternate. Firms that make more acquisitions than implied by their development

TABLE 3
Results of Survival Analyses and Logit Models: Different Types of Start-ups and Acquisitions[a]

Variable	Survival Analysis 1		Survival Analysis 2		Logit Model 1[b]		Logit Model 2[b]	
Intercept					−7.680*	(3.465)	−9.049**	(3.471)
Greenfields in new markets: Businesses	−0.078	(0.041)			−0.026	(0.072)		
Greenfields in familiar markets: Businesses	−0.029*	(0.013)			0.104***	(0.026)		
Acquisitions in unrelated domains: Businesses	−0.021	(0.021)			−0.028	(0.038)		
Acquisitions in related domains: Businesses	0.039***	(0.004)			0.025*	(0.014)		
Greenfields in new markets: Countries			−0.042	(0.039)			−0.071	(0.069)
Greenfields in familiar markets: Countries			−0.053**	(0.019)			0.136***	(0.038)
Acquisitions in unrelated domains: Countries			0.071	(0.038)			−0.259***	(0.077)
Acquisitions in related domains: Countries			0.038***	(0.005)			−0.028*	(0.012)
Multinational diversity	0.062**	(0.020)	−0.007	(0.042)	−0.232***	(0.044)	0.003	(0.082)
Product diversity	0.612***	(0.119)	0.409***	(0.102)	−0.362	(0.330)	−0.423	(0.318)
Firm size	−0.482***	(0.082)	−0.435***	(0.085)	1.011**	(0.311)	1.160***	(0.310)
Return on equity	−2.070***	(0.468)	−1.591***	(0.475)	2.294**	(0.843)	2.565**	(0.819)
Cultural distance	−0.163	(0.093)	−0.199*	(0.092)	0.520***	(0.157)	−0.514***	(0.156)
Foreign subsidiary	0.523**	(0.316)	0.654*	(0.312)	1.088*	(0.537)	1.106*	(0.536)
Gross national product per capita	2.482*	(1.091)	2.428*	(1.098)	−2.513	(2.752)	−2.384	(2.716)
Unrelated expansion	0.463***	(0.127)	0.447***	(0.126)	−0.046	(0.241)	0.044	(0.239)
Jointly owned venture	0.360***	(0.100)	0.376***	(0.099)	−0.678***	(0.165)	−0.685***	(0.166)
Time	−0.040**	(0.014)	−0.053***	(0.014)	0.141***	(0.030)	0.148***	(0.031)

[a] n = 1,349; firm dummies are not shown; numbers in parentheses are standard deviations.
[b] Acquisition = 1; R^2 = .21.
* $p < .05$
** $p < .01$
*** $p < .001$

FIGURE 1
Simulation Based on the Logit Model



path gravitate back toward this path using greenfields, and vice versa.

Hypotheses 3b and 4b predict that (1) the finding that prior greenfields increase the likelihood of acquisition is driven by prior greenfields in familiar markets rather than by greenfields in new markets and (2) the finding that prior acquisitions increase the likelihood of greenfields is driven by acquisitions in related domains rather than by acquisitions in unrelated domains. Table 3 displays the results of the corresponding logit analyses. Consistent with predictions, the results in columns 3 and 4 show that prior greenfields in familiar markets have a significant, positive influence on the likelihood of acquisitions, and acquisitions in related domains have a negative, significant effect on the likelihood of acquisitions. Although the corresponding four parameters are significant in the expected direction, acquisitions in new countries (column 4) also have a significant, negative effect on the likelihood of further acquisitions, which is contrary to our prediction. Perhaps, owing to the overload of new experiences and information associated with acquisitions in unfamiliar country markets, a firm (temporarily) shies away from undertaking further takeovers. Thus, Hypothesis 4b was only partially supported.

Sensitivity Analysis

Joint ventures as a separate category. Our research distinguished between greenfields and acquisitions as a dichotomy. An alternative form, however, is joint venture. To test whether our models were robust for the inclusion of joint ventures as a distinct group, we repeated the analyses reported in Table 2 with joint ventures as a separate category in the independent and dependent variables. These models did not decrease support for any of the hypothesized relationships.

