REFERENCES

Interorganizational Imitation: The Impact of Interlocks on Corporate Acquisition Activity

Pamela R. Haunschild
University of Wisconsin–Madison

In this study, I examine direct evidence for the influence of interorganizational imitation on a voluntary, substantive strategic action that affects the economic core of the firm: corporate acquisitions. I argue that firm managers are exposed to the acquisition activities of other firms when they sit on those firms' boards. The acquisition activities of the firms they are tied to serve as models to be imitated. Hypotheses are developed and tested on 1981–1990 acquisition data for a sample of 327 firms. Results show that firm managers are imitating the acquisition activities of those other firms to which they are tied through directorships. Competing rival interpretations of positive evidence for imitation are examined, and the imitation interpretation is found to hold.

Interorganizational imitation of practices and structures plays a central role in several theories of organizational action. Theories of organizational learning, for example, argue that organizations copy other organizations, letting others absorb the costs of experimentation or discovery (Dutton and Freedman, 1985; Levitt and March, 1988; Lant and Mezias, 1990; Bolton, 1992). Strategic choice theories suggest that imitation can be a strategic response to competitor activities, whereby second-movers take advantage of the fact that the risk associated with product development has been absorbed by the first-movers (Lieberman and Montgomery, 1988). Institutionalization theory argues that organizations copy practices adopted by others in an effort to acquire legitimacy (DiMaggio and Powell, 1983).

Because it suggests social mechanisms that facilitate one firm doing what other firms are doing, the research on interorganizational networks and director interlocks is also relevant to interorganizational imitation. Some of the network research, for example, suggests that interorganizational networks function as a mechanism for the diffusion of innovative practices (Rogers, 1983; Granovetter, 1985). Recent research on director interlocks suggests that these entities function as important conduits of information about business practices (Useem, 1984; Davis and Powell, 1992). The dissemination of information through interlocks may result in firms doing the same things their interlocked partners are doing (Davis, 1991; Palmer, Jennings, and Zhou, 1993).

Not surprisingly, early work on interorganizational imitation and diffusion focused on theoretical rationales and exploring empirical evidence that these effects occur. Several studies showed, for example, that the number of prior adopters in an organizational field seems to affect chances of later adoption (Tolbert and Zucker, 1983; Fligstein, 1985, 1990a, 1990b). But evidence for imitation in such studies is still indirect and open to varied interpretations. Appropriately, more recent work has explored the mechanisms of imitation more directly. Galaskiewicz and Wasserman (1989) showed that intercorporate networks had a direct effect on decisions involving the charitable recipients of corporate philanthropy, but while such decisions are important, they do not affect the core economic activities of the firm. One could even

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argue that imitation should affect symbolic actions like charitable recipients, but other mechanisms should drive choice in voluntary strategic actions involving major resources and the operations of the firm.

The first goal of this study was to explore evidence concerning the direct role of imitation of other firms on a major strategic action, corporate acquisitions. I argue that firm managers are exposed to the acquisition activities of other firms when they sit on those firms' boards. For these managers, the acquisition activities of tied-to firms serve as models, examples to imitate or emulate. Therefore, I examined the impact of interlocks with firms that have previously made acquisitions on current acquisitions by other firms. The study's second goal was to examine competing rival interpretations of positive evidence for imitation, exploring the potential impact of tied firms experiencing similar conditions and the effect of private information about acquisition activity that might be transmitted through direct interlocks.

Corporate Acquisitions

Corporate acquisitions are an interesting and important firm activity with which to explore the substantive impact of interorganizational imitation. During the 1980s, the American economy was significantly restructured by a wave of mergers and acquisitions. Approximately 24,000 firms acquired others or merged with each other, in an exchange of $1.3 trillion in assets. Many of the U.S.'s largest firms were among those acquired, including 28 percent of the 1980 Fortune 500 (Shleifer and Vishny, 1988). Acquisitions represent a serious strategic choice and often involve the commitment of substantial resources. Ninety-five of the 100 largest acquisition transactions that ever occurred occurred during the early 1980s (Grimm, 1987). The acquisition of one company by another often involves significant firm change and can negatively affect the lives of many employees (e.g., Hirsch, 1987; Walsh, 1988; also see review by Schweiger and Walsh, 1990). Despite the prevalence and importance of acquisitions, our understanding of what influences whether a firm will acquire another firm is incomplete. Most of the research on the motives for acquisitions is financial or economic. This research has received mixed support, and no clear consensus has emerged. As Ravenscraft (1987: 20) said ". . . our understanding of the basic determinants of merger motives reflects a large degree of ignorance or at least disagreement."

