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Conundra and Progress: Research on Entry Order and Performance

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We raise four sets of issues relating to the definition and measurement of first mover advantage. We begin by posing questions about the basic definition of FMA and whether advantage should be measured in terms of profit, market share or business survival — which often yield conflicting results. We then probe the related question of duration — over what period of time must superior performance be sustained to constitute first mover advantage? Next we consider problems of identifying the starting date of a market and the basic question of how markets should be defined. Last, we consider a potentially important type of sample selection bias that has largely been overlooked. We conclude by assessing recent progress in entry order research.

Introduction

The timing of market entry has been a major focus of attention by researchers in marketing, economics and business strategy over the past three decades. Many hundreds of articles have been published, and our understanding of basic issues has been significantly advanced. Within this broad topic area, one can identify two interrelated streams of research. The first focuses on explaining the timing of entry by firms into a market, based on their characteristics. What types of firms tend to enter early versus late? What firm and market-specific factors influence the timing of entry? These questions are amenable to theoretical modeling as well as empirical assessment based on historical data for established markets that are well defined, *ex post*. Most of the papers in the current volume fit into this broad stream, adding a variety of new insights.

A second stream of research, with which we have been associated since the publication of our early paper (Lieberman and Montgomery, 1988), examines a set of phenomena relating to what is often referred to as First Mover Advantage (FMA). This stream aims to be more managerially prescriptive: it attempts to identify the existence of advantages (and disadvantages) of early market entry and the drivers of such (dis)advantages. Considerable progress has been made in

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understanding the issues and the potential pitfalls that can distort empirical analyses within this stream. We now have a body of theory, including a range of models and integrative frameworks that lay out circumstances favorable — or unfavorable — to early market entry. Much of contemporary work is oriented toward further elucidating contingencies: market or firm characteristics that define when pioneering is likely to be a superior strategy, and when it better for the firm to be a follower. In general, the field has achieved a fair degree of agreement on conceptual frameworks and has moved beyond asking simple questions. We also have seen the active development of theoretical and empirical work on closely related topics, such as industry evolution and disruptive technology.

Nevertheless, some fundamental problems complicate continued progress in this area. Hopefully, these impediments can be overcome, although at least a few seem so deeply rooted that quite possibly they cannot be totally satisfactorily resolved. The call for this volume focuses on the need for better theory, and it is clear that progress has been held back by the incompleteness of theory in some areas. Even so, we believe that the primary impediments in the field today arise from problems and inconsistencies in the design of empirical studies. Our primary emphasis in this paper is to lay out a set of empirical conundra of this type. These are the subject of the first and primary section of the paper. In the second section we elaborate on recent progress in the field, and we close with a brief section on further challenges to be pursued.

Many of the impediments pertain to issues we raised nearly 25 years ago (Lieberman and Montgomery, 1988). Many problems discussed in that article have still not been adequately addressed. Some may be impossible to overcome, which raises questions about the ultimate extent of progress that can be achieved by researchers in this area. Other problems stem from the fact that we still do not have agreement on operational definitions of key concepts and categories. In this paper we point out several elephants in the room that nobody wants to talk about, as well as a few hiding in the closet that are seldom clearly seen. We illustrate with recent examples, emphasizing Internet companies — a class of firms that did not exist when we wrote our 1988 article.

Conundra aplenty

We propose four sets of conundra relating to the definition and measurement of first mover advantage. The conundra are interrelated. We begin by posing questions about the basic definition of FMA and whether advantage should be measured in terms of profit, market share or business survival. We then probe the related question of duration — over what period of time must superior performance be sustained to constitute first mover advantage? Then we consider problems of defining the initial "start date" of a market and the question of how finely markets should be divided for purposes of identifying order of entry. Finally, we revisit the well-worn topic of sample selection biases, raising an issue that has largely been ignored by researchers to date.

Conundrum 1. What is (first-mover) "advantage" and how should it be measured?

Faced with the prospect of an emerging new market, a firm must decide whether and when to enter. If positive net discounted profit can be anticipated (subsequent to entry by the firm at some point in the market's evolution), entry is justified. Assuming that entry is profitable in this sense, adjusted for risk, what do we mean by first-mover (or follower) advantage? Many interpretations are possible.

In our 1988 article, we argued (p. 51) that first-mover advantages exist when the firm earns positive profits attributable to the early timing of entry, (i.e., positive profits net of those that can be attributed to the firm's proficiency more generally). We never offered a more precise definition in our paper, in part because several alternatives are logically defensible. One unfortunate consequence is that we are faced with multiple definitions and lack of consensus in the field.

Consider the following definition: a firm enjoys a first-mover advantage if early entry into the market is more profitable than later entry undertaken by that firm (or vice versa for follower advantage). Underlying this definition is the notion of an "experiment" (impossible to conduct in reality)

that compares the firm's total return for different timings of entry. (You would first have Firm A enter an industry at some early time t, observe its future performance; then you would have the same Firm A enter that same industry at time t + j and again observe its performance.) Entry is justified if the expected return is positive for at least one entry date, and the difference between the returns shows if there is an advantage or disadvantage of early entry.