In the survival analysis, the effect of the variable for preceding joint ventures was not significant (0.032, $p = .39$). This finding is consistent with the interpretation that joint ventures are an intermediate form between wholly owned greenfields and acquisitions and do not appear to increase or decrease the viability of later ventures. Multinomial logit estimates—with the categories wholly owned greenfield, joint venture, and acquisition in the dependent variable—further supported this view; preceding wholly owned greenfields increase a firm's preferences for both acquisitions (0.178, $p < .001$) and joint ventures (0.149, $p < .05$). Preceding acquisitions, however, increase a firm's preferences for both wholly owned greenfields (0.022, $p < .05$) and joint ventures (0.041, $p < .05$). Perhaps joint ventures have, in part, an impact similar to that of

acquisitions because they also confront a firm with new influences and may also have a revitalizing effect (Nooteboom, 1999). However, they may also resemble wholly owned greenfields in that the firm needs to transfer superior knowledge to the subsidiary (Kogut & Zander, 1993).

Alternative measurement of preceding greenfields and acquisitions. In our models, we counted the number of preceding greenfields and acquisitions from 1966 onward (complemented with firm dummies to account for the conditions at the starting point). Relevant is the balance between the two variables—that is, values produced with one variable controlled for the other, rather than absolute numbers. However, it might be suggested that experience depreciates and that, as a consequence, older observations should carry less weight in this count. This notion would make sense for acquisitions; knowledge learned through acquisitions may gradually lose value or simply be forgotten. It would not make sense for expansion through greenfields however; simplicity and inertia built up through replication and exploitation in newly formed affiliates do not simply disappear over time. To test for these assertions, we performed several types of sensitivity analysis. We counted acquisitions and greenfields over the prior 5 and 10 years and constructed measures with discounts, following Ingram and Baum (1997). The results pertaining to acquisitions were highly stable for all these alternative measurements. The results pertaining to greenfields were not very stable, as the above reasoning suggests.

DISCUSSION

In this study, we advanced and tested the idea that acquisitions increase the viability of a firm's later expansions. Prior studies have typically focused on acquisitions per se, looking, for instance, at their survival (Porter, 1987) or at implementation problems (Chatterjee et al., 1992). We moved beyond that perspective by studying how acquisitions influence a firm's later expansions. We argued that ongoing exploitation of a firm's knowledge base through greenfields eventually causes the organization to become simple and inert, which damages its new ventures when environments change. Acquisitions, in contrast, may broaden the firm's knowledge base, break inertia, and foster the development of new knowledge through combinations of existing forms of knowledge (Kogut & Zander, 1992). Consequently, acquisitions may improve the viability of a firm's later expansions, both greenfields and acquisitions. Various implications of this theory were strongly corroborated.

We also developed and tested finer-grained implications of our theory. One idea was that only greenfields in familiar product or geographical markets, not those in unfamiliar markets, imply replication and exploitation of existing knowledge (March, 1991) and thus promote rigidity and simplicity. Another idea was that firms primarily learn from acquisitions in related domains. Acquisitions in unrelated domains may not lead to learning, since the acquiring firms lack the basic knowledge necessary to absorb the new experience (Cohen & Levinthal, 1990; Lane & Lubatkin, 1998). These finer-grained implications of our theory were also corroborated by the results of our logit and survival analyses.

Contributions to Research

In prior work, researchers have argued that firms make acquisitions to enter a market quickly, to overcome barriers to entry (Caves & Mehra, 1986; Hennart & Park, 1993), or to imitate other firms that make acquisitions (Haunschild, 1993). However, such acquisitions may, as a side effect, revitalize a firm. Learning through acquisitions does not necessarily need to be a conscious strategy; acquisitions can also trigger learning when they were not primarily made for that purpose.

Our theory does imply, however, that over time, surviving firms strike a balance between exploitation and greenfields on the one hand and organizational revitalization and acquisitions on the other hand. Hence, firms that have mostly acquired for some time will tend to use greenfields, and vice versa. This idea was strongly corroborated in our study and was illustrated by the simulation results displayed in Figure 1. These results illustrate that the firms in our data set—which we traced over several decades—followed a development path in which the tendency to make acquisitions centered around a certain probability ($p < 1$). As the simulation results show, firms may temporarily wander off this development path but will eventually be pulled back to it.