There are three classes of theories that address acquisition motives: (1) financial theories; (2) resource dependence theory; and (3) managerial and agency theories. Most of the research on acquisition motives falls into the first class, the financial theories, and is efficiency-based. Many of these theories propose that acquisitions are driven by the search for synergy, yet whether acquisitions are driven by synergies remains unclear, as mixed and contradictory findings have been found (Jensen, 1984; Chatterjee, 1986). Further, the relationship between synergies and their realization is equivocal (e.g., Chatterjee, 1986; Lubatkin, 1987; Ravenscraft and Scherer, 1987; Barney, 1988). One of the

most well-supported findings in the acquisition literature is that only target-firm, not acquiring-firm shareholders benefit from an acquisition. Some observers ascribe the value that accrues to target-firm shareholders as the result of anticipated synergies. Others ascribe it to the anticipated gains from shifting control of the target's assets to the more efficient acquiring-firm managers (an agency theory prediction). Neither explanation has been conclusively supported. Further, long-term studies that focus on the accounting and investor returns of the acquiring firm for several years around the acquisition date show that acquisitions (especially conglomerate acquisitions) are not, on average, profitable for the acquiring firm (e.g., Hogarty, 1970; Herman and Lowenstein, 1988; Fowler and Schmidt, 1988). This means that if synergy is the motive for acquisitions, then the anticipated gains are often not realized. This may not be surprising, given the many other factors that affect the relationship between motives and outcomes of acquisitions (Schweiger and Walsh, 1990).

More promising are the non-efficiency-based managerial and resource dependence theories. According to resource dependence theory, mergers and acquisitions are a response to the constraints imposed by organizational interdependence (Pfeffer, 1972; Pfeffer and Salancik, 1978). When organizations are dependent on other organizations for resources, such constraints can be managed through mergers. Relationships between various forms of interdependence and mergers are predicted by the theory. Horizontal mergers are used to reduce competitive or commensalistic interdependence. Vertical mergers are used to reduce symbiotic (buyer-seller) interdependence. Conglomerate mergers are a response to dependence on other organizations (1) that constitute a large portion of the organization's exchanges (2) for which few substitutes exist, and (3) in which a vertical merger with the other organization is not feasible, e.g., as in the case of dependence on the government. Support for resource dependence theory as an explanation for industry merger patterns can be found in Pfeffer (1972), Pfeffer and Salancik (1978), and Burt (1983).

Some theorists suggest that the third class, the managerial and agency theories, are much more important as explanations of acquisition motives than the financial theories (Ravenscraft and Scherer, 1987; Trautwein, 1990). The managerial theories propose that acquisitions are driven by managerial desire for the prestige, power, salary, and job security that comes with managing large companies (Williamson, 1963; Marris, 1964; Baumol, 1967). Managerial theorists argue that the lack of profitability from acquisitions is no surprise, because managers of acquiring companies are paying for benefits to themselves that are of no value to shareholders (Amihud and Lev, 1981; Shleifer and Vishny, 1988; Morck, Shleifer, and Vishny, 1990). The managerial theories apply mainly as a motive for conglomerate (unrelated) acquisitions. Self-interested managers are motivated to engage in conglomerate acquisitions for two reasons. First, managers of conglomerates are less threatened with job loss due to poor performance, since they can offset poor performance in one business with good

performance in another (Amihud and Lev, 1981). Second, managers in poorly performing firms have incentives to acquire new businesses that they might be better at running than their current business (Shleifer and Vishny, 1990). Support for managerial theories is provided by studies showing that the alignment of managerial and shareholder interests results in acquisitions that are more profitable for shareholders (Amihud and Lev, 1981; Morck, Shleifer, and Vishny, 1990).

Our understanding of corporate acquisitions is incomplete in that most existing theories do not consider the social context that firms are embedded in. We know that firms and firm managers exist in a social world, and it is likely that social embeddedness (Granovetter, 1985) affects even such major activities as acquiring another firm. This study provides social context by investigating whether director interlocks are a source of acquisition models to be imitated. This provides a social explanation for acquisition activity that is quite different from existing explanations. It also extends the scope of imitation to include a major, voluntary strategic action that was responsible for reshaping the American economy during the 1980s.

