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Embeddedness, Social Identity and Mobility: Why Firms Leave the NASDAQ and Join the New York Stock Exchange

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Organizations derive their social identity from membership in formal groups and strive to maintain a positive social identity. When their social identity is threatened and group boundaries are permeable, organizations defect to other groups. This paper suggests that organizations receive identity-discrepant cues when in-group members defect to an out-group, but how organizations respond to such cues hinges on their social affiliations to the in-group, out-group, and defectors. A study of organizations that migrated from the NASDAQ stock market to the New York Stock Exchange reveals that strong ties to in-group members (NASDAQ members) reduced the impact of identity-discrepant cues and diminished defections. Conversely, strong ties to out-group members (NYSE members) enhanced the impact of identity-discrepant cues and increased defection. Proximity to defectors increased cross-overs—organizations followed defectors to whom they had direct ties. Implications for the study of embeddedness are outlined.●

The central insight of the embeddedness perspective is that economic action is shaped by the structure of social relationships (Granovetter, 1985). By extending this insight to the organizational level of analysis, sociologists have shown that social structures affect a wide array of economic outcomes, such as price-fixing (Baker and Faulkner, 1993), the dissolution of small firms (Uzzi, 1996), and the migration of manufacturing establishments (Romo and Schwartz, 1995). Despite the growth of empirical research, however, the embeddedness perspective has been critiqued for lacking theoretical depth. Portes and Sensenbrenner (1993: 1321) observed that while the embeddedness concept is useful for criticizing neoclassical models, "it suffers from theoretical vagueness" when used to provide concrete propositions. DiMaggio (1994: 27–28) suggested that embeddedness researchers should delineate how social structures provide the "categories and understandings that enable us to engage in economic action." A useful point of departure for doing that is White's (1992: 6–18) proposal that social networks supply actors with meanings from which they construct their social identity and ward off threats to their social identity by engaging in control efforts.

We extend this proposal by suggesting that organizations acquire a social identity from membership in formal and informal groups and strive to maintain a positive social identity. When group members exit their in-group to join an out-group, the focal organization receives cues discrepant with its own social identity. A focal organization's response to such identity-discrepant cues is likely to be affected by its ties to in-group and out-group members and by affiliations of defectors to in-group members and to the focal organization itself. In doing so, we synthesize embeddedness arguments with social identity theory (Tajfel and Turner, 1979) and suggest that each perspective can enrich the other.

We investigate these arguments in an empirical analysis of why organizations voluntarily abandon listing in a stock exchange and join a new stock exchange. A corporation's choice of stock exchange is consequential, both materially

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and symbolically. An organization's choice of stock market influences how its shares are priced and, thus, its ability to raise capital (Easterbrook and Fischel, 1991). The choice of stock exchange also has symbolic consequences. For instance, drawing on the symbolic importance of affiliation, the NASDAQ stock market (NASDAQ) and the New York Stock Exchange (NYSE) put considerable effort and expense into promulgating the uniqueness of their identities and attracting and retaining listing companies. Our paper follows 2,020 organizations listed on the NASDAQ national stock market in 1987 until the end of 1994 to study whether they migrated to NYSE.

EMBEDDEDNESS AND SOCIAL IDENTITY

According to some critics, the embeddedness perspective says little about how social ties shape the categories and understandings that inform the economic behavior of participants. Portes and Sensenbrenner (1993: 1321) remarked that observing that outcomes "depend on how economic action is embedded" does not help to improve predictions or build theory. "To fulfill these goals, we must better specify just how social structure constrains, supports or derails individual goal-seeking behavior." White (1992: 5) proposed that embeddedness has its effects on economic action partly by shaping identities through social interaction with others. Social network theory posits that an actor's identity is constructed through multiple role settings: a social role exists in relation to other complementary roles, and a role indicates the points of contact and interaction between actors occupying different positions (Powell and Smith-Doerr, 1994). Hence, knowledge of an actor's ties facilitates prediction of an actor's orientations and behaviors. But beyond making this general observation, the literature on embeddedness sidesteps the issue of how actors derive social identity from membership in social groups and how they strive to maintain a positive social identity.

Social psychologists have articulated a social identity perspective, but it has flourished in relative isolation from embeddedness arguments, despite the potential for both perspectives to enrich each other. With explicit attention to how actors derive and enhance social identity, embeddedness arguments may explain how social structures provide actors with the categories and understandings to make economic decisions. But embeddedness arguments can also enable social identity theory to account for how actors receive identity-discrepant cues from peers and how the affiliations of actors influence their interpretation and response to identity-discrepant cues.

Social identity theory. Social identity theory emphasizes that actors engage in categorization, identification, and comparison in their construction of a self-image (Tajfel and Turner, 1979). Social categories are discontinuous divisions of the social world into distinct perceptual classes that provide actors with a systematic means of defining themselves and others. When actors perceive categories, they give them meaning by accentuating the differences between categories and emphasizing the similarities within categories. As a

result, appropriate, expected, and desirable behaviors are used to define the category as different from other categories. Second, actors identify with the groups to which they perceive themselves as belonging. Actors sometimes think of themselves as group members and at other times think of themselves as unique entities. The first is referred to as social identity, the latter is referred to as personal identity, and both are basic to a self-concept. Put another way, social identity is a social self-categorization. Third, social identity theory also holds that one's social identity is clarified through comparisons, generally between an in-group (the group to which an actor belongs) and an out-group (a rival group). To the extent that an in-group is perceived to be better than the out-group, one's social identity is enhanced.

Members preserve their positive social identity by positively stereotyping their group and negatively stereotyping others. But when negative feedback undermines these stereotypes and jeopardizes social identity, members respond to threats to their social identity by using three basic strategies: social mobility, social creativity, and social change (Tajfel and Turner, 1979). Social mobility describes an actor's ability to exit the in-group and join another group (out-group). Social creativity describes an actor's ability to creatively change the basis of comparison so that the in-group is seen more favorably. Finally, through social change, actors may compete directly with the out-group to alter the relative status of both groups. Social mobility (exit) is the dominant strategy for achieving positive social identity because individuals use other strategies only when they find it impossible to change membership (van Knippenberg, 1984; Taylor and McKirnan, 1984). Several studies have suggested that social mobility strategies are preferred when boundaries are permeable and changing group membership is a realistic possibility (e.g., Jackson et al., 1996; Ellemers, Spears, and Doosje, 1997).

The preceding arguments have also been extended to the organizational level of analysis (Dutton and Dukerich, 1991; Ashforth, 1999). Albert and Whetten (1985) suggested that, like individuals endowed with a personal identity, organizations also have an identity built around their central, enduring, and distinctive characteristics (e.g., the American Cancer Society viewing itself as committed to saving lives). Organizations may also derive a social identity through membership in formal groups or through benchmarking processes (Gioia, 1998). Organizations acquire a social identity from the industry to which they belong, the organizational form they use, and through membership in accrediting bodies. For example, U.S. West has derived its social identity by categorizing itself as a member of the multimedia industry and not the telephone industry (Sarason, 1998). Liberal-arts, Black, and teachers' colleges have derived their social identity from membership in the National Association of Intercollegiate Athletics (NAIA) rather than the National Collegiate Athletics Association (NCAA), which is perceived as the out-group (Washington, 1999).

