

Why Do Firms Imitate Each Other?

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ABSTRACT

Scholars from diverse disciplines have proposed numerous theories of business imitation. To unify such work, this paper organizes theories of imitation into two broad categories: (1) *information-based theories*, where firms follow others that are perceived as having superior information, and (2) *rivalry-based theories*, where firms imitate others to maintain competitive parity or limit rivalry. We consider conditions under which each type of imitation is most likely; interactions between vicarious and experiential learning; productive versus dysfunctional outcomes; and policy implications.

Why Do Firms Imitate Each Other?

Imitation of rivals is one of the most fundamental features of business competition, yet in some ways it remains poorly understood. Business scholars from a range of disciplines have proposed numerous theories of imitation. While these theories share common elements, they have been developed for specialized audiences and tend to emphasize different mimetic phenomena. Thus, the large body of research on imitation processes remains fragmented, with few scholars aware of related work by colleagues in other disciplines. The primary aim of this paper is to help unify this body of theory by drawing together common threads.

Imitation takes place within many business domains: introduction of new products and processes; adoption of managerial methods and organizational forms; market entry and the timing of investment. Within each of these domains, imitation may lead to positive or negative outcomes for individual firms and society as a whole. Given the broad range of imitative behaviors and the fact that societal outcomes are often negative, it is important that business scholars, managers and policy makers gain a deeper understanding of why imitation occurs.

Imitation of superior products, processes and managerial systems is widely recognized as a fundamental part of the competitive process. Such imitation typically leads to a loss of profits to the innovator firm but broader gains in economic welfare as prices and costs fall. Many studies have documented processes of “creative destruction” (Schumpeter, 1942) and “diffusion of innovations” (e.g., Rogers, 1995) that lead to widespread adoption of superior products or methods. In the absence of uncertainty, imitation of this type is comparatively straightforward

and well understood.

In highly uncertain environments, however, imitative behavior can be dysfunctional or even pathological. Herd behavior can lead to speculative bubbles and the waste of resources in duplicative investments. Nowhere has this been more apparent than in the Internet sector, where a financial bubble in the late 1990s left in its wake a business landscape overpopulated by imitative startups and organizational forms.¹ Imitation often provokes excessive investment, focused too narrowly on a limited number of options, with poor profit outcomes for the majority of firms. As Internet commerce burgeoned, many managers believed that they were adopting superior methods and systems, only to discover that they had followed others down largely fruitless paths. Imitation is a natural response to environmental uncertainty, but by reducing variety it compounds the collective risk of firms in an industry.

In relatively certain environments, though, imitation can defuse rivalry and reduce risk for any given firm. Knowledge that rivals will respond in kind lowers the incentive for any individual firm to act aggressively in an effort to gain competitive advantage. Moreover, when all competitors take similar actions, there is less chance that any firm will succeed or fail relative to others. Thus, imitation helps to preserve the status quo even in industries where strong rivalry is maintained. One example is Casio and Sharp, the leaders in electronic calculators, which repeatedly matched each other's incremental innovations in the 1970s. Market shares between the two firms remained quite stable, even though the lead shifted back and forth. Ultimately, the two firms emerged with nearly identical product lines (Numagami et al., 1992).

As these examples suggest, imitation can occur for a variety of reasons with dramatically different implications and outcomes. Under some conditions imitation is apt to be beneficial and should be promoted. But in other settings imitation is more likely to have negative implications for firms and/or society. It is therefore important for researchers and managers to be able to

distinguish among types of mimetic behavior and understand the potential consequences. To aid these assessments, this paper provides a conceptual survey of existing research. Why, exactly, does imitation occur? Under what conditions do undesirable outcomes arise? What conclusions can be drawn to guide managers and policy makers? To help answer these questions, we review a range of relevant theories in strategic management, economics, and organization theory. These disciplines have addressed the phenomenon of imitation from complementary perspectives.

We organize theories of business imitation into two broad categories: (1) *information-based theories*, where firms follow others that are perceived (sometimes erroneously) as having superior information, and (2) *rivalry-based theories*, where firms imitate others to maintain competitive parity or limit rivalry. The next two sections of this paper describe the information- and rivalry-based theories, respectively. We then consider environmental conditions where each type of imitation is most likely, and differences among the theories in “who imitates whom.” In addition, we raise the fundamental problem of distinguishing imitation from other forms of isomorphism, including the basic case where firms respond independently but identically to the same external shock. We suggest some ways to distinguish empirically among imitation types, despite the difficulty of precise identification. The paper closes with a discussion of social and managerial implications and an assessment of challenges for future research.

We do not review the empirical literature on business imitation, as our objective is to provide a conceptual survey rather than a discussion of specific findings. Nevertheless, to give a broader guide to the literature, Table 1 lists some prominent empirical studies and their main conclusions. Later in this paper we describe the handful of applied studies that have attempted to distinguish among alternative types of imitation processes.