These findings add to prior research on acquisitive growth (Amit, Livnat, & Zarowin, 1989; Bruton, Oviatt, & White, 1994; Hitt et al., 1990, 1991, 1996). Hitt and colleagues (1991) argued, for instance, that acquisitions divert funds and top management's time and attention away from internal growth and innovation. These authors found that acquisitions are, in the short run, negatively associated with a firm's internal innovation. A real danger of a strategy emphasizing acquisitions is that organizations get locked into a pattern of external growth. But acquisitions may also have other ef-

fects. They may, for instance, trigger corporate restructuring and renewal (Johnson, 1996; Lei & Hitt, 1995). Our evidence from the expansion patterns of firms that survived over a period of several decades shows that, eventually, acquisitions in these firms were succeeded by internal growth through greenfields, and vice versa. Apparently, these firms managed to strike a balance between the two expansion modes and alternated them. An interesting issue for future research would be to explore which contingencies (managerial, structural, institutional, and so forth) stimulate firms to strike a balance between the two modes over time, or push them into a strategy of external growth through acquisitions only.

Our study also adds to the literature on knowledge resources and organizational learning. Our results support the ideas that the repeated replication of an organization's knowledge base or part of it diminishes its viability and, in tandem, the survival chances of its ventures. This formulation ties in with the ideas of competency traps (Levitt & March, 1988) and progressing organizational simplicity (Miller, 1993). Our research indicated, however, that organizations may learn from the companies they acquire. It shows that these two modes of expansion reflect the balance between the exploration of new knowledge resources and the exploitation of existing ones (cf. March, 1991).

Our study also adds to the organizational change literature. It has been suggested that firms go through long periods of stability and convergence that are punctuated by short periods of radical change (Tushman & Romanelli, 1985). The periods of change allow these firms to adapt to changing environmental circumstances and to survive in the long run. More recent contributions emphasize that in today's world, external conditions are continuously changing, in part owing to globalization and increasing competition (Bettis & Hitt, 1995). Thus, firms continually need to renew themselves to keep up with changing circumstances (Hitt, Keats, & DeMarie, 1998). A recent stream of research suggests various strategies enabling firms to achieve this goal. Brown and Eisenhardt (1997) found that successful firms in the high-technology sector orchestrated their own process of creative destruction and renewal by "rhythmically" replacing old technologies with new ones, each time causing short-term problems, but over the long term remaining competitive and surviving. Likewise, firms with a strategy of entering and operating in a number of different environments have short-term problems (e.g., Barkema et al., 1996), but these may also advance the creation of new knowledge and routines (Barkema & Vermeulen, 1998; Miller & Chen, 1996). The present study showed, in addition, that firms revitalize their knowledge bases through acquisitions. Acquisitions cause short-term problems as well (Chatterjee et al., 1992) and may act as shocks to the system. However, they appear to enhance the success of a firm's later ventures, which helps the firm to survive in the long run.

Limitations and Future Research

Although acquisitions are an often-used mode of corporate expansion, researchers and shareholders have adopted a critical attitude towards them since the 1980s. This critical attitude is not surprising; prior research on acquisitions has shown that many of them fail (Porter, 1987) and that acquired companies do not increase their performance after their takeover (Ravenscraft & Scherer, 1987, 1989). Others have found that greenfields outperform acquisitions (Li & Guisinger, 1991; Nitsch et al., 1996; Woodcock et al., 1994). However, our theory and evidence imply that greenfields and acquisitions should not be judged on their individual performance only. Acquisitions may improve the chances of survival of later ventures, and greenfields may have a negative impact. A key message of this article is that researchers should take these influences into account when comparing the benefits of acquisitions and greenfields.

However, this study should not be interpreted as a simple plea for firms to make more acquisitions. The learning opportunities offered by the acquisition of another firm is one important factor that needs to be considered, but it is clearly not the only one. Prior studies have shown that acquisitions come at a cost; they are expensive, may siphon away resources, require an inordinate amount of top management's time and attention, and often lead to cultural clashes and integration problems. Decision makers should take all of these issues into account when considering a takeover. Our study, for instance, did not address the net gain of acquisitions. A parent firm may regain vitality through acquiring an existing company, but the target may become worse off as part of the larger organization (Ravenscraft & Scherer, 1989); to what extent the acquiring organization's gain is offset by the acquired company's loss is a topic for future research.