This definition has logical consistency and the practical benefit that it focuses on the entry timing decision made by the firm. Thus, it offers a useful strategic perspective from the standpoint of a given company. Moreover, it sets up an expected profit comparison to be made prior to the firm's entry, when the analysis is managerially useful. However, the definition has a number of major drawbacks. It implies that every (profitable) entrant must enjoy either first-mover or follower advantage, which differs from the way these terms are commonly applied. (Part of the problem may be lack of consensus in the strategy field on the meaning of "competitive advantage"; see Lieberman, 2009.) Another drawback for researchers is that in order to document such an advantage, information is required on what each firm's profit would have been had it entered the market at a different point in time, a counterfactual which cannot be observed. So, as a practical matter this definition is virtually impossible to implement in empirical research.

An alternative definition that fits the common view of FMA is that entry timing advantage is defined, *ex post*, by the market entrant(s) observed to have the highest total profit (or profit rate/market share/survival) at the time the analysis is performed. The entry order associated with these "winners" demonstrates whether the market environment offers a first-mover or follower advantage. (To be valid, the "winners" must be identified after controlling for underlying firm characteristics and potential endogeneity.) This definition has the benefit that once a performance measure has been selected, data can be collected and the analyst can identify the best performing firm(s) based on the data. This approach is market-centric and has greatest value for identifying how specific market characteristics (e.g., type or degree of product differentiation, rate of market growth, speed of technical change, etc.) can influence the extent of first-mover versus follower advantage. One deficiency of inferring advantage from data on post-entry performance is that the performance measures are often deeply flawed, and they can yield inconsistent results. Moreover, it is hard to adequately control for firm-level heterogeneity. Still, this is the most common approach in empirical research, in large part because it is an approach that can be readily implemented in many contexts.

Other definitions are defensible, but these are the two primary ones. The first definition is managerially relevant but virtually impossible to implement in empirical research. The second definition, better suited for empirical studies, comes in many variants, depending on the controls for heterogeneity and the selection of the performance measure. However, all performance measures suffer from defects, as we discuss below. We consider the three measures typically used in order of entry studies: profit, market share and survival.

Profit

As noted above, expected profit should define entry decisions by the firm (assuming a rational economic view). If expected net discounted profit were observable, it would be the most suitable measure for comparative empirical studies of entry timing. Given that expected profit cannot be consistently observed in practice, researchers rely on various proxies.

One proxy for expected profit is actual historical profit observed over some time period following entry by the firm. Despite the availability of historical accounting data, very few empirical studies of entry timing advantage use this measure. One reason is that profit data are available only for public companies, which can lead to important exclusions from the sample of market entrants. Moreover, unless a long time series is available, the data will emphasize the early history of the market, when most firms are likely to suffer losses, omitting the period of typically higher profits as the market becomes mature. Many Internet companies, such as Amazon, for example, experienced large initial financial losses as they made early investments, despite being widely viewed as successful market pioneers. And ultimately, some maturing markets may experience destructive competition which compromises and perhaps nearly eliminates profits.

According to financial theory, stock prices reflect the expected value of the firm's future profits, as anticipated by investors. Therefore, stock market capitalization provides a measure of the expected discounted profit of public companies. Such an approach is applied in Lieberman (2010) to assess first-mover advantages in the Internet sector. Despite the obvious attraction of using an objective measure of expected profit, this approach has some major drawbacks. One is that market capitalization is available only for firms that have completed an IPO. (Moreover, in the case of established companies with substantial existing operations, total capitalization is a poor and upward-biased gauge of expected profit in the new market.) Another problem is that stock prices are often highly volatile in a new market (e.g., those that emerged during the rise of the commercial Internet in the 1990s). As a result, stock market based observations of "advantage" can be very unstable.

A related point is that in the decision-making of a firm, expected profit should be adjusted for risk. Indeed, risk might be considered as a separate performance measure. The risk of entry into a new market normally diminishes over the early period of market evolution, and established firms often delay their entry as a way to reduce risk. (Risk may increase, however, if the firm waits too long to enter.) Good managers trade off expected return against risk; i.e., risk and return should be jointly considered, particularly in established companies that may have discretion with respect to the timing of their market entries. However, outside researchers cannot normally observe the firm's expected profit (except for stock market capitalization) or the associated level of risk, so as a matter for empirical research, the options here are limited.

Market share

Given that (total expected) profit is difficult to measure, researchers normally rely on proxies. The most common proxy used in empirical studies of entry timing is market share.

Market share has many problems as a performance measure. As discussed in our 1988 article, firms' shares depend critically on how the market is defined. Moreover, in a growing market there will be some spurious correlation between market share and entry order, which leads to a bias favoring early entrants. (Even a late entrant with excellent prospects almost always enters the market with a small initial share.) Use of market share as a performance measure also fails to recognize that multiple entrants — including firms entering both early and late — can simultaneously have advantages.