INFORMATION-BASED THEORIES OF IMITATION

Information-based theories of imitation have been proposed in the fields of economics, institutional sociology and population ecology.² These theories apply in environments where managers cannot assess connections between actions and outcomes with great confidence. Links may not only be uncertain (in a probabilistic sense) but also ambiguous in that managers are not cognizant of the full range of potential actions and outcomes. In such environments of uncertainty and ambiguity, managers are particularly likely to be influenced by the observed actions of others. We begin by considering the economic theories of imitation, where the information component has been developed most explicitly.³

Economic Theories

The most prominent economic theory of herd behavior is called information cascades or social learning (Banerjee, 1992; Bikhchandani, Hirshleifer & Welch, 1992, 1998). Information cascades occur “when it is optimal for an individual, having observed the actions of those ahead of him, to follow the behavior of the preceding individual without regard to his own information” (Bikhchandani et al., 1992). Suppose each agent has her own private information about the state of nature. The first agent behaves purely based on her prior belief, but her behavior reveals her private information to followers. As this revealed information accumulates, it may be rational for followers to ignore their own prior information and mimic the decisions of others. A typical example is a restaurant with a long queue that becomes increasingly popular. Many of those waiting at the end of the line may have intended to visit other restaurants with which they are familiar, but they are swayed by the observation of the queue, which suggests (perhaps erroneously) that the restaurant is of high quality. Thus, agents may choose to go against their initial signals as they draw inferences from the observed behavior of others.

Such processes have some power to explain the imitative behavior that contributed to the Internet bubble that began to rise in the late 1990s. Consider a retailing entrepreneur contemplating a new venture but initially skeptical that the Internet will replace existing channels. Observing the growing wave of entry into the Internet sector (supported by the enthusiastic forecasts of analysts, the trade press, and rising stock prices) the entrepreneur concludes that perhaps others have superior information about the prospects for Internet retailing. Eventually, the observed signals grow in strength relative to the entrepreneur's prior belief, and the entrepreneur decides to follow others and enter the Internet sector. Similarly, financial investors initially skeptical of Internet commerce may have been swayed by the "information" revealed by the rising stock market, the trade press, and other sources. Such forces helped drive the Internet bubble upward.

As more entrepreneurs and investors are persuaded by such observations, the wave of entrants grows. But as Bikhchandani et al. (1992) point out, such processes are inherently fragile and subject to reversal. Just as a critical mass of positive actions is needed to start the cascade upward, if a sufficient number of negative signals emerge, the process will reverse. This may characterize the collapse of the Internet bubble in mid-2000, as pessimistic assessments began to appear and grew rapidly. Internet stock prices fell to a fraction of their previous levels and entry came to a virtual halt. The dramatic rise and fall took place within the span of just two or three years, much faster than the rate at which concrete data emerged on the long-term prospects for Internet commerce.

In driving such a bandwagon, the actions of some individuals or firms may be weighted more strongly than others. If some are perceived as likely to have superior information, they can become "fashion leaders." For example, small firms may follow larger rivals if they believe the latter to be better informed. Similarly, firms that have been relatively successful in the past

are more likely to have their actions emulated. In the case of Internet retailing, the entry of prominent firms such as Barnes & Noble and Wal-Mart, and the enormous stock price gains of Amazon, helped legitimize the efforts of other retailers to quickly establish a presence on the Web. Such a role for leading firms is elaborated in the sociological theory of institutional isomorphism, discussed below.

A second economic theory of herd behavior is based upon the idea that managers ignore their own private information and imitate the decisions of others in an effort to avoid a negative reputation. Suppose that there are superior and inferior managers who have private information about investment. Outsiders do not know the type of each manager, but only that superior managers receive informative signals about the value of the investment while inferior managers receive purely noisy signals. Since the signals superior managers received might be misleading, outsiders cannot rely solely on the outcome of the investment, but also on behavioral similarity among managers. Therefore, in order to be evaluated as a superior type, managers ignore their own information and imitate others (Palley, 1995; Scharfstein & Stein, 1990).

This second theory may help to explain the herd behavior of analysts and institutional investors in driving the Internet bubble upward. Financial actors are often evaluated on performance relative to peers; those who deviate from the consensus and ultimately prove to be wrong are likely to suffer a fatal loss of reputation. During the rise of the bubble it was widely believed that the leading Internet analysts had superior signals, which led them to be optimistic about the future of many Internet companies. Those who did not follow were often shunned for their failure to grasp the fundamental dimensions of the “new economy.” Under these circumstances, less-informed analysts and investors often chose to join with the crowd, pushing Internet stock prices higher.⁴ This example shows how the second economic theory of herd behavior can complement the first: information cascades likely contributed to the emergence of

the trend, which was further sustained by reputation-based signaling on the part of analysts and investors.

Theories of Organizational Sociology and Ecology

Organization theory gives a related explanation for behavioral similarity: institutional isomorphism. DiMaggio and Powell (1983) argue that rational actors make their organizations increasingly similar when they try to change them. This process of homogenization is captured by the concept of isomorphism. Isomorphism is a constraining process that forces one unit in a population to resemble other units that face the same set of environmental conditions (Hawley, 1986).

Among several kinds of institutional isomorphism, mimetic isomorphism is the process whereby organizations model themselves on other organizations when the environment is uncertain. The modeled organization is perceived as more legitimate or successful. Such mimetic behavior is rational because it economizes on search costs to reduce the uncertainty that organizations are facing (Cyert & March, 1963).⁵

Mimetic isomorphism can be viewed as rational imitation of a superior organization, although sociologists often emphasize ritualistic rather than rational motivations. For example, DiMaggio and Powell (1983) claim that the rapid proliferation of quality circles in American firms that modeled Japanese and European successes was intended to enhance the legitimacy of the adopting firm. March (1981) argues that once enough social actors adopt a certain behavior, the behavior is taken for granted or institutionalized, and thereafter, other social actors will adopt the behavior without thinking.

The sociological theory differs from “information cascades” in that once a behavior is institutionalized, organizations are slow to respond to new information. Behavior is much more

durable than in the economic theory where new information can lead to sudden reversals.

