



## ALL THE RIGHT MOVES: HOW ENTREPRENEURIAL FIRMS COMPETE EFFECTIVELY

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*In this article, we examine competitive moves by which firms achieve superior performance. In contrast to prior work that has focused on moves and the related competitive advantages of large firms, we draw attention to entrepreneurial firms. Based on 32 runs of a multi-round experiential simulation and in-depth participant interviews, we find that entrepreneurial firms require competitive strategies that are different from those of a control group of comparable large firms. Entrepreneurial firms that stay below the radar in established markets and are quick to explore in new markets perform better. They succeed in established markets with a strategy that works around large firm competition but ultimately surprises them, and in new markets with a strategy that sets the standards of competition swiftly by continuously creating and destroying new strongholds ahead of large firms. Overall, successful entrepreneurs use a combination of selective, invisible, and asynchronous strategies that vary depending on whether the market is established or new. Our findings contribute to literatures on evolutionary learning, exploration and exploitation, and competitive dynamics. Copyright © 2012 Strategic Management Society.*

*‘You have to search for fundamental advantage ... In fact, there are no fundamental competitive advantages. So, the question for you then is how to create ongoing advantages in your company.’*

Jensen Huang, CEO and founder, NVIDIA

### INTRODUCTION

Competitive advantage is at the heart of strategy. That is, strategies that lead to competitive advantage enable firms to achieve superior performance. More

broadly, some suggest that competitive advantage is central to why firms even exist (Conner and Prahalad, 1996; Katila and Chen, 2008). Research suggests that competitive moves are likely to play an important role in creating competitive advantage. In particular, the key findings are that more frequent, complex, and aggressive moves are likely to be performance enhancing (Chen and Miller, 1994). These findings have been corroborated across diverse industries and in numerous studies in the competitive dynamics literature.

Yet, while these insights are helpful, they may not be how entrepreneurial firms<sup>1</sup> successfully compete. There are several open issues. First, it is unclear whether these findings generalize to firms *with*

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<sup>1</sup>We define entrepreneurial firms as those firms that start from weak market and resource positions.

*limited resources* such as entrepreneurial firms. Extant research that examines competitive moves and their performance focuses on large firms such as market leaders (Ferrier, Smith, and Grimm, 1999) and publicly traded firms (Rindova, Ferrier, and Wiltbank, 2010). In contrast, entrepreneurial firms are characterized by limited resources such that they may not have the resources to engage in frequent and complicated competitive moves which are likely to be costly. Thus, these firms are more likely to be very selective about their moves. This suggests that, to be successful, entrepreneurial firms may require different competitive moves than large firms.

Second, it is unclear whether extant findings generalize to *less visible moves* such as R&D moves that entrepreneurial firms often make. Instead, most research that focuses on easily visible moves—such as pricing and airline destination changes of large firms—finds that such visible, aggressive moves are successful in part because they are likely to preempt countermoves (Chen and Hambrick, 1995). While such moves may be effective at intimidating rivals, they can, at times, also trigger retaliation and an escalation of rivalry. Large firms may be able to win rivalrous escalations because of their extensive resources, but entrepreneurial firms cannot probably afford to risk engaging in them (Katila and Shane, 2005). Thus, entrepreneurial firms may prefer to use less visible moves such as R&D moves that are more difficult to detect (Chen *et al.*, 2010) and therefore less likely to trigger a response. Moreover, their moves may be more invisible in general; that is, moves of entrepreneurial firms may be less likely to intimidate, given that most rivals pay attention to the largest players, not small firms. This suggests that successful moves of entrepreneurial firms may be different and trigger different countermoves than those of large firms.

Third, it is unclear whether extant findings on competitive moves generalize to *new markets* where many entrepreneurial firms compete. Most research examines high-performing competitive moves in established markets such as shipbuilding, banking, and air travel (where archival data are available). Yet, high-performing moves may be distinctive in new markets. Because new markets are characterized by low structure, high unpredictability, and limited understanding of customers, rivals, and market segments (Katila and Shane, 2005; Santos and Eisenhardt, 2009), it seems likely that moves that explore the market for opportunities—rather than moves that exploit existing positions—are

particularly key. Overall, it seems likely that the findings on competitive moves in established markets may be less relevant for entrepreneurial firms that often enter new markets.

Taken together, we argue that while extant research clearly demonstrates the importance of many complex, aggressive moves for large firms in established markets, it is unclear whether these findings generalize to select, invisible moves in new markets that are likely to be particularly relevant for entrepreneurial firms. We address these open issues by asking: *Which moves are high performing for entrepreneurial firms in new vs. established markets?* Overall, we address a core tenet of strategy by examining strategies by which entrepreneurial firms may outperform large rivals, despite often lacking stable revenue streams, established market positions, and strong product portfolios and resources. Specifically, we define entrepreneurial (vs. large) firms as those firms that start from weak market positions with few resources, and we examine when they are successful despite these constraints.

To examine the research question, we integrate competitive dynamics and evolutionary theory, and we conceptualize competitive moves as entrepreneurial firms and their rivals simultaneously searching in new and established performance landscapes. Our research design is an experiential simulation in which participants manage rival firms over time. Similar to experiments, we are able to control out team effects by random assignment and sharply focus on those aspects of entrepreneurial firms relevant for our study, including limited resources. In particular, we randomly assigned participants to either manage a ‘treatment’ group (entrepreneurial) or a ‘control’ group (large) firm with the purpose of eliminating selection to either group that may bias the results in other settings. We supplement the experiential simulation data with fieldwork, including interviews of participants, to deepen understanding. These interview data help us understand the intentions behind particular moves and how teams interpreted moves of others. The data also help explain our findings.

We have two core contributions. First, we identify the competitive moves of entrepreneurial firms that lead to high performance. Entrepreneurial firms are more likely to succeed in established markets when they are highly astute in choosing products to exploit, and in new markets when they are quick to explore. Their moves are particularly important for gaining high performance in new markets. In contrast, large

firms with existing positions succeed in established markets with conservative moves, even when they make errors. In new markets, while these firms can also do well, they must make more diverse and mistake-free moves to do so.

Our second contribution is to deepen the theoretical roots of competitive dynamics. We conceptualize moves as a form of search, so we anchor competitive dynamics in broader evolutionary theory. By integrating evolutionary learning and competitive dynamics, we expand our understanding of the performance effects of competitive moves to simultaneous competition on different fitness landscapes, distinct search starting positions, and relative invisibility of particular moves and particular rivals.