Furthermore, a relatively small share of the total market does not mean that a pioneering firm lacks FMA. This is particularly true of firms pursuing niche strategies. Consider, for example, the Internet "employment exchange" market that performs a matching function between job openings and potential employees. One of the earliest entrants into this market, Monster (formerly TMP International), has long held the largest market share (albeit diminishing in recent years). Early on, Monster invested heavily to capture the network effect in this market and met with strong initial success. Another entrant, Dice, entered the market just slightly ahead of Monster. In contrast with Monster's broad and aggressive strategy, Dice focused on a specific segment: engineers. While both firms continue to survive, their market shares (as a fraction of the total US online employment market) have been dramatically different. Dice's small share might be taken as an indicator of limited success, however, it continues as the dominant player in its niche. (A key issue here is market definition, which we discuss further below.)

Survival

The second most common proxy in empirical studies is survival. Using hazard models, survival can be assessed and statistical tests performed. While this proxy has the appearance of clinical objectivity, many issues cloud its application in entry timing studies. The most important problem, typically ignored, is that firms "die" in a variety of ways.

Non-survival does not indicate failure. Indeed, selling out is often a sign of success, and exiting at a good price is the main objective of many startups. One example of non-survival success is Instagram, an 18-month-old company with 13 employees that Facebook acquired for roughly $1 billion in April 2012. Non-survival denotes unambiguous failure only in cases of liquidation. For exits that

occur via acquisition or merger, outcomes might be classified as success or failure, depending on the acquisition price.

Consider the various ways in which business entities can disappear or continue over time:

- Liquidation;
- Acquisition;
- Merger;
- Change of the business focus (exit from the market, but survival of the firm);
- Survival with de-listing from the stock exchange;
- Survival and continued listing but with limited firm growth and success;
- Survival and long-term success, but with a trip through financial distress (Chapter 11, de-listing, etc.);
- Survival with no major problems.

The results of statistical analyses are likely to depend heavily on how survival is defined. Unfortunately, there is no common standard for defining survival in empirical studies. The first and last categories above are unambiguous in their interpretation, but the others are all intermediate cases. A typical approach is to treat all firms that disappear through acquisition or merger as "right censored" in the hazard analysis. In effect, this ignores much potential information on the ultimate outcome. In the Internet sample of Lieberman (2010) for example, well over half of the market entrants exited the sample via acquisition or merger. Whether such firms should be classified as successes or failures depends largely on the acquisition price. There is, however, no accepted way to make this classification, and only rarely is it even attempted.

Use of survival as a performance measure can give radically different results as compared with similar analysis based on profit or market share. For example, the findings reported in Lieberman (2010) are consistent for stock market capitalization and revenue share, but they differ in substantial ways from findings for firm survival (based on hazard analysis).

Conundrum 2. Period of advantage

First-mover advantage is dynamic, not static. How should we deal with this complicating fact? Unfortunately, duration of advantage is an issue that has not been adequately or often addressed in this literature.

Short-term versus long-term advantage

Findings on the relation between entry order and performance can vary depending on the time period of the analysis. (In physics, if you do an experiment at different times and get different results, this is quite problematic.) An analysis carried out at the time of the dot-com crash in 2001 of the success of companies serving the market for Internet search would not have identified the late entrant, Google, as the clear market winner, but that outcome seems apparent today (although it could change at any time in the future). In general, how long should a researcher wait for a market to mature before attempting to analyze the connection between the entry timing and performance?

In turn, this leads to a set of related questions on duration of advantage. For how long must a firm sustain superior performance (profit or market share) to be considered as having achieved a first-mover (or follower) advantage? If eBay, for example, is eventually eclipsed as the dominant Internet auction company in the United States (perhaps even exiting the market), does that imply loss of eBay's first-mover advantage? A related issue arises with respect to the duration of a market and the way that advantage is defined. Early in the rise of the commercial Internet, many firms entered the new market(s) for business-to-business ("B2B") exchanges. Some of the early entrants, such as VerticalNet and FreeMarkets, sustained huge market capitalizations for a period of time, and early shareholders made fortunes by selling stock in an environment where first-mover advantages were widely anticipated. Eventually, flaws in the entire B2B exchange sector became apparent, and the vast majority of these companies, both early and late entrants, are now considered to be

failures. In cases such as this, how should we treat initial perceptions of first-mover success that ultimately fail to be borne out? And how long should we wait to make these assessments? If change and dynamic competition are the order of the day, perhaps we can never assert that the final results are in.

First-mover and follower advantages can exist simultaneously

In our 1988 paper, we pointed out that first-mover and follower advantages can exist simultaneously in a market. The study of entry timing has always involved a balancing or netting out of various forces, mechanisms, and opportunities. Given the many ways that these can interact with firm-specific heterogeneity, a wide range of outcomes are possible. And in the extreme, if timing advantage is defined as entry at the point in market evolution that is best for that specific firm, then every (profitable) firm can potentially enjoy a timing advantage (and this advantage could persist over the entire period that the firm is active in the market).