Information cascades can be fragile, whereas the sociological theory points to the emergence of a permanent social order. Another difference is that the sociological theory has generally been applied to explain the adoption of organizational processes and forms whereas the economic theory aims to be more general.

Theories of social networks (Granovetter, 1985; Gulati, Nohria & Zaheer, 2000) provide further basis for predicting “who imitates whom.” Organizations that are linked by greater network ties are likely to have more detailed information about each other, which facilitates imitation. Similarly, organizations that are central in the network have links with the greatest number of others; such organizations are also typically regarded as prestigious and thus likely to be imitated. Gulati and Gargiulo (1999: 1448) argue that “the more central an organization’s network position, the more likely it is to have better information.”

“Legitimation” is another concept of organization theory that is related to the cascade theories of economics (Carroll & Hannan, 1995; Hannan & Carroll, 1992). Scholars of organizational ecology have long noted that once a new industry has acquired a threshold number of entrants, the firms acquire a legitimacy that facilitates their growth (e.g., banks become more willing to supply capital, and potential employees can be more easily hired). This expansion in the availability of resources, in turn, often leads to a further wave of entry. Thus, there is a threshold effect in entry processes, similar to the economist’s notion of an information cascade. One difference from the economic theory is that growth in the number of entrants increases firms’ legitimacy while also making competition more intense. The offsetting force of competition places a ceiling on the equilibrium number of firms. Limits of this sort are not normally considered in the economic theory of information cascades.

Interaction Between Experiential and Vicarious Learning

All of these theories describe processes by which organizations learn by drawing inferences from the behavior of others. While the theories focus on vicarious learning, in reality, additional information builds over time as organizations assess their own experience (Baum, Li & Usher, 2000). The dynamics and durability of mimetic behaviors depend upon the rates at which these different types of learning occur. If experiential learning is slow, mimetic processes can yield behaviors that are durable, even though they may be highly sub-optimal; if experiential learning is fast, firms are likely to converge rapidly on good choices.

Despite its importance, this interaction between imitative and experiential learning has seldom been investigated in theoretical or empirical work. Experience (or experiment) is more costly and time-consuming than imitation, which can be viewed as a form of satisficing (Baum, et al., 2000; Cyert & March, 1963; March, & Simon, 1958). When firms have adequate time and resources to extensively explore their environment, experiential learning will be preferred. But in highly uncertain environments where quick action is necessary, to imitate others becomes an attractive decision rule. Even so, large firms, given their greater resources, are more likely to pursue experiential learning than smaller firms. As a new industry or commercial area evolves, vicarious and experiential learning tend to proceed together, often with smaller firms mimicking the behavioral shifts of larger rivals, as the latter gain information through their marketing and R&D programs.⁶ Alternatively, all firms may imitate small de novo entrants whose strategies or product lines appear to be enjoying initial success.

Bikchandani et al. (1992) make the point that information cascades fail to provide “deep” learning; in simple cascade models, vicarious learning stops once the cascade begins.⁷ Given the shallowness of beliefs, only a small amount of independent learning is needed to overturn the cascade if the imitated behavior proves erroneous. Subsequently, a new cascade may arise once

a sufficient number of firms discover a superior alternative. For example, one might view the continual progression of management “fads” (e.g., “total quality management,” “re-engineering,” “employee empowerment,” etc.) as proceeding roughly in this manner, as firms imitate organizations that they believe to be better informed but discover through experience the limits of the new managerial system. Such reversals are not emphasized in the organizational theories, which take the mimetic behavior as more durable.

THEORIES RELATING TO COMPETITIVE RIVALRY AND RISK

A second set of theories gives imitation as a response designed to mitigate competitive rivalry or risk. Firms imitate others in an effort to maintain their relative position or to neutralize the aggressive actions of rivals. Unlike the theories discussed in the previous section, firms’ actions do not convey information. The theories relating to rivalry and risk have their primary origin in the fields of economics and business strategy.

Imitation to mitigate rivalry is most common when firms with comparable resource endowments and market positions face each other.⁸ Competition can be very intense in such cases, with prices and profits eroded easily (Peteraf, 1993). To alleviate this situation, firms can pursue either differentiation or homogeneous strategies (Baum & Haveman, 1997; Deephouse, 1999; Gimeno & Chen, 1998). Firms that differentiate their resources and market position from those of competitors become insulated from the actions of rivals. This reduces the likelihood of imitation. However, pursuing a differentiation strategy is often difficult and risky. Firms therefore often choose to pursue homogeneous strategies, where they match the behavior of rivals in an effort to ease the intensity of competition or reduce risk.

Homogeneous Strategies to Mitigate Rivalry

When resource homogeneity creates a potential for intense competition, matching behavior may be a way to enforce tacit collusion among rivals. Studies of repeated games show how “tit for tat” strategies can punish deviant behavior and thereby maintain cooperation (Axelrod, 1984). In his early work on strategic groups, Porter, (1979: 217) suggested that firms within the same group behave similarly because “divergent strategies reduce the ability of the oligopolists to coordinate their actions tacitly ... reducing average industry profitability.” In other words, firms within the same strategic group may adopt similar behavior to constrain competition and maintain tacit collusion.⁹ More recent work in strategy and economics gives similar predictions. Studies on action-response dyads (Chen & MacMillan, 1992; Chen, Smith & Grimm, 1992) suggest that matching a competitor’s move indicates a commitment to defend the status quo, neither giving up the current position nor falling into mutually destructive warfare. Similarly, Klemperer (1992) shows that competitors may duplicate their product lines to mitigate rivalry. If firms offer identical product ranges, each consumer can avoid the costs of dealing with multiple firms by selecting a single supplier. This segmentation of customers may make the market less competitive.