## THEORETICAL BACKGROUND

### Evolutionary theory

Prominent in evolutionary learning theory is the idea of search, i.e., a problem-solving process in which organizations recombine, relocate, and manipulate existing knowledge in order to create new knowledge (Levinthal, 1997; Katila, 2002). Such search takes place on a performance landscape. Two principles are central. First is path dependency such that firms have a tendency to search close to their existing knowledge bases—i.e., search locally so they are imprinted by their original starting position and the related performance attributes (Helfat, 1994). In evolutionary landscape terms, firms often find it difficult to change their current neighborhoods and, in particular, to escape the low-performance valleys (e.g., Benner and Tushman, 2003). Thus, they tend to *exploit* landscape areas they know. Second, while firms have a general tendency to remain local, some search further away and increase performance (Siggelkow and Rivkin, 2005; Katila and Chen, 2008). That is, they *explore* landscape areas that are new to them.

Evolutionary learning theory is also appropriate to our understanding of search in different types of markets. From the evolutionary theory perspective, *established markets* can be conceptualized as search landscapes that are *well understood*, relatively *stable*, and, therefore, often *organized*. First, these landscapes are well understood such that accurate maps (e.g., peaks and valleys) exist. Second, these landscapes are relatively stable such that few new peaks arise and old peaks sink relatively slowly in

their attractiveness. As a consequence, these competitive landscapes are often well structured, orderly, and organized. Competitors occupy relatively established and known positions in the landscape, and the competitive moves are often predictable. In contrast, *new markets* can be conceptualized as search landscapes that are *poorly understood*, *unstable*, and, therefore, often *disorganized*. First, the landscape is poorly understood such that peaks and valleys are unmapped, customers and product attributes are often unknown and undefined, and competing firms learn more about the terrain only through search. Second, the landscape is relatively unstable such that new peaks often arise and fall as the market rapidly evolves. Thus, the landscape is often disorganized, with no well-defined segments of competition or spheres of influence to defend and unpredictable moves.

Overall, evolutionary theory is particularly appropriate to understand how search moves (exploratory and exploitative) that begin from a particular starting position on a landscape ultimately influence performance. In particular, we focus on the effective search strategies of entrepreneurial firms that start from initially weak positions. We add to theory by including influences of rival moves. Extant theory typically looks at moves in isolation and is relatively silent about how moves are affected by competing firms.<sup>2</sup> We expand the theory and include the moves of rivals by drawing from the competitive dynamics perspective.

### Competitive dynamics

The competitive dynamics perspective examines the moves of a firm to defend or improve its position and performance relative to its rivals (Chen, Smith, and Grimm, 1992). This literature emphasizes the interplay of competitive moves, interdependence among rivals, and performance. In particular, it argues that competitive moves that target unexploited opportunities and attract delayed or weak retaliation from rivals are high performing.

The competitive dynamics literature particularly emphasizes that every competitive action has a reaction (Chen and Miller, forthcoming). That is, the performance consequences of a particular move

<sup>2</sup> See Katila and Chen (2008) and Pacheco-de-Almeida and Zemsky (2007) for the few exceptions that have started to incorporate interfirm evolutionary dynamics.

depend not only on the scope of the opportunity that the move targets or the capabilities and resources with which the move is executed, but also on the likelihood of a competitive response, i.e., countermove. The longer the lag of response, the more effective the focal move. Recently, competitive dynamics research has particularly focused on better understanding such responses and explaining when these responses may *not* arise (Chen *et al.*, 2010). The argument is that a competitive response is particularly likely if the rival is both motivated (i.e., the move is visible and relevant for the rival) and capable (i.e., the rival has appropriate resources) to respond (Chen, Su, and Tsai, 2007; Ferrier, 2001). Other recent work further illustrates how motivation and capability play out in different market contexts (Marcel, Barr, and Duhaime, 2010). Overall, the key focus of this ‘relational’ view is the need to incorporate multiple viewpoints and the motivation and capability of rivals in particular to understand which moves are likely to be high performing.

Empirical research in competitive dynamics has generated numerous insights. Studies in a variety of contexts—such as airlines (Miller and Chen, 1994), trucking (Audia, Locke, and Smith, 2000), shipbuilding (Greve, 2003), radio broadcasting (Greve, 1998), and Fortune 500 firms in various industries (Ferrier *et al.*, 1999)—examine the effects of competitive moves on firm performance. These studies show the benefits of engaging competitors speedily (Chen and Hambrick, 1995), diversely (Miller and Chen, 1996), and, in particular, frequently (e.g., Ferrier *et al.*, 1999; Chen, 2007). For example, Miller and Chen (1994) discovered that airlines with more price changes, advertising campaigns, and service adjustments had higher revenues per available seat mile—a standard measure of performance in the industry. Altogether, these studies suggest that large firms engage in many competitive moves in order to outmaneuver, anticipate, or surprise their competitors, but it is unclear whether these results generalize to competitive moves of entrepreneurial firms and those of their rivals. By combining evolutionary theory with competitive dynamics, we address this gap.

## HYPOTHESES

The hypotheses that follow detail competitive moves that result in high performance in established vs.

new market landscapes. We contrast resource-limited entrepreneurial firms that start from weak landscape positions (valleys) with resource-rich large firms that start from favorable positions (peaks). We propose that entrepreneurial firms are particularly high performing when their R&D and market moves: (1) target unexploited opportunities that match their limited resources; and (2) avoid triggering countermoves by large rivals.

### Competitive moves in established markets

#### *Entrepreneurial firms*

Given the stable search topography of established market landscapes and their weak starting positions, we propose that entrepreneurial firms should invest in R&D moves that lower the production cost of their existing products (we label these as exploitative R&D moves) and offer these low-cost products to market segments that are price sensitive and, thus, typically underserved by large firms (we label these as exploratory market moves). That way, entrepreneurial firms stay undetected and attack weak flanks in large firm strongholds.

