

## EXPLAINING THE CLUSTERING OF INTERNATIONAL EXPANSION MOVES: A CRITICAL TEST IN THE U.S. TELECOMMUNICATIONS INDUSTRY

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**This study distinguishes alternative competitive and institutional explanations of interorganizational mimicry by examining the clustering of U.S. telecommunications firms' 1995–95 moves into other Western Hemisphere countries. Mimicry of entry moves was more likely when both a focal firm and prior movers had large shares in the same domestic markets. More mimicry occurred among oligopolistic long-distance firms than among monopolistic local-exchange phone companies. Thus, mimetic international entry was strongly linked to the structure of domestic competition.**

The “resource-based view of the firm” suggests that competitive advantage derives from the exploitation of unique firm-specific capabilities (Barney, 1991; Peteraf, 1993). This view implies that firms should seek unique product-market positions that allow them to best exploit their unique capabilities (Porter, 1996). If firm behavior were primarily the result of idiosyncratic efforts to exploit unique resources, as the resource-based view suggests, we would expect to observe little behavioral interdependence at the group or industry level. This expectation is contradicted by the fact that groups of firms often act in very similar ways, often in close temporal proximity. We call this group-level pattern *clustering*, which can be defined as the temporal agglomeration of similar strategic actions by multiple firms or economic agents (Gul & Lundholm, 1995).

Clustering behavior is observed in a number of different strategic contexts. For example, in emergent industries, existing and new firms rush into new markets in large numbers, only to be forced to

exit in equally large numbers after a shake-out (Aldrich & Fiol, 1994; Sahlman & Stevenson, 1985; Willard & Cooper, 1985). Likewise, industries experience waves of mergers and strategic alliances (Auster & Sirower, 2002; Dymski, 1999; Gomes-Casseres, 1996). New firms and firms seeking market expansion favor particular locations already occupied by other firms, leading to geographic agglomerations (Porter, 1990; Shaver & Flyer, 2000). Firms from the same country and industry often enter international markets in lockstep (Flowers, 1976; Head, Mayer, & Ries, 2002; Knickerbocker, 1973; Yu & Ito, 1988).

The clustering phenomenon is not only prevalent, but also theoretically interesting. Clustering suggests that the behavior of other firms substantially influences a firm's decision-making processes. This view contrasts with theories that emphasize independent strategic choice based on firm-specific capabilities or an independent assessment of exogenous supply and demand parameters. Multiple theoretical perspectives have emerged in management, economics, and sociology to explain clustering behavior. Some perspectives emphasize the role of positive externalities among organizations, such as localized knowledge diffusion, the emergence of a technological standard, or shared supplier capabilities (Nachum, 2003; Porter, 1998). Others emphasize the process of decision making

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under uncertainty and the role of vicarious learning. Psychological and sociological needs for legitimacy and identity-conforming actions may also lead firms to behave similarly (Bandura, 1977; Peteraf & Shanley, 1997). Other researchers have emphasized the role of competitive response in generating clusters of similar actions (Chen & MacMillan, 1992; Knickerbocker, 1973).

In general, all these theoretical perspectives suggest that firms will be more likely to take a particular strategic action if other firms have taken that same action. Yet these theories of mimetic behavior differ widely in their attribution of specific motivations, causes, and boundary conditions. Unfortunately, empirical research from multiple perspectives has focused on the existence of clustering behavior without attempting to separate or distinguish mechanisms and theoretical rationales. Research that goes beyond describing the clustering phenomenon by addressing these issues is needed.

The contribution of this article is the development of hypotheses and a research design intended to discriminate among multiple motivations for mimetic clustering behavior. We examined the clustering of international entry moves from a number of different theoretical perspectives, including competitive response (Knickerbocker, 1973), vicarious learning under uncertainty (Haunschild & Miner, 1997; Henisz & Delios, 2001), and legitimacy-seeking response to isomorphic pressures (DiMaggio & Powell, 1983; Guillén, 2002; Suchman, 1995). Our multitheoretic approach allows us to develop a research design intended to discriminate among different motivations for mimetic clustering. Discrimination among alternative causal mechanisms facilitates theoretical synthesis and has the potential to provide executives and public policy practitioners with better foresight about whether particular decisions or actions are likely to lead to clustering.

We examined clustering in the context of U.S. telecommunications companies and their expansion into other countries in the American continent (Argentina, Canada, Chile, Mexico, and Venezuela) (Doh & Teege, 2002). To achieve discrimination among alternative theories, we disaggregated industry-level clustering patterns into discrete firm-level entry decisions, which allowed us to test alternative theoretical explanations with different implications for dyadic mimicry patterns (that is, who imitates whom). Because different theoretical explanations rely on different underlying causal mechanisms that are often difficult to observe directly, we also relied on unique characteristics of our sample to develop a “crucial experiment” that

allowed us to differentiate between different clustering explanations.

A crucial experiment, also known as a “critical test,” is “a description of a set of observations which will decide between two alternative theories, both of which according to present knowledge are quite likely” (Stinchcombe, 1968: 25). It relies on evidence from selective research contexts that allow discrimination among alternative theoretical explanations.<sup>1</sup> In most settings, a firm’s closest rivals also represent its most similar and relevant reference group. This reality makes it difficult to isolate competitive and noncompetitive explanations of clustering. However, the context of our study made a crucial experiment possible because it was one in which similar peer firms were not direct competitors.

Regulation of the telecommunications industry in the United States between the Modified Final Judgment of 1984 (which broke up AT&T, liberalized the long-distance market, and created the “Baby Bells”) and the Telecommunications Act of 1996 (which eliminated regional monopolies in local exchange service) was the context for the crucial experiment. During that period, competition between some firms was restricted by regulation, allowing us to disentangle the effects of alternative competitive and noncompetitive motives of clustering.

## CLUSTERING: THEORETICAL PERSPECTIVES

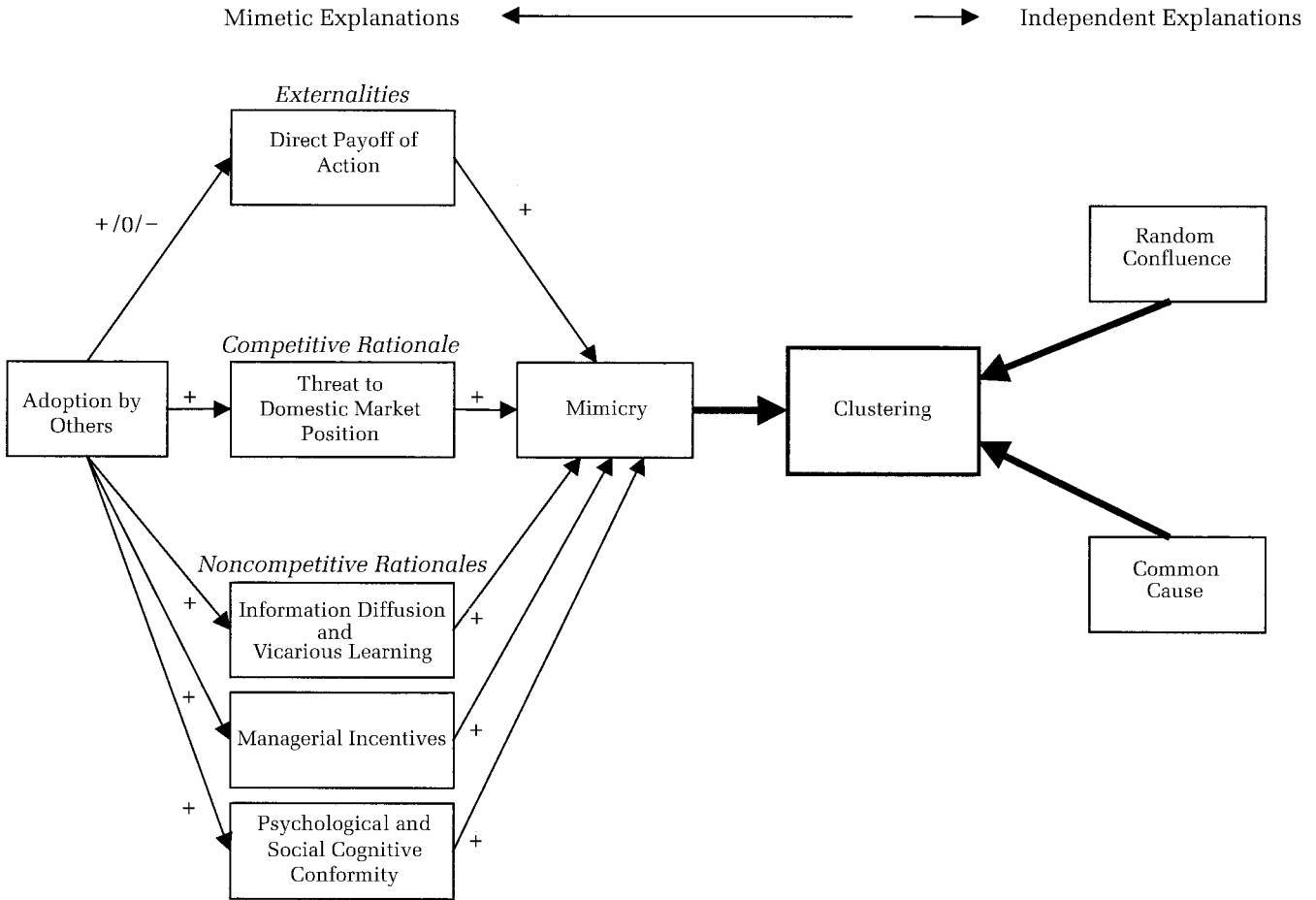
Organizational actions (such as international entry moves) by industry actors often exhibit an intriguing degree of macrolevel clustering (Schelling, 1978). These clustering patterns can be explained in three ways, depicted in Figure 1 and as follows: First, they can be explained as random confluences of independent decisions. For example, firms may independently act on the basis of their internal capabilities, yet multiple firms may act similarly because they have similar capabilities. However, random confluence explanations of clustering are probabilistically implausible when they involve substantial numbers of industry players.