The hypothesis that firms adopt similar behavior to mitigate rivalry can be also derived from studies on multimarket contact. Edwards (1955) was the first to argue that multimarket contact might blunt the edge of competition, because “A prospect of advantage from vigorous competition in one market may be weighed against the danger of retaliatory forays by the competitor in other markets.”¹⁰ When firms compete with each other in many markets, they can more easily sustain collusion, because deviations in one market can be met by aggressive responses in many places.¹¹ This is the idea of “mutual forbearance.” If multimarket contact facilitates mutual forbearance, firms may pursue matching behavior in order to mitigate rivalry.¹²

Risk Minimization

Other researchers have proposed that imitation stems from the desire of rivals to maintain relative competitive position. One of the first examples documented in the literature was the “bunching” of foreign direct investment (FDI), as rivals matched each other’s entries into foreign markets. Knickerbocker (1973) argued that such “follow-the-leader” behavior is the result of risk minimization. If rivals match each other, none become better or worse off relative to each other. This strategy guarantees that their competitive capabilities remain roughly in balance. Motta (1994) gives a game theoretic explanation for this follow-the-leader behavior, and Head, Mayer & Ries (2002) show that it can be sustained only when managers are risk averse.¹³

In a potential “winner takes all” environment, rival firms may adopt similar behavior to prevent others from leading the race.¹⁴ For example, in R&D competition, where the first inventor can acquire a patent to appropriate the technology so that other firms cannot use it, R&D investments among firms are positively correlated. Such competition leads to over-investment (Dasgupta & Stiglitz, 1980).¹⁵

DISTINGUISHING AMONG IMITATION PROCESSES

The information- and rivalry-based theories described above are not mutually exclusive; both types of imitation may occur simultaneously. Nevertheless, one type or the other is likely to be predominant in any given context. In this section we draw some predictions about the conditions under which the different types of imitation are most likely. These distinctions provide guidance for researchers and managers in attempting to identify mimetic behavior and assess underlying processes. In addition, we consider the problem of distinguishing imitation

from other types of isomorphism, including the basic case where firms respond independently but identically to a common environmental shock.

Environmental Conditions

One generalization that we draw from the theories is that information- and rivalry-based imitation tend to arise under different conditions. Key differences relate to firm asymmetry and environmental uncertainty, as summarized in Table 2. Information-based imitation is most likely in environments where:

1. *Firms are asymmetric in size, resources, and market position.*¹⁶ This dampens rivalry and raises the likelihood that some firms possess superior information.
2. *Uncertainty is very high, and managers have weak “prior probabilities” about the likely success of alternative paths.* Moreover, uncertainty cannot be resolved quickly, as experiential learning is difficult for most firms. Hence there is a potential advantage to mimicking the choices of others (who may have superior knowledge and skills) rather than attempting to find a desirable path through individual trial and error. Examples include emergence of a fundamentally new technology, or a new organizational arrangement involving complex interactions that are difficult to assess.

By comparison, rivalry-based imitation is most likely where:

1. *Firms are comparable in their market positions and resources.* Closely matched competitors often have similar information but strong rivalry. Rivalry-based imitation is also more likely when firms have multimarket contact; this expands the domains where imitation can occur and raises the probability that firms respond to each other in kind. Furthermore, firms that are closely matched may be risk averse, particularly to a loss of market share.¹⁷

2. *The degree of uncertainty is moderate or low.* While the ultimate success of the contemplated action is not known, reasonable expectations can be drawn from prior experience. This would characterize many actions in established industries (e.g., investment in foreign manufacturing to replace existing exports; introduction of a new product with incrementally improved features; general expansion of production capacity).

These environmental differences provide a basis for researchers and managers to discriminate between the two main types of imitation. The four quadrants in Table 2 are distinguished by degree of uncertainty and firm asymmetry. In environments with high uncertainty and asymmetric firms, imitation is almost surely information-based. Conversely, in relatively certain environments with closely matched firms, imitation is likely to be rivalry-based. The case with high uncertainty and comparable firms is ambiguous: both types of imitation may arise.¹⁸ In the fourth type of environment, with low uncertainty and differentiated firms, imitation of either type is very unlikely. Further distinctions may be drawn from observation of leader-follower patterns, as discussed below.

Who Imitates Whom?

In information-based imitation processes, firms follow those believed to have superior information, whereas in rivalry-based imitation they follow close rivals. Thus, the two classes of theories imply different patterns of leader-follower behavior. In practice, though, it may be hard (for outsiders) to draw clear distinctions, given that beliefs about information quality and the degree of rivalry cannot be directly observed.

Since the information of others cannot be observed directly, firms must rely on imperfect signals of information quality, including firm size, network position, and prior success. Larger firms have greater resources to acquire superior information, and they may maintain larger staffs

to better assess implications. Similarly, firms that have had past success in the domain under consideration may possess superior information or assessment abilities. For example, a firm that has demonstrated repeated success in introducing novel consumer products is likely to have superior knowledge about evolving consumer tastes. Hence, the new product introductions of such a firm are more likely to be imitated. When such patterns are observed—small firms following larger firms, or general imitation of successful firms—it is likely that the imitation process is information based.