In particular, we propose in Hypothesis 1a that the more frequently the *entrepreneurial firms* engage in *exploitative R&D moves* that reduce the cost of their products, the higher their performance in established market landscapes. First, we propose that low-cost products are advantageous for entrepreneurial firms because such products avoid expensive product development races with large firms (Katila and Chen, 2008). Given their limited R&D resources and initially less attractive products (Diestre and Rajagopalan, forthcoming), entrepreneurial firms typically cannot afford to win such races. Instead, the high-performing strategy for entrepreneurial firms is likely to be investing in process R&D to lower the production costs of existing products so they can be offered at lower prices (cf. Utterback, 1994). For example, a high-performing, low-resource team in our experiential simulation described how they took their ‘*star project*’ and, instead of spending to add functionality, invested in lowering cost. Their aim was to improve process and prune functionality, thus avoiding head-on competition with the expensive, feature-rich products of large firms. Second, we propose that exploitative R&D moves are high performing for entrepreneurial firms because they are much less likely to trigger a competitive response from rivals than more visible



product development moves are. This is because, as Christensen and Raynor note (2003), it is typically more attractive for large firms to move up-market than down-market. Overall, because they match resources of entrepreneurial firms and invite less retaliation, exploitative R&D moves are likely to be high performing for entrepreneurial firms in established markets.

Further, we propose in Hypothesis 1b that *entrepreneurial firms* that engage in *exploratory market moves* whereby they enter new market segments are likely to be higher performing. First, as we have noted, entrepreneurial firms can outperform rivals by targeting flanks (i.e., opportunities that rivals have not noticed or fully exploited) in the larger market segments served by rivals. In particular, we propose that through entering such markets via exploratory market moves, entrepreneurial firms can increase performance by targeting customers that value low price and are currently underserved by the large firms (cf. Bower and Christensen, 1995). Second, entries to new market segments by entrepreneurial firms are less likely to be retaliated against because larger competitors tend to pay attention to and retaliate against rivals that are visible to them, such as those large in size or similar in characteristics (Kilduff, Elfenbein, and Staw, 2010). Our interviews confirmed this attention bias. Our large firm interviewees rarely mentioned entrepreneurial firms and their moves and instead focused on moves of other large firms. Interestingly, and in a striking contrast, several of our entrepreneurial teams spoke about ‘*diverting the attention*’ of large firms and using low-cost products as a ‘*Trojan horse*’ to target flanks in portfolios of large rivals. In sum, we propose that exploratory market moves of entrepreneurial firms are performance increasing because they target opportunities that others have missed, and, as more invisible moves, sidestep retaliation. We propose:

*Hypothesis 1a: Exploitative R&D moves will increase entrepreneurial firm performance in established markets.*

*Hypothesis 1b: Exploratory market moves will increase entrepreneurial firm performance in established markets.*

#### *Large firms*

In contrast, we propose that large firms that use the opposite moves, i.e., invest in developing new

products (exploratory R&D moves) in their existing market segments (exploitative market moves), are likely to perform well in established markets. Here, the strategic logic is to invest in maintaining existing market positions through new product introductions. In particular, in Hypothesis 2a we propose that the more frequently the *large firms* engage in developing new products through *exploratory R&D moves*, the higher their performance. Since large firms in established market landscapes start with substantial product positions, they can achieve high performance simply by maintaining the attractiveness of their peak. They can do so by using repeated R&D moves to improve their products—remaining attractive to customers even as the market evolves and rivals make moves (King and Tucci, 2002). Such R&D moves are particularly effective for large firms because they leverage the firms’ unique product capabilities, such as technical know-how, reputation, and brand awareness (Barney, 1986). Moreover, multiple R&D moves are particularly appropriate to stay ahead of capable rivals, preempt countermoves, and even intimidate other firms. Consistent with this view, a large firm team in our experiential simulation spoke about a ‘*paranoia of losing market share*’ that drove the team to ‘*add more R&D moves*’ into their strategy. Overall, we propose that frequent exploratory R&D moves help large firms offer products that are consistently attractive to customers, align with their own capabilities, and simultaneously anticipate and prevent counterattacks by competitors.

Further, we propose in Hypothesis 2b that the more frequently the *large firms* engage in *exploitative market moves* that reinforce their current market positions, the higher their performance in established markets. First, we propose that large firms that focus on competing in their existing market segments are able to develop market-specific expertise and exploit it to their advantage. For example, several participant managers who started from good market positions spoke about maintaining ‘*foothold*’ and ‘*consolidating*’ their position. Second, because firms in the established market have relatively entrenched positions, they are likely to perform better when they avoid new market segments. Introducing products to new market segments that are typically already occupied by other firms is likely to invite intense retaliation (cf. Chen and Hambrick, 1995; Gimeno, 1999) from incumbents. Such retaliation is likely, in turn, to lower the focal firm’s performance. Illustrating the benefits of

proactively avoiding countermoves, Chen and Miller (1994) showed that an airline's performance was poor when its competitive moves evoked a large number of responses from rivals and, conversely, Katila and Chen (2008) found that when a competitive move did not trigger a response, a robotics manufacturer was able to maintain advantage over its competition longer. This suggests that firms should avoid provocative entries into rival segments. This is especially true for large firms because their scale of operations makes their moves into new segments particularly visible. Taken together, we propose that large firms that introduce new products that reinforce their current market segments and avoid entry into new market segments are high performing in established markets.

*Hypothesis 2a: Exploratory R&D moves will increase large firm performance in established markets.*

*Hypothesis 2b: Exploitative market moves will increase large firm performance in established markets.*

### Competitive moves in new markets

#### *Entrepreneurial firms*

Given the unstable search topography of new markets, we propose in Hypotheses 3a and 3b that *entrepreneurial firms* that develop new products (exploratory R&D moves) and enter new market segments (exploratory market moves) are likely to achieve high performance. In particular, we propose in Hypothesis 3a that the more frequently the *entrepreneurial firms* engage in *exploratory R&D moves* to develop new products, the higher their performance in new market landscapes. First, product introductions are particularly critical in new markets because they help firms learn about which product features are needed—helping identify opportunities (Katila, 2002). In new markets, there is neither existing data nor experience from which to draw. Typically, there are also few rivals to benchmark. So, successful firms are likely to experiment widely through exploratory R&D moves in order to identify performance and feasibility and develop successful products. Because new but unpredictable peaks often arise as new markets evolve, firms that engage in exploratory R&D moves also have more technical alternatives at hand to tap emerging opportunities. For example, some teams spoke of experiments to

develop 'two product lines in parallel' to increase strategic flexibility (cf. Shimizu and Hitt, 2004). Thus, we propose that under-resourced entrepreneurial firms will increase performance through exploratory R&D moves that allow firms to keep reassessing the best search options as the landscape changes. In contrast, the possibility of large landscape fluctuations makes exploitation too risky for resource-limited entrepreneurial firms. Second, we propose that exploratory R&D moves are performance enhancing for entrepreneurial firms because such moves (unlike exploitation) can often be executed ahead of large firms and because large firms' responses to such moves is often delayed. Because of their small size and speed, entrepreneurial firms can move early and often, thus avoiding having to react to others' moves. Illustrating this strategy, one entrepreneurial team noted that they moved in ahead of others because they 'wanted to avoid moves at the same time ... as the big boys.'