Given the many dynamic issues raised here, we have a strong preference for the term, "entry timing effects" rather than "first-mover advantages and disadvantages". Indeed, the latter terms suffer from serious definitional problems in our view.

Conundrum 3. definitional problems

After many decades of research, we still have no clear and standard way of defining "first-mover(s)" and "followers". There are two sets of problems here. The first and most serious relates to the definition of markets. The other is in drawing lines to distinguish between categories of entry timing. The discussion below elaborates on ambiguities pointed out in Lieberman and Montgomery (2012) and our earlier work.

What kind of new market is it?

There are several major categories of new markets. These include: (a) new-to-the-world products, (b) new "generations" of product, characterized by discrete waves of improvement over the existing technology (e.g., successive generations of computer hard disk drives, game consoles, and semiconductor memory), and (c) introduction of existing products into new geographic locations (e.g., introduction into a national market, such as China). Fundamentally new products often emerge through a process of radical innovation, whereas the other new market categories tend to emerge incrementally in a more predictable way. Researchers often fail to make clear distinctions among these categories, even though the sources of market timing advantage tend to be very different (Lieberman and Montgomery, 2012).

When did the new market truly begin?

Particularly in the case of a new product or service that is introduced to the world for the first time, it can be difficult to clearly identify the starting date of the market — and equivalently, the birth of the first entrant. How should we distinguish such a market from its potential precursors? Unfortunately, there are no objective standards. As we note in Lieberman and Montgomery (2012), "Disagreements over market breadth may lead one observer to classify a given firm as the first-mover, whereas another may view that same firm as a follower within a more broadly-defined, existing market. For example, (we) contend that the Golder and Tellis (1993) definition of Xerox as a follower in the copier business instead of as the pioneer in the plain paper copier business is inappropriate."

One problem for researchers is to decide how to deal with rudimentary products that are introduced before what most people see as the beginning of an industry. New industries often start with precursors of this type. Typically, they are "half-baked" products or ideas, and it is always hard to decide which of these can truly be considered as defining the start of the industry or market. Since the firms that introduce these "half-baked" products almost always fail, the classification decision effectively determines whether an advantage or disadvantage is found for the market's earliest entrants. Indeed, Dobrev and Gotsopoulos (2010) find a spike in mortality for firms that entered the US auto industry before the market began in earnest.

Such problems of precursor classification are rife in Internet markets. For example, Lieberman (2010) classifies Amazon as one of the pioneering entrants into the Internet book retailing market, and eBay as the US pioneer for online auctions. However, other researchers point to earlier, unsuccessful entrants that offered similar but more primitive services on the Internet (e.g., Hidding and Williams, 2002; Wilson et al., 2003).

This subjectivity of such definitions leads to academic hair splitting that is unproductive and unlikely to ever be resolved. The problem is most serious when researchers cling to methodologies that compare among discrete entrant categories, and particularly when they attempt to compare the performance of a unique first mover (or a small set of pioneers) with that of followers. One resolution is to define a continuum of entrants and use more continuous timing measures. Another is to perform robustness checks with respect to timing cutoffs. Neither of these approaches, however, can deal with a more fundamental issue: determining appropriate market breadth.

How finely should markets be defined?

If markets are defined narrowly enough, many firms can be viewed as first-movers, each into its own unique market niche (Lieberman and Montgomery, 1988). The distinction between a niche and a market is fundamental to any analysis of entry timing, but again we have no clear standards. In some sense our disagreement with Golder and Tellis (1993) over whether Xerox was a leader or a follower hinges on the question of whether plain paper copiers were a new market or simply a new niche. (Alternatively, plain paper copiers might be viewed as a new product generation: the first-generation technology was that of human scribes, who were eventually supplanted by the mimeo type technologies identified by Golder and Tellis, leading finally to the plain paper copier segment that is still dominant — albeit increasingly difficult to distinguish from electronic printer technology; see the "morphing market" problem discussed below.)

One further complication is that a firm may enter into a niche but then expand. A tiny niche in an existing market can grow to become a whole new industry that is ultimately viewed as fundamentally new and different. Moreover, sequential positioning to broaden the firm's product line from an initial niche can be a desirable entry strategy. With such a strategy, a firm may be first-mover in its initial niche but a follower in the broader market. A prominent example is Facebook, which pioneered the "online college face book" niche but later expanded into the broader online social networking market, where it was clearly a follower behind MySpace, Friendster and others. Should Facebook, therefore, be classified as a pioneer, a follower, or both? Another example is Amazon, (arguably) a pioneer in the online book retailing market. Amazon later entered a wide array of online retailing markets, and today might be considered the world's only full line retailer on the web. Should Amazon be considered primarily as a follower, given that it was rarely if ever the first entrant into the specific online retail markets where it holds dominant positions today? Or should Amazon be considered the pioneer in full line web retailing?