In rivalry-based imitation, firms follow others that they regard as close rivals. Close rivals are likely to be direct competitors with strong overlap in their product lines and geographic market coverage. Rivalry may also be greatest for firms with similar origins and history. When such firms follow each other's actions (rather than those of larger, or more successful firms) it suggests that the imitation process is rivalry-based rather than information-based.

Identical Responses to Common Environmental Shock

We have argued that fundamental characteristics of the industry environment and the identity of initiating firms provide a basis for distinguishing between information- and rivalry-based imitation processes. One complication is that both types of imitation may occur simultaneously, even though one is predominant. A further complication is that what looks like imitation may simply be firms' independent responses to a common external stimulus.

As an example, consider an economic recession that induces many firms to lay off part of their workforce. Such layoff decisions are made primarily on the basis of forecasts of future sales. To the extent that firms are subject to the same demand fluctuations and have access to the same public information about macroeconomic conditions, one would expect them to make

reasonably similar and simultaneous cutbacks. To regard such behavior as imitation would clearly be incorrect.

It is nevertheless likely that some degree of imitation may occur in such situations, stemming from information or rivalry motives (or both). For example, firms may look to the announcements of others as a source of information about the likely depth of the recession in their industry. Similarly, if rivals have not yet announced layoffs, a firm may be reluctant to act alone for fear that it could lose competitive position. In such instances, once one firm announces cutbacks, many others may follow suit.

Thus, we often observe the confluence of both imitative and non-imitative responses to external shocks. This simultaneity makes clear-cut identification of imitative behavior a thorny problem for empirical researchers attempting to characterize imitation processes.¹⁹

Resource Constraints on Imitative Behavior

Imitation processes are also influenced by resource constraints that limit the scope of firms' behavior. Firms with very different resource endowments may be unable to behave similarly even if they face the same environment. This is because strategy is constrained by the current level of resources, as many scholars of the resource-based view of the firm point out (e.g., Collis, 1991; Teece, Pisano & Shuen, 1997). Firms may be able to mimic others only when their resource endowments are comparable. In the petroleum industry, for example, Helfat (1997) shows that synthetic fuels became an attractive growth opportunity when oil prices rose dramatically in the 1970s, but only firms with requisite expertise in petroleum refining R&D were able to invest. Since firms with similar resources are often direct rivals, resource constraints can make it appear that rivals are responding to each other, even though the simultaneity of actions stems from information-related factors or independent responses to

common shock (as in the case of synthetic fuels).

Complexity may serve as a further constraint on imitative behavior. Firms with adequate resources can copy simple actions, but often not complex repertoires containing many elements. Causal ambiguity about which elements are most important leads to “uncertain imitability” (Lippman & Rumelt, 1982). If many elements and their interactions must be duplicated to achieve success, the sheer burden of the task may prevent imitation (Rivkin, 2000).

Empirical Studies that Distinguish Among Theories

There have been many empirical studies of imitation processes, but few have attempted to test alternative theories or to link theories to environmental conditions where they are most applicable. Most empirical researchers have sought to find evidence of imitation, taking one specific theory of imitation processes as given. For example, many studies in the international business literature have documented the bunching of entry by foreign firms, as the assumed consequence of interfirm rivalry (e.g., Caves et al., 1980; Flowers, 1976; Knickerbocker, 1973; Yamawaki, 1998; Yu & Ito, 1988). Other researchers in organizational ecology have commonly found a surge of entry once a new industry achieves “legitimacy” (c.f., Carroll & Hannan, 1995; Hannan & Carroll, 1992). While these presumed mechanisms of imitation may be valid in their respective contexts, only a handful of applied studies have attempted to sort out the conditions under which alternative imitation processes tend to arise.

In one such study of entry by U.S. telecommunications firms into foreign markets, Gimeno, Hoskisson, Beal, and Wan (2001) use differences in domestic market overlap to identify rivalry-based imitation. They find clustering of foreign entries by firms that compete directly in their home market, but no such pattern for entry by local monopolist “Baby Bells.” This suggests that rivalry was a dominant motive leading to the bunching of entry, a conclusion

consistent with the assumptions of prior FDI studies.

Asaba and Lieberman (1999) assess the imitation of new product introductions in the Japanese soft-drink industry. They consider two categories of introductions—major and minor—and the characteristics of leader and follower firms. Asaba and Lieberman find a tendency for larger firms to be followed in cases of major product innovations where uncertainty is high, whereas close rivals are followed for incremental product changes. This suggests that information- and rivalry-based imitation both occur in the Japanese soft-drink industry, but the dominant type of imitation depends upon the degree of uncertainty. Information-based motives prevail under conditions of high uncertainty, whereas rivalry motives prevail when uncertainty is low. Such observations are consistent with the predictions drawn earlier in this paper.

Gilbert & Lieberman (1987) consider imitation in investment behavior by chemical producers. They find a pattern in which small firms mimic the capacity expansions of their larger rivals, whereas large firms avoid imitation for fear of creating overcapacity. Gilbert and Lieberman suggest that the observed pattern is consistent with information-based motives, as small producers draw upon on the superior ability of large firms to assess likely growth in demand.

While such studies begin to flesh out a mapping between environmental conditions and types of imitation processes, our empirical knowledge in this area remains highly incomplete. Clearly, the state of empirical research remains far behind that of theory. More empirical studies are needed, despite the great difficulty of drawing clear-cut distinctions among alternative types of imitation.