Similarly, we propose in Hypothesis 3b that the more frequently *entrepreneurial firms* engage in *exploratory market moves* whereby they enter new segments, the higher their performance in new market landscapes. First, since little or no information about the new market landscape exists before the firm enters it, introducing products to market segments where the firm currently does not offer any products and observing subsequent performance helps the firm understand the topography and dynamics of the new market. This provides insight into segment growth, evolving customer preferences about sales channels and distribution as well as customers' willingness to pay for particular features. Consistent with prior work, we propose that such exploratory market moves are especially valuable for entrepreneurial firms and in markets that are uncertain and poorly understood (Brown and Eisenhardt, 1997; Sorenson, 2000). As with R&D moves, we expect that market moves are also most effective when they are exploratory. Setting down positions to exploit market segments when the landscape fluctuates is too risky for entrepreneurial firms. Second, we propose that exploration is more performance enhancing than exploitation because it enables entrepreneurial firms to make moves ahead of the competition. Market moves will attract countermoves that hamper performance. In contrast to those in established markets, rivals in new, poorly understood markets are more likely to pay attention to all competitors independent of their size and other characteristics. Furthermore, no rules of mutual

forbearance have emerged. As a consequence, entrepreneurial firms can expect to lose advantages quickly as more resource-rich (large) firms start to climb promising peaks originally discovered by entrepreneurial firms (Katila and Chen, 2008). This suggests that successful entrepreneurs should explore new segments quickly but are less likely to be able to exploit them alone. So for entrepreneurial firms in new markets, moving in and out of markets ahead of large firms is crucial in order to create a series of competitive advantages. One entrepreneurial team illustrated, ‘*be nimble and quick...willing to leap from segment to segment.*’ We hypothesize:

*Hypothesis 3a: Exploratory R&D moves will increase entrepreneurial firm performance in new markets.*

*Hypothesis 3b: Exploratory market moves will increase entrepreneurial firm performance in new markets.*

#### *Large firms*

Further, we propose in Hypotheses 4a and 4b that large firms should distinctively engage in *both* exploratory and exploitative moves in order to achieve high performance in new markets. In particular, we propose in Hypothesis 4a that the more frequently the *large firms* engage in *exploratory and exploitative R&D moves*, the higher the performance. This is because numerous product moves (R&D exploration) help find the markets, drive out weaker competitors, and establish a foothold position (D’Aveni, 1994). Driving down product costs (R&D exploitation) further builds long-term positions. One team illustrated this approach by saying, ‘*Milk current products, but be prepared to have new ones at hand to catch the next wave and gain new advantage.*’ Another team explained, ‘*We are conducting multiple feasibility tests in order to set ourselves up for both [new market] research and [further developing] our [existing] product in the next round.*’ This argument is also consistent with prior work that finds that firms with sufficient resources are able to experiment first (i.e., explore) (Brown and Eisenhardt, 1997), and then invest heavily to establish positions (i.e., exploit) (Cusumano, Suarez, and Kahl, 2007). Further, a combination of exploration and exploitation is likely to be useful in expanding positions because in-depth knowledge of one part of the landscape helps to

explore nearby peaks that involve related knowledge (cf. Karim and Mitchell, 2000; Katila and Ahuja, 2002; Siggelkow and Rivkin, 2005). Second, a combination of exploratory and exploitative R&D moves is attractive because it is effective against the countermoves of other large firms. Unlike a strategy that uses only exploratory R&D moves, a combination of exploration and exploitation establishes a stronger position and, as a more complex move, is harder for rivals to address (Rivkin, 2000). Moreover, by engaging in both types of moves, large firms protect flanks in their product portfolios that would otherwise provide easy entry points for rivals.

Similarly, we propose in Hypothesis 4b that the more frequently the large firms engage in *exploratory and exploitative market moves*, the higher the performance in the new market. First, we propose that large firms can tap into new demand by entering new market segments. As noted earlier, since little or no information about the landscape exists before firms enter it, introducing products to new market segments (exploratory moves) and observing subsequent performance helps firms understand the topography and the dynamics of the new market. Further, in order to achieve superior market share and differentiate from competitors that explore the same landscape simultaneously, we propose that successful firms combine such exploratory moves with exploitation to establish position and ‘milk’ the investment. This combination will help the firms develop superior and unique knowledge of particular areas of the landscape and build a stronghold (Katila and Ahuja, 2002).

*Hypothesis 4a: Exploitative and exploratory R&D moves will increase large firm performance in new markets.*

*Hypothesis 4b: Exploitative and exploratory market moves will increase large firm performance in new markets.*

## METHODS

### Research setting

We tested the hypotheses using data from an experiential simulation, Markstrat3. In this simulation, participant teams comprise the firms that compete with each other in a computer-simulated industry environment. These teams make a variety

of competitive moves in each round of play in order to outmaneuver their rivals and achieve high performance.

#### *Simulation setup*

We used a two-market, five-firm simulation scenario. In the scenario, the Markstrat industry consists of two hypothetical product markets: Sonite (established) and Vodite (new). At the beginning of the simulation, all five firms compete in the established Sonite market. This market has well-established customer segments and relatively well-known product features. Participants describe the market as ‘*relatively stable*’ and ‘*mature*.’ The market also has relatively low switching costs and limited IP protection through secrecy, but not patenting. Thus, rivals can potentially make competitive moves that overtake or outmaneuver entrenched firms—but it typically takes time for them to develop new products and persuade customers to buy them.

In contrast, the Vodite market is new. Characteristic of new markets, it is unpredictable and ambiguous (Eisenhardt, 1989). Like most new markets, there is very little information about the market. Further, the forecasts are often highly inaccurate and there is much ambiguity about how to interpret the market. One participant described the market as ‘*far from clearly defined*’ while others stated that ‘*it has not been developed and little is known about the consumer behavior*.’ Indeed, it is unclear who the competitors will be, what customer preferences will emerge, how rapidly the market will grow, and so forth. In other words, the first companies to launch Vodite brands must develop an understanding of the market to succeed. Finally, as firms enter and begin to make competitive moves, instability becomes clear as the pace of change often accelerates and the leadership position rapidly rotates among the competing firms.