These problems of definition arise over two dimensions: a breadth dimension and a temporal dimension. Both require judgment calls by researchers. When a new technology or differentiated product emerges within an existing industry or market, the researcher must decide if it is distinct enough to deserve its own entry clock. And over time, as firms introduce improved products within an established market, how much discontinuity is needed to constitute a new product generation, where the timing game starts largely anew? The breadth and temporal dimensions can be related, as our debate with Golder and Tellis over the classification of Xerox suggests. Cusumano and Rosenbloom's (1987) study of the VCR industry provides a detailed perspective on how a new industry or product generation (VCRs for the mass market) can emerge from an older one (high-end video recorders for broadcasters). In some contexts, such as DRAMs, disk drives and computer game consoles, new product generations tend to be well defined and widely anticipated (although the first few generations can be "disruptive", as Christensen (1993) has argued). But in other industries, such as copiers and video recorders, it can be hard to decide if a class of new products should be viewed as a new product generation, a new industry, or simply a new segment of the existing industry or market. Although many researchers have raised these issues, no one has yet resolved them.

The "morphing market" problem

Beyond the difficulty of defining product generations and market breadth, the above discussion of Facebook and Amazon raises what we call the "morphing market" problem — a serious challenge facing empirical researchers that is seldom recognized or addressed. Not only do individual firms change their strategies and evolve into different market positions, the markets themselves may change fundamentally over time. Even if widely agreed upon initially by observers, market definitions can be highly unstable. What once may be considered a specific niche (e.g., college face books) can disappear or evolve into a new market type. During the rise of Internet commerce, for example, many different categories of Internet retailing were distinguished, but this is no longer the case. While such "morphing" problems may be particularly problematic in Internet markets, they arise in other contexts as well.

Defining first-mover(s) versus followers

Assuming that the market can be suitably defined, what defines each firm's date of entry? Most would agree that we want to capture the point when a firm starts to compete in a market; that is, having a meaningful offering that competes for customer preferences against the offerings of other entrants in the new market. Often, this date can be clearly identified. If the firm sells a physical product and there is a public record of the first sale, the date of entry is known. But the date is ambiguous in some situations.

Such ambiguity can be considerable for entries by Internet companies. One can usually determine when Internet startups established their first website; however, many such sites were mere placeholders, without full functionality. Moreover, commercial web sites on the early Internet commonly began by providing free information and services, and the date of their first monetary transaction is often unclear. As an alternative, the date of incorporation might seem to provide a more objective marker of entry by Internet companies, since it denotes the point in time when the firm first planted its flag in the commercial landscape. However, this date is not meaningful in the case of diversifying firms that entered new markets from an established corporate base.

Strictly speaking, a market has only one "first-mover". In practice, multiple firms (appropriately in our opinion) are often identified as "first-movers" or "pioneers". Assuming that the date of market birth can be unambiguously identified (thereby identifying a unique first entrant), how long a window should be set for firms to be categorized as market pioneers? If a second firm enters one week after the first, are they a follower? One month later? One year later? Consider, for example, the Internet startups Autoweb and Autobytel, which set up automotive retailing websites within a few weeks of each other in April 1995. Is Autoweb's three-week head start sufficient for it to be considered the first mover?

Just as we lack standard definitions of first-movers/pioneers, we do not have a standard set of categories for follower firms. Various terms are often used: follower, fast follower, early follower, late follower, laggard, etc. One view is that this does not matter: such categories have only artificial importance because of what we have read into the idea of "first-mover advantage".

Today, most researchers have moved away from such categorical approaches. Most studies now consider entry timing as a continuum, often measured as the time elapsed from first entry. But this is not a perfect solution. A lag of several months immediately following the industry's birth is likely to be quite different from a similar lag as the industry approaches maturity. Moreover, statistical tests can be difficult to perform and interpret unless we have entrants assigned into discrete categories that reflect the timing of their entry.

A related issue of classification relates to empirical implementation of theoretical constructs in the entry timing literature. For example, Suarez and Lanzolla (2007) propose industry taxonomies with respect to rates of technological and market change (smooth versus abrupt, fast versus slow). How can and should these taxonomies be empirically defined?

Conundrum 4. Sample selection biases

The field has made considerable progress in understanding and recognizing potential sample selection biases (e.g., VanderWerf and Mahon, 1997). These include firm survival and endogeneity

biases, and the need to control for differences in underlying firm capabilities. One exception, which continues to go largely unrecognized, is what might be called "market survival bias", arising from the fundamental lack of data on new markets that fail to survive.

This bias arises in cases where a single firm attempts to pioneer a new market but quickly fails and is not followed by others. It is conceivable that a large number, perhaps even a majority, of pioneering firms do not show up in any record because they fail in their innovative efforts and vanish with little trace. If so, the net disadvantage of pioneering may be much greater than what is commonly estimated. Indeed, this "market survival bias" may be the big "elephant in the closet" that is seldom seen by FMA researchers, despite its considerable size.

The "elephant" is in fact a vast graveyard of infants whose parents — entrepreneurs — attempted to create an offering that was unique. Countless entrepreneurs over the decades have been driven by a dream of achieving FMA. However, most entrepreneurs fail, frequently leaving little trace. We can only speculate about the number of these forgotten efforts at pioneering. Undoubtedly the count is very large. Many were mere attempts to develop a new niche within an existing market, but perhaps a sizable fraction were significant and novel enough to be classified as "first movers". If their numbers are truly substantial, there can be no doubt that the vast majority of first mover attempts fail.