Second, clustering may reflect similar but independent firm-level reactions to a common environ-

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<sup>1</sup> By design, crucial experiments are based on highly selective observations, not observations from a representative sample, but benefit from stronger causal inference. For example, observations of twin siblings separated at birth are very selective, but they are also very informative for distinguishing between genetic and environmental theories.

**FIGURE 1**  
**A Clustering Framework**



mental influence—for example, organizations behaving similarly because they are independently responding to the same external signals, such as changes in regulation, technology, or customer preferences. In this case, a common underlying cause gives rise to clustering, but no firm-level interdependence may exist. The assumption here is that firms are able to independently identify and evaluate available environmental opportunities without the framing influence of other firms' actions. This assumption may be realistic when environmental changes are objectively observable and have clear and unambiguous implications. However, behavioral and social constructionist views suggest that opportunity identification is embedded in a social context (Greve, 1998; Porac, Thomas, Wilson, Paton, & Kanfer, 1995), where the meaning and significance of external events are socially constructed.

Third, clustering may be the result of interdependent or mutually referential decision making in

which actions by some firms increase the likelihood of other firms taking the same action. Thus, macrolevel clustering is the product of an endogenous system of interactions among individual actors within industries or populations (Schelling, 1978). We call this actor-level behavior *interorganizational mimicry*. Interest in mimetic processes is shared across different social science disciplines (economics, sociology, psychology), which has led to the proliferation of overlapping terms such as “bandwagons,” “fads and fashions,” “mimetic isomorphism,” “follow-the-leader behavior,” and “herd behavior”). Because the purpose of this paper was to integrate and discriminate among multiple theories, we use the more generic term “interorganizational mimicry” rather than any of the existing terms. Interorganizational mimicry has been explained from several theoretical perspectives, identified in Figure 1, that respectively emphasize (1) externalities among the strategic actions of organizations, (2) competitive reactions among

organizations, and (3) noncompetitive referential processes.

### Externalities among Strategic Actions

Positive externalities, or spillovers among the strategic actions of organizations, may increase the direct economic value of an action (or decrease its cost) when other organizations have already taken the action (Abrahamson & Rosenkopf, 1993). In that case, actions by firms are *complementary* in terms of performance, because prior actions directly increase performance for later actors. For instance, network externalities may raise the performance of firms that adopt the same technological standards other firms have adopted (Arthur, 1989; Katz & Shapiro, 1985).

While performance complementarity may exist in some contexts in which strategic actions and practices diffuse, it is not present in most clustering situations. For example, the performance effect of adopting many popular practices, such as total quality management, an M-form structure, or poison pill provisions, is unlikely to increase just because other firms have adopted them previously (although the performance expectations of managers and stakeholders may indeed increase with prior adoption). Thus, such actions may be *independent* in terms of performance. When carrying capacity is limited, as is the case of entry into new markets or market segments (Greve, 1998), adoption moves may even be performance *substitutes*, since prior adoptions would reduce the returns of later adoptions. Even in the case of performance substitutes, however, prior adoption may positively stimulate mimicry by other causal mechanisms, such as changing expectations about the value of adoption, or upsetting the competitive status quo.

### Competitive Reactions among Organizations

Competitive (or oligopolistic) reaction is a well-established reason for interorganizational mimetic behavior (Chen & Miller, 1994). When few rivals compete in a market, a firm's actions to gain competitive advantage tend to reduce its rivals' performance. Awareness of mutual interdependence increases the likelihood that a firm will respond to neutralize the effects of a rival's moves and deter further attacks (Chen & Miller, 1994). Matching responses, in which a respondent executes the same strategic action as an attacker, are common because they signal commitment to defend the status quo without escalating rivalry (Chen & MacMillan, 1992; Genesove & Mullin, 2001). Evidence of oli-

gopolistic matching responses has been found for price and nonprice strategic moves in the airline industry (Chen & MacMillan, 1992) and capacity expansion moves in the chemical industry (Gilbert & Lieberman, 1987), among others.

In the context of international expansion investments, oligopolistic reaction leads firms to mimic the international expansion of their home market competitors (Aharoni, 1966; Hennart & Park, 1994; Knickerbocker, 1973; Vernon, 1966). International expansion may endow rivals with competitive advantages (e.g., global economies of scale, access to inputs or technologies) that can be leveraged in the home market. Interorganizational mimicry (in the form of a matching response) would constitute a defensive response to reestablish parity and reduce competitive risk in the home country.<sup>2</sup> Because the prospect of falling behind an advantaged rival is worse for a firm's competitive position than the prospect of imitating an ineffective move, defensive mimicry may occur even if the success of the rival's move is uncertain or if competitive crowding reduces the postentry expected profits in the host market (Head et al., 2002). Knickerbocker (1973) found evidence of clustering in foreign direct investment moves of U.S. multinationals and a positive relationship between clustering in host countries and oligopolistic market structure in a home country industry.<sup>3</sup> Several studies of the clustering of international entry moves have produced findings in general agreement with Knickerbocker's oligopolistic arguments (Flowers, 1976; Martin, Swaminathan, & Mitchell, 1998; Terpstra & Yu, 1988; Yu & Ito, 1988), although the evidence has not been conclusive (Hennart & Park, 1994).

<sup>2</sup> Similar patterns of competitive response have been reported in other strategy research streams. In Mitchell's (1989) examination of entry into new technological subfields, firms that risked losing important positions in existing, threatened subfields were more willing to enter new subfields early. Mitchell's model differs from ours because the threat comes from technological substitution rather than from loss of home-market competitive position relative to rivals with international scope. Similarly, research on multimarket competition has shown that firms enter markets in a way that increases multimarket contact with their rivals (Baum & Korn, 1999; McGrath, Chen, & MacMillan, 1998). This strategy may give firms broader scope to balance competitive interests and force rivals to deploy resources to defend their positions in entered markets.

<sup>3</sup> Knickerbocker (1973) also found that clustering decreased for extremely concentrated industries, interpreting that result as tentative evidence of tacit collusion in a home industry.

## Noncompetitive Referential Processes

Mimicry of strategic actions may also be a result of vicarious learning and social influence processes in which decision makers model their firm's behavior on the behavior of appropriate peer firms (March, 1994). This behavior is more likely when firms are facing high uncertainty about the consequences of potential actions (DiMaggio & Powell, 1983). These explanations have been used to explain the diffusion of organizational innovations (TQM, poison pills, M-form structures); they have also been used to explain mimetic market entry behavior (Greve, 2000; Guillén, 2002; Haveman, 1993; Henisz & Delios, 2001).

**Information spillovers and vicarious learning.** The performance expectations of potential actors may be enhanced by others' earlier actions. Inter-organizational network contacts to prior actors can serve as conduits of information about the benefits of strategic actions (Haunschild & Beckman, 1998; Rogers, 1995). However, even without direct communication links to prior actors, firms may vicariously learn from the *observation* of the actions of other firms (Baum, Li, & Usher, 2000; Levitt & March, 1988). Models of "information cascades" suggest that actions convey signals about the actors' private information. Other firms update their performance expectations on the basis of these vicarious observations, even to the point of disregarding their own private information (Bikhchandani, Hirshleifer, & Welch, 1992).<sup>4</sup> Therefore, firms economize on search costs by using the choices of others as information proxies (Conlisk, 1980; Haveman, 1993). Similar arguments figure in DiMaggio and Powell's (1983) description of mimetic isomorphism, defined as a response to uncertainty in which firms model themselves after similar organizations that they perceive to be more legitimate, better informed, or more successful. In agreement with this view, Henisz and Delios (2001) found that firms without experience in a host country were more likely to mimic the plant location behaviors of their industry peers.

**Managerial incentives.** When uncertainty combines with agency relationships, risk-averse managers may behave mimetically to avoid being penalized for firm-specific failures (Brandenburger & Polak, 1996; Chevalier & Ellison, 1999; Scharfstein & Stein, 1990). Under outcome uncertainty, principals (shareholders and the financial community)

do not rely uniquely on ex post performance to evaluate managerial behavior. Because "good" managers are likely to make similar decisions, principals evaluating managers will consider how consistent their decisions are with other managers'. "Holding the absolute profitability of the investment choice fixed, managers will be more favorably evaluated if they follow the decisions of others than if they behave in a contrarian fashion. Thus, an unprofitable decision is not as bad for reputation when others make the same mistake—they can share the blame if there are systematically unpredictable shocks" (Scharfstein & Stein, 1990: 466).

**Psychological and sociocognitive factors.** In contrast to explanations that depict mimicry as a rational choice based on preferences or expected consequences, the psychological and sociological argument is that individuals (and, indirectly, organizations) are predisposed toward social conformity. Conformity may be the result of diffuse psychological pressure to reduce social anxiety by insuring that other relevant social actors view a behavior as appropriate and legitimate (Giddens, 1984). Once enough individuals do things in a certain way, the behavior becomes taken-for-granted and is often employed with little reflection (Berger & Luckmann, 1966). Sociocognitive explanations of mimicry hinge on participation in a shared inter-organizational group identity (Peteraf & Shanley, 1997) or macroculture, defined as "relatively idiosyncratic, organization-related beliefs that are shared among top managers across organizations" (Abrahamson & Fombrun, 1994: 730). Managers who perceive their organizations as belonging to a shared identity are more likely to act in identity-appropriate ways and are predisposed toward rule following (March, 1994) and mimetic behaviors (Abrahamson & Fombrun, 1994; O'Neill, Pouders, & Buchholtz, 1998).