Although this study mainly focused on the general effects of acquisitions on a firm's later ventures, we anticipate that a variety of factors moderate ability to learn from an acquisition. Variables at the acquiring-firm level and characteristics of the acquisition itself may be involved. It seems likely, for instance, that a firm will learn more by acquiring a highly profitable, technology-rich venture

than by taking over a poorly performing firm that happens to be a bargain. Other potential moderating factors are succession in the target's or acquirer's top management team, the acquirer's debt position, characteristics of the screening and selection process of targets, and whether the acquisition is friendly or hostile (Hitt, Harrison, Ireland, & Best, 1998). The moderator examined here—whether acquisitions take place in related or unrelated domains—suggests another important reason why they sometimes result in significant learning and other times do not. The empirical results corroborated the idea that firms learn from related acquisitions, not unrelated ones. In addition, we found that firms do not learn from an acquisition in a country that they have never entered before; they do learn from an acquisition in a country where they have established a position earlier. In conclusion, our combined evidence suggests that firms may learn from acquired organizations if the latter are related to the current knowledge base of the firm. The differences complement the knowledge of the acquiring firm (Harrison et al., 1991). If the differences become too large, however, the firm will no longer be able to understand, absorb, and assimilate the target (Barkema et al., 1997; Hitt, Harrison, Ireland, & Best, 1998). Future studies examining other moderators, including at what point differences start to hamper learning instead of fostering it, would clearly contribute to our research.

Acquisitions provide a firm with opportunities for learning, which may revitalize it. A limitation of our study is that firms may also learn from other sources, such as alliances. In fact, alliances allow firms to tap the particular part of another firm that they need while avoiding the problems of integrating an entire company (Hennart & Reddy, 1997). Our study emphasizes that the classic disadvantage of acquisitions—frictions during implementation—may actually create long-term benefits, because it may trigger learning and break rigidities in the acquiring firm. On the other hand, we also argued that if differences become too large, they will ultimately hamper learning. Alliances suffer less from this problem. Since they require less integration, they may allow for larger differences. They also allow for greater flexibility; breaking an alliance is typically easier than divesting an acquired company. Alliances also enable multiplicity; a firm can have several alliances within the same domain, a situation that increases the diversity of its sources of knowledge and learning. Different subsidiaries with overlapping activities within one firm might be more difficult to sustain (Nooteboom, 1999). We would welcome future research that compares the long-term (net) gains of the two expansion modes, contingent on various conditions.

The theory and evidence in this article suggest that the knowledge gained through the acquisition of other companies may gradually deteriorate through exploitation in greenfields. Our definition of a greenfield—as a subsidiary set up from scratch—does encompass a relatively broad set of activities. These might concern a current product or a minor extension of a current product within a domestic market, or they might involve a true new venture introducing an innovative product in, perhaps, a new geographical market. Our theory and empirical evidence suggest that, in general, the more greenfields are based on the replication and exploitation of a firm's existing knowledge, the more they contribute to the process of progressing simplicity. Hence, we anticipate that the former rather than the latter case conforms to the patterns predicted here. However, future studies examining different and finer-grained moderators of the extent to which greenfields lead to organizational ossification and simplicity would certainly contribute to our insight into these important processes.

Finally, the methodology of this study implied looking at surviving organizations; we studied firms that, by the end of our window of analysis, had survived for a number of decades at least. When looking at the actual choices that these firms made (using logit analysis), we found that they conformed to the patterns implied by our theory, with respect to the need for, and the timing of, acquisitions and greenfields. Hence, these organizations were doing the right things, in terms of our theory, either as parts of conscious strategies or as side effects of other strategic moves. In future studies, we or others might adopt a complementary methodology by ex ante selecting a cohort of firms and examining whether the survival of these companies is indeed influenced by striking a balance between greenfields and acquisition.

Conclusion

The evidence in this study was *in*consistent with an old and familiar idea in the strategy literature: that firms expand either through internal expansion or through acquisitive growth (e.g., Pitts, 1977, 1980). Our longitudinal study showed that the two modes alternate as firms expand over time. Our study adds to the growing body of literature that argues that the same capabilities that make a firm successful in the short run eventually make it rigid and unsuccessful (Leonard-Barton, 1992; Levitt & March, 1988; Levinthal & March, 1993; Miller, 1993, 1994;

Miller & Chen, 1996; Miller et al., 1997). We found that a focus on internal growth through greenfields diminishes the survival chances of a firm's later ventures. We also found that acquisitions help to prevent and resolve such rigidity. A recognition of these effects on the parts of researchers and shareholders may lead to a less critical stance toward acquisitions than appears to have been in vogue since the 1980s. At the same time, however, our study is not an unconditional plea for making acquisitions. In fact, we suggested various contingencies mediating when acquisitions contribute to a firm's long-term survival. We invite others to continue this new line of research and to explore other contingencies. Such future research may provide important, novel answers to the key question of the strategy literature: which factors enhance the performance of firms and contribute to their long-term survival?