Imitation Theory and Hypotheses

As mentioned earlier, most studies of imitation provide only indirect evidence that imitation is occurring. Fligstein found, for example, that one predictor of engaging in financial restructuring (Fligstein, 1990a, 1990b) and adopting an M-form structure (Fligstein, 1985) was the percentage of other large firms that had done so. Fligstein interpreted these results as imitation, but other explanations exist. These and other studies vary in the extent to which their evidence clearly documents that an imitation process was responsible for adoption. At a minimum, demonstrating that one firm's practice is the result of imitation of another firm's practice requires that three conditions be satisfied: (1) a model firm exhibits the practice at time t, (2) representatives from the imitating firm are exposed to the model, and (3) the imitating firm exhibits the practice at time $t + x$, where x is some positive but unknown period of time. The reason for specifying these conditions is to be able to demonstrate that imitation, rather than some alternative factor, is responsible for the firm's adoption of a practice. Since I focus on director ties as a source of models to be imitated, evidence for imitation requires that (1) the model (the tied-to firm) engages in an acquisition at time t, (2) the imitator (the focal firm) is exposed to the model through director ties, and (3) at some later time, the focal firm engages in an acquisition.

While there are many ways that models to be imitated may come to the attention of firm managers, there are several reasons why director ties might be one of them. Several recent studies have shown that director interlocks provide a mechanism for the diffusion of organizational practices and structures. These include Mizruchi's (1992) study, showing similarity in political campaign contributions among firms tied to each other through director ties. Also, O'Reilly, Main, and Crystal (1988) found chief executive officers' salaries to be positively related to the salaries of their firms' outside

directors. Two recent studies directly measured the relationship between interlocks and the adoption of firm practices and structures. First, Davis (1991) showed that intercorporate director ties affected the adoption of ''poison pills,'' a firm-level defense against unwanted corporate takeovers. The likelihood of a firm adopting a poison pill was increased when the firm was tied to other firms that had adopted. Second, Palmer, Jennings, and Zhou (1993) showed that interlocks affected the adoption of the multidivisional form. Ties to firms that adopted an M-form influenced adoption, while ties to firms that did not adopt did not. While these studies do not discuss director ties as a source of models, they show that director ties are important sources of information and influence on firm structures and practices. Director ties provide managers with information from a familiar source, and familiarity has been shown to affect imitation among individuals (e.g., Bandura, 1977) and firms (Galaskiewicz and Wasserman, 1989). Director ties render events that are otherwise distant more proximate. Sitting on a board and watching another firm make an acquisition creates an immediate, concrete example that may encourage imitation. Useem's (1984) study supports the idea that imitation occurs through director ties, which provide a source for models. Based on interviews with 129 American and British executives and directors of companies, Useem (1984) proposed that the primary function of director interlocks is to act as a mechanism through which managers can achieve an optimal ''business scan'' of the latest business practices and the overall business environment. Useem provided several examples in which managers describe sitting on a board and then deciding that what that firm is doing might be relevant for their own firm.

Director interlocks are an important source of personal contacts among those managers with the power to affect organizational merger and acquisition (M&A) activity. Inside directors, because they are also managers, are more likely to influence firm M&A activities than outside directors. Inside directors are also more likely to sit on outside boards than are lower-level managers. Any one inside director might have multiple ties, and each tied-to firm might complete multiple acquisitions. The effectiveness of modeling is also increased by multiple models (Kazdin, 1976), since the more models exhibiting behavior *X* one is exposed to, the more likely one is to imitate behavior *X*. This suggests that the number of acquisitions completed by all tied-to firms affects the likelihood of imitation by the focal firm and leads to the following hypothesis:

Hypothesis 1 (H1): The number of prior acquisitions completed by firms that are tied to a focal firm through director ties is positively associated with the number of current acquisitions by the focal firm.

It is reasonable to expect that the relationship between the number of acquisitions by the focal and tied-to firms will not be linear when the tied-to firms complete large numbers of acquisitions, because there is only so much information that the focal firm can obtain from observing the acquisition behavior of the tied-to firms. At some point, the impact of additional models on imitation behavior should begin to

increase at a decreasing rate. After seeing several models, some of this information is likely to be duplicated, producing less impact on the focal firm. This leads to the hypothesis that the relationship in H1 will be nonlinear, with diminishing effects at high levels of acquisition activity by the tied-to firms:

Hypothesis 2 (H2): The relationship between the number of current acquisitions by the focal firm and the number of prior acquisitions by the tied-to firms will be positive but will increase at a decreasing rate.