Empirically, researchers have emphasized the organizational analogue to personal identity but have paid less attention to the social identity of an organization. Dutton and Dukerich

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(1991) distinguished two aspects of organization-level personal identity, namely, organizational identity (insiders' perceptions) and organizational image (outsiders' perceptions), and showed how both influence how decision makers perceive and respond to events. Elsbach and Kramer (1995) investigated the responses of academic administrators in eight business schools to *Business Week* rankings and found that administrators in schools that suffered in comparison with their peers resorted to more selective comparison categories (e.g., schools emphasizing teaching downplayed comparisons with research-focused schools). School administrators were able to employ selective comparisons because schools derived their social identity from membership in categories (e.g., schools in public universities saw themselves as belonging to a distinct category).

Although Elsbach and Kramer (1995) usefully emphasized how decision makers used a strategy of social creativity to regain a positive social identity, organizational researchers have paid little attention to social mobility, even if it is the dominant strategy of identity enhancement at the individual level. Social mobility is especially interesting because the exit decisions of group members are themselves cues that undermine the social identity of a focal organization. To date, research on social identity theory has presumed that threats to the social identity of an actor come from sources outside the in-group (e.g., feedback manipulated in experiments, external rankings, or the power of the out-group). But the social identity of organizations can be jeopardized when group members defect to the out-group. Defections not only make the social identity of the focal organization salient but also undermine it. Scott (1995: 34–35) proposed that mimetic mechanisms provide a cognitive foundation for the construction of identity. As the number of such identity-discrepant cues accumulates, actors find it difficult to maintain a positive social identity. When this happens, the embeddedness of a focal organization may influence its use of social mobility as an identity-enhancement strategy.

Identity Enhancement through Mobility

Defections by in-group members are signals that the boundaries of in-groups and out-groups are permeable. Defections create a discrepancy between actors' desire for a positive social identity and current realities. Studies of turnover at the individual level suggest that voluntary exits impugn the identity of role occupants when exiters are similar to role occupants (Ashforth, 1999: 45). For example, Krackhardt and Porter (1986) found that turnover in fast-food restaurants tended to snowball because individual exits undermined role identity. When members of the in-group defect and join an out-group, decision makers in the focal organization are likely to infer that there is something wrong with their social group and, by implication, their own social identity. Identity-discrepant cues in the form of defections make it difficult for in-group members to believe that their group is better than the out-group. As identity-discrepant cues accumulate, the social identity of the organization is likely to be undermined, and decision makers in the focal organization are likely to become concerned. But how these decision makers interpret the

accumulation of identity-discrepant cues depends on their ties to in-group and out-group members and on the affiliations of defectors to in-group members and to the focal organization itself.

Ties to in-group members. A consistent finding in the social identity literature is that responses to a social identity threat differ according to an actor's level of prior identification: low identifiers were disposed to dissociate themselves from a group, but high identifiers were prepared to stick together (Ellemers, Spears, and Doosje, 1997). Ties to co-members are likely to increase an actor's identification with the in-group. Studies of voluntary associations suggest that ties to co-members foster shared interpretations of what is desirable and what is acceptable and thus reduce exits. McPherson, Popielarz, and Drobnic (1992) found that if a member was connected to another member in the organization, the membership lasted an average of 66 percent longer than without the tie. The more numerous the ties to in-group members, the more likely it is that decision makers in a focal organization will derive social identity from the in-group and negatively stereotype defectors. Hence, ties to co-members dampen the effect of identity-discrepant cues and lower the probability that the focal organization will exit the in-group:

Hypothesis 1 (H1): A focal organization's ties to in-group members will reduce the effect of identity-discrepant cues and diminish defection to the out-group.

Ties to out-group members. By contrast, ties to out-group members are likely to amplify the effect of identity-discrepant cues. Several studies indicate that social groups recruit new members through the network ties of their current members (Booth and Babchuk, 1969; Fernandez and McAdam, 1988). Because of the homophily principle, new members who join a group through their contacts with existing members will tend to be similar to their contacts (Popielarz and McPherson, 1995). McPherson, Popielarz, and Drobnic (1992) reported that if a member of a social group was connected to non-members, the membership lasted an average of 14 percent less time than without the extraorganizational tie. Hence, ties to out-group members are likely to undermine a focal organization's attachment to the in-group but also to diminish negative stereotyping of the out-group. As a result, ties to out-group members are likely to accentuate the effect of identity-discrepant cues and induce the focal organization to exit the in-group:

Hypothesis 2 (H2): A focal organization's ties to out-group members will enhance the effect of identity-discrepant cues and increase defection to the out-group.

Ties of defectors to in-group members. All defections of in-group members do not exert the same discrepant effect on an actor's social identity: the actions of highly visible role models are particularly influential (DiMaggio and Powell, 1983). The more ties defectors have with in-group members, the less likely they are to be negatively stereotyped and the more influential a defection is as an identity-discrepant cue for remaining in-group members. The greater the number of

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in-group ties possessed by prior defectors, the more likely are their exits to cause in-group members to question their membership. Exits by insiders occupying a central location in the in-group breach the taken-for-granted stereotypes of members and signal that jumping ship is not only appropriate but also desirable:

Hypothesis 3 (H3): The greater the number of ties to in-group members possessed by a prior defector, the more likely is the focal organization to defect to the out-group.

Ties of defectors to the focal organization. An organization's social identity is more likely to be disconfirmed when it has direct connections with defectors. Potential migrants with direct ties with prior migrants find it easier to observe the consequences of migration, resulting in serial migration (see Massey and Espinosa, 1997). Similarly, direct ties to prior adopters of an innovation diminish the ambiguity faced by potential adopters, leading to network-based contagion. Direct ties with defectors enable the focal organization to learn about the value of mobility as an identity-enhancement strategy and promote vicarious learning. The more ties the focal organization has to defectors, the more directly are its decision makers able to observe the effects of defection. As result, decision makers in the focal organization are less likely to stereotype the out-group negatively and more likely to question membership in the in-group:

Hypothesis 4 (H4): The larger the number of ties that a focal organization has with prior defectors, the more likely is it to defect to the out-group.

METHOD

NASDAQ Stock Market

We investigated these hypotheses in a study of whether organizations voluntarily abandoned listing in the NASDAQ stock exchange and joined the rival NYSE.¹ We chose stock exchanges as our empirical setting because organizations derive social identity from stock exchanges and defect to rival exchanges to enhance their social standing. Because companies that migrate are publicly proclaimed to have gained status through switching exchanges, defections constitute an identity-discrepant cue for the remaining organizations, and social ties in the form of board interlocks play an important role in how decision makers construct and interpret these identity-discrepant cues.