## THEORY AND HYPOTHESES

We focus on the clustering of international entry moves in a host country as a context for testing alternative mechanisms of interorganizational mimicry. Generally, firms expand internationally to develop and exploit firm-specific advantages in new host markets (Dunning, 1988; Hennart, 1982). Since opportunities in host markets are limited, prior moves should crowd out additional moves. Yet clustering may still emerge owing to competitive and noncompetitive mimetic influences (Henisz & Delios, 2001; Knickerbocker, 1973; Martin et al., 1998). Entry into a foreign market is a decision generally made under conditions of uncertainty about performance outcomes, and other firms in

<sup>4</sup> It must be noted that mimicry, while individually rational, may lead to collectively irrational outcomes in which a whole population follows a few first movers despite their own private information to the contrary.

foreign countries may serve as reference models for deciding which host countries to enter.

Differentiating among alternative theoretical explanations of clustering from empirical evidence is difficult. Empirical research has predominantly examined whether firms tended to enter the same host countries as other firms from their own country and industry. Yet such generic evidence is consistent with alternative theoretical views. Since industry peers may be both direct rivals and relevant reference models, industry-level clustering patterns may be explained as competitive reactions or as noncompetitive mimicry among similar firms. In existing research, a homogeneous mimetic influence has also been assumed, whereby all prior adopters influence all remaining nonadopters equally. This is a questionable assumption given that (1) some prior adopters may be more influential than others, (2) some remaining nonadopters may be more susceptible to mimetic influence than others, and (3) some prior adopters may be influential for some specific nonadopters but not for others (Strang & Tuma, 1993).

Our hypotheses explore intraindustry heterogeneity in mimetic influences with respect to international entry moves. First, we examine how domestic market positions (market shares of focal firms and prior movers) influence mimetic behaviors. Domestic market positions affect competitive relationships and referential processes and should therefore explain variance in interorganizational mimicry. Although in these hypotheses we argue for heterogeneous mimetic influences, the hypotheses are still consistent with multiple theoretical rationales. Hypothesis 4 develops a critical test to discriminate among competitive and noncompetitive explanations.

### **Heterogeneous Mimetic Influences: The Role of Domestic Market Positions**

Firms are most aware of the actions of other firms that are present in the same markets as themselves (Chen, 1996; Greve, 1998). In addition to presence, market share is an important dimension of market position that shapes firms' interactions (Porter, 1979). We investigate the effects that the market shares of a focal firm and prior movers in overlapping domestic market segments have on the focal firm's decision to mimic prior movers' expansion into a host country.

**Prior movers' domestic market shares.** Not all prior movers induce mimicry equally. From a competitive perspective, the domestic market shares of prior movers determine the visibility of their strategic actions (Chen & Hambrick, 1995). Actions by

firms with large market shares may be perceived as especially threatening, since their resources support moves of greater competitive magnitude (Singh, 1986). Prior movers with high domestic shares will be more likely to elicit fast competitive responses (Chen & Miller, 1994; Dutton & Jackson, 1987). International entry moves by dominant domestic competitors may therefore elicit parallel moves from their rivals.

Prior movers with high market shares may also elicit mimicry for noncompetitive, referential reasons. Firms with large shares in a domestic market are important players in a firm's organizational field and are usually perceived as successful. Large and successful organizations generally have superior legitimacy and reputation (DiMaggio & Powell, 1983; Fombrun & Shanley, 1990), and their actions may be viewed as appropriate reference points in a context of uncertainty. As a result, other firms mimic those actions, both to benefit from the actions' informational content and to gain legitimacy (Haunschild & Miner, 1997; Haveman, 1993). In summary, both competitive and noncompetitive mimicry explanations lead to the prediction that prior international entry moves by a firm with a large domestic market share are more likely to lead to imitation by others.

*Hypothesis 1. The likelihood that a firm will move into a host country is positively related to prior movers' market shares in the domestic market segments of the focal firm.*

**Focal firm's domestic market share.** Firms may also differ in their susceptibility to mimetic influences—some firms act autonomously, while others are more likely to mimic and pursue competitive responses. From a competitive perspective, a firm's share in the domestic market segments of prior movers may be related to its ability and motivation to respond (Chen, 1996). Although firms with large market shares are not as likely to initiate aggressive competitive actions (Barnett, 1997; Chen & Hambrick, 1995), they are more motivated to respond to rival actions to protect their superior market positions. They are also likely to possess the resources necessary to respond to prior movers (Chen & Hambrick, 1995; Gilbert & Lieberman, 1987). Lack of response may reduce competitive reputation and induce future attacks (Clark & Montgomery, 1998).

Noncompetitive referential processes provide more ambiguous predictions about whether large-share or small-share firms are the more susceptible to mimetic influences. Firms with large market shares tend to be more active and effective in scanning their competitive environments, and therefore they may be more aware of their competitors' ac-

tions. Yet their environmental scanning capabilities may provide them with superior private information that could substitute for vicarious learning (Bikhchandani et al., 1992; Haunschild & Beckman, 1998). Thus, firms with larger market shares can afford to act more autonomously, while firms with smaller shares will rely more on mimicry.

Primarily drawing on competitive explanations of mimicry (since noncompetitive explanations are more ambiguous), we propose that prior international entry moves will be more likely to be mimicked by firms with large market shares in the prior movers' domestic markets.

*Hypothesis 2. The likelihood that a firm will move into a host country is positively related to the firm's market share in the domestic market segments of prior movers.*

**Dyadic mimicry effect.** A more complex view of interorganizational mimicry would suggest that mimicry is a dyadic relationship and that characteristics of both focal firms and prior movers should be simultaneously considered. Looking at the match between the positions and shares in relevant domestic market segments of both a focal firm and prior movers can capture these influences. A competitive reaction rationale suggests that large-share firms respond more to other large-share firms. In oligopolistic competition, a few dominant home market firms respond to each other's moves to maintain the competitive status quo in their home country (Knickerbocker, 1973). Concentrated markets often emerge from the competition of a few large-share generalists, with small-share specialists filling the remaining niches (Carroll, 1985; Dobrev, Kim, & Carroll, 2002). Size-localized competition models also suggest that competition is direct among large firms that target the same broad market, while competitive interdependence between large-share generalists and small-share specialists is not as great (Baum & Mezias, 1992). Competitive responses among small-share specialists are also less likely, because they often target differentiated niches.

Noncompetitive mimetic explanations suggest a similar outcome. Firms with similarly large shares in the same market segments probably follow similar generalist strategies. The strategic similarity of these firms leads to the development of interorganizational macrocultures or group identities (Peteraf & Shanley, 1997). These factors should increase the likelihood that these firms will model their actions on the prior actions of other large-share firms (Haveman, 1993). In this case, both competitive and noncompetitive mechanisms would heighten mimicry when both a focal firm

and prior movers have similarly high market shares in the same domestic market segments.

*Hypothesis 3. The likelihood that a firm will move into a host country is higher when both the firm and the prior movers have similarly high market shares in the same domestic market segments.*

### **Critical Experiment: Mimicry among Long-Distance Firms and Baby Bells**

The regulatory context in the U.S. telecommunications sector in the time between the Modified Final Judgment (1984) and the Telecommunications Act (1996) provides a unique natural experiment for contrasting competitive and noncompetitive mimicry explanations. The seven regional holding companies (RHCs), or Baby Bells, that resulted from the 1984 break-up of AT&T (formerly the Bell Telephone Company) experienced unique regulatory conditions in their domestic operations. These regulatory constraints would influence alternative motivations for mimicry. Comparing the levels of mimicry within these subgroups provides a test of alternative theories of mimicry.

If desire to minimize competitive risk in a domestic market primarily motivates mimicry of international entry moves, head-to-head competition in the domestic market is a necessary condition for oligopolistic reaction (Knickerbocker, 1973; Vernon, 1966). The terms of the Modified Final Judgment of 1984 deregulated the long-distance market and gave customers a choice of long-distance operators. Long-distance companies in the United States competed head-to-head in the national market with little geographic or product differentiation. The long-distance market was characterized by intense and direct oligopolistic competition, with the top three national firms (AT&T, MCI, and Sprint) capturing more than 80 percent of U.S. long-distance revenue in 1995 (Federal Communications Commission [FCC], 1996).

In contrast, the Bell Regional Holding Companies, divested from AT&T in 1984 with mandates to operate local exchange services as regulated regional monopolies,<sup>5</sup> did not compete directly with

<sup>5</sup> In the cellular segment of the industry, local exchange providers obtained the initial licenses in each cellular market while the subsequent license went to another entity, usually an independent company. While it was possible for the Baby Bells to obtain second licenses in other Baby Bells' territories, this was uncommon in practice. Parker and Röller (1997) provided statistics suggesting that only 12 percent of the cellular

each other, although they were active in similar telecommunications segments and had similar technologies and institutional contexts. They were regional monopolists in separate, nonoverlapping regions. From a competitive standpoint, therefore, long-distance companies appeared to have stronger motivations than Baby Bell companies to engage in mimetic behavior.