Existing literature on imitation is unclear about exactly which dimensions of the behavior exhibited by a model will be imitated. If the focal firm is imitating tied-to firm acquisitions, it is unclear whether the focal firm will imitate only the fact of the acquisition, in which case they may make a different type of acquisition than the tied-to firm, or whether they will imitate the specific type of acquisition that the tied-to firm completed, in which case they will make the same type of acquisition as the tied-to firm. A stronger case for imitation can be made if the latter is true, if there is some similarity between the type of acquisition undertaken by the tied-to firm and the acquisition undertaken by the focal firm. Several classification schemes exist for determining whether acquisitions are similar (e.g., Salter and Weinhold, 1979). One commonly used criterion is whether the acquisition is horizontal, vertical, or conglomerate. Horizontal acquisitions occur when firms acquire their competitors, vertical acquisitions occur when firms acquire their suppliers or distributors, and conglomerate acquisitions occur when firms acquire unrelated firms.

The logic behind director ties serving as models also supports the idea that firms will imitate the specific type of acquisition, because part of the information and examples transmitted through director ties is likely to be the general strategies that are involved in making vertical, horizontal, or conglomerate acquisitions. Decisions about substantive acquisitions are often justified to the board of directors, and part of this justification is likely to be the strategy involved in the specific type of acquisition being proposed. For example, if a firm is contemplating buying a supplier in a vertical acquisition, then the logic for a vertical acquisition is likely to be explicitly laid out at the board meeting. The rationale for a particular form of acquisition and its proposed benefits are likely to influence managers of other firms that are sitting in these board meetings. Accordingly, we should see a relationship between the type of acquisition (horizontal, vertical, or conglomerate) completed by the tied-to and focal firms:

Hypothesis 3a (H3a): The number of prior horizontal acquisitions by tied-to firms is positively associated with the number of current horizontal acquisitions by the focal firm.

Hypothesis 3b (H3b): The number of prior vertical acquisitions by tied-to firms is positively associated with the number of current vertical acquisitions by the focal firm.

Hypothesis 3c (H3c): The number of prior conglomerate acquisitions by tied-to firms is positively associated with the number of current conglomerate acquisitions by the focal firm.

Alternative Explanations

Results consistent with the above hypotheses are subject to two general types of alternative explanations. This first is that the relationship between acquisitions by the tied-to and focal firms may be due to the tied-to and focal firms being subject to similar internal or external conditions that cause the observed levels of acquisition activity by both firms. The second alternative explanation is that the relationship between acquisitions by the tied-to and focal firms may be due to the director ties acting as a conduit of "private" information about acquisitions, and this information, not imitation, is causing the observed relationship.

Similar conditions. The first alternative explanation is that director ties may occur among firms subject to similar conditions. If this is true, then both focal firms and tied-to firms could be acquiring or not acquiring in response to these conditions, and not because the focal firm is imitating the tied-to firm. This is an omitted-variable problem: Some variable related to both acquisition levels and interlocks is causing the observed relationships. One way of testing for similar conditions is to see if the relationship between acquisitions by the focal and tied-to firms still holds when the focal and tied-to firms are very dissimilar. I thus hypothesize:

Hypothesis 4 (H4): The relationship between focal and tied-to firm acquisitions is restricted to cases in which the focal and tied-to firms are similar.

If the relationship between acquisitions by the focal and tied-to firms holds when the firms are dissimilar, the similarity explanation is not supported.

It could be argued that even if no support is found for hypothesis 4, the reason is that the proper dimensions of similarity were not captured in this test. This argument would propose the existence of another factor common to both focal and tied-to firms, and also to the likelihood of interlocks, that is causing similar levels of acquisition activity by both firms. Some managerial and agency theories outlined earlier could be proposed to work in this way. For example, an argument could be advanced that proposes (1) managers complete acquisitions for personal motives, and (2) managers who have the motivation and ability to do this tend to sit on each other's boards.

Any such factor that is associated with both ties and acquisitions (but not imitation) would operate simultaneously in both the focal and the tied-to firms. This means that the requirement for demonstrating imitation, that some time elapse between the acquisitions by the tied-to firms and the acquisitions by the focal firms, does not hold. When managers are sitting on boards and observe a firm making an acquisition, they cannot go back to their own firms and immediately execute a deal. Therefore it is likely that any acquisition completed by tied-to firms in a given year cannot be imitated by a focal firm in that same year. Yet if some common condition, like self-interested managers, exists in both firms, then acquisitions by the tied-to firms in one year should be related to the number of acquisitions by the focal firm in that same year:

Hypothesis 5 (H5): The number of current-year acquisitions by tied-to firms is related to the number of current-year acquisitions by the focal firm.