Progress in entry order research

The discussion above illustrates some of the ambiguities and misconceptions that have been endemic in entry order performance research, often under the rubric of First Mover Advantages or Disadvantages. Despite the limitations imposed by these thorny issues, much has been learned about performance and entry order (see Lieberman and Montgomery, 1998, especially Table 1, and Lieberman and Montgomery, 2012, for more evidence and examples), so it is not all bad news for the field. Here we provide a very brief summary of what has been learned to date.

It is important to recognize that performance is impacted by much more than entry order. Rather, in any given case, performance is the net result of often opposing forces which take account of the behavior of the early entrants as well as later entrants, evolution of the market and consumer behavior, as well as technological and environmental changes and governmental actions. Performance has many fathers, not just entry order. This seems often forgotten in both academic and practitioner discussions and has contributed to misconceptions and ambiguities concerning the relation of entry order to performance (Lieberman and Montgomery, 2012).

GENERAL FINDING 1: Advantages to early movers often exist, but are by no mean inevitable, in many contexts for performance measures such as market share, profit, survival, and risk.

Positive early mover advantages have been found more often for market share than for profit, survival, or risk (Kalyanaram et al., 1995). The market share result has been found even for low entry barrier markets in the service industry as well as for consumer and industrial markets (Makadok, 1998; Magnusson et al., 2009) and emerging international markets (Cui and Lui, 2005). Thus, early mover advantage in market share is often found across a broad range of market types and across countries.

Early entry advantage for profits has less extensive empirical support and is more mixed between advantage and disadvantage (Boulding and Christen, 2003; Cui and Lui, 2005). There is less evidence for survival, which is also more mixed as to the advantage or disadvantage of early entry (Golder and Tellis, 1993; Kalyanaram et al., 1995; and Cui and Lui, 2005). Luo and Peng (1998) found evidence of reduced risk from early entry in China.

Thus, advantages are fairly commonly found for early entry, particularly in terms of market share. But there is substantial variance from case to case, which suggests that early mover advantage is by no means automatic — it depends on context and must be earned to be realized.

GENERAL FINDING 2: Entry order advantages are best assessed incorporating contingent factors.

The potential to achieve early mover advantage depends upon characteristics of both the market and the firm. The characteristics of some markets — such as opportunities to establish customer switching costs, network effects or patentable technology — can enable an early entrant to gain a competitive advantage and maintain it over time. However, other markets lack these elements or may be so volatile with respect to technology or other factors that it is difficult to attain or sustain an advantage (Lieberman and Montgomery, 1988, 1998, 2012; Suarez and Lanzolla, 2007). Similarly, some entrants have capabilities that are particularly well-suited for pioneering, whereas others have strengths that favor a strategy of later entry. For example, large established firms often have the financial and other resources necessary to break into a market that is already emerging, and these same firms may find it best to avoid the risks and uncertainties associated with early entry (Markides and Geroski, 2005). Furthermore, even if market and firm characteristics are both favorable to early entry, the success of any first mover strategy depends upon how well that strategy is implemented.

Such predictions are supported by many applied studies. Contingent factors such as vertical integration, shared facilities and customers, market growth, R&D intensity, and industry incorporated into empirical assessment of entry order effects have been found to improve the fit of the empirical analysis as well as positively impacting the relation between entry order and performance (Szymanski et al., 1995; Luo and Peng, 1998; Cui and Lui, 2005; and Isobe et al., 2000). A great deal of recent research has been oriented toward elucidating such contingencies. At the industry level, for example, Adner and Kapoor (2010) have shown that first mover advantage is dependent on the technological readiness of ecosystem elements, and at the firm level, Franco et al. (2009) have demonstrated that technological capabilities largely determine the survival of pioneers.

One contingency that warrants further study is the presence of network externalities, where the value of a service or product rises with the number of users. When our original article was published in 1988, network effects had not yet come to play an important role in entry order performance. The emergence of the information economy has given rise to this additional potential driver of entry order success or failure. Some studies of first mover advantage find a positive effect for network externalities (e.g., Lieberman, 2010), and others find a negative impact (e.g., Srinivasan et al., 2004). An important element affecting advantage is product compatibility between and within product generations (Wang et al., 2010). Outcomes can depend on the interaction of multiple parameters (Zhu and Iansiti, 2011). Moreover, our discussion of Facebook above suggests that basic challenges remain with respect to clearly identifying product markets and generations in environments with network effects.

Although not a contingency, per se, research findings with respect to FMA differ among the three major categories of new markets described above (new-to-the-world products, new "generations" of product, and introduction of existing products into new geographic locations). For example, political resources (Frynas et al., 2006) and institutional factors (Meyer et al., 2009) are most salient in the case of international market entry. An opportunity exists for some type of meta analysis to calibrate the relative importance of factors that influence FMA across the three categories of markets.