PERFORMANCE IMPLICATIONS

To enhance organizational learning and avoid negative outcomes, it is important that managers and other policy makers understand the imitation processes described in this paper. Managers must recognize the motives for imitation and give them appropriate weight in decision-making. Government and institutional policy makers can sometimes play a productive role by providing external information or constraining firm behavior.

Industry Performance and Social Outcomes

The previous sections of this paper have shown that imitation can be either beneficial or costly for society. Information-based imitation processes can accelerate the adoption of superior approaches or squander firms' resources. Rivalry-based imitation can spur firms to improve their products and services or elicit cycles of wasteful, duplicative investment. As discussed earlier, imitation helped to promote the boom-bust cycle of Internet commerce and numerous business fads. In many industries imitation has led to overcapacity and excessive introductions of virtually identical products. Arguably, the glut of telecommunications capacity that touched off dramatic bankruptcies by Worldcom, Global Crossing and others was the consequence of imitative investments. Such examples suggest that dysfunctional imitation abounds, even though it is hard to document definitively.

Imitation can occur within many domains and dimensions; e.g., product design, organizational forms, investment timing and location. Imitation tends to be socially beneficial—and potentially profitable—in situations where the imitators complement each other. Complementarities often arise in environments with network externalities or agglomeration economies. For example, Baum & Haveman (1997) found that hoteliers tend to locate new

hotels close to established hotels. Agglomeration of hotels attracts people, goods, and services, and consequently, it increases the attractiveness and reputation of the location. This is beneficial to society as well as to the hotels. At the same time, however, the close location of hotels can intensify price competition, making hotels less profitable. Chung & Kalnins (2001) and Urtasun & Gutierrez (2002) found that spatial agglomeration raised profitability when hotels were differentiated, but reduced profitability when hotels were homogeneous in terms of quality. In the latter case, the benefits of agglomeration in geographic space were offset by costs of homogeneity in the quality domain.

By reducing the variation in firms' strategies and technological approaches, imitation also raises the collective risk of firms in an industry. When firms imitate each other in an uncertain environment they place identical bets on the future, thereby raising the odds of large positive and negative outcomes. Correlated behavior raises risk even when complementarities enhance the expected return.

If early firms have chosen a productive path, imitation accelerates the industry's convergence on a good solution. Imitation helps to promote network effects and common standards, with broad potential benefits for firms and consumers. In VCRs, for example, Japanese firms benefited from their early convergence on magnetic tape as the storage medium. Sony, the Japanese pioneer, had correctly recognized that tape was superior to other approaches considered at the time, such as the videodisk being developed by RCA. Because R&D efforts in Japan were focused on the single technology, efficient and speedy development of the technology enabled Japanese manufacturers to dominate the global market (Rosenbloom & Cusumano, 1987).

If the wrong path is chosen, however, imitation can be costly for firms and for society. In

high-definition television (HDTV), Japanese electronics firms adopted analog technology in the 1980s and heavily promoted its development. It later became clear, however, that the analog approach was inferior to digital. Despite their dominance in many areas of consumer electronics, the Japanese firms found themselves at a serious disadvantage in world markets for HDTV. The growth of HDTV in Japan and elsewhere was hampered as a result.

The VCR and HDTV examples illustrate the fact that imitation raises the odds of extreme outcomes when the environment is highly uncertain. If the leading firms possess superior information and favorable luck, imitation leads to superior outcomes and is socially beneficial. On the other hand, if the path that is imitated proves inferior, the social costs can be high. By comparison, in industries where firms act independently, convergence is often slow, but the diversity of approaches helps to avoid the worst outcomes and is collectively more robust. Moreover, experiential learning within a diverse population of firms can identify approaches that are superior to those of the early market leaders.

The rivalry-based imitation that arises in more certain environments can also have both positive and negative performance implications. As discussed earlier, such imitation may elicit redundant investments, and the threat of matching behavior can make an industry less competitive. On the positive side, imitation often intensifies the pressure for firms to improve their products and services in an effort to match or surpass the offerings of rivals. In calculators, for example, Casio and Sharp responded to each other by introducing many new product features and cost reductions, leading to market growth and consumer gains. Similarity of product and market position made each firm a good reference for the other, which facilitated learning. Ultimately, the accumulation of product enhancements enabled Casio and Sharp to drive out their American rivals who had pioneered the basic technology. Thus, competitive pressure

derived from rivalry-based imitation can expand the market and strengthen the capabilities of individual firms.

In summary, if firms gain from externalities such as network effects, information exchange or agglomeration effects, imitation tends to yield outcomes that are beneficial to society. Otherwise, imitation is apt to cause resource duplication, often leading to price wars. Imitation also compounds collective risk.

Implications for Managers

It is managers who must decide whether their firms will follow others or pursue a differentiated strategy. The desirability of imitation depends upon context. Imitation tends to increase the intensity of competition, which lowers profitability (Barreto & Baden-Fuller, 2002; Deephouse, 1999; Ghemawat, 1991; Odagiri, 1992). In certain situations, however, “tit for tat” imitation (or the threat thereof) can deter aggressive competition, thereby raising profit. Also, in the presence of the complementarities described above, imitation can enhance profitability. Managers therefore need to compare the likely positive and negative effects of imitation. If the positive effects surpass the negative ones, the firm may want to imitate others, while if the negative effects dominate, imitation should be avoided.