Both the long-distance companies and the Baby Bells were likely to be subject to noncompetitive referential processes, although we argue that such processes were likely more intense for the Baby Bells because of their similar characteristics and common administrative heritage. For long-distance firms, competitors probably served as the most relevant external models of behavior, both for the managers and for the shareholders and financial community that evaluated their performance. This situation would create some pressure for imitation. From a sociocognitive perspective, long-distance firms shared a common organizational field and were therefore part of a shared cognitive community, or macroculture (Abrahamson & Fombrun, 1994). On the other hand, the long-distance firms had very different organizational histories (AT&T was the incumbent, while MCI and Sprint were aggressive new entrants) and exhibited high variance in size, which might diminish the likelihood of vicarious learning or social modeling (O'Neill et al., 1998).

In contrast, the Baby Bell companies were very similar in many dimensions. Although their competitive strategies began to diverge slowly after the AT&T break-up (Noda & Collis, 2001), their common heritage, technology, and market position similarities made them a natural comparison group for managers, the shareholders, and the financial community (Noda & Bower, 1996; Smith & Zeithaml, 1996). From a sociocognitive perspective, the Baby Bells bear the imprint of their common AT&T heritage (Stinchcombe, 1965) and hence share a strong macroculture and a common identity (Abrahamson & Fombrun, 1994). Taken together, these arguments suggest that noncompetitive mimetic processes, although probably active for both the long-distance firms and the Baby Bells, were stronger among the latter.

These arguments provide the basis for our critical

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markets had two competing Baby Bells. The most common outcome (in 62 percent of the markets) was a Baby Bell competing with an independent company. Therefore, while there were two Baby Bells competing in a few cellular markets, the magnitude of that competition was likely to be insignificant relative to the overall revenues of these companies.

experiment. If competitive motivations for mimicry have stronger predictive power, we would expect to see greater mimicry among long-distance companies. On the other hand, if noncompetitive referential processes are the key motivations of mimicry, we would expect to see greater mimicry among Baby Bells. The following competing hypotheses reflect these predictions:

*Hypothesis 4a. The likelihood of mimetic behavior is higher among long-distance companies than among Bell Regional Holding Companies (Baby Bells).*

*Hypothesis 4b. The likelihood of mimetic behavior is lower among long distance companies than among Bell Regional Holding Companies (Baby Bells).*

## METHODS

### Sample

The core of the U.S. telecommunications industry (SIC classifications 4812 and 4813)<sup>6</sup> is comprised of three service market segments: (1) local exchange, (2) long-distance or interexchange, and (3) cellular service. Our sample is drawn from the population of U.S. publicly held telecommunications firms that participated in any of these core market segments between January 1, 1985, and December 31, 1995.<sup>7</sup> This time window represents a unique regulatory context that, by constraining competition in some segments, allows us to separate competitive and noncompetitive mimetic explanations. As described above, The Modified Final Judgment of 1984 broke AT&T's monopoly and created the Baby Bells, and the Telecommunications Act of 1996 fundamentally altered the dynamics of the telecommunications industry by reducing regulatory entry barriers between the long-distance and local exchange market segments. January 1, 1985, and December 31, 1995, therefore, represented logical beginning and ending points for data collection. This period included all the pioneering entry moves by U.S. companies into the telecommunications service markets of the host countries

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<sup>6</sup> SIC 4812 includes primarily companies providing two-way radiotelephone communications, including cellular service. SIC 4813 includes those providing telephone voice and data communications, excluding radiotelephone and telephone answering services.

<sup>7</sup> Other market segments, such as personal communication services (PCS), were not considered, primarily because these segments either did not exist or were not well developed during this study window.



in our sample. Thus, there was no “left censoring” of entry events.

Sample firms were selected from three subpopulations: local exchange companies, long-distance companies, and cellular companies. First, all firms (parent or holding companies) that reported to the Federal Communications Commission as local exchange carriers in any year of the study period were initially included in the sample (FCC, 1996). Reporting companies were those with local exchange revenues above \$100 million.<sup>8</sup> In 1995, the last year of the study period, companies in the sample accounted for more than 90 percent of the U.S. local exchange market. Second, all companies that had long distance revenues of more than \$100 million in any year of the study were included. In 1995, sample firms accounted for nearly 90 percent of U.S. long-distance service revenues<sup>9</sup> (FCC, 1996). Third, the sample included each company with more than \$100 million in revenues that was active in SIC code 4812 (two-way radiotelephony, including cellular services), according to *Ward's Business Directory*, or that was listed by the Cellular Telecommunications Industry Association (CTIA) as a leading cellular operator. In 1995, sample firms accounted for 82 percent of U.S. cellular revenues. Finally, firms included in the three above categories but for which data were not available on COMPUSTAT were excluded. The \$100 million revenue cutoff was designed to eliminate companies that were financially unable to meaningfully participate in recent global competitive trends. These criteria resulted in a sample of 43 firms over the 11-year period of the study. In 1995, there were 29 active companies, of which 16, 10, and 17 had local exchange, long-distance, and cellular revenue, respectively. Some firms disappeared from the sample due to dissolutions or acquisitions. These firms were treated as “right-censored” observations, since they were no longer at risk of entering a foreign country. Accordingly, we were careful not to double-count entry moves.

Foreign investment in telecommunication services was a novel phenomenon in the 1980s and 1990s, the decades in which countries began to

privatize their public monopolies, thus opening their telecommunications markets to competition. The five countries in our sample represented the major telecommunications markets undergoing liberalization/privatization in the Americas between 1985 and 1995 (Doh & Teegen, 2002). These countries represented natural opportunities for expansion for U.S. firms. The number of these entry moves allowed us to examine whether firm-specific factors, country-specific opportunities, or different mimetic forces explained entry patterns. Several other countries outside the Americas also underwent liberalizations, but there were not enough moves by U.S. companies into these countries to support empirical examination of entry patterns. Furthermore, as research by Doh and Teegen (2002) pointed out, the Americas are more likely to be subject to competitive entry, because more sweeping liberalization has taken place there than in Asia, where institutional change has been more incremental and entry more government controlled. In telecommunications, a firm must have local licenses and local investments to compete effectively for the country's domestic demand. We used the following sources to generate and cross-check a list of announcements of international entry moves: (1) the Wall Street Journal Index, (2) company annual reports and 10K filings, (3) the Securities Data Company's proprietary Joint Ventures/Strategic Alliances database, (4) ABI/Inform, (5) various databases on Lexis/Nexis, and (6) previous research (Noda, 1996). A total of 36 moves were identified;<sup>10</sup> the first was in 1985, the last in 1995, and the greatest number (ten moves) in 1994. There were 14 moves into Mexico, 9 into Canada, 5 into Venezuela, and 4 each into Argentina and Chile. Of the 36 moves, 16 moves involved entry into the wireless industry segment, 13 into the long-distance segment, 4 into local exchange markets, and 3 into multiple segments. The Appendix

<sup>8</sup> Generally, local exchange companies with revenues below \$100 million did not report to the FCC. There were about 1,300 companies that provided local exchange service in the United States. These companies ranged from rural cooperatives sometimes serving fewer than 100 customers (not included in our sample) to the Baby Bells.

<sup>9</sup> Long-distance companies excluded by the \$100 million cutoff were primarily resellers (that is, firms that resold the long-distance services of other long-distance firms and had no proprietary networks of their own).

<sup>10</sup> A formal selection process, usually administered by a host government, and often an auction or a bidding process constrained entry into some markets. In these cases, some attempted entry moves may not have been realized because firms failed to win bids. Our study included only successful entry moves. Failed moves, in our opinion, fundamentally differed from actual entries and, although interesting in their own right, could not be treated either conceptually or empirically as identical to realized moves. All the countries studied offered multiple avenues for entry, ranging from sale of equity stakes in privatized incumbents, auctions for service licenses, liberalization of foreign ownership and acquisitions, and de novo entry.

lists the entry moves in the sample and the time between sequential moves.

### Statistical Estimation

The clustering of international entry moves is inherently sequential, and it should be studied using explicitly dynamic methods. Event history analysis using time-varying covariates was therefore an appropriate method for studying the likelihood of an entry event. We defined the unit of analysis as the event history of a firm's entry into a country (a firm-country combination), since different mimetic processes may arise in different host countries as a function of prior moves. Entry into a host country was only possible after regulatory constraints had been relaxed and business opportunities were sufficiently attractive. For each country, we used the first entry announced as the starting point for analysis, except for Mexico, where two independent first entry moves were announced on the same day of bidding for cellular licenses. Thus, there were six first entries for five countries. From the 215 original firm-country combinations (43 firms in 5 countries), we lost 6 firm-country combinations (and 6 entry moves) in determining the beginning of the risk period for each country. We also lost another 6 firm-country combinations (but no moves) because the firms disappeared from the sample before the first entry into the country. Hence, the sample included 203 firm-country event histories, of which 30 (14.78%) ended with an entry move, while the remaining 173 were right-censored either by the end of the observation period (1995) or the disappearance of the firm from the sample. Although the high censoring rate increased the variance of our estimates, it did not create a bias. For medium-sized samples like ours, coefficient estimates in event history models remain unbiased even with censoring levels as high as 90 percent (Tuma & Hannan, 1984). However, the high rate of censoring limited the statistical power of the analysis.<sup>11</sup>

A semiparametric event history methodology

(Cox model) was used to model the time-varying hazard rate of entry into a host country. The proportional hazards Cox model provided an effective and general way to handle time dependence that did not require the specification of a parametric functional form for the baseline hazard.<sup>12</sup> This modeling procedure controlled for time-varying factors that affected all firms equally. Beyond mimetic influences, host-country characteristics and opportunities may influence entry processes (see Figure 1). To accommodate those differences, we allowed the underlying baseline hazard rates to vary across countries. Country-specific baseline hazards controlled for time-invariant differences among host countries, such as those due to physical or cultural distance from the United States, and also for differences in the shape of time dependence across countries (for instance, if entry into one country was generally faster than entry into another). We therefore estimated a stratified Cox model, where the hazard of entry by firm  $i$  into country  $c$  was modeled as the product of a country-specific baseline hazard rate and an exponential function of the covariates, as follows:  $h_{ic}(t) = h_{0c}(t) \times \exp(\beta X_{ict})$ , where  $X_{ict}$  is a vector of independent and control variables and  $h_{0c}$  is a time-varying country-specific baseline for the hazard rate.