GENERAL FINDING 3: Nothing is permanent — entry order effects on performance diminish over time and can be overcome by competitor actions.

Not only are early mover performance advantages not guaranteed or a birthright, they also do not last forever even if they exist at some point in time. Both logic and empirical evidence supports this assertion. Early entrant advantages have been found to dissipate over time at the brand level (Brown and Lattin, 1994; Huff and Robinson, 1994) as well as at the business unit level (Robinson and Fornell, 1985; Robinson, 1988). Market share advantage for early entrants decays slowly over time in mature markets, both industrial and consumer (Kalyanaram et al., 1995, G214), and the profits of early movers have also been found to decay over time (Boulding and Christen, 2003). We would assert that this is true for all market advantages that a firm may possess, not just entry order effects. Nothing lasts forever.

Moreover, studies show that entry order effects on performance are often weaker then marketing mix effects, thus giving opportunity to later entrants (Lieberman and Montgomery, 1998). For

example, Urban et al. (1986) found that later entrants were able to overcome an early entrant's advantage in market share by substantially outspending the early entrant in advertising and/or developing a superior positioning with respect to customer needs. This enables later entrants, with deeper pockets and/or more innovative strategies, to overcome advantages from early entry.

Such processes may be accelerating, as competitor response has speeded up over time. The time to competitor entry into a new product market has greatly shrunk from 33 years early in the 20th Century to 3.4 years much later in that Century (Agarwal and Gort, 2001) and is continuing to shrink in the 21st Century (Vakratsas et al., 2003). Since there is evidence that a longer lead time before competitive entry enhances the early entrant's market share (Huff and Robinson, 1994), this speeded up competitor response would seem to diminish the average magnitude of first mover advantages and place a premium on competitor analysis, competitor anticipation and surveillance.

Quo vadis entry order research?

We have discussed various issues that continue to complicate empirical research on the effects of market entry timing. We have offered some suggestions but have raised far more questions than answers. Many of the problems seem deeply rooted and thus difficult to overcome. Others require simple agreement and consensus among researchers on definitions and standards. In principle, such agreement can be reached, but to get consensus among academics is never an easy task.

So, where does this leave us? As we have argued elsewhere, "first-mover advantage" is an attractive phrase, but it serves primarily as a macro for a variety of specific mechanisms that perhaps should be studied individually and in interaction rather than under a common rubric. The appeal of simple prescriptions, combined with the ambiguities and misconceptions discussed above, may account in part for the often naïve use of the FMA macro. One need only recall the prevalence of assertions of first mover advantage as a birthright justifying a headlong rush into investments during the dot-com frenzy at the turn of the millennium. Absent specific drivers of performance advantage, the mere fact of entry order offers no support for such a strategy. Thus it seems advisable to abandon any idea that we are in a grail search to understand some general phenomenon of market timing advantage. At this point, we believe that focused analyses that elucidate particular mechanisms impacting performance in relation to entry order and their interactions are more likely to advance the field than more general studies or labels.

Despite the many problems in performing empirical research, first mover (dis)advantage remains highly meaningful and relevant as a managerial issue. Firms recognize entry opportunities and often have some ability to choose the timing of their entry. Given the characteristics of an emerging new market, should a firm with a given set of capabilities choose to enter early or to delay for some period of time? This is a fundamental and important strategic question. The literature on first mover advantages offers a logical approach for structuring such analysis and a set of empirical findings that are robust enough to provide useful managerial input in many cases.

Although we have taken a critical view of the continued challenges for researchers, similar challenges are endemic in many, if not all, research areas in strategy and management. In our view, it is important to identify, understand and attempt to rectify ambiguities and misconceptions which may arise in the application of strategic theory and empirical results. The existence of conundra such as those we have emphasized should not be taken as a reason to abandon the search for better theoretical and empirical understanding. Indeed, the academic community should attempt to more clearly communicate the nature of the boundaries and uncertainties of knowledge, so to help practitioners and the public avoid excesses — such as those contributing to the dot-com bubble, which was driven in part by the belief that early entry was essential for long term success. If nothing else, research has demonstrated that first mover (dis)advantages are a complex phenomenon. With each additional study, our understanding of the many underlying factors continues to grow. So, even though the research challenges in this area are many — and some of the conundra we have outlined are unlikely to ever be fully resolved — continued efforts are more than warranted.

References

Adner, R., Kapoor, R., 2010. Value creation in innovation ecosystems: how the structure of technological interdependence affects firm performance in new technology generations. Strategic Management Journal 31 (3), 306–333.

Agarwal, R., Gort, M., 2001. First-mover advantage and the speed of competitive entry, 1887–1986. Journal of Law and Economics 44 (1), 161–177.

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

Brown, C.L., Lattin, J.M., 1994. Investigating the relationship between time in market and pioneering advantage. Management Science 40 (10), 1361–1369.

Christensen, C.M., 1993. The rigid disk drive industry: a history of commercial and technological turbulence. Business History Review 67 (4), 531–588.