Many theoretical studies show that imitation is (myopically) rational behavior for individual firms. Even so, behavior that is individually rational may be inferior. For example, a standard result of game theory is that rational choice in a prisoner’s dilemma game yields losses for all parties. With regard to imitation, the theory of information cascades shows that firms ignore their prior information when they enter a cascade, so the collective outcome fails to incorporate much of the knowledge held by the population of firms. Similarly, theories of institutional isomorphism imply that firms ignore internal knowledge in an effort to mimic

organizations that are regarded as superior. Furthermore, the literature on rivalry shows that firms may take duplicative actions in an effort to minimize risk, even though (expected) profits are higher when firms differentiate their behavior. Thus, the theories suggest that in many contexts, firms can be more successful if managers resist the incentives to imitate.

How can managers avoid the traps of dysfunctional imitation? While our analysis points to no clear-cut decision rules, it does highlight the importance of making a careful assessment of the motives for imitation. Managers should ask a number of questions: Most broadly, is imitation motivated by inferences about information held by others or by competitive rivalry (or, perhaps, both)? If imitation is information-based, is it a diffusion of a clearly superior product or practice? Is it a response to a common environmental shock? If imitation is motivated by inferences from the actions of others in an uncertain environment, how likely is it that these actions convey perverse information? Are the inferences strong enough to overturn the prior beliefs of the firm's managers? Can additional information be collected to validate these inferences? And if imitation is intended to reduce competitive risk, is such behavior truly in the interest of the firm's shareholders? If imitation is multifaceted, can it be pursued along dimensions that are likely to be productive but avoided along others? By asking such questions, managers may be able to limit the extent of negative outcomes.

CONCLUSIONS

We have surveyed various theories of imitation processes, as proposed by scholars from a range of business disciplines. We have shown that these explanations for imitation fall into two broad categories: information-based theories and rivalry-based theories. These two types of imitation tend to arise in different contexts, with information-based imitation more likely under

conditions of high uncertainty. Nevertheless, both types of imitation can occur simultaneously, and environmental shifts can induce firms to take independent but identical actions. We have suggested ways that types of mimetic behavior can be identified and distinguished, even though the confluence of factors makes it hard to implement clear-cut tests.

Despite the difficulty of empirical research in this area, more work is needed given the prevalence of imitation processes and the potential magnitude of social costs. Our applied knowledge of imitation processes is extremely limited; in particular, few empirical studies have attempted to distinguish among the basic types of imitation. Ideally, it would be useful to obtain rough estimates of the costs and benefits of imitation in different contexts, and whether costs can be avoided through market interventions or greater managerial sophistication.

We also see opportunities for theoretical research to link the processes of mimetic and experiential learning, and to explore how they interact. Firms draw inferences from the observed behavior of others as well as from their own experiences. Both types of learning are clearly important. Nevertheless, the literatures on imitation and organizational learning have evolved almost completely independently of each other. Realistic models of learning must incorporate both effects.

ENDNOTES

¹ To cite a specific example, four near-identical startups, backed by rival venture capitalists, entered the online pet supply business within months of each other in 1999 (Wolverton, 1999). In the same period many consulting firms set up “Internet business incubators,” which were perceived at the time as a superior new organizational form. All of the independent pet supply companies, and virtually all of the incubators, soon disappeared with the crash of the dot-com sector.

² Since our emphasis is on the behavior of organizations, we ignore a related body of literature from psychology on processes of social conformity.

³ The economic theories are an outgrowth of earlier work on how information affects the operation of markets, for which Akerlof, Spence and Stiglitz were awarded the 2001 Nobel Prize.

⁴ In addition, many stock analysts had conflicts of interest that encouraged them to issue positive forecasts in order to promote their employer’s relationships with client firms.

⁵ Empirical studies have identified the operation of mimetic isomorphism in various organizational domains. For example, Fligstein (1985) used the concept to explain the widespread adoption of the multidivisional structure; Haveman (1993) explained the parallel diversification patterns of California savings and loan associations; and Greve (1995, 1996) assessed the format change of radio stations.

⁶ Supporting this idea, Stuart (1998) found that large semiconductor firms tended to enter fewer research and development alliances as they developed better in-house capabilities over time. In general, larger firms may shift from external to internal information sources as they build capabilities in a given area.

⁷ After the start of the cascade the actions of followers provide no additional information, since it is recognized that they are simply responding to the information revealed by the initial actors.

⁸ Similarity in resources or market position may arise from imitation in prior periods or from characteristics of the environment that limit differentiation but support entry by multiple firms.

⁹ While strategic groups may be able to sustain tacit collusion in this way, firms within a strategic group typically experience more competition among their group members than with members of other strategic groups within the same industry (Greve, 1997).

¹⁰ From Corwin Edwards' testimony quoted by Scherer (1980: 340).

¹¹ Note that multimarket contact can be both a cause and a consequence of behavioral similarity. Multimarket contact increases the number of domains where matching behaviors can occur. Moreover, when firms match the entry of rivals into new markets, the degree of multimarket contact is increased.

¹² Empirical studies, however, often fail to support the mutual forbearance hypothesis (Heggestad & Rhoades, 1978; Rhoades & Heggestad, 1985; Scott, 1982). Bernheim & Whinston (1990) and Karnani & Wernerfelt (1985) suggest that the ambiguous empirical results of the existing studies are due to different effects of multimarket contact depending upon the characteristics of markets and firms. Controlling carefully for such characteristics, several recent empirical studies on multimarket contact support the mutual forbearance hypothesis (Evans & Kessides, 1994; Gimeno & Woo, 1996).

¹³ As indicated in Table 1, many empirical studies of FDI confirm this "follow-the-leader" behavior (Knickerbocker, 1973; Flowers, 1976; Caves et al., 1980; Yu & Ito, 1988; Yamawaki, 1998).