If we find that this simultaneous relationship does not hold, it suggests that no common condition is simultaneously influencing the acquisition behavior of the focal and tied-to firms.

Finally, if some condition common to both firms is causing the acquisition relationship, we should find both focal and tied-to firms acquiring or not acquiring. This means that prior acquisitions by the focal firm should be related to current acquisitions by the tied-to firms. If this relationship cannot be reversed, then the similarity explanation is not supported:

Hypothesis 6 (H6): The number of prior acquisitions by the focal firm is related to the number of current acquisitions by the tied-to firms.

Private information. The second alternative explanation relates to ambiguity about what interorganizational director ties represent. Although they were discussed above as a source of models, they could be simply a source of information about mergers and acquisitions: managers who sit on boards of firms that are making acquisitions are exposed to information about acquisitions. This interpretation is consistent with imitation, which requires exposure to examples of other firms, but it is also consistent with some financial theories known as private-information theories. Private-information theories say that acquisitions are executed by managers who have "better" information about the target, or the target's value, than managers of other firms (e.g., Bradley, Desai, and Kim, 1983). Presumably, the more boards managers sit on, the greater their chances of getting this "better" information. There are three ways of exploring this private-information perspective: (1) measuring and controlling for access to private information; (2) focusing on what types of private information might be communicated through director ties; and (3) examining imitation over time.

Access to information has commonly been measured by network centrality, i.e., having many director ties to other firms (e.g., Mariolis and Jones, 1982; Useem, 1984; Davis, 1991). Firms that are tied to many other firms are more likely to have access to private information about acquisitions than firms that are tied to few other firms. According to an imitation perspective, network centrality is not a requirement for imitation. Thus, finding a relationship between network centrality and acquisitions would support a private-information explanation:

Hypothesis 7 (H7): There is a positive relationship between focal-firm network centrality and the number of acquisitions completed in the current year.

The second way of exploring the private-information explanation is to focus in more detail on what types of private information might be communicated through these interorganizational director ties. If evidence is found that private information is related to acquisition activity, it would be useful to see what form this information takes, which is not clear in the literature discussing private information.

Discussions of private information usually focus on the effects of asymmetric distributions of information, without considering its content. For purposes of this study, it is useful to distinguish among types of private information that might be communicated through director ties. There are three general types of private information that might be communicated: (1) information about acquisition opportunities, e.g., special opportunities for buying particular firms, especially undervalued firms; (2) general know-how information, e.g., what investment bankers to use or how to negotiate a low purchase price; and (3) normative information, e.g., acquisitions are "the thing to do."

Information about acquisition opportunities is probably closest to a financial argument for private information, while normative information is probably furthest from it. The idea of firms responding to normative information is very similar to the idea of firms imitating other firms, however, and the effects of the impact of normative information and imitation on a firm therefore cannot be disentangled. It is useful, nevertheless, to attempt to disentangle information about acquisition opportunities from know-how and normative information, and this can be done with the data used in this study.

The alternative explanation that information about special acquisition opportunities is causing the relationship between acquisitions by the tied-to and focal firms can be dealt with by determining in which industries the focal and tied-to firms are acquiring. Firms that acquire other firms in a particular industry are more likely to have information about opportunities in that industry than nonacquirers in an industry. If they pass on this information, there should be a relationship between industries in which the tied-to firms are acquiring and the industries in which the focal firms are acquiring. If they are not acquiring in the same industries, then it is less likely that private information about opportunities is being communicated through these director networks and causing the relationship between acquisitions by the tied-to and focal firms.

Hypothesis 8 (H8): There is a positive relationship between the industries of the tied-to firm's acquisitions and the industries of the focal firm's acquisitions.

Finally, the third way of testing whether private information is causing the relationship between acquisitions by the tied-to and focal firms is to examine differences in the impact of imitation variables over time. Private-information and institutional theories of imitation make different predictions about effects over time. Empirical research investigating the institutionalization of various practices and structures has documented that early adoption of these practices and structures is due to the practice being functional for the adopting firm. This is not true for later adoption, when the practice is widely understood to be something that "rational" firms do. Then the practice is followed whether or not it makes sense for the adopting firm. Tolbert and Zucker (1983) found this pattern in the diffusion of civil service reform, and Armour and Teece (1978) and Fligstein (1985) found support for similar predictions in the spread of the M-form. Historically, mergers

have occurred in waves, with peaks in merger activity in about 1899, 1929, 1967, and 1986. The wave of mergers in the 1980s began in 1975, peaked about 1986, and the number of mergers decreased thereafter. Applying the above theory to the 1980s wave, it may be that early in the wave, acquisitions occur when they are functional for the acquiring firm, but later in the wave, when many firms are making acquisitions and acquisitions are normative, social processes dominate. This leads to the hypothesis that the imitation relationships are more strongly associated with later rather than earlier acquisition activity:

Hypothesis 9 (H9): The imitation variables are more strongly associated with acquisitions during the later part of the 1980s merger wave.