Stock markets have long been the research domain of financial economists who gloss over social relations on the assumption that social connections are marginal sources of friction in financial markets. The choice of stock exchange is usually deemed to have material financial consequences. The existence of a national public market for shares makes it easier for potential investors to maintain diversity and liquidity, thereby reducing the cost of equity capital for firms. An organization's choice of stock market influences how its shares are priced and, thus, its ability to raise capital (Easterbrook and Fischel, 1991). Studies by financial economists indicate that organizations leave the NASDAQ and join the NYSE

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The AMEX, once the second-largest exchange, is now a distant third to the NYSE and the NASDAQ, and it has become known as a market dominated by obscure energy-related stocks, stock options, and derivatives. Recently, the AMEX announced a merger with the NASDAQ. There is considerable rivalry between the NASDAQ and the NYSE to attract firms (characterized by the *Economist* as a "listing battle"). Much of this competition takes the form of the NYSE seeking to attract NASDAQ firms, and the traffic is almost entirely from the NASDAQ to the NYSE.

when they are small, when they perform erratically, and when they have low trading volumes, small numbers of shareholders, few competitive quotes, and high bid-ask spreads (Sanger and McConnell, 1986; Cowan et al., 1992; Dharan and Ikenberry, 1995). Even beyond any financial or economic incentive firms may have to switch exchanges, however, social identity and social connections may be more than mere sources of friction, but in fact may play an important role in the decision to migrate.

Organizations signal their social identity through their affiliation with stock exchanges, with the NASDAQ and the NYSE offering distinctive competing images. On a public front, NASDAQ advertisements in the 1990s insisted that NASDAQ-listed firms represented the new high-growth economy, while NYSE advertisements proclaimed that NYSE members were established organizations that had met tough listing requirements. An index of the prices of NASDAQ-listed firms is commonly taken in the media as an indicator of the fortunes of the technology sector. In contrast, the NYSE is far older and larger, and it has more demanding listing requirements as well as greater exit barriers. Most so-called blue-chip firms (e.g., members of the Dow Jones index) are listed on the NYSE. As one equity trader put it, membership in the NYSE has to do with "a perception of establishment and tradition, of having matured and made it as a corporation" (*Milwaukee Journal Sentinel*, 1999: 3). As a result, almost all of the traffic is from the NASDAQ to the NYSE, with very few firms moving the other way. Yet the financial case for moving is highly ambiguous: stayers on the NASDAQ as of 1999 included Microsoft, Intel, MCI Worldcom, Dell Computer, Cisco, Amazon.Com, and other prominent representatives of the new economy. In contrast, movers to the NYSE on average suffered worse performance (Dharan and Ikenberry, 1995).

Decision makers of listed organizations have emphasized social identity as the reason why they belong to the NASDAQ, as did Robert Cohn, the chief executive officer (CEO) of Octel: "We believe that part of our company's growth is attributable to the NASDAQ growth environment. There is another reason my company—and I suspect many others—continues to favor NASDAQ. Call it a cultural affinity, if you will. NASDAQ is a market in a constant state of self-examination and improvement, adapting and combining the best features of its own system and that of the exchanges" (*Los Angeles Times*, 1994: D7). Joseph Hardiman, the CEO of the NASDAQ, stated that when CEOs forsake the NASDAQ for the NYSE, they are "making a visceral, rather than intellectual decision. Logic can't do much to deter people who are deciding on that basis" (*Washington Post*, 1994: F5).²

We interviewed representatives of recent defectors and members of the NASDAQ to understand the role of social identity. Investor-relations managers of recent defectors stated that prestige and, by implication, a favorable social identity was their reason for moving to the NYSE. Representatives of Qwest, a firm that was inducted on the NYSE under the symbol "Q," identified their need for greater visibility and brand awareness as the reason for their switch. They also indicated

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Even if firms typically shift from NASDAQ to the NYSE, a counterargument is that the NASDAQ market has outperformed the NYSE market and that, as a result, the social identity of NASDAQ firms may not be jeopardized even if their compatriots jumped ship to the NYSE. Although the NASDAQ national market looks desirable retrospectively, since the NASDAQ index outperformed the NYSE index during the late 1990s, the case was considerably more uncertain looking prospectively during the late 1980s and early 1990s. Even if the NASDAQ market is currently doing better than the NYSE market, executives of firms who have recently defected still cite prestige and, by implication, a favorable social identity as the reason for the defection.

that joining the NYSE was a demonstration that the company had “proved itself” by migrating to the “more prestigious exchange.” Representatives of the restaurant chain IHOP, which was compelled to change the ticker symbol from “IHOP” to “IHP” on switching to the NYSE, identified prestige as the primary motivation for the switch, stating, “It is a fitting match for one of America’s blue-chip family restaurants to be listed on the blue-chip exchange.”

Interviews also revealed that exchange members perceived defections of firms, especially proximal firms, as cues that undermined the NASDAQ’s identity and, by implication, their own. For example, the representative of Qwest referenced the prior defection of AOL (America Online) as an indication that the NASDAQ “no longer had a monopoly on technology—there are plenty of large technology companies on the Big Board [NYSE]”—and implied that “affiliation with high-quality” firms in the NYSE would enhance Qwest’s social standing. Our interviews also revealed that firms currently in the NASDAQ were likely to perceive defections as identity-discrepant cues because NYSE executives publicized these defections and targeted firms to inflict symbolic damage on the NASDAQ. Members of the NASDAQ also stated that NASDAQ executives recognized that defections were freighted with symbolic value and sought to downplay their impact. Representatives of member firms also indicated that personnel from the rival exchanges even battled over the number of defections in a year to influence perceptions of current members.

We interviewed executives of both exchanges to cross-check the perspectives of NASDAQ members. Representatives of both exchanges stated that the image of firms in capital markets was influenced by their exchange affiliation and that defections had adverse symbolic rather than financial consequences. NYSE representatives stated that they regarded defections from the NASDAQ as “coups” for their exchange, whereas NASDAQ executives indicated that they sought to reduce the fall-out from defections. For instance, when America Online defected in 1996, NASDAQ spokesman Marc Beauchamp stated, “I think it’s got to do more with what’s going on at America Online than it does with what’s going on at NASDAQ” (*Washington Post*, 1996: F1). Exchange representatives also disagreed over the number of defections as NASDAQ managers sought to contain the damage and as NYSE managers sought to do the opposite. For example, after Roadway Corporation’s defection in 1995, “NASDAQ spokesman Marc Beauchamp said 34 companies left NASDAQ for the NYSE by the end of September 1995. The NYSE disputed those figures as too low; it says 44 companies have defected as of Nov. 9, 1995” (*Star Tribune*, 1995: 3D). NYSE representatives also indicated that they targeted specific firms whose departures would be a large blow to the NASDAQ and its listed companies. NASDAQ executives asserted that they made every effort to dissuade firms from leaving. For example, Richard Grasso, the NYSE president in 1995, indicated that Microsoft was its primary target. NASDAQ spokesmen dismissed Grasso’s targeting of Microsoft as “campaign rhetoric” but nevertheless invited Michael Brown,

the chief financial officer of Microsoft, to join the board of the NASDAQ (*Los Angeles Times*, 1995).

Media accounts of defections also lend credence to the accounts furnished by exchange representatives and investor relations managers of firms belonging to the NASDAQ. As one newspaper put it, if 40 firms left the NASDAQ in 1987, they would amount to less than 2 percent of the national market, but "symbolically though, the departures amount to a major irritant for NASDAQ, for they highlight one of its most vexing problems: a lack of prestige" (*Washington Post*, 1994: F5). A similar view is evident in the *Financial Times'* (1996) account of Bay Networks' defection:

Mr. Richard Grasso, chairman of the NYSE, said he was "thrilled" by Bay's move. He said Bay was joining "a prestigious list of high-technology companies whose shares enjoy the worldwide visibility and liquidity that only the NYSE's auction market can provide." This was regarded as a criticism of the NASDAQ, which has a high proportion of well-known technology companies on its lists, including Microsoft, Intel and Apple Computer.