Cui, G., Lui, H.-K., 2005. Order of entry and performance of multinational corporations in an emerging market: a contingent resource perspective. Journal of International Marketing 13 (4), 28–56.

Cusumano, M.A., Rosenbloom, R.S., 1987. Technological pioneering and competitive advantage: the birth of the VCR industry. California Management Review 29 (4).

Dobrev, S.D., Gotsopoulos, A., 2010. Legitimacy vacuum, structural imprinting, and the first mover disadvantage. Academy of Management Journal 53 (5), 1153–1174.

Franco, A.M., Sarkar, M., Agarwal, R., Echambadi, R., 2009. Swift and smart: the moderating effects of technological capabilities on the market pioneering – firm survival relationship. Management Science 55 (11), 1842–1860.

Frynas, J.G., Mellahi, K., Pigman, G.A., 2006. First mover advantages in international business and firm-specific political resources. Strategic Management Journal 27 (4), 321–345.

Golder, P.N., Tellis, G.J., 1993. Pioneer advantage: marketing logic or marketing legend? Journal of Marketing Research 30 (2), 158–170.

Hidding, G.J., Williams, J.R., 2002. Are There First-Mover Advantages in B2B eCommerce Technologies?. Working Paper Carnegie-Mellon University.

Huff, L.C., Robinson, W.T., 1994. The impact of leadtime and years of competitive rivalry on pioneer market share advantages. Management Science 40 (10), 1370–1377.

Isobe, T., Makino, S., Montgomery, D.B., 2000. Resource commitment, entry timing, and market performance of Foreign direct investments in emerging economies: the case of Japanese international joint ventures in China. The Academy of Management Journal 43 (3), 468–484.

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

Lieberman, M.B., 2009. Is Competitive Advantage Intellectually Sustainable? Presentation at the 2009 Atlanta Competitive Advantage Conference.

Lieberman, M.B., 2010. Did First Mover Advantage Survive the Dot Com Crash? UCLA Working Paper.

Lieberman, M.B., Montgomery, D.B., 1988. First mover advantage. Strategic Management Journal 9 (S1 Summer 1988), 41–58.

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

Lieberman, M.B., Montgomery, D.B., 2012. First mover/pioneer strategies. In: Shankar, V., Carpenter, G. (Eds.), Handbook of Marketing Strategy. Edward Elgar.

Luo, Y., Peng, M.W., 1998. Learning to compete in a transition economy: experience, environment, and performance. Journal of International Business Studies 30 (2), 269–295.

Magnusson, P., Westjohn, S.A., Boggs, D.J., 2009. Order-of-entry effects for service firms in developing markets: an examination of multinational advertising agencies. Journal of International Marketing 17 (2), 23–41.

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

Markides, C.C., Geroski, P.A., 2005. Fast Second: How Smart Companies Bypass Radical Innovation to Enter and Dominate New Markets. Wiley, San Francisco.

Meyer, K.E., Estrin, S., Bhaumik, S.K., Peng, M.W., 2009. Institutions, resources, and entry strategies in emerging economies. Strategic Management Journal 30 (1), 61–80.

Robinson, W.T., 1988. Sources of market pioneer advantages: the case of industrial goods industries. Journal of Marketing Research 25 (1), 87–94.

Robinson, W.T., Fornell, C., 1985. Sources of market pioneer advantages in consumer goods industries. Journal of Marketing Research 22 (3), 305–317.
Srinivasan, R., Lilien, G.L., Rangaswamy, A., 2004. First in, first out? The effects of network externalities on pioneer survival. The Journal of Marketing 68 (1), 41–58.
Suarez, F.F., Lanzolla, G., 2007. The role of environmental dynamics in building a first mover advantage theory. Academy of Management Review 32 (2), 377–392.
Szymanski, D.M., Troy, L.C., Bharadwaj, S.G., 1995. Order of entry and business performance: an empirical synthesis and reexamination. The Journal of Marketing 59 (4), 17–33.
Urban, G.L., Carter, R., Gaskin, S., Mucha, Z., 1986 June. Market share rewards to pioneering brands: an empirical analysis and strategic implications. Management Science 32 (6), 645–659.
Vakratsas, D., Rao, R.C., Kalyanaram, G., 2003. An empirical analysis of follower entry timing decisions. Marketing Letters 14 (3), 203–216.
VanderWerf, P.A., Mahon, J.F., 1997. Meta-analysis of the impact of research methods on findings of first-mover advantage. Management Science 43 (11), 1510–1519.
Wang, Q., Chen, Y., Xie, J., 2010. Survival in markets with network effects: product compatibility and order-of-entry effects. Journal of Marketing 74 (4), 1–14.
Wilson, T., Kuncheria, T., Hidding, G.J., 2003. Complementary Resources and (Fast-)follower Advantages in e-Business Technology Industries Paper Presented at the CIST Conference, Atlanta, Georgia.
Zhu, F., Iansiti, M., 2011. Entry into platform-based markets. Strategic Management Journal 33 (1), 88–106.

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