In each Markstrat run, five firms compete in an industry. Markstrat assigns different starting positions (i.e., positions relative to competitors in the Sonite market) to each of the five firms such that some teams initially have more resources and better landscape positions than others. In particular, firms differ in terms of their product strength, customer base, financial resources, and market power.

Based on our definition of entrepreneurial firms as firms with unfavorable market and resource positions, we split the sample into *three large* and *two entrepreneurial firms* by using the starting position

of each firm. The three large firms have significant financial, customer, and product portfolio advantages over the two entrepreneurial firms. In particular, large firms begin with products sold in at least one high-margin segment, while entrepreneurial firms begin with products only in low-margin segments. Large firms are almost twice as large in revenue and about 50 percent more profitable than entrepreneurial firms. To ensure comparability across runs, we hold the two-market, five-firm simulation scenario, the user interface, and the initial starting positions constant across all of our 32 simulation runs.

#### *Methodological advantages and limitations*

Experiential simulations have several advantages. First, because of the standardized structure, experiential simulations allow sharp focus on the core research interest (in our case, entrepreneurial firms in weak markets with few resources) and control of some confounding factors that are unrelated to the focal research interests (e.g., firm age, founding team experience). In particular, we randomly assigned participants to manage either a ‘treatment’ group (entrepreneurial) or a ‘control’ group (large) firm, with the purpose of eliminating selection to either group that may bias the results in other settings. Second, experiential simulations provide complete, transparent information on different types of actions and different types of actors. Thus, we were able to gather a more comprehensive data set and measure variables that would otherwise be difficult, costly, and perhaps impossible to obtain in other settings (e.g., specific R&D moves of entrepreneurial firms).

In addition, Markstrat offers several more specific advantages. First, it provides a *realistic* view of competition. It has been used extensively in prior strategy research and has been shown to provide an accurate description of competition among firms (see Clark and Montgomery, 1996; Marinova, 2004). One reason for the realism is that Markstrat teams compete against other teams (i.e., not against computer-simulated teams). Prior work shows that when competition involves such ‘*identifiable rivals*,’ the likely outcomes of firm interactions and subsequent firm performance are more realistic, emergent, and unpredictable (cf. Kilduff *et al.*, 2010). Second, Markstrat is also highly *motivating and engaging* for most participants because it parallels competitive interactions in real life. Prior research



indicates that Markstrat participants find the simulation interesting and are very motivated to put in significant effort to achieve high performance (Clark and Montgomery, 1996). That is, participants try hard to succeed just as they would in real life. In fact, practicing managers who have participated in Markstrat have identified the simulation's realism as one of its greatest strengths (Kinnear and Klammer, 1987). We further motivated participants by including their firm's performance as a significant part of their course grade. Third, the longitudinal nature of Markstrat enables us to study firm and industry evolution over time, leading to better understanding of causality.

Like all research methods, ours has limitations. Specifically, teams cannot form alliances and make acquisitions (cf. Gulati, Lavie, and Singh, 2009). But while Markstrat does not permit all possible business moves, the simulation does enable a rich exploration of key competitive moves and their implications for the performance of entrepreneurial vs. large firms, which is our focal interest.

### Sample and data sources

We conducted the simulation in a masters-level strategy class at a major U.S. university. We gathered data during eight academic quarters, spanning the years 1999 to 2006. We collected data for four industries, i.e., four runs of the simulation, each quarter. In all industries, the simulation ran for seven rounds over six weeks. In total, the data cover 32 industries and 160 firms (i.e., five firms per industry). Although each of the five firms had a different starting position (i.e., relative competitive position in an industry), these starting positions were constant across the 32 runs of the simulation.

Groups consisting of three students formed each firm's top management team. The average age of participants was 24-years-old (standard deviation of 2.67 years). Most participants had at least two to three years of work experience. Sixty-seven percent of the participants were male. Forty-four percent of the participants were from the U.S. We formed the teams through random assignment but stratified them to ensure that each had members with diverse national backgrounds and work experiences. To further ensure that team member backgrounds did not interfere with results (Hambrick, Cho, and Chen, 1996), we used demographic variables to control for team heterogeneity when this information was available, with no change in our main results.

To supplement our main data source of simulation runs, we collected additional data (both quantitative and qualitative) on participants and their moves. First, we conducted semi-structured *interviews* with eight participant teams during the first half of the simulation; each interview lasted approximately 45 minutes. These interviews provided insights into the process of deciding competitive moves and revealed which moves participants thought were most crucial to performance.

We also collected in-depth *survey* data for a sample of the teams—i.e., we surveyed 60 teams before the decisions were due for the next round and asked them to explain the reasoning behind their decisions: (1) What were the two or three most important decisions you made this round? and (2) Why did you make them as you did? Sixty percent responded in all rounds, and all teams responded for at least three rounds. We coded and analyzed their responses to better understand how teams viewed their competitive moves and what they believed most significantly influenced firm performance. Of the 228 distinct competitive moves mentioned, 34 percent were R&D moves and 30 percent were market moves. Together, these data further confirmed the importance of R&D and market competitive moves (the focus of our hypotheses) for competitive advantage and high performance. We confirmed this choice by analyzing several other moves such as pricing and advertising, but these did not significantly influence the results.

Third, we reviewed all 160 team papers and presentations that were completed in conjunction with the simulation. Drawing on these data, we prepared 20 written *cases* of different teams, stratified by starting position and industry. In each industry, one case focused on the competitive moves of a high-performing team and another focused on the competitive moves of a low-performing team. The cases gave us a richer understanding of how competitive moves evolved across industries and which moves were most consequential to firm performance.

### Measures

Our dependent variable is *performance*. We measured firm performance as the firm's market share in a round in the established Sonite or the new Vodite market. Market share is an effective measure of performance because it allows us to compare across simulation runs by controlling for industry size and other extraneous differences such as pricing. For

these reasons, studies of competitive moves have frequently used market share as the measure of firm performance (e.g., Chen and MacMillan, 1992; Ferrier, 2001). Our qualitative data further confirmed this choice. Most interviewees talked about market share (and related revenues) when they detailed their competitive move strategies. We also used several alternative measures of performance, including revenue, stock price, and total profit. The results were qualitatively similar.