¹⁴ Other than R&D competition described in the text, “winner takes all” situations also appear when the market has bandwagon effects or network externalities (Leibenstein, 1950; Katz & Shapiro, 1985). Firms may imitate their rivals for fear that they lose everything when their competitor wins the competition by different behavior (Asaba, 1995).

¹⁵ Cockburn & Henderson (1994) examine the R&D investment of pharmaceutical firms, however, they find only weak correlation of R&D investments among firms.

¹⁶ Gulati & Gargiulo (1999) argue that it is easy for organizations to distinguish among other organizations under high structural differentiation, which is a measure of uniqueness of an organization’s network position. Structural differentiation is high when firms are asymmetric, making it easier for firms to choose the target for imitation.

¹⁷ Risk aversion is a necessary condition for some types of rivalry-based imitation. Managers are likely to be risk averse, and institutional forces may augment the effect. In Japan, for example, the historical practice of lifetime employment created strong incentives to maintain market share; financial losses from duplicative investments were considered less traumatic than the layoffs potentially required if a firm fell behind rivals.

¹⁸ While asymmetry increases the likelihood that imitation is information-based, it is not a necessary condition. Indeed, the basic economic theory of information cascades assumes symmetric agents.

¹⁹ See Manski (2000) for a more general discussion of problems encountered by economists attempting empirical research on social interactions.

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TABLE 1
Empirical Studies of Imitative Behavior

TOPIC AREA AND STUDY	PHENOMENA/INDUSTRY	KEY FINDINGS
<i>Multimarket contact to mitigate competition</i>		
Heggestad & Rhodes (1978)	Banks	Multimarket contact stabilizes dominant firms' market share.
Rhodes & Heggestad (1985)	Banks	"Mutual forbearance" is not confirmed.
Scott (1982)	Diversification	Multimarket contact is associated with higher profits in highly concentrated industries.
Gimeno & Woo (1996)	Airlines	Multimarket contact decreases the intensity of competition.
<i>Investment bunching as risk-reduction</i>		
Knickerbocker (1973)	FDI by US firms	Bunching behavior is more likely to occur in moderately concentrated industries.
Flowers (1976)	FDI in the US by Canadian and European firms	Bunching of entry is positively related with home market concentration.
Caves, Porter, & Spence (1980)	FDI in Canada by US firms	Bunching of entry is positively related with home market concentration.
Yu & Ito (1988)	FDI by US tire and textile firms	Bunching of entry is positively related with home market concentration.
Kogut & Chang (1991)	FDI in the US by Japanese firms	Bunching of entry is positively related with home market concentration.
Hennart & Park (1994)	FDI in the US by Japanese firms	Positive relation between bunching behavior and market concentration is not confirmed.
Yamawaki (1998)	FDI in the US by Japanese firms	Bunching of entry is positively related with home market concentration.
Makino & Delios (2000)	FDI by Japanese auto and electronic companies	Strong bunching effect in timing of FDI is observed.
Chen & MacMillan (1992)	Action-Response by airlines	A firm is more likely to match a move with its dependence on the market.
Cockburn & Henderson (1994)	R&D by pharmaceutical firms	R&D expenditures among firms are weakly and positively correlated.
<i>Mimetic isomorphism (org. sociology)</i>		
Haveman (1993)	Entry in savings and loan industry	Rate of entry has inverted U-shaped relationship with density (competition- vs legitimation+).
Greve (1995; 1996)	Adoption of new formats by radio stations	Radio stations imitate stations of the same corporation.
Baum & Haveman (1997)	Hotel location decisions in Manhattan	New hotels locate close to established hotels that are similar in price, but different in size.
Deephouse (1999)	Performance and strategic similarity in commercial banks	Intermediate levels of strategic similarity lead to the highest performance.
Baum et al. (2000)	Acquisition of chain organizations (nursing homes)	Chain organizations imitate comparable others (similar sized chains).
Henisz & Delios (2001)	International plant location	Prior decisions by others provide legitimation and information.
Lu (2002)	Entry mode choice of Japanese firms	Later entrants tend to follow the entry mode of earlier entrants.
Garcia-pont & Nohira (2002)	Alliance formation in the automobile industry	Firms imitate the strategic behavior of others occupying the same strategic niche.

<i>Herd behavior (economics)</i>		
Chang et al. (1997)	Clustering of bank branches	Branch openings follow other, existing branches.
Kennedy (2002)	Prime television programming	Television networks introduce new programs in herd-like fashion.
Rao et al. (2001)	Choice of securities analysts	Analysts change coverage of a firm when peers have recently changed coverage
<i>Studies testing among alternative theories</i>		
Gilbert & Lieberman (1987)	Capacity investment by chemical firms	Smaller firms tend to invest when their larger rivals invested.
Gimeno & Chen (1998)	Market similarity in the airline industry	Firms increase market similarity with rivals having similar resources and higher performance.
Gimeno et al. (2001)	International expansion of telecom firms	Oligopolistic firms imitate each other's local entry moves, while local monopolists do not.

TABLE 2

Using Environmental Characteristics to Distinguish Imitation Types

		Uncertainty/Ambiguity of Market and Technology	
		high	low
Asymmetry of Firms' Resources	high	<i>Information-based imitation</i>	<i>Imitation unlikely</i>
	low	<i>Information- or rivalry-based imitation</i>	<i>Rivalry-based imitation</i>