Social ties in the form of shared directors have the potential to significantly influence the defection of organizations from the NASDAQ to the NYSE. A simple majority vote by the board of directors is the mechanism by which an organization can decide to leave the NASDAQ and join the NYSE. As the NASDAQ representative put it in our interviews, "A company can just pick up the phone and leave." How a board exerts influence also depends on where else directors sit on boards and on their affiliations with other organizations. Numerous studies indicate that board interlocks formed by sharing board members can serve as an infrastructure for cohesion (Useem, 1984) and as a communication mechanism for the transfer of norms, values, and strategies (Mariolis and Jones, 1982; see Mizruchi, 1996, for a review).

Directors draw on their prior experiences and on their interpretation of what other firms have done in making decisions about the governance of the firm. Interlocks play a crucial role in this process of information acquisition and interpretation. Interviews with directors by Lorsch and MacIver (1989: 27) reveal the importance of interlocks. One CEO in their sample said that "serving on the board is a way of seeing how somebody else is doing the same thing you are doing," and another remarked that "you learn so much about situations that you, in turn, become faced with." In the case of the decision to switch exchanges, the respective markets are very much aware of the influence of board interlocks on this decision. The NASDAQ representative stated, "Boards make the world go around for some of these stocks," and part of the "standard operating procedure" for those whose job it is for NASDAQ to retain member firms is to check on and pay attention to the connections of the board. Thus, director interlocks provide procedural information for decision making as well as normative information. For example, Republic Industries (managed by Wayne Huizenga) moved from the NASDAQ to the NYSE and, by doing so, followed the path of other companies such as Blockbuster Video (since sold to

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Viacom) and Waste Management, with whom Huizenga was involved as a board member or CEO (*Financial Times*, 1997).

Director interlocks are inexpensive, trustworthy, and credible information sources (Haunschild and Beckman, 1998). They are inexpensive because directors are required for all corporations, and the information that comes from a director is a by-product of this requirement. Interlock information is likely to be credible when it relates to issues about which a partner has personal knowledge and experience. Interlock information is likely to be trustworthy, since law and custom largely contain conflicts of interest (e.g., competitors are prohibited from sharing directors).

Since a vote by the board of directors is the device by which a firm can de-list from NASDAQ and join NYSE, an act of interpretation on the part of the board is required to resolve the issue of whether migration will enhance the organization's social identity. How directors of a focal firm view the migration decision and what kind of information they channel to the board of the focal firm depends on whether they sit on the board of another NASDAQ firm (in-group tie) or a NYSE firm (out-group tie). Similarly, the effects of defectors also hinge on how interlocked they are with NASDAQ members and with the focal organization.

Data

The initial sample included all 2,020 firms listed in the National Market System (NMS) of the NASDAQ in 1987. Not all of these firms were eligible (at risk) to defect, however, because of the NYSE's stricter listing requirements. Thus, we included firms in the risk set only at times when they met the NYSE's eligibility requirements. NYSE rules state that an organization is eligible to join the NYSE when it fulfills the following conditions: (1) pretax income of \$2.5 million in the latest year, (2) pretax income of \$2 million in the preceding two years, (3) net tangible assets of \$18 million, (4) a minimum of 1.1 million publicly held shares, and (5) a minimum of 2,000 holders of 100 shares or more. We analyzed all eligible firms culled from the National Issues Market of the NASDAQ as of 1987 and ended our window of observation in 1994. We did not include defections in 1995 because a controversy about price manipulation by NASDAQ dealers arose during 1995 that occasioned both investigation and reform.

Dependent variable. Data on the exact day, month, and year in which an organization defected from the NASDAQ to the NYSE were obtained from data tapes maintained by the Center for Research on Security Prices (CRSP). The event of interest was the switching of a firm's listing from NASDAQ to NYSE, and our dependent variable was the continuous hazard rate.

Independent variables. An *identity-discrepant cue* was defined as the defection of a NASDAQ member to the NYSE. The number of identity-discrepant cues facing an organization was the cumulative number of defections on the ending date for each spell.

Corporate network theorists distinguish between strong ties and weak ties. Strong ties consist of sent and received ties

and arise when an executive of the focal firm sits on the board of another firm (sent) or when an executive of the other firm sits on the board of a focal firm (received). By contrast, weak or neutral ties are created when board members belong to a third organization. Most interlock researchers hold that strong ties are more likely to promote an exchange of influence among actors, because those persons who create sent and received interlocks are more willing and able to serve as the representatives of the firms they connect (Mizruchi, 1996; Palmer et al., 1996). We tested H1 with strong ties to in-group members because they were more likely than weak ties to lead to positive assessments of the in-group and negative assessments of the out-group. We defined *strong ties to in-group members* for each focal organization as the sum of all nonduplicated sent and received ties that a firm's board had to boards in the NASDAQ stock market. When computing NASDAQ interlocks, we considered a focal organization's ties to all other firms in the sample of 2,020 NASDAQ firms listed in the National Market as of 1987. We tested H2 with strong ties to out-group members because such ties were more likely than weak ties to undermine identification with the in-group and to lead to positive assessments of the out-group. We defined *strong ties to out-group members* as the sum of all nonduplicated sent and received ties that a firm's board had to boards in the NYSE. Similarly, when computing interlocks between a focal NASDAQ organization eligible to join the NYSE and other NYSE organizations, we considered all interlocks between the focal NASDAQ firm and 1,337 organizations listed on the NYSE as of July 1, 1986. These 1,337 organizations include large, publicly traded American industrial and service enterprises on the Fortune 500 industrials as well as Fortune 500 service companies. We used a defector's strong ties to test H3 because we reasoned that defectors were more likely to be influential when they had strong ties than weak ties to in-group members. We defined a defector's *strong ties to in-group members* as the sum of all nonduplicated sent and received ties that the defecting firm's board had to boards in the NASDAQ market. Finally, a focal organization's *ties to prior defectors* consisted of all nonduplicated ties to prior defectors in the sample. We did not distinguish between weak and strong ties because we were interested in whether a focal organization could directly observe the consequences of a defection. Thus, we followed Davis (1991) in constructing this measure. The value 1 was used for firms that have a connection, and 0 was used for unconnected firms. Hence, a positive coefficient was expected. Data on board interlocks were derived from information on the composition of boards of directors provided in the proxy statement issued closest to January 1, 1987, as reported by Compact Disclosure.