We operationalized four independent variables to measure competitive moves. Consistent with competitive dynamics research measuring moves (Ferrier *et al.*, 1999), we used frequency (a count) of the moves made by each firm in each round. In particular, we measured an *exploratory R&D move* by a count of firm's R&D investment projects that were initiated to develop a new product and an *exploitative R&D move* by a count of firm's R&D process projects initiated to lower production cost of existing products. In parallel, we measured an *exploratory market move* by a firm's entry into a customer segment in which the firm did not compete in the prior round. We measured *exploitative market moves* by a lack of exits (i.e., continuing to compete) in the firm's current market segments. This variable was reverse coded. That is, a withdrawal of all products from a particular customer segment in which the firm has been competing indicates that the firm no longer exploits that particular segment.

There were also several control variables. Because there was wide variance in how the industries evolved, we controlled for three characteristics of industries that possibly influence performance: industry growth, product diversification, and intensity of competitor moves (Kotha and Nair, 1995). First, when an industry is rapidly growing—that is, demand grows quickly—particular firms that are able to tap into new demand quickly may perform better (Castrogiovanni, 1991). We measured *industry growth* as the average percentage change in total industry (Sonite and Vodite) revenue per round. Second, product diversification of firms across customer segments may also influence focal firm performance. For example, competition may be less intense when rivals offer products across different types of customer segments. We measured *product diversification* using a Herfindahl-type index per round:  $1 - \sum(P_a/PT)^2$ , where  $P_a$  equals the number of products in customer segment  $a$  and  $PT$  equals the total number of products in the market. The

measure ranges from 0 to 1, where higher values indicate greater diversification. Third, we also controlled for rivalry, because the intensity of competition in the industry may decrease performance. When competitors make many moves, especially relative to a focal firm, such hypercompetitive activity by rivals can erode the performance of the focal firm (D'Aveni, 1994). In contrast, some authors have suggested that such moves may encourage firms that are in strong positions in the industry to compete more effectively, thus increasing (rather than decreasing) their performance. Our measure of rivalry was the intensity of *competitor moves*. We measured competitor moves by the number of moves made by all firms, less those moves made by the focal firm. We compute this measure for each firm in each round and for each market (i.e., Sonite and Vodite).

We also controlled for several characteristics of firms that may influence performance beyond the competitive move variables about which we directly hypothesized. First, we controlled for diversity of the firm's R&D and market moves because diversity may have different effects on performance than frequency (Ferrier, 2001). We measured *R&D and market move diversity* using a Herfindahl-type index in each round:  $1 - \sum(N_i/NT)^2$ , where  $N_i$  equals the number of type  $i$  moves made by the firm and  $NT$  equals the total number of moves made by the firm. This variable was calculated separately for R&D and for market moves and for each market (Sonite or Vodite). We also controlled for firm performance in the previous round. We included this variable to control for unobservable firm effects over time. We measured *lagged performance* as the firm's market share in the previous round.

We collected data for each of the seven rounds of the Markstrat simulation and used a longitudinal round-by-round panel to test the relationships. In order to establish the correct causal relationships, we used a lagged variable design. We recorded competitive moves in round  $r$  and predicted performance in round  $r + 1$ . Although the simulation ran for seven rounds, our analysis focuses on five rounds of competitive moves. We excluded the first round of moves in order to calculate the control variables, such as industry growth, and to eliminate any unique first-round effects. We excluded the final round of moves to eliminate any possible end game actions. In unreported analyses, we dropped the industry growth variable and included all six rounds, with similar results.

### Statistical methods

To analyze longitudinal panel data on competitive moves and the impact on performance, we use GLS regression. Since GLS models (using feasible generalized least squares) control for firm-specific variability in time series data, they do not produce biased estimates as OLS models might. Specifically, the GLS model corrects for autocorrelation and heteroskedasticity that arise in pooled time series data (Sajrs, 1989). The panel data are subject to autocorrelation since each firm is measured repeatedly across multiple rounds and subject to heteroskedasticity because of differences in variance across panels. In further sensitivity analyses, we used alternative estimators, including a random effects linear regression, with highly similar results.

## RESULTS

Table 1 reports descriptive statistics and correlations for the variables used in the analyses. Overall, the independent variables show considerable variance, and the correlation matrix indicates low correlations among the independent variables. The exception is the correlation ( $r > 0.8$ ) between the R&D move variables: exploitative moves and move diversity. Consequently, these variables were entered in the models both separately and simultaneously with no difference to the hypothesized results we report.

Tables 2 and 3 report the results for the GLS regression analyses predicting the effects of competitive moves on performance in established and new markets, respectively. Models 1 and 2 in each table report the results for the entrepreneurial firm sample. Models 3 and 4 are similar, but the sample is large firms. As expected, competitive moves more significantly predict high performance in new, rather than established, markets (note the changes in chi-squared), suggesting that effective strategists may be especially successful in new markets. In these markets, the performance of firms is determined more by their own strategies of competitive moves than by the strategies of others. The results also show that the performance of both entrepreneurial and large firms shows strong path dependency effects (lagged performance).

### Established market results

Models 1 and 3 in Table 2 include the control variables only. Results indicate that entrepreneurial

firms make the most of general industry trends and opportunities (e.g., industry growth, product diversification). On the flip side, established positions and mutual forbearance shield large firms from competitor attacks, whereas the performance of entrepreneurial firms is more strongly hurt by them (competitor moves).

Models 2 and 4 introduce the R&D and market move variables, *exploratory and exploitative moves*. We argued that in established markets, exploitative R&D moves that focus on developing lower-cost products increase entrepreneurial firm performance (H1a), while exploratory R&D moves that focus on introducing new products are particularly high performing for large firms (H2a). In Model 2, the coefficient for exploitative R&D moves is positive and significant ( $p < 0.001$ ), supporting Hypothesis 1a. Moreover, in the same model, the coefficient for exploratory R&D moves is negative and significant ( $p < 0.01$ ), indicating not only the benefits of low-cost product strategies for entrepreneurial firms but also the perils of deviating from them. Model 4 reports an opposite pattern for large firms, as expected. The coefficient for exploratory R&D moves is positive and significant ( $p < 0.01$ ) whereas the coefficient for exploitative R&D moves is negative but not significant. Therefore, Hypothesis 2a is supported. Altogether, successful entrepreneurial firms hone low-cost versions of their existing products whereas successful large firms develop new products.

To test Hypotheses 1b and 2b (that entrepreneurial firms benefit from exploratory and large firms from exploitative market moves), we assess the market move coefficients in Models 2 and 4 in Table 2. As expected, the coefficient for exploratory market moves is positive and significant ( $p < 0.01$ ) in Model 2 and the (reverse-coded) coefficient for exploitative market moves is negative and significant ( $p < 0.001$ ) in Model 4, providing support for both hypotheses. Overall, the results suggest that entrepreneurial firms perform well by entering new segments with existing low-cost products while large firms perform well by bolstering their existing segments with new products.