METHOD

The design compares firms with different numbers of acquisitions (including no acquisitions) during the 1981–1990 period. This period was chosen for two reasons. First this was a period in which great numbers of acquisitions occurred. Second, it is the period covered by the best available database of mergers and acquisitions, the database covered by the *Journal of Mergers and Acquisitions* (the M&A database). The M&A database includes all acquisitions during this period that exceeded a purchase price of $1,000,000 and was used to code the acquisition variables.

Sample

The sample consists of all medium and large-sized firms (over $35 million in assets) listed in the 1981–1990 COMPUSTAT databases for four industries. Small firms were not studied because they make very few acquisitions and have very few interlocks. COMPUSTAT historical files were used, so that firms that were acquired by other firms during the 1981–1990 period were included in the sample. The sample is not restricted to survivors. Sampling from COMPUSTAT means that leveraged buyouts (LBOs) and other forms of going-private transactions in which individuals rather than firms are making the acquisition were not included in this study. Only ''traditional'' acquisitions, in which one existing firm is buying another existing firm, were sampled. Because traditional acquisitions accounted for 85 percent of all acquisitions completed from 1981 to 1987 (Blair, Lane, and Schary, 1991), this sample includes a large portion of the acquisition activity during the 1980s.

I restricted the focal firms I sampled to four industries, because acquisition activity varies by industry, and industry has to be controlled for in all analyses. Having a few firms in many industries would restrict controlling for industry differences. The four Standard Industry Classification (SIC) industries selected were electrical equipment manufacturing (SIC 36), transportation equipment (SIC 37), wholesale trade (SIC 50), and business services (SIC 73). The electrical and transportation equipment industries were chosen because manufacturing industries like these have been the subject of almost all of the acquisition research to date (e.g., Golbe and White, 1988; Fowler and Schmidt, 1988). The wholesale and business services industries were chosen because they were important, growing industries during the 1980s.

Selecting all medium and large-sized firms (over $35 million in assets) from these four industries resulted in a sample of 327 focal firms. These 327 focal firms were tied to 622 other firms, so data were collected on a total of 949 firms.

Data were not collected for all ten years during this 1981–1990 period, because collecting acquisition and director tie data is a laborious task. Rather, for each focal firm, one year from the 1981–1990 period was randomly selected and acquisition data were collected for the selected year and three years before the selected year. This sampling approach minimized data collection while still providing variance across firms. The three-year period was used because it is reasonable to think that events in the distant past will have less impact than events in the recent past. Three years was assumed to be a reasonable period for an acquisition to serve as a model for other firms.

Dependent Variables

The number of acquisitions completed by the focal firms during the randomly selected year and three years before the selected year was obtained from the *Journal of Mergers and Acquisitions.* The number of acquisitions completed by the focal firms in the selected year ranged from zero to nine. Because the industry of almost all acquired firms was available from either the M&A database or COMPUSTAT, each acquisition by the focal firm could be classified according to whether it was vertical, horizontal, or conglomerate. A classification scheme that has been used in several other studies of acquisition activity (e.g., Blair, Lane, and Schary, 1991) was used to classify acquisitions as horizontal, vertical, or conglomerate. An acquisition was coded as horizontal when the two-digit industry code of the acquiring firm matched that of the acquired firm. An acquisition was coded as vertical when the industry of the acquiring firm either (1) sold more than 5 percent of its output to or (2) received more than 5 percent of its input from the industry of the acquired firm. The input-output numbers were obtained from the input-output tables published annually by the *Survey of Current Business* (U.S. Department of Commerce). Finally, acquisitions that were neither horizontal nor vertical were coded as conglomerate.

This coding scheme assumes that firms can be uniquely classified into 2-digit industry codes. Although the primary industry of these firms was used in the coding scheme, very large firms may have operations in several industries other than the primary one. This means that this coding scheme will result in classifying some acquisitions as conglomerate that are really horizontal or vertical. Obtaining completely accurate industry codes requires line-of-business acquisition data, which is not publicly available. Any misclassifications by this coding scheme work against finding effects, however, so any effects found would be stronger with more precise industry data.