Following the heterogeneous diffusion methodology (Greve, Strang, & Tuma, 1995; Strang & Tuma, 1993), we modeled entry moves as a function of two factors: (1) an intrinsic tendency or propensity to enter and (2) interorganizational mimicry. The propensity factor captured the effect of firm-specific or environmental variables that motivated entry independently of other firms' actions. It accounted for situations in which clustering was the result of a random confluence of firms' independent decisions; for example, clustering might be attributable to parallel internal pushes by several firms toward internationalization. The propensity factor also accounted for situations in which decisions were attributable to a common cause, such as the attractiveness of the host country. The mimicry factor captured the influence of prior entry moves by other sample firms on a focal firm. In particular, our specification followed the *multiplicative heterogeneous diffusion model* proposed by

<sup>11</sup> We performed a Monte Carlo simulation with 1,000 simulated samples to assess the power of tests for a sample with 203 event histories and 30 realized events, given the methodological choices (stratified Cox model with robust errors) and the number of variables and country effects. We had good power (above 0.8) to recover effects for which the multiplier effect of a one-standard-deviation increase of the independent variable is above 1.8, but the power is moderate (0.3 to 0.6) for lower effect sizes (1.3 to 1.6). Thus, the study did not have statistical power to identify small causal factors.

<sup>12</sup> The proportional hazards assumptions was empirically tested both for the whole set of covariates and for each individual variable using the Stata 7.0 proportionality test (Grambsch & Therneau, 1994). We could not reject the proportionality hypothesis at the 0.1 level of confidence either globally or for any specific variable in the model.

Strang and Tuma (1993), defined as

$$\beta X_{ict} = \alpha Z_{ict} + \gamma \sum_{j \in S_c(t)} Y_{ij, ct},$$

where  $Z_{ict}$  represented a vector of propensity factors, and  $Y_{ij, ct}$  was a vector of dyadic mimicry factors that represented the effect that a prior entry move by firm  $j$  into host country  $c$  had on focal firm  $i$ .  $S_c(t)$  represented the set of all referent firms that had entered host country  $c$  before time  $t$ .<sup>13</sup> The overall mimicry factors were the sum of the dyadic mimicry factors across all prior movers in a host country.

The stratified Cox model with time-varying covariates was estimated with Stata 7.0 software. As is typical in event history methodology, we accommodated time-varying variables by dividing event histories into multiple spells with invariant variables for the duration of the spell. The time-varying control variables changed at year-end, while the time-varying independent variables, which reflected the mimicry effect from prior moves, changed either at year-end or whenever any firm entered the host country (since the relevant summations changed). The 203 firm-country event histories yielded 1,900 spells. Splitting event histories into arbitrary spells did not affect the consistency of estimates, since it did not modify the overall likelihood function of the model. Although splitting spells would create more observations, these observations would be arbitrary splits of time and would not modify the relevant event rate of 30 entries among 203 event histories. We used a robust variance estimator to account for the possible non-independence of spells from each firm-country event history (Lin & Wei, 1989).<sup>14</sup>

<sup>13</sup> Our motivation for using a multiplicative model instead of an additive formulation was the fact that, as Greve, Strang, and Tuma observed, an additive model would only allow for positive mimetic influences; multiplicative models, on the other hand, “permit prior adoptions to decrease as well as increase the hazard of the focal case, capturing empirical contexts where actors seek to avoid the actions of (certain) others in the population” (Greve et al., 1995: 384). The ability to capture negative mimetic behavior or mutual avoidance is important in the present study.

<sup>14</sup> Although traditional statistical models entail the assumption that each observation has independent errors, robust estimation allows observations within certain groups to be correlated. In our case, after time splitting, unobserved factors that affected a particular firm-country event history might generate some spurious correlations among those spell observations. A fixed-effect approach to controlling for unobserved heterogeneity would not be feasible here, since it eliminates the

## Operational Definitions

**Independent variables.** In accordance with the heterogeneous diffusion model, the overall mimicry influence of all prior movers was aggregated by summing over all prior movers in a host country (members of the  $S_c[t]$  set) the dyadic variables ( $Y_{ij, ct}$ ) representing the mimetic influence of a prior mover  $j$  on a focal firm  $i$ .

**Domestic market share variables.** According to Hypotheses 1 to 3, the market shares of the focal firm and prior movers in the domestic market segments where they overlap determined the mimicry effect of prior moves on a focal firm. Focal firms and prior movers could be active in one or more of the three domestic service segments (local exchange, long distance, or cellular service). Therefore, the dyadic mimicry influence ( $Y_{ij, ct}$ ) was an aggregate of the mimicry influence generated in each domestic market segment  $m$  where the firms interacted ( $Y_{ij, mct}$ ). The influences from each segment were aggregated in proportion to the focal firm’s dependence from each segment (Chen, 1996), measured by the percentage of telecommunication revenues obtained by firm  $i$  in each segment ( $p_{imt}$ ).

Market shares in each domestic market segment (local exchange, long distance, cellular service) were calculated from segment-specific revenues obtained from the COMPUSTAT Segment File, company annual reports and 10K filings.<sup>15</sup> We defined  $MS_{imt}$  and  $MS_{jmt}$  as the revenue market share of focal firm  $i$  and prior mover  $j$  in domestic segment  $m$  in year  $t$ . Market share levels were updated yearly. To facilitate interpretation of interaction effects used for testing dyadic mimicry, and to reduce multicollinearity between main and interaction effects, we centered the market share measures around the mean market share of all incumbents in a given segment during the study period and then calculated interactions based on the centered variables (Aiken & West, 1991). Therefore,  $MS_{imt}^c$  and  $MS_{jmt}^c$  symbolized mean-centered domestic market shares for the focal firm and a prior mover, respectively. The “main effects” should be interpreted as

273 event histories that were right-censored in 1995 owing to lack of variance on the outcome. Robust estimation allowed us to control for potential nonindependence of observations while maintaining our focus on cross-sectional comparison of movers versus nonmovers.

<sup>15</sup> In a few cases where information on cellular revenue was not publicly available, we used the number of subscribers and average revenue per subscriber from the Cellular Telecommunications Industry Association (CTIA) to derive an estimate.

conditional relationships when the other interacting market share was at average level.

The prior movers' domestic market share was the sum of the centered market shares of prior movers on those segments in which a focal firm was present (where dummy variable  $I_{imt}$  equaled one). The focal firm's domestic market share was the sum of its centered market share in the domestic market segments occupied by prior movers (where dummy variable  $I_{jmt}$  equaled one). We tested dyadic mimicry by examining the interaction between market shares. The interaction was the sum of the product of the centered market shares of the focal firm and prior movers. All these dimensions were aggregated over the three domestic market segments (weighted by the focal firm's percentage revenues from each segment), as follows:

*Prior movers' domestic market share*<sub>ict</sub>

$$= \sum_m p_{imt} \sum_{j \in S_c(t)} I_{imt} \times MS_{jmt}^c$$

*Focal firm's domestic market share*<sub>ict</sub>

$$= \sum_m p_{imt} \sum_{j \in S_c(t)} MS_{imt}^c \times I_{jmt}$$

*Prior movers' × focal firm's market share (interaction)*<sub>ict</sub>

$$= \sum_m p_{imt} \sum_{j \in S_c(t)} MS_{imt}^c \times MS_{jmt}^c$$

An alternative approach to testing Hypothesis 3 is to focus on market share similarity or differences between a focal firm and prior movers. We constructed a market share difference measure by taking the squared differences of market shares between the focal firm and prior movers:

*Squared differences in market shares*<sub>ict</sub>

$$= \sum_m p_{imt} \sum_{j \in S_c(t)} (MS_{imt} - MS_{jmt})^2$$

**Subgroup variables.** Hypothesis 4 compares the mimetic behavior of long-distance telephone companies and Baby Bells. The market share variables already model differential mimicry among firms due to their market positions in overlapping business segments. Yet, beyond these general market share effects, specific subgroups of firms may display differential rates of mimicry above or below those explained by their market overlap and market share positions. Two variables, reflecting the extent of prior entry among peers in a subgroup, shift the hazard rate differently for the two relevant subgroups. For long-distance companies, *long distance*

*facing long distance*<sub>ict</sub> measured the number of prior movers in a host country who were active in the domestic long distance segment and was zero otherwise. For Baby Bells, *regional holding company facing regional holding company*<sub>ict</sub> measured the number of prior movers in a host country who were Baby Bells and was zero otherwise.