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APPENDIX
Variables and Measurements

Survival Rate
Inverse of the instantaneous rate of venture dissolution: $r(t, \boldsymbol{X}) = h(t)\exp(\boldsymbol{\beta X})$, where r is the hazard rate, $h(t)$ is an unknown function of time t, $\boldsymbol{X}$ is the vector of measured explanatory variables, and $\boldsymbol{\beta}$ is the vector of parameters to be estimated.

Likelihood of Acquisition
$\text{Logit}(p) = \log[p/(1 - p)] = \alpha + \boldsymbol{\beta' X}$, where α is the intercept parameter, $\boldsymbol{\beta}$ is the vector of slope parameters, and $\boldsymbol{X}$ is a vector of explanatory variables.

Number of Preceding Greenfields
Number of greenfields since 1966; measures the influence of preceding greenfields controlled for the number of acquisitions during the same period.

Number of Preceding Acquisitions
Number of acquisitions since 1966; measures the influence of preceding acquisitions controlled for the number of greenfields during the same period.

Preceding Greenfields in Familiar Markets
Two measures were used: (1) the number of greenfields that took place in an SBI code in which a firm was already present (the SBI code is the Dutch equivalent of the Standard Industrial Classification [SIC] code) and (2) the number of greenfields that took place in a country in which the firm had established a subsidiary earlier.

Preceding Greenfields in New Markets
Two measures. (1) The number of greenfields that were the first in a SBI code and (2) the number of greenfields that were the first in a country.

Preceding Acquisitions in Unrelated Domains
Two measures. (1) The number of acquisitions not within two digits of the firm's prior SBI codes and (2) the number of acquisitions in a country not entered before

Continued on next page

APPENDIX continued

Preceding Acquisitions in Related Domains
Two measures: (1) the number of acquisitions within two digits of the firm's prior SBI codes and (2) the number of acquisitions in a country in which the firm had acquired earlier

Multinational Diversity
The number of different countries in which the firm had subsidiaries at the time of expansion; indicates the breadth of international presence (Caves & Mehra, 1986). Measure was cross-checked with entropy measures of multinational diversity (Barkema & Vermeulen, 1998).

Product Diversity
Logarithm of the number of SBI codes in which a firm was active at the time of expansion; indicates breadth of activities (cf. Lubatkin, Merchant, & Srinivasan, 1993). Measure was cross-checked against entropy measures of product diversity (Barkema & Vermeulen, 1998). The logarithm captures nonlinear relationships (Tallman & Li, 1996)

Firm Size
Logarithm of a firm's assets, corrected for a price index; large firms have often been perceived as inert (e.g., Hannan & Freeman, 1984). Larger organizations may have a stronger need for revitalization through acquisitions, and their subsidiaries may be less viable. The logarithm captures nonlinear relationships (Haveman, 1993)

Firm Profitability
Return on equity; profitable firms have more cash resources that make acquisitions more likely, even if they are not viable (Jensen, 1986).

Cultural Distance
A Euclidean index based on Hofstede's (1980) four cultural dimensions: $\sqrt{CD_j = \Sigma_{i=1,2\,3,4}\,[(I_{ij} - I_{in})^2/V_i]}$, where CD_j = distance of the jth country from the Netherlands, I_{ij} = index for the ith dimension and jth country, n = the Netherlands, and V_i = the variance of the ith dimension. The Euclidean index of cultural distance (cf. Barkema & Vermeulen, 1997) is the square root of the sum of the squares of the deviations of each country from the index of the Netherlands along Hofstede's (1980) four cultural dimensions. Since the construct concerns distance, it is theoretically more appropriate to compute the square root, rather than the arithmetic average of the dimensions

Foreign Subsidiary
Dummy variable coded 1 if the affiliate was located abroad; the survival chances of foreign expansions may differ from those of domestic ones (Hymer, 1960).

Economic Development
GNP per capita in the year of expansion, corrected for a price index. A host country's level of economic development may influence firm preferences (Zejan, 1990).

Product Relatedness
Dummy variable coded 1 if an expansion did not take place within two digits of a firm's SBI codes. A two-digit difference between codes denotes unrelatedness (cf. Pennings et al., 1994).

Ownership
Dummy variable coded 1 if a subsidiary was not fully owned by a Dutch firm; controls for joint ventures and equity alliances

Time
Calendar time: 1966 = 1 to 1993 = 27, this linear control variable annuls the influence of aging and general developments in the course of time.

Firm-Specific Effects
Firm dummies; capture firm-specific influences