Independent Variables

Director ties. Imitation is more likely to have an effect when directors of the focal firms who sit on the boards of tied-to firms are inside directors (i.e., managers) of their own firms.

This is because inside directors are more likely to influence their own firms' decisions about acquisitions than outside directors. The ties of inside directors are a subset of all possible interlock ties between two firms. The ties in this study are almost all unidirectional, i.e., a focal firm manager sits on the tied-to firm's board, but no tied-to firm managers sit on the focal firm's board. They are also direct ties. Other studies have classified interlocks into those that are direct (created by people affiliated with the two firms that are connected) and those that are indirect (created by people not affiliated with those two firms). Several researchers have suggested that direct interlocks are more influential than nondirectional interlocks (Palmer, 1983; Mintz and Schwartz, 1985; Stearns and Mizruchi, 1987; but see Palmer, Jennings, and Zhou, 1993 for an exception). Interlock data were collected for this study by obtaining the names of all inside directors, their titles and director ties from the proxy statements of the focal firm. Then each firm for which these managers served as director (the tied-to firm) was checked against the M&A database. The number of acquisitions by these tied-to firms during the sampled year and three years before the sampled year was used to create the tied-to firm acquisition variables.

The size of the firms acquired by these tied-to firms was obtained from COMPUSTAT and/or the M&A database. The type of acquisition (horizontal, vertical, or conglomerate) completed by the tied-to firm was coded the same way as that of the focal firm. Network centrality was calculated as the sum of ties for all inside directors of a firm, minus any duplicated ties, i.e., when two directors of the same firm sit on the same board. The number of ties to other firms ranged from zero to fifteen.

To test for differences in imitation over time, the sample was split into two periods. The split occurred between 1986 and 1987, which is right after the peak of the 1980s merger wave. A dummy variable for period and an interaction variable (period by number of acquisitions by the tied-to firms) were created.

Control Variables

Some variables not considered in the hypotheses and alternative explanations may be related to the number of acquisitions by the focal firms, including the firms' free cash flow, past performance, previous acquisition activity, and size and factors associated with the economy and a firm's industry.

Free cash flow. According to Jensen's (1987) free cash flow theory, high cash flow and low debt create agency costs associated with conflicts between managers and shareholders over the payout of this free cash, which is the cash left after the firm has invested in all available positive net present value projects. Jensen's theory says that managers have incentives to invest excess free cash in negative net present value projects (especially those related to firm growth), rather than pay it out to shareholders as dividends. Free cash flow theory predicts that free cash flow will be positively related to conglomerate mergers, because these mergers provide growth and are also generally not

wealth-enhancing projects for acquiring firm shareholders. Thus, we might expect free cash flow, i.e., high levels of current free cash and low debt, to be related to the number of conglomerate acquisitions by the focal firm. Consistent with Lehn and Poulsen (1989), free cash flow was measured as follows: Current-year Cash Flow = (Operating Income − Taxes − Interest Expense − Preferred Dividend − Common Dividend)/Equity. All variables were obtained from COMPUSTAT. Two free cash flow measures were developed, one measuring free cash flow at the end of the year before the sampled year and one measuring average free cash flow over the prior three years.

The second measure of free cash flow is the firm's debt (long- and short-term) to equity ratio. Low debt in relation to equity means that the firm has more free cash flow. Again, both debt/equity as of the end of the year before the sampled year and average debt/equity over the prior three years were measured.

Past performance of the focal firm. Firm performance is likely to influence the number of acquisitions, but the direction of this effect is difficult to specify. On the one hand, increasingly good prior performance may result in managerial hubris (Roll, 1986), which in turn results in acquisitions, especially risky acquisitions (Morck, Shleifer, and Vishny, 1990). Managers with hubris will systematically overestimate their ability to make risky acquisitions work. An alternative interpretation of a positive relationship between performance and acquisitions is that good past performance results in easy access to acquisition financing, enabling firms to make more acquisitions. On the other hand, Morck, Shleifer, and Vishny (1990) hypothesized that managers in poorly performing firms have incentives to try something new, and they enact this by buying new businesses that they may be better at running than their current businesses. If this is true, then we may see more acquisitions by poorly performing firms.