**Control variables.** We included a number of important control variables that could be related to the independent propensity of a firm to enter a country (see Figure 1). *Revenues<sub>it</sub>*, defined as the natural logarithm of a focal firm's total revenue in a prior year, was used to control for firm size and overall access to resources. *Return on assets<sub>it</sub>* controlled for the financial performance of a firm in the year prior to a move, as performance might provide an impetus for international expansion. Moreover, high return on assets might also reflect the presence of valuable intangible assets in technology, organizational routines, or brand equity that would increase earnings without increasing accounting assets. Firms with such assets might engage in foreign direct investment to exploit them (Hennart, 1982).<sup>16</sup> Data on firm revenues and performance were obtained from COMPUSTAT. *Free cash flow<sub>it</sub>* reflected a firm's internal availability of cash flows that could encourage expansion but could also buffer environmental pressures (Jensen & Meckling, 1976; Singh, 1986). When performance is controlled, greater cash flows might indicate commitments to depreciation-intensive investments in physical assets. The measures were calculated from COMPUSTAT data as the free cash flow from operations (calculated as operating income before depreciation, minus taxes, interest, and dividends) divided by revenues. *International experience<sub>it</sub>*, the logarithm of the number of countries in which a focal firm had subsidiaries in a prior year, was used to control for a focal firm's experience in international operations. The information was collected from the annual *America's Corporate Families and International Affiliations*. Finally, to control for business opportunities available in the telecommunications sector in a host market, we included *telephone penetration*, a time-varying count of telephone mainlines per 1,000 people; data were from the World Bank's *World Development Indicators*. Moreover, the stratified Cox model also controlled for other unspecified host country factors (such as idiosyncratic or country-specific opportunities)

<sup>16</sup> We thank Jean-Francois Hennart for his insightful interpretations of the performance and cash flow controls.

**TABLE 1**  
**Descriptive Statistics and Pearson Correlation Coefficients<sup>a</sup>**

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10
1. Revenues <sub>it</sub> <sup>b</sup>	20.65	2.02										
2. Return on assets <sub>it</sub>	0.01	0.08	.30									
3. Free cash flow <sub>it</sub>	0.09	0.23	.45	.39								
4. International experience <sub>it</sub>	0.37	0.82	.57	.06	.14							
5. Telephone mainlines <sub>ct</sub>	223.80	215.40	-.02	.02	.00	-.03						
6. Prior movers' domestic market share <sub>ict</sub>	0.02	0.17	.00	-.01	.02	-.06	.04					
7. Focal firm's domestic market share <sub>ict</sub>	-0.03	0.13	.49	.00	.06	.47	-.04	-.22				
8. Prior movers' × focal firm's market share <sub>ict</sub>	0.00	0.02	-.22	-.02	.01	-.30	-.02	-.20	.02			
9. Squared differences in market shares <sub>ict</sub>	0.08	0.21	.16	.05	.00	.31	.00	.09	-.07	-.89		
10. Long distance facing long distance <sub>ict</sub>	0.33	0.96	-.15	.08	.01	-.06	.12	.29	-.51	-.17	.42	
11. Baby Bell facing Baby Bell <sub>ict</sub>	0.24	0.62	.49	.04	.21	.36	-.02	.09	.52	.09	-.10	-.14

<sup>a</sup>  $n = 230$  event histories; 1,900 spells and 30 entry events were analyzed. Correlations with absolute values above 0.05 are significant at the .05 level.

<sup>b</sup> Logarithm.

that might increase the propensity to enter a host market.

## RESULTS

Table 1 presents descriptive statistics. There were some significant correlations among the variables, but these did not appear to present major problems with multicollinearity, as the variance inflation factors for the variables averaged 1.64 and were always below 2.50 (Neter, Wasserman, & Kutner, 1985). The condition number for the independent variables was 3.20, below the threshold of 20 indicative of multicollinearity problems (Belsley, Kuh, & Welsch, 1980).

Table 2 presents the results of our statistical analysis employing a Cox proportional hazard model stratified by host country. Model 1 included only control variables. Model 2 included all the independent variables except the interaction term. The joint Wald test suggested that the four variables added in model 2 were jointly significant ( $p < .01$ ). Models 3 and 4 tested for dyadic mimicry using different approaches. Wald tests showed that both additions were significant ( $p < .01$ ). Given that robust estimation was used, all the inferences presented below were based on Wald tests rather than likelihood-ratio tests.

Control variables indicated (see model 1) that large firms (see *revenues<sub>it</sub>*), firms with prior experience in international markets (*international experience<sub>it</sub>*), and firms with high returns on assets were more likely to engage in international entry moves. However, the effect of international experience turned insignificant after inclusion of other independent variables. Free cash flow was negatively related to the level of international expansion, after

size and profitability were controlled for. We interpreted these results as suggesting that superior performance and valuable intangible assets encouraged international expansion, but significant commitment to depreciation-intensive physical assets reduced international expansion. This pattern of results may derive from the fact that physical assets in telecommunications are often limited to regional or national coverage and cannot be easily redeployed or leveraged overseas. We explored whether firms active in long-distance, local exchange, and cellular markets (represented by dummy variables) differed on basic propensity for entry and found no significant differences.

Results also showed that firms were more likely to enter host countries when telephone penetration was higher. The level of telephone penetration reflected the increased opportunities available as foreign telecommunications markets expanded. In further explorations, we included other commonly used time-varying country-level variables but found that these did not improve model fit. The evidence suggested that the use of a country-stratified statistical model, in combination with the telephone penetration variable, provided adequate control for important differences in host-country opportunities that affect international entry behavior.<sup>17</sup>

Hypothesis 1 asserts that the likelihood that firm

<sup>17</sup> Because the sample and the number of entry events were both small, we had to conserve degrees of freedom. We explored a large number of control variables to represent time-varying country opportunities, including gross domestic product (GDP), GDP growth, political risk, inflation, population, foreign direct investment (FDI) from the United States to the host country, and change in FDI. None had a significant effect and therefore

$i$  will enter county  $c$  is positively related to prior movers' market share in firm  $i$ 's domestic markets. The coefficient of prior movers' domestic market share was statistically significant in model 2, but it became smaller and insignificant in models 3 and 4 when we included dyadic mimicry. These results indicated that the effect of prior movers' market shares was not significant as a main effect, but depended also on the market share of the focal firm. For focal firms of average domestic market share, the market share of prior movers did not influence the likelihood of mimetic entry. Hypothesis 1 was therefore not supported.

Hypothesis 2 posits that the likelihood of focal firm  $i$  entering country  $c$  is positively related to its own market share in the domestic segments of prior movers. This assertion is also tested in models 2–4. *Focal firm's domestic market share* was statistically significant ( $p < .05$ ; see models 2–4) in the predicted direction. This result provided statistical support for Hypothesis 2 and suggested, as predicted, that focal firms with larger domestic market shares were more likely to respond mimetically to the international entry moves of average-share rivals in their domestic markets.

Hypothesis 3 proposes that mimetic entry is more likely when both prior movers' and a focal firm's domestic market shares are simultaneously high. The dyadic mimicry effect could be tested either with an interaction between market shares (model 3) or by examining market share differences between the focal firm and prior movers (model 4). In both cases, the addition of the new variable representing dyadic mimicry improved the overall fit of the model ( $p < .01$ ). Moreover, in both cases the coefficients were statistically significant and in the proposed direction. The interaction had a positive effect in model 3, indicating that dyadic mimicry results when large-share firms face large-share prior movers. The market share difference had a negative effect in model 4, indicating that dyadic mimicry was less likely when firms differed markedly in market share. In both cases, the addition of these variables made the coefficient of prior movers' market share smaller and insignificant, implying that the high shares of prior movers encourage mimicry only when a focal firm has a similarly high domestic market share. Taken together, these re-

sults provide strong evidence in support of the dyadic mimicry hypothesis.

Hypothesis 4 was tested using two variables that represented whether the focal firm was a long distance company whose domestic long distance rivals had entered into the host country, or a regional holding company (RHC; here, a Baby Bell) whose RHC rivals were in the host country (see Table 2, models 2–4). Long distance facing long distance<sub>ict</sub> was positive and strongly significant ( $p < .01$ ), while RHC facing RHC<sub>ict</sub> had a negative sign but generally did not reach statistical significance. A Wald test comparing these coefficients showed them to be significantly different ( $p < .01$ ), suggesting that the level of mimicry among long-distance companies was higher than among Baby Bells. This result supports competing Hypothesis 4a that competitive motivations dominated noncompetitive motivations in explaining the mimicry of international entry moves among U.S. telecommunications firms.

## DISCUSSION AND CONCLUSION

The results bolster competitive explanations of interorganizational mimicry. Other alternative explanations from a vicarious learning or institutional perspective do not appear to have as much predictive validity in our specific context. Firms with large shares in domestic market segments were more likely to respond to the foreign expansion moves of firms in those segments (Hypothesis 2), and the mimetic behavior of dominant players was stronger when the prior movers also had important market shares in overlapping domestic segments (Hypothesis 3). This result is consistent with the view that mimicry is an oligopolistic response in which the intent of follower firms is to minimize domestic market competitive risk (Knickerbocker, 1973). For instance, Fuentelsaz, Gomez, and Polo's (2002) study indicated that firms were more likely to expand into new geographic markets if their core markets exhibited intense industry rivalry. Mitchell (1989) also found evidence that industry incumbents in core products that were directly threatened by emerging subfields entered those subfields earlier. Consistently with these findings, our results indicate that even in indirect competitive situations, where rivals could leverage foreign market presence to improve their home market competitive advantages, firms were likely to defensively expand by imitating their rivals' international expansion moves.

Statistical tests of Hypothesis 4 provided additional support for competitive explanations. Mimicry of international entry among long-distance

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none were included in the final specification. We concluded that the combination of the stratified Cox model with the telephone mainline control variable effectively controlled for country-specific telecommunication opportunities. The five current control variables have a pseudo- $R^2$  of 30.1 percent.