### New market results

As before, Models 1 and 3 in Table 3 include the control variables for the new market analyses. As expected, in unstable new markets where market positions have not been established, neither large nor

Table 1. Descriptive statistics and correlations for established and new markets

Established market		1	2	3	4	5	6	7	8	9
Variable	Mean	s.d.								
1 Exploratory R&D moves	1.07	1.06								
2 Exploitative R&D moves	0.34	0.69	0.51							
3 Exploratory market moves	0.58	0.78	0.11	0.08						
4 Exploitative market moves	0.36	0.62	-0.02	-0.02	0.11					
5 Industry growth	0.26	0.17	-0.09	-0.02	-0.05	-0.03				
6 Product diversification	0.78	0.02	0.16	0.05	0.10	0.03	-0.15			
7 Competitor moves	10.04	4.28	0.09	-0.08	0.12	0.04	-0.07	0.18		
8 R&D move diversity	0.14	0.22	0.54	0.82	0.10	-0.002	-0.02	0.13	-0.01	
9 Market move diversity	0.06	0.17	0.08	0.07	0.59	-0.01	-0.03	0.06	0.06	0.09
10 Performance	0.20	0.09	0.04	0.11	0.04	-0.24	-0.001	0.0001	-0.01	0.09
										0.01
New market		1	2	3	4	5	6	7	8	9
Variable	Mean	s.d.								
1 Exploratory R&D moves	0.72	0.96								
2 Exploitative R&D moves	0.11	0.39	0.36							
3 Exploratory market moves	0.40	0.70	0.32	0.23						
4 Exploitative market moves	0.07	0.29	0.04	0.12	0.29					
5 Industry growth	0.26	0.17	0.17	0.07	0.16	-0.02				
6 Product diversification	0.42	0.27	-0.04	0.02	0.15	0.19	-0.47			
7 Competitor moves	4.66	3.99	0.11	0.16	0.25	0.21	0.16	0.46		
8 R&D move diversity	0.05	0.15	0.44	0.81	0.29	0.10	0.05	-0.01	0.14	0.06
9 Market move diversity	0.03	0.11	0.13	0.04	0.48	0.12	0.10	0.12	0.17	0.33
10 Performance	0.12	0.24	0.36	0.30	0.52	0.10	0.11	0.001	-0.004	0.18



Table 2. Impact of competitive moves on performance in the established market. GLS regression results  
Performance (market share)

	Entrepreneurial firms		Large firms	
	1	2	3	4
<i>Independent variables</i>				
Exploratory R&D moves		-0.003* (0.002)		0.004** (0.002)
Exploitative R&D moves		0.021*** (0.004)		-0.003 (0.003)
Exploratory market moves		0.007** (0.002)		0.003 (0.002)
Exploitative market moves (exits; reverse-coded)		-0.005** (0.002)		-0.013*** (0.002)
<i>Industry controls</i>				
Industry growth	0.017* (0.007)	0.017* (0.007)	-0.012 (0.008)	-0.009 (0.008)
Product diversification	0.105 (0.075)	0.154* (0.077)	-0.114 (0.098)	-0.133 (0.095)
Competitor moves	-0.002*** (0.0003)	-0.001*** (0.0003)	0.001** (0.0003)	0.001 <sup>†</sup> (0.0003)
<i>Firm controls</i>				
R&D move diversity	0.023*** (0.006)	-0.024* (0.011)	0.022*** (0.006)	0.017 <sup>†</sup> (0.010)
Market move diversity	0.010 (0.009)	-0.021* (0.011)	-0.008 (0.009)	-0.018 <sup>†</sup> (0.010)
Performance (lagged)	0.936*** (0.041)	0.940*** (0.040)	0.927*** (0.028)	0.887*** (0.026)
Constant	-0.063 (0.057)	-0.100 <sup>†</sup> (0.058)	0.094 (0.077)	0.121 (0.075)
Wald chi <sup>2</sup>	572.83	716.05	1190.15	1652.61

N = 320 for entrepreneurial firms; N = 480 for large firms.

<sup>†</sup>p < 0.10; \*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001; two-tailed tests. Standard errors are in parentheses.

entrepreneurial firms are buffered from market changes. Aggressive competitors (competitor moves) constrain the performance of all firms. We also find that resource-constrained entrepreneurial firms suffer more relative to their rivals when the industry grows rapidly. The results suggest that large firms with substantial resources are in a better position to benefit from explosive growth (industry growth).

Models 2 and 4 introduce the R&D and market move variables, *exploratory and exploitative moves*. We argued that only exploratory moves are performance-enhancing for entrepreneurial firms (H3a and H3b). As expected, the coefficients for exploratory R&D and exploratory market moves are positive and

significant at the  $p < 0.001$  level in Model 2. The coefficient for reverse-coded exploitative market moves is also positive and significant, providing further support for exploration (but not exploitation). Thus, Hypotheses 3a and 3b are supported.

We also argued that both exploratory *and* exploitative moves are performance enhancing for large firms in new markets (H4a and H4b). Consistent with both hypotheses, the coefficients for exploratory and exploitative R&D and market moves are positive and significant at the  $p < 0.001$  level in Model 4 in Table 3. Thus, to perform well, large firms make a variety of both exploitative and exploratory moves in new markets.

Table 3. Impact of competitive moves on performance in the new market GLS regression results  
Performance (market share)

	Entrepreneurial firms		Large firms	
	1	2	3	4
<i>Independent variables</i>				
Exploratory R&D moves		0.020*** (0.002)		0.009*** (0.002)
Exploitative R&D moves		-0.017 (0.014)		0.039*** (0.012)
Exploratory market moves		0.022*** (0.003)		0.045*** (0.002)
Exploitative market moves (exits; reverse-coded)		0.028*** (0.005)		-0.041*** (0.004)
<i>Industry controls</i>				
Industry growth	-0.067*** (0.005)	-0.060*** (0.009)	0.033** (0.010)	0.016 (0.013)
Product diversification	0.015*** (0.001)	0.002 (0.004)	0.022** (0.007)	0.020** (0.007)
Competitor moves	-0.004*** (0.0002)	-0.003*** (0.0004)	-0.005*** (0.001)	-0.005*** (0.0005)
<i>Firm controls</i>				
R&D move diversity	0.342*** (0.014)	0.289*** (0.022)	0.122*** (0.009)	-0.005 (0.031)
Market move diversity	0.013 (0.013)	-0.066*** (0.004)	0.091*** (0.022)	-0.005 (0.023)
Performance (lagged)	0.588*** (0.029)	0.544*** (0.027)	0.649*** (0.008)	0.617*** (0.008)
Constant	0.071*** (0.004)	0.053*** (0.006)	0.081*** (0.009)	0.064*** (0.008)
Wald chi <sup>2</sup>	2231.64	52402.98	21907.54	49288.31

N = 170 for entrepreneurial firms; N = 255 for large firms.  
†p < 0.10; \*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001; two-tailed tests.  
Standard errors are in parentheses.