Control variables. We controlled for several factors not included in our hypotheses but implicated as antecedents of defection from the NASDAQ to the NYSE by prior research and lagged them by a year. Finance scholars also suggest that NASDAQ firms migrate to the NYSE because of the desire for enhanced investor recognition, which is driven by perceptions of the status of the firm (Baker and Pettit, 1982; Freedman and Rosenbaum, 1987). Empirically, this would

mean that small NASDAQ firms have the greatest economic incentive to enhance their status by joining the NYSE. We used the total *market value* of the equity of the firm as a control variable because smaller firms have been shown to be more likely to defect to the NYSE. Since the market value of the firm can fluctuate across individual trading days, we computed yearly averages. Some studies show that risk reduction may be another motive for firms to join the NYSE (Bhandari et al., 1989). One measure of risk faced by firms is beta (indicating the sensitivity of share price to market movements), and the other is variance in returns, and both have been shown to be higher for defectors than for incumbent NASDAQ firms (Cowan et al., 1992). We used *variance in returns* as a control variable. A return is the change in the total value of the investment in common stock over some period of time per dollar of initial investment. This measure was computed using data on the price of stock for every day on which a stock traded in every year. Data came from CRSP tapes and were updated annually.

The *number of registered shareholders* was included as a control variable because it is a direct measure of investor recognition (Kadlec and McConnell, 1994). This measure was updated annually. Financial economists also indicate that firms with few market makers on the NASDAQ may experience higher bid-ask spreads (i.e., the difference between what potential buyers are willing to pay and what potential sellers are willing to sell for), a sign of market inefficiency that increases investors' costs (Amihud and Mendelson, 1986). When there are very few market makers, competition among them is likely to be lesser and bid-ask spreads are likely to be higher, hence, firms with fewer market makers are more likely to switch to the NYSE (Ho and Stoll, 1983). So, we used the *number of market makers* as a control, computed as the number of market makers for a firm divided by the number of share classes, because market makers can specialize by share classes. Other studies indicate that firms having higher trading volumes, large numbers of outstanding shares, and higher bid prices are likely to have enough competitive quotes on the NASDAQ to increase liquidity and minimize spreads (Ho and Stoll, 1983; Cowan et al., 1992).³ Because thinly traded firms have greater incentives to defect to the NYSE, the *average volume of trading* (mean volume in shares traded per day) was also used as a control. We also used as a control the *number of shares outstanding*, a measure of potential trading volume, and the *log of bid price*, because firms with lower prices may have greater incentives to defect, to increase their share price.

We used *weak ties to in-group members* (weak NASDAQ interlocks) and *weak ties to out-group members* (weak NYSE interlocks) as controls. Although strong ties are widely assumed to be channels of intercorporate influence because they are consciously created by firms, weak ties can also affect the transfer of disruptive information (Burt, 1992). We defined weak ties as nondirectional interlocks that are automatically created between two firms when they appoint the same director from a third firm to their boards and included them as controls. We also used *board size* as a control vari-

3

Stock exchange regulations require the specialists to stabilize prices by providing quotes and participating in transactions in order to prevent trade-to-trade price changes that, in the exchange's definition, would be unacceptably large; hence, specialists may have to buy when prices are falling and sell when prices are rising. By contrast, in the NASDAQ system, any dealer meeting minimal capital requirements can make a market and has minimal obligations—a dealer must continuously post bid and ask quotes and honor them for a limited number of shares and can begin or cease making a market at the start of any trading day. If they do not comply, they must be out of the market for 20 days.

able because larger boards may have more political costs than smaller boards. *Organizational age* was treated as a control variable because older organizations are more likely to be inertial (Hannan and Freeman, 1989). Age was defined as the elapsed time since an organization issued stock and was updated annually. We computed age by subtracting the year of founding from the year of each observation. We used the *number of years qualified* as a control variable because firms may defect to the NYSE soon after meeting qualification standards, with longer-qualified firms being more reluctant to leave. It was defined as the elapsed time since an organization became eligible to join the NYSE and was reset to 0 if the organization lost eligibility. Both organizational age and the number of years qualified were lagged by a year.

Since we began following NASDAQ firms on the National Market System (NMS) in 1987, some of them were "survivors" because they could have moved to the NYSE before 1987 yet elected to stay in NASDAQ. The implication is that survivors may have an inherently different propensity to defect than non-survivors. We constructed a dummy variable, *pre-1987*, and used it as a control for such firms. Since high-technology firms may have an unobserved propensity to defect because of their strategy, we included a *hi-tech* dummy as a control variable to account for firms in the computer and medical-device industries. Finally, we also wanted to control for the tendency of organizations to mimic industry peers (Scott, 1995), particularly those sharing the same Standard Industrial Classification (SIC) code, and spatially proximal organizations. Firms within a *2-digit SIC code* were treated as rivals, and *spatial proximity* was operationalized as location in the same state, and both of these variables were included as controls. If the at-risk firm and the prior defector were in the same 2-digit SIC code or state, then distance was coded as a 0, otherwise, it was coded as a 1. So a negative sign was expected for the coefficient when firms imitated those like themselves.

Table 1 provides descriptive statistics for the independent variables and control variables deemed to affect the propensity to defect and susceptibility to identity-discrepant cues; proximity-related variables are excluded. The correlations between market value and strong in-group ties and out-group ties are small, indicating that network effects are not artifacts of organization size. Most importantly, the correlation between strong in-group and strong out-group interlocks is also small.

Modeling Strategy

We used continuous-time event-history models to analyze the defection of firms from the NASDAQ to the NYSE in the sample during the 1987–1994 period. An event history is a record of an organization and provides details about its characteristics (Tuma and Hannan, 1984). To use time-varying covariates, we split the event history of all sample organizations into one year spells, with all spells except the year of adoption being coded as "right censored," or continuing beyond the study period.

Embeddedness and Mobility

Table 1

Correlations among Independent and Control Variables*								
Variable	2	3	4	5	6	7	8	9
1. Market value of equity	.80	.83	.48	.31	.24	.07	.11	-.02
2. Average trading volume		.83	.70	.11	.25	-.04	-.04	-.01
3. No. shares outstanding			.66	.10	.32	.08	.12	.00
4. No. of market makers				-.05	.35	-.01	.04	-.04
5. Log of bid price					.11	.14	.21	.08
6. No. of shareholders						.04	.46	.02
7. Organizational age							.46	.22
8. No. of years qualified								.08
Variable	10	11	12	13	14	15	16	
1. Market value of equity	.01	.18	.12	-.07	.07	.08	.18	
2. Average trading volume	.12	.25	.02	.14	.06	.02	.23	
3. No. shares outstanding	.00	.17	.08	-.01	.09	.06	.13	
4. No. of market makers	-.08	.21	.05	.10	.07	.06	.19	
5. Log of bid price	.25	.08	.08	-.52	.08	.22	-.09	
6. No. of shareholders	.11	.01	.06	-.07	.17	.20	-.03	
7. Organizational age	.26	.08	.23	-.29	.17	.20	-.09	
8. No. of years qualified	.21	.03	.13	-.37	.09	.12	-.13	
9. Pre-1987	.05	-.16	-.04	.02	-.03	-.01	.02	
10. Board size		.07	.35	-.54	.16	.38	-.19	
11. Weak ties to in-group			.32	.01	.53	.22	.04	
12. Weak ties to out-group				-.28	.20	.46	-.04	
13. Variability of returns					-.06	-.25	.21	
14. Strong in-group ties to in-group							-.08	
15. Strong out-group ties to out-group							-.11	
16. Hi-tech								

* Correlations with an absolute value greater than .04 are significant at $p < .05$.