**TABLE 2**  
**Cox Model of International Entry Moves Stratified by Host Country<sup>a</sup>**

Variables	Stratified Cox Models				Conditional Logit Models	
	1	2	3	4	5	6
Revenues <sub>it</sub> <sup>b</sup>	0.46** (0.18)	0.71*** (0.18)	0.86*** (0.20)	0.86*** (0.21)	0.47** (0.22)	0.47** (0.22)
Return on assets <sub>it</sub>	13.16*** (3.15)	15.17*** (3.87)	15.37*** (3.50)	15.82*** (3.86)	10.24** (4.21)	10.41** (4.24)
Free cash flow <sub>it</sub>	-3.20*** (0.84)	-4.13*** (0.85)	-4.83*** (0.80)	-4.90*** (0.80)	-3.13*** (0.95)	-3.12*** (0.94)
International experience <sub>it</sub>	0.54** (0.27)	0.32 (0.26)	0.41 (0.27)	0.39 (0.27)	0.58** (0.27)	0.56** (0.27)
Telephone mainlines <sub>ct</sub>	0.09*** (0.02)	0.08*** (0.02)	0.09*** (0.02)	0.09*** (0.02)		
Hypothesis 1: Prior movers' domestic market share <sub>ict</sub>		2.48 <sup>††</sup> (1.39)	1.15 (1.40)	1.04 (1.51)	0.86 (1.72)	0.81 (1.73)
Hypothesis 2: Focal firm's domestic market share <sub>ict</sub>		1.95 <sup>††</sup> (0.99)	2.59 <sup>†</sup> (1.29)	3.30 <sup>††</sup> (1.44)	2.47 <sup>††</sup> (1.50)	3.02 <sup>††</sup> (1.61)
Hypothesis 3: Prior movers' market share × focal firm's market share (interaction) <sub>ict</sub>			12.33 <sup>†††</sup> (4.22)		10.31 <sup>††</sup> (5.71)	
Hypothesis 3: Squared differences in market shares <sub>ict</sub>				1.43 <sup>†††</sup> (0.50)		-1.15 <sup>††</sup> (0.63)
Hypotheses 4a–4b: Long-distance company facing long-distance company <sub>ict</sub> ( <i>b</i> <sub>1</sub> )		0.68 <sup>†††</sup> (0.19)	0.86 <sup>†††</sup> (0.21)	1.01 <sup>†††</sup> (0.25)	0.80 <sup>†††</sup> (0.29)	0.91 <sup>†††</sup> (0.32)
Hypotheses 4a–4b: Regional holding company facing regional holding company <sub>ict</sub> ( <i>b</i> <sub>2</sub> )		-0.31 (0.30)	-0.41 (0.32)	-0.43 <sup>†</sup> (0.33)	-0.43 (0.39)	-0.45 (0.39)
Entry events	30	30	30	30	30	30
Firm-country event histories/spells	203/1,900	203/1,900	203/1,900	203/1,900		
<i>n</i>					791	791
Log-likelihood	-69.55	-61.88	-58.87	-58.76	-67.71	-67.66
Wald chi-square ( <i>df</i> )	58.71 (5) <sup>***</sup>	102.13 (9) <sup>***</sup>	94.73 (10) <sup>***</sup>	88.65 (10) <sup>***</sup>	62.10 (9) <sup>***</sup>	62.20 (9) <sup>***</sup>
Wald test of incremental addition to model 1 ( <i>df</i> )		19.33 (4) <sup>***</sup>	33.68 (5) <sup>***</sup>	33.97 (5) <sup>***</sup>	62.10 <sup>***</sup>	62.20 <sup>***</sup>
Wald test of <i>b</i> <sub>1</sub> = <i>b</i> <sub>2</sub> (1 <i>df</i> )		11.19 <sup>***</sup>	14.83 <sup>***</sup>	15.62 <sup>***</sup>	10.36 <sup>***</sup>	10.77 <sup>***</sup>

<sup>a</sup> Robust standard errors are in parentheses.

<sup>b</sup> Logarithm.

Two-sided tests:

\* *p* < .10

\*\* *p* < .05

\*\*\* *p* < .01

One-sided tests:

<sup>†</sup> *p* < .10

<sup>††</sup> *p* < .05

<sup>†††</sup> *p* < .01

companies was greater than among Baby Bells. This finding is consistent with the view that competitive processes motivate mimicry, but not with the view that noncompetitive referential processes are the dominant influence on similar firms. The competitive interpretation of mimetic moves was also consistent with some qualitative evidence. For example, the 1992 annual report of AT&T (page 22) justified its equity alliance with Canadian firm Unitel as follows: "We negotiated this alliance, which will include joint projects and marketing efforts, as a competitive response to an alliance between MCI Communications, Inc. and a consortium of Canadian telephone companies called Stentor." In their 1994 annual report (page 25), they justified their alliance with the Mexican Grupo Alfa by writing that "other U.S. companies – including MCI Communications Corp (MCI), Sprint and GTE Corporation – have or plan alliances with Mexican companies to compete in telecommunications services." Clearly, our results do not rule out all alternative interpretations. It might also be argued that the Baby Bells evolved divergently over time, and therefore the expectation of mimetic behavior may be unrealistic. Indeed, in a study of the Baby Bells' development within the cellular telephone service business, Noda and Collis (2001) provided qualitative evidence of how the interplay of various internal convergent and divergent factors generated path-dependent evolution that increased heterogeneity among the Baby Bells over time. Other particularistic explanations of the divergent behavior of the Baby Bells may be possible. For example, they may have tried to develop their own independent organizational identities after the AT&T breakup. However, most particularistic explanations of their divergent behavior would not explain the mimetic behavior of long-distance firms. Our interpretation explains why some initially similar firms (the Baby Bells) were less likely to mimic one another's strategic moves (resulting in strategic diversity over time), while other firms that were initially much more dissimilar (the long-distance companies) tended to match each other's moves. In our view, the intraorganizational process Noda and Collis (2001) described and the interorganizational process described here are complementary explanations rather than substitutes. Given our single-industry design and small sample, our results cannot be interpreted as conclusive support for one perspective over another. Additional research and replications in other contexts are needed. However, we strongly encourage future research to move beyond testing mimetic behavior against a null model of no mimicry (the dominant approach currently

and to focus instead on testing alternative theories of mimicry.

### Sensitivity Analysis

We explored the sensitivity of our results in several ways. First, because our study included only five host countries, we explored whether host country differences affected results. Ideally, we would have estimated our model separately for each country. However, because the number of events in some countries was small, we lacked sufficient power to estimate country-specific models. We used the alternative approach of estimating five models, each excluding one country. The results were highly consistent with our reported results.<sup>18</sup>

Because our results are based on only 36 actual moves, there was also a possibility that a few outlying observations were influential. To evaluate this possibility, we performed a "bootstrap estimation" of the model based on 5,000 simulated samples obtained by sampling with replacement among the 203 event histories. As Horowitz (2001) recommended, we bootstrapped the *Z*-statistics associated with each parameter, since these are the asymptotically pivotal statistics (statistics whose distribution is asymptotically standard normal or chi-square). Since the Cox model was nonlinear, the empirical distribution of bootstrapped statistics was biased, and we used bias-corrected confidence intervals for the *Z*-statistics. The bootstrap results generally supported the results from the stratified Cox model.

Finally, we wanted to check that unobserved heterogeneity due to opportunities in the host countries not captured by our controls did not influence results. To examine this possibility, we analyzed the data using an alternative modeling methodology that controls for all country characteristics (observed and unobserved) in a particular spell. The estimation was based on the conditional logit methodology, since it focused on explaining which firm entered a country in a particular spell, given that at least one company had entered. This analysis therefore examined entry determinants within each

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<sup>18</sup> The coefficients associated with the interaction effect and long distance mimicry were positive and significant in all five models. The coefficients associated with focal firm's domestic market share were positive and significant in all the models except the one excluding Mexico; there, the coefficient was insignificant, but the interaction coefficient was much higher than it was in other models. Since excluding Mexico excluded 12 of the 30 moves in the data set, this result may be due to the lower statistic power in the remaining sample.



country spell. Since all observations at risk faced the same country characteristics, comparisons were among firms facing the same environment. Columns 5 and 6 of Table 3 display the results of the conditional logit analysis. Although the results were not strictly comparable to those of the stratified Cox model (these models are not nested), the patterns of results were remarkably similar. This analysis indicates that omission of unobserved characteristics of the country environments did not bias our findings.<sup>19</sup>

### Limitations and Extensions

Although the results were empirically robust, the study had some limitations. First, the small number of firms, host countries, and events analyzed limited statistical power. Future research could replicate these findings in other contexts with richer data sources that could afford stronger statistical power. The challenge for future work, however, will be to improve statistical power without sacrificing the critical experiment aspect of the research design. If the most similar firms in a data set are also direct competitors (which is a common situation), statistical power alone is unlikely to let a researcher tell alternative theories apart. Because observation of similar behavior may be due to the spurious effects of common environmental opportunities, future research should also include attempts to control for potential environmental factors that may explain parallel behavior. Our model used control variables and statistical methods (country strata in the Cox model and an alternative conditional logit model) to control for common environmental effects. Although one cannot rule out all alternative explanations, our results were generally robust.

Second, the critical experiment nature of the study implies that the results may not be broadly

generalizable. Indeed, critical experiments involve observations selected for their ability to separate alternative theoretical mechanisms that are generally difficult to extricate. The unique regulatory context in telecommunications allowed us to separate competitive and noncompetitive explanations of mimicry, but that uniqueness may limit generalizability. Future research could examine other critical experiment situations in other industry contexts. For example, other contexts in which the most similar firms may not be direct competitors include the airline industry (e.g., low-cost airlines generally do not compete against each other, but against regular airlines).

Third, the sample window was not sufficiently long to explore the full evolutionary path of clustering behaviors, including the end of clustering.<sup>20</sup> Future research could examine the dynamics of clustering over longer time windows and observe whether some conditions reduce the propensity of firms to cluster. In general, the motivations to cluster may vary over time and with prior adoption and may depend on whether adoption moves are complements or substitutes.