## DISCUSSION

Our core contribution is insight into high-performing competitive strategies of entrepreneurial firms in new vs. established markets. While evolutionary theory provides insight into search on different landscapes from different (low vs. high) starting positions, competitive dynamics adds that firms do not search in isolation, but rather in the context of other competing firms. We combine these literatures in an experiential simulation study of key competitive moves for entrepreneurial vs. large firms. There are several findings.

### Competitive moves of entrepreneurial firms

First, we find that while prior research documents that frequent and complex moves are performance enhancing, entrepreneurs instead use *fewer, select moves* to perform well. Second, we show that every move need not be followed by a countermove (cf. D’Aveni, 1994; Chen *et al.*, 2007). The relative *invisibility* of entrepreneurial firms may often allow them to move undetected and unretaliated and perform unexpectedly well. Third, we find that new markets in which entrepreneurs often compete require them to emphasize different aspects of moves

than large firms do. While high-performing large firms focus on the quantity of moves, entrepreneurs focus on their *timing* (Schoonhoven, Eisenhardt, and Lyman, 1990; Katila and Chen, 2008). In particular, in established markets, entrepreneurs search late for opportunities that are left unexploited by large firms. In new markets, entrepreneurs move quickly in and out of opportunities ahead of others. Together, our results provide strong confirmation that entrepreneurs use different (select, invisible, and asynchronous) competitive moves than large firms to be successful.

#### *New vs. established market moves*

The results that contrast high-performing moves across new and established markets are especially intriguing for entrepreneurial firms. As we have noted, in *established markets*, *entrepreneurial firms* must be skillful (i.e., make few errors) and lucky (i.e., have lazy rivals to give them an opening) to succeed. That is, they pursue strategies that aim to work around their rivals. As a successful entrepreneurial team noted, *'we shifted strategy according to our competitors' moves.'* So while a 'pick an attractive peak and climb' strategy may seem attractive, especially for technology entrepreneurs, it was not advisable. Entrepreneurial firms had neither the resources of large firms nor the supporting product portfolios to engage in such moves. In contrast, *large firms* were able to concentrate on evolving their strategic peaks and could get away with strategic errors. That is, firms with initial advantages were in control of their own fates and could get away with being competitively less astute. Their strategies focused on exploratory R&D in existing market segments with fewer penalties for engaging in 'incorrect' moves. As our large firm simulation participants explained, the goal was to *'maintain dominance'* and *'just ride it.'* Overall then, the results offer strong support for the prediction that large and entrepreneurial firms engage in opposite competitive strategies to succeed. And, even if entrepreneurial firms carry out 'all the right moves,' they face an uphill battle in established markets. Unless large firms make mistakes, entrepreneurial firms rarely dethrone large firms and gain market leadership.

*New markets*, by contrast, are much more attractive for *entrepreneurial firms*. Here, disadvantaged firms are more in control of their own fates. In these markets, customer segments have not developed, rivals are often fewer, and advantages are likely to

be highly temporary. In the language of landscapes, peaks are fluctuating and unpredictable and their coordinates are poorly understood such that they are often indefensible, unoccupied, or unknown. By having a strategy of appropriate competitive moves that *quickly* explore the new market landscape but avoid overstaying in any segment, entrepreneurial firms can perform well. To illustrate the point with a counterexample, a low-resource team that engaged in an opposite strategy of *'slow and steady'* finished in the last place in its industry. Overall, the performance of entrepreneurial firms is determined more significantly by their own strategy of competitive moves than it is in the established market. *Large firms* can also do well, but they have to make more strategically astute and diverse competitive moves than they do in established markets.

More intriguing, the results indicate that despite lacking resources, *entrepreneurial firms* can take advantage of new market landscapes effectively with a few select moves. In contrast, successful large firms often rely on a resource-consuming 'fire on all cylinders' strategy to gain footholds and build positions. Prior research on institutional entrepreneurship similarly emphasizes that savvy entrepreneurs can act ahead of others to structure new markets (Tushman and Anderson, 1986; Santos and Eisenhardt, 2009). An interviewee from an entrepreneurial team told us that their team saw *'potential to create—rather than fight over existing demand.'* Similarly, others spoke of their motivation to *'set the standards'* of competition, *'shape customer expectations,'* and serve as *'market movers.'* Another successful entrepreneurial team noted, *'Being the early entrant in Vodite, we managed to write the rules of the game... Instead of throwing darts in the dark... we decided that we were going to be the ones setting the height of the dartboard.'* Finally, the negative effect of market exits on large firm performance (and the positive effect for entrepreneurial firms) suggests that exiting large firms may not be adequately exploring the new landscape and may instead engage in superstitious learning, whereas entrepreneurial firms are potentially more effective learners (cf. Argote, Beckman, and Epple, 1990).

#### **Technology-based industries and beyond**

Like all research, ours has scope conditions. First, our study and its findings are particularly relevant for *technology-based firms*. Access to resources is a particularly acute question for firms

in technology-based industries (Stuart, Hoang, and Hybels, 1999; Katila, Rosenberger, and Eisenhardt, 2008), and understanding how entrepreneurial firms with limited resources can compete effectively expands this understanding.

Second, the differences across established and new markets (and the related mix of exploration and exploitation moves) are prototypical challenges in rapidly changing technology industries and, thus, particularly relevant for technology entrepreneurs. The new Vodite market in the simulation is particularly of interest in this regard. It takes off as a result of a scientific breakthrough, but substantial investment in research and development is required before it becomes a business. Thus, it represents a typical environment for high-technology entrepreneurship.

## CONCLUSION

By integrating evolutionary and competitive dynamics perspectives, we explore the competitive moves by which resource-constrained entrepreneurial firms achieve high performance and contrast those moves with the moves of large firms. Our key conclusion is that, while competitive moves are crucial, the 'playbook' of the 'right moves' is essential for winning, especially in new markets.

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