Since two hypotheses (H1 and H2) emphasized how organizational characteristics would amplify or dampen the effect of identity-discrepant cues, and two hypotheses (H3 and H4) focused on the impact of a defector's ties to in-group members and the focal organization, we used Strang and Tuma's (1993) specification of the diffusion process. Their specification is as follows:

$$r_{it} = \exp(\alpha'x_n) + \Sigma \exp(\beta'v_n + \gamma'w_s + \delta'z_{ns}).$$

Although this model appears complex and has primarily been applied to the study of diffusion, it enables us to provide a straightforward account of defection and to distinguish between propensity and contagion effects. An individual actor has an intrinsic propensity to undertake action (here, a defection to the NYSE) flowing from its own characteristics: x_n is a vector of variables describing a potential actor n 's *propensity*. The contagion effects are partitioned into susceptibility, infectiousness, and proximity effects. First, when other actors in the environment defect, the extent to which such identity-discrepant cues influence the focal actor to adopt depends on several factors. The focal actor may be more or less susceptible to identity-discrepant cues, just as individuals vary in their immunity to a virus. This susceptibility can either minimize or magnify the influence of prior defections by other organizations in the environment: v_n is a vector of variables describing n 's *susceptibility* to influences from prior defections. Second, prior defectors can be more or less

influential as role models according to their individual characteristics (their infectiousness): w_s is a vector of variables describing the *infectiousness* of s (defectors) for all n . Third, prior defectors can also induce others to defect, depending on their social distance from the focal organization: z_{ns} is a vector of variables describing the *proximity* of n and s . We estimated these models using a specially formulated version of the RATE program (Tuma, 1993).

The results of this model are interpreted somewhat differently from conventional regression models. Thus, the propensity and susceptibility vectors refer to the at-risk firm, whereas the infectiousness vector refers to the most recent defector. The variables in the proximity vector refer to the social distance between those who have defected and those at risk of doing so on the basis of their relational attributes. For example, finding a negative effect of strong in-group (NASDAQ) ties in the propensity vector means that firms with strong in-group ties are less likely to defect. But finding a negative effect of strong in-group ties in the susceptibility vector means that as the number of defections rises, those with strong in-group ties are less likely to defect in response to these identity-discrepant cues. A positive effect of strong in-group ties in the infectiousness vector means that defectors with NASDAQ ties have a pronounced effect on subsequent defections. The contagion effects are a combination of all of these things. Thus, organizations that are highly susceptible are more likely to be affected by influential role models and defectors to whom they have direct ties. Conversely, some firms may be virtually immune to outside influence, and prior defections will have a minimal impact.

Since H1 implied that strong in-group (NASDAQ) ties reduced the effect of discrepant cues on an organization and diminished the probability of defection, we included them in the susceptibility vector. Since H2 indicated that strong out-group (NYSE) ties enhanced the effect of discrepant cues on an organization and raised the probability of defection, we included them in the susceptibility vector. These characteristics are cumulatively interacted with the number of prior defectors to test whether they magnify or minimize a focal firm's vulnerability to influence from prior defectors. We included a defector's strong ties to in-group (NASDAQ) members in the infectiousness vector to test H3 because it implied that defectors with in-group ties were more discrepant and, hence, were more influential cues. In this vector, strong NASDAQ ties are characteristics of the immediate prior defector. Finally, we included a defector's ties to the focal organization in the proximity vector to test H4, which suggested that firms with connections to defectors were likely to be influenced by them. If the at-risk organization and the defector had direct ties, the value 1 was used for such proximate observations, and 0 was used for distant observations. Hence, we expected a positive coefficient.

A major advantage of Strang and Tuma's (1993) model is that it permits researchers to tease out multiple influences exerted by one or more variables. This feature was helpful to us because it enabled us to test our predictions stringently while controlling for alternative effects of the independent and con-

trol variables. To discern the multiple influences of a variable, a parallel search, simultaneously estimating effects in different vectors, is more efficient than a serial search, in which the variable is introduced in each vector in separate analyses (see Greve, Strang, and Tuma, 1995).

We included strong ties to in-group and out-group members in the propensity vector because these variables are characteristics of potential defectors and can affect their intrinsic disposition to defect to the NYSE. All economic control variables were included in the propensity and susceptibility vectors. A focal organization's weak ties to in-group and out-group members were inserted in both vectors. Our reasoning was that these variables could affect intrinsic dispositions to defect and susceptibility to outside influences. We inserted the weak in-group, weak out-group and strong out-group ties of defectors in the infectiousness vector. We inserted similarity to industry peers and spatially proximal firms as controls in the proximity vector. We used two-tailed tests of significance tests to evaluate the effects of control variables and one-tailed tests to evaluate support hypotheses, since they presumed directional effects.

Finally, work by Greve, Strang, and Tuma (1993) showed that the model performs well even when there is incomplete population-level data. When data on independent variables are not available or when a sample is taken from a population, events in both categories are treated as out-of-sample events and are included with a weight of 0 to assist in accurate estimation. Accordingly, all events before 1987 and all other events for which we did not have data were deemed to be out-of-sample events and were assigned a weight of 0 when estimating our models.

RESULTS

Table 2 presents the results of the contagion models. Given that financial economists typically treat firms as atomistic decision makers and consider defections as the outcomes of firm-specific variables, we estimated a model with all economic control variables in the propensity vector only. We also included organizational age as a control in this vector to account for inertia. Model 1 shows moderate support for the effect of economic control variables on the propensity to defect. Organizations whose stock is traded in large volumes have a significantly lower propensity to defect, but firms with higher variance in returns have a higher propensity to defect. Firms with larger numbers of market makers also defect at a significantly higher rate. Organizational age has a significant negative effect on the propensity to defect, as does the number of years qualified. All other controls have insignificant effects. The propensity-vector-only model improves over the baseline model as indicated by the chi-square statistic.

It could be argued that many of the finance control variables not only affect the propensity to defect but can also affect the susceptibility to identity-discrepant cues (or prior defections to the NYSE). Accordingly, in model 2 we included these variables in the susceptibility vector, and the results changed. In the propensity vector, market value of equity now becomes significant and negative, and the number of