Fourth, the study relied on theoretical mechanisms that were assumed but not directly observed. For example, our theory uses market shares and subgroup membership as proxies for competitive dependence and referential behavior. Future research could contribute by developing measures of mediating constructs, such as dyadic competitive dependence or interorganizational referential behavior, and provide explicit tests of the alternative causal paths invoked in alternative theories of mimicry. For example, experimental and policy-capturing methods could be used to evaluate alternative (competitive/noncompetitive) motivations for mimetic behavior.

### Implications for International Entry Research

Although our research examines mimetic behavior as a dyadic interorganizational influence, our results agree with and extend previous findings about the relationship between market structure and clustering (Knickerbocker, 1973). We found mimicry most prevalent among firms with large

<sup>19</sup> Because of the high level of censoring, we checked that we did not have a bias due to the high level of zeros (censored spells) relative to ones (spells ending in an entry move). The "rare event logit" is a method political scientists have developed to account for potential biases in logistic regression models when the ratio of ones to zeros is very low (King & Zeng, 2001). This problem happens, for example, in attempts to predict war among country dyads, since war is a rare event. Although this methodology was inferior for our specific context (it did not allow country strata and did not model timing of events), it provided an additional check of the robustness of our results. The results of the rare event logit with respect to the hypotheses were consistent with those of the stratified Cox model.

<sup>20</sup> In a post hoc analysis, we explored whether imitation was more likely for more recent moves by other firms. If so, this could imply a time decay in the mimicry effect of earlier movers that could explain deescalation of clustering behavior. Although the coefficients were in the expected directions (more recent moves had stronger effects), the differences were not statistically significant.

domestic market shares competing in overlapping domestic market segments, and hence actively jockeying for market position. In such a context, expansion moves by some firms often escalate into a competitive bandwagon. On the other hand, in a dominant-firm domestic market structure (where a single firm dominates the market, resulting in very high concentration), the competitive forces that lead to mimicry are diminished, as small-share fringe firms are less likely to imitate dominant firms.

The findings also illustrate how domestic rivalry influences firms' globalization efforts, in agreement with Porter's (1990) "diamond model." Direct domestic competition among long-distance companies led them to replicate similar relationships internationally by following each other's international activities, especially in adjacent international regions. The lack of direct domestic competition among the Baby Bells was likewise replicated in their international behaviors. While all Baby Bells internationalized, they did so to different degrees and in different geographic regions. This was true not only in the Americas, but also in the rest of the world. The lower prevalence of mimicry among Baby Bells may reflect a strategic motivation to develop non-overlapping international "spheres of influence" that mirror their domestic competitive context. Alternatively, Baby Bells may have lacked the experience in head-to-head competitive interaction that is necessary to implement competitive responses. Yet the results provide some interesting indication of how local competitive conditions may shape the structure of global competition.

The descriptive evidence of mimetic behavior should not be interpreted as prescriptive support for this behavior. It is not clear that mimetic behavior (with either competitive or noncompetitive motivations) leads to superior performance outcomes. The experience in Mexico, where seven U.S. firms lined up large investments to enter the local long-distance market, only to be caught in the peso crisis and end up merging their investments, demonstrates that imitating firms may collectively obtain inferior outcomes. The high level of uncertainty associated with international entry may cause ex ante rational mimetic moves to end in substantial ex post entry failures. Although observation of prior adoptions may encourage optimistic performance expectations, these higher expectations may promote excessive investments and lead to industry shake-outs (Sahlman & Stevenson, 1985). Competitive imitation may also represent individually rational strategies to reduce competitive risks, yet these behaviors may collectively lead to competitive convergence and market crowding (Kennedy, 2002).

### Implications for Interorganizational Mimicry Theory

This study suggests some avenues for extending current theoretical models of interorganizational mimicry. Generally, our research emphasizes the role of competitive motivations in the diffusion of strategic actions; although recognized in early research, this role has received little attention in recent organizational research on mimetic processes. Given that the context of our study was selected for its quality as a critical experiment, we cannot make broad inferences about the general validity of non-competitive referential mechanisms beyond our context. We think that both theoretical perspectives have merit and that the adequacy of one or another perspective may depend on the behavior that is being imitated, or the context of imitation. Indeed, there is evidence of other mechanisms at work in other recent studies (Guillén, 2002; Henisz & Delios, 2001). Nevertheless, our results strongly suggest a balanced and integrated attention to competitive and noncompetitive motivations of interorganizational mimicry (Deephouse, 1999).

One possible avenue for integrating these alternative mechanisms in a broader framework of clustering is to consider the contextual contingencies of such mechanisms. Three contextual dimensions may serve to illuminate and integrate our findings within a broader framework: (1) the nature of externalities across moves, (2) the level of analysis of the clustered practice or action, and (3) the temporal stage in the diffusion process.

First, the nature of performance externalities across moves (beyond information spillovers and social modeling) limits the range of application of referential mimetic processes. In theoretical models of noncompetitive referential mimicry, the assumption tends to be that prior diffusion does not crowd out returns to adoption. Under this assumption, mimicry is a process of social discovery of unknown but constant parameters (Bikhchandani et al., 1992). This may be true in the case of a poison pill adoption (Davis, 1991) or choices of an investment banker (Haunschild & Miner, 1997), where adoption moves are not performance substitutes. In many cases, however, adoption moves are substitutes, and prior adoptions reduce the performance of further adoption. For instance, in foreign market entry, prior entry may signal attractive market opportunities while simultaneously diminishing such opportunities. Under those conditions, negative externalities (prior moves crowding out an adoption opportunity) counterbalance the information diffusion benefits of prior moves, and clustering behavior is likely to end earlier (Avery & Zem-

sky, 1998). When mimicry is motivated by competitive responses, however, its expected benefit is that of maintaining competitive balance in a domestic market. Therefore, competitive motivations may encourage mimicry even in crowded host markets. Accordingly, we would expect competitive mimicry motivations to be more prevalent than noncompetitive referential mechanisms when adoption moves are performance substitutes rather than complements.

Second, and a consequence of the previous point, the level of analysis at which a clustering behavior or action is studied may determine the relevance of competitive and social reference motivations. While Baby Bells apparently avoided mimicking each other's international entry moves *in the same host countries*, they appeared to simultaneously follow an internationalization trend (Noda, 1996; Smith & Zeithaml, 1996). This apparent paradox directs attention to the different levels of analysis at which competitive and social mimetic forces operate (Dacin, 1997). Because narrowly defined practices, such as "entry into Mexico," are more likely to be crowded out by prior adoption, competitive motivations may be more relevant when such crowding out is possible. Broadly defined practices such as "internationalization" may not be devaluated by prior adoption and may be more amenable to diffusion by noncompetitive processes.

Third, the narrow time window our sample represents may explain the lack of stronger support for institutional explanations of mimicry. It is perhaps unlikely that practices such as the ones studied here (entering a specific host country) could become institutionalized within the span of a few years. With only about 14 percent of event histories ending in market entry, it is unlikely that entry into a host market becomes a taken-for-granted behavior in the context. Noncompetitive referential processes (particularly those involving following particular institutional norms) may only be activated after adoption by a critical mass (Abrahamson & Rosenkopf, 1993). But how does a system gain the critical mass to cross that social contagion threshold? Competitive mimicry may not require a large mass of prior adopters, since firms respond to their close market competitors. Therefore, competitive mimicry may be a bridge between early adoption that results from independent assessments of efficiency and late adoptions that result from rule-following social pressures (such as managerial incentives or sociocognitive factors). Therefore, competitive mimicry may temporally precede institutional mimicry.

In summary, in this research we found that domestic competition among U.S. telecommunica-

tions firms was a powerful motivation for mimicry of their international expansion moves in the American continent. Future theoretical research should strive to develop a midrange theory that integrates the competitive and noncompetitive dimensions of interorganizational mimicry over time. Since discriminating among these mechanisms is generally difficult in many contexts, further empirical work is needed to identify, test, and distinguish among the alternative theoretical mechanisms.

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**APPENDIX**  
**Description of Entry Moves**

Host Country	First Moves	Subsequent Moves	Time since Previous Move
Argentina	Bellsouth: July 27, 1988	AT&T: March 29, 1994 GTE: March 29, 1994 SBC: November 7, 1995	5 years, 8 months 0 days 19 months
Canada	Ameritech: January 1, 1985	GTE: June 6, 1991 MCI: September 10, 1992 AT&T: January 8, 1993 Sprint: August 4, 1993 MFS: November, 23, 1993 Nextel: March 3, 1994 LCI: January 25, 1995 Bell Atlantic: February 23, 1995	6 years, 5 months 15 months 4 months 7 months 4 months 3 months 11 months 1 month
Chile	PacifiCorp: May 23, 1989	Bellsouth: September 10, 1991 Bell Atlantic: December 5, 1994 SBC: February 7, 1995	2 years, 4 months 3 years, 3 months 2 months
Mexico	Contel: January 15, 1990 McCaw: January 15, 1990	Centel: March 6, 1990 Bellsouth: March 10, 1990 SBC: October 9, 1990 Bell Atlantic: October 12, 1993 MCI: January 26, 1994 Nextel: June 4, 1994 GTE: September 28, 1994 Alltel: November 1, 1994 AT&T: November 9, 1994 Sprint: December 13, 1994 C Tec: January 25, 1995 MFS: August 15, 1995	2 months 4 days 7 months 3 years 3 months 4 months 4 months 1 month 1 week 1 month 1 month 7 months
Venezuela	Bellsouth: January 17, 1991	AT&T: November 18, 1991 GTE: November 18, 1991 MCI: February 24, 1992 Sprint: October 17, 1995	10 months 0 days 3 months 3 years, 8 months

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