Table 2

Contagion Models of Migration of NASDAQ Firms to the NYSE (186 Events)*

Variable Names	Model 1	Model 2	Model 3
<i>Propensity</i>			
Constant	2.20 ^{***} (.927)	2.12 (1.86)	1.97 (1.96)
Market value	-.00000004 (.0000001)	-.000002 [*] (.000001)	-.000002 [*] (.000001)
Average trading volume	-.000002 ^{**} (.0000008)	-.000004 ^{**} (.000002)	-.000004 ^{**} (.000002)
No. shares outstanding	.000004 (.000006)	.00007 ^{***} (.00002)	.00007 ^{***} (.00002)
No. market makers	.027 ^{**} (.013)	.060 ^{**} (.028)	.065 ^{**} (.029)
Log of bid price	.256 (.162)	.860 ^{**} (.474)	.867 ^{**} (.432)
No. shareholders	-.010 (.008)	-2.31 ^{***} (.187)	-2.39 ^{***} (.209)
Board size	.012 (.016)	.030 (.025)	.032 (.024)
Age	-.064 ^{***} (.014)	-.001 (.023)	.015 (.024)
No. years qualified	-.031 [*] (.018)	-.031 (.036)	-.027 (.036)
Variability of returns	.482 ^{***} (.138)	.332 (.260)	.313 (.217)
Pre-1987	-.149 (.439)	.427 (.509)	.376 (.527)
Hi-tech	.135 (.262)	.537 (.346)	.665 [*] (.355)
Weak in-group ties			-.058 (.075)
Weak out-group ties			-.064 (.077)
Strong in-group ties			.042 (.118)
Strong out-group ties			-.031 (.141)
<i>Susceptibility</i>			
Constant		-.002 (9.36)	-.00003 (5.4)
Market value		.000000008 (.0000001)	.00000003 (.00000001)
Average trading volume		-.000001 ^{**} (.000008)	-.000002 ^{**} (.000008)
No. shares outstanding		.000006 (.000006)	.00001 [*] (.000006)
No. market makers		.029 (.018)	.022 (.018)
Log of bid price		.309 (.277)	.309 (.249)
No. shareholders		.007 (.005)	.009 [*] (.005)
Board size		.036 (.024)	
Age		-.072 ^{***} (.023)	-.102 ^{***} (.023)
No. years qualified		-.019 (.025)	-.00009 (.025)
Pre-1987		.00003 (4.7)	.00003 (5.4)
Variability of returns		.317 (.214)	.467 ^{**} (.218)
Weak in-group ties			.105 (.069)
Weak out-group ties			.118 ^{***} (.043)

Continued

Embeddedness and Mobility

Table 2 (Continued)

Variable Names	Model 1	Model 2	Model 3
Strong in-group ties			-.150 [•] (.117)
Strong out-group ties			.147 ^{***} (.046)
<i>Infectiousness</i>			
Defectors' weak in-group ties			-2.77 (1.90)
Defectors' strong in-group ties			.883 (.779)
Defectors' weak out-group ties			-1.67 (3.69)
Defectors' strong out-group ties			-.00002 (1.82)
<i>Social proximity</i>			
2-digit SIC code			-2.51 ^{**} (.573)
State			-1.53 ^{**} (.623)
Ties to prior defectors			5.85 ^{***} (2.92)
Log-likelihood	-420.47	-311.23	-292.17
Chi-square†	69.87 ^{***}	288.34 ^{***}	326.47 ^{***}
D.f.	12	24	40

• $p < .10$; ** $p < .05$; *** $p < .01$; one-tailed tests for independent variables, two-tailed for control variables.

* Figures in parentheses are standard errors.

† The chi-square statistics are computed vis-à-vis a baseline model with a constant term and no covariates.

shareholders also becomes significant and negative. Average trading volume continues to be negative and significant. The number of market makers is significant and positive. The log of bid-price and number of shares outstanding now become significant and positive. Interestingly, variance in returns now becomes insignificant, as does organizational age. The effects of other variables in the propensity vector remain unchanged from model 1. For the susceptibility vector, average trading volume has negative and significant effects, as does organizational age. Thus, large volume firms and older firms are impervious to the press of prior defections. Overall, model 2 significantly improves over a baseline model to a greater extent than model 1, as evidenced by a comparison of their log-likelihoods.

The upshot is that three of the finance controls (market value, trading volume, and number of shareholders) have negative propensity effects, as predicted by the finance literature. The finance controls that are contrary to expectations in the propensity vector are market makers, shares outstanding, and log of bid price. Prior research (Cowan et al., 1992) has shown that the effects of market makers on switching decisions is only marginally significant at the .10 level. The effects of bid price and shares outstanding become significant in the propensity vector only when they are included in the susceptibility vector. Average trading volume has negative susceptibility effects that have not hitherto been acknowledged in the finance literature. These results provide minimal support for the finance controls and suggest that an

explicit consideration of susceptibility effects may reduce support for predictions put forth by financial economists.

Model 3 includes social structural variables (strong and weak in-group and out-group ties) in the propensity, susceptibility, and infectiousness vectors and industry and regional controls plus direct ties to prior defectors in the proximity vector. In the susceptibility vector, the number of shares outstanding has positive and significant effects, as does the number of shareholders and variability in returns. Highly traded firms are more susceptible to identity-discrepant cues than thinly traded firms, and firms with greater recognition also become vulnerable to identity-discrepant cues. Firms with highly variable returns also become susceptible to the press of prior defections. Other finance controls have unaltered effects. Both strong or weak ties to in-groups and out-groups have insignificant effects in the propensity vector. Strong in-group ties have a significant and negative effect on susceptibility to identity-discrepant cues as predicted in H1, but this support is marginal at the .10 level. Weak in-group ties have insignificant effects, but strong out-group ties have significant positive effects on the susceptibility to identity-discrepant cues, as hypothesized in H2. Interestingly, weak out-group ties also have significant positive effects on the vulnerability to identity-discrepant cues. In the infectiousness vector, the effect of a defector's strong in-group ties is not significant, and there is no support for H3. All other affiliation variables are also insignificant in the infectiousness vector. The effects of the proximity vector are interesting. Industry and geographic proximity have significant and negative results, implying that firms mimic peers that are similar to them. To test H4, we included the focal organization's ties to defectors in the proximity vector. H4 is supported, because the number of defectors tied to the focal organization has positive effects in the proximity vector: such ties encourage chain migration. Overall, model 3 improves significantly more over a baseline model than model 2, as evidenced by a comparison of their log-likelihoods.

On balance, model 3 supports three of our four predictions. There is evidence that strong ties to in-group members significantly dampen the effect of identity-discrepant cues, whereas strong ties to out-group members significantly increase the impact of identity-discrepant cues. Ties to prior defectors produce chain migration. To assess how important the network effects are in model 3, we examine the effect of in-group ties: the addition of one tie to in-group members reduces the effect of identity-discrepant cues to .86 [$\exp(-.150)$]. The establishment of one additional tie to out-group members increases the impact of identity-discrepant cues by 15 percent [$\exp(.147)$]. As mentioned earlier, there was no support for the prediction that defectors with strong ties to in-group members represent more discrepant cues. The proximity vector shows that each tie to a defector increases the focal organization's defection rate by 347 times [$\exp(5.85)$]. On balance, then there is strong support for three out of four predictions.

Robustness checks. We undertook several checks to verify the robustness of our results. We reestimated model 3 with-

out the insignificant finance controls and found that support for H1 became stronger at the .05 level but that support for H2 and H4 was unaltered. This reduced-form model performed nearly as well as model 4 in terms of the extent to which it improved over a baseline model with the constant term only. Since we used NASDAQ and NYSE interlocks in 1987 as time-constant indicators of ties to in-group and out-group members, we collected data on the interlock structure of firms in 1994 to see if there were discernible differences between the start and end of our observation window. In analyses not reported here, we found that there were no significant differences between in-group and out-group ties at the start and end of our observation window. Nevertheless, the lack of time-varying interlock data is a limitation of our study, because defecting firms may have had unobserved propensities to alter their interlocks in anticipation of defection. We ascertained whether in-group and out-group ties have curvilinear effects on defections. In analyses not reported here, we found that second-order effects either were insignificant or, in some cases, resulted in the first-order effect also becoming insignificant. We also explored whether proportions of ties rather than counts of ties influenced defections, but we encountered convergence problems.

A limitation of our study is that it covered the period starting from 1987 and ending in 1994 but included pre-1987 survivors. We used a dummy to account for the unobserved propensity of such survivors but found that the dummy was insignificant. In unreported analyses, we investigated the option of dropping left-censored observations and introducing yearly dummies, but we rejected them as infeasible. Dropping left-censored observations reduced the count of events, and including yearly dummies posed convergence problems. We checked whether our results held if the event window was extended by one year to 1995. In analyses not reported here, we found that the pattern of support for H1–H4 was unchanged. Nevertheless, we believe that care should be taken to generalize our results beyond the period of observation.

Finally, some readers may be concerned that the strategy of parallel search for multiple effects of NASDAQ and NYSE interlocks might create collinearity problems, especially between their propensity effects and susceptibility effects. Prior work indicates that such collinearity does not impede estimation, because each component of contagion is conceptually distinct. Greve, Strang, and Tuma (1995: 416) conducted several simulations to assess if the heterogeneous diffusion model could accurately assign multiple effects of a variable in different vectors and found that effects were successfully assigned in 100 percent of trials. They reported that “none of the parameter combinations produced problems. Multiple effects of a single variable (and by implication, high correlations among conceptually distinct measures) do not impede estimation when the effects are located in different parts of the model.” In unreported analyses, we inspected the correlations among parameter estimates and did not find any problematic cases.

DISCUSSION

Our study speaks to Portes and Sensenbrenner's (1993: 146) critique that research using embeddedness arguments is theoretically vague and "too instrumentalist about its effects." Our study pursues the idea that networks are sources of identity and connects embeddedness arguments with the literature on social identity. Organizations derive social identity by becoming members of formal and informal groups and strive to preserve a positive identity. When faced with a threat to their social identity, organizations respond by migrating to the out-group. Defections by members of the in-group to the out-group threaten the social identity of remaining in-group members and constitute identity-discrepant cues. But in-group members do not blindly follow defectors. How they respond not only hinges on their social affiliations to in-group and out-group members but also on their connections with defectors. By developing these arguments, this paper shows how the social environment influences the social identity of organizations and their use of social mobility as an identity-enhancement strategy.

The findings show that social ties influence an organization's response to identity-discrepant cues. The more numerous a focal organization's strong ties to in-group members, the more likely are decision makers to stereotype the in-group positively and negatively stereotype defectors and the out-group. Hence, ties to in-group members insulate an organization from the effect of identity-discrepant cues and reduce the use of social mobility as an identity-enhancement strategy. Conversely, the results show that ties to out-group members exacerbate the effect of identity-discrepant cues. The more numerous a focal organization's ties to out-group members, the less likely are decision makers to stereotype outsiders and defectors negatively and the more likely the organization is to use social mobility as an identity-enhancement strategy. There was no support for the prediction that a defector's strong ties would induce focal organizations to defect. Finally, the results also show that the more defectors that are directly connected to the focal organization, the more likely it is to view defection positively and also jump ship.

These findings expand the literature on social identity by showing how social mobility is used as a strategy for enhancing social identity. Social psychologists indicate that social mobility is the dominant strategy when group boundaries are permeable but seldom specify how the social context influences the use of social mobility as an identity-enhancement strategy. To date, social psychological research on social identity has leaned heavily on experiments and presumed that actors respond to social mobility when they receive disconfirming cues from the external environment. Our study demonstrates that threats to the social identity of the focal organization may emanate from inside the in-group when peers defect. But defection is subtly influenced by the focal organization's affiliations to in-group members, out-group members, and defectors. By unraveling these effects, our study points to how social networks influence the evocation of social identity and underscores the need for identity

researchers to study how social ties shape the self-categorizations of individuals and organizations.

A clear implication of our study is that structural equivalence and cohesion provide actors with evaluative frameworks to construct social identity. Previous work has suggested that industry categories serve as an interpretive core from which firms derive social identity (Porac, Wade, and Pollock, 1999). Results indicated that firms mimic industry peers, but there was strong evidence for the effect of strong in-group and out-group ties and ties to prior defectors. Future research on how actors construct social identity needs to consider simultaneously the effects of industry peers and direct ties to assess the salience of structural equivalence and cohesion.

Our findings also contribute to the literature on organizational status. A growing body of research suggests that a firm's affiliations to buyers, third parties, and producers are signals of quality that have beneficial spillover effects (Podolny, 1993; Stuart, Hoang, and Hybels, 1999). These studies emphasize how an organization's ties to other actors influence how an organization is perceived by actors outside the organization. Our study complements this line of research by proposing that an organization's ties to other actors shape the perceptions of actors inside the organization about the social identity of their enterprise. Because social identity is predicated on social comparison, defections of in-group members to an out-group make it difficult for remaining members to believe that their group is better than the out-group. In turn, this loss of relative status undermines the social identity of the focal organization and induces migration. But an organization's social affiliations filter the effect of identity-disconfirming cues and influence the use of mobility as a strategy of identity enhancement. Thus, that "preservation of identity is a constraining force does not mean that firms are unable to shift their position in the market" (Podolny, 1993: 867). Far from it, the pressure to maintain a positive identity can induce a firm to shift its location from one market to another.

The findings of this study also speak to the literature on diffusion. Strang and Meyer (1993) observed that diffusion research typically presumes that behavior is driven by the mechanical transfer of information between prior adopters and potential adopters and urged researchers to unravel how diffusion is an exercise in the social construction of identity. Our study responds to their call and demonstrates that organizations do not blindly follow the behavior of prior defectors. The extent to which prior defections induce action by disconfirming social identity hinges on director interlocks; in turn, interlocks exert segregating and blending effects because they tug at the social identity of the organization in different directions. Although director interlocks have been a widely employed measure of embeddedness, their role in the construction of social identity has not been explicated. Our results suggest that director interlocks allow for the transmission of information and evaluative frameworks with which social identity can be constructed. They also suggest that the content of board interlocks can vary significantly and underscore the need for more systematic analyses of how board

interlocks can be conduits for diverse norms and ideas (Gulati and Westphal, 1999).

A natural extension of this study is to analyze what non-migrants do in the face of identity-discrepant cues in the form of defections by peers. Social identity theorists postulate that actors may employ social creativity strategies to repair social identities (Tajfel and Turner, 1979) but have yet to test the use of social creativity tactics in the face of social mobility by peers. A second possibility outlined by social identity theorists is that actors resort to social change strategies wherein they compete with the out-group to bring about positive changes in their relative status when group boundaries are impermeable (Tajfel and Turner, 1979; Abrams and Hogg, 1990). Social creativity tactics are cognitive endeavors that involve the use of advantageous bases of comparison and have collective implications. By contrast, social change strategies are political enterprises wherein organizations belonging to a social group may improve their standing vis-à-vis rival groups by initiating a social movement designed to discredit the rival group and to recruit a new following. In turn, rivals can initiate a countermovement to thwart such efforts. Thus, a rich avenue for future research is to study how social movement processes significantly shape the social identity of enterprises and organizational forms.

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