Three measures of the past performance of the focal firm were developed. Firm performance relative to industry was used because industries vary in performance measures, and the industry component is presumably not under managerial control. Performance not under managerial control is unlikely to affect the managerial motivations outlined earlier. The first measure is income growth relative to the industry over the three years before the selected year. Following Morck, Shleifer, and Vishny (1990), income growth was measured as $\log[I(t-1)] - \log[I(t-4)]$, where t is the selected year and I is the sum of net income, interest income, and deferred taxes. The mean income growth for all firms in the same industry was subtracted from this number. The second measure is return on assets (relative to industry) during the three years prior to the selected year. The third measure is return on equity, relative to the industry, during the three years prior to the selected year. All variables were obtained from COMPUSTAT.

Other controls. Four other variables were included to control for factors known or expected to affect acquisition activity. One control is a firm's previous acquisition activity.

The probability of acquisition activity in one year is not likely to be completely independent of acquisition activity in the previous year (or years) (Amburgey and Miner, 1992). To control for firm-level tendencies to acquire or not acquire, independent of imitation, the number of acquisitions by the focal firm during the three years before the selected year was used as a control variable.

Macroeconomic researchers suggest that some macroeconomic variables, such as annual gross national product (GNP), are associated with levels of acquisition activity (e.g., Becketti, 1986; Golbe and White, 1988). Evidence based on merger activity prior to the 1980s shows that low interest rates and high stock prices are associated with the number of mergers per year (e.g., Beckenstein, 1979), although this relationship appears to break down in the 1980s (Golbe and White, 1988). Other macroeconomic factors unique to the 1980s wave have been proposed, including (1) lax antitrust enforcement by the Reagan administration, which resulted in an increase in the number of related mergers and (2) the rise of the junk bond market and alternative forms and techniques for acquisition financing (Jarrell, 1987). In this study, the potential effect of macroeconomic conditions on acquisition activity was controlled in two ways: (1) by entering years as a set of dummy variables to the models and (2) by directly entering those macroeconomic variables that have been found to be associated with acquisition activity by prior studies. These variables are annual GNP, cost of capital, measured as the annual rating on Moody's Aaa bonds, and a stock market index measured as the annual volume traded on the New York Stock Exchange (NYSE) (e.g., Nelson, 1959; Golbe and White, 1988).

The third control accommodates the argument that industry conditions can affect levels of acquisition activity. Several theories of acquisition activity that operate at the industry level have been proposed (e.g., Jensen, 1987). Some of these explanations are unique to the 1980s, including (1) increased industry deregulation, which has the potential to increase competition (e.g., airlines) and/or relax former prohibitions on acquisitions by firms in certain industries (e.g., banking), and (2) the rise of foreign competition, which affected manufacturing industries more than service industries (Jarrell, 1987). These explanations have not been tested, but they are still important to control for. Therefore, differences in acquisition activity for the four industries in this study were controlled by entering industry (as a set of dummy variables) into the model.

Finally, it has been shown in previous studies that acquiring firms tend to be larger than nonacquiring firms. Therefore, the size of the focal firm (measured as total assets) was added as the fourth control variable. Asset size was obtained from COMPUSTAT. Because size is both a cause and an effect of acquisitions, firm size as of the end of the year before the sampled year was used in the analyses.

Tables 1 and 2 present descriptive statistics and correlations among the study variables.

Table 1

Descriptive Statistics for Study Variables*

Variable	Mean	S.D.	Min.	Max.	*N*
Control variables					
Year	85.57	2.91	81	90	327
Elec. equip.	.327	.470	0	1	327
Transportation	.156	.363	0	1	327
Wholesale	.281	.450	0	1	327
Business svcs.	.235	.425	0	1	327
Assets (in millions)	1803	12727	35	164063	327
Debt/equity	.551	.681	0	6.81	327
Free cash flow	11.84	55.01	−2.27	365.53	327
Adjusted income	.000	1.03	−6.85	5.29	327
Adjusted ROA	.000	2.03	−4.44	30.57	327
Adjusted ROE	.000	1.67	−1.12	25.82	327
No. focal acqsns. (prior 3 yrs.)	1.30	2.11	0	16	327
No. focal firm acquisitions					
Current yr.	.651	1.20	0	9	327
Horizontal	.286	.704	0	5	318
Vertical	.088	.354	0	2	317
Conglomerate	.250	.759	0	6	316
No. tied-to firm acquisitions					
Current yr.	.997	2.56	0	19	327
Prior 3 yrs.	2.05	5.09	0	49	327
Current yr. (banks only)	.266	1.02	0	9	316
Prior 3 yrs. (banks only)	.593	1.99	0	16	316
Current yr. (nonbanks only)	.745	2.08	0	19	316
Prior 3 yrs. (nonbanks only)	1.64	4.30	0	45	316
Current yr., horizontal	.461	1.24	0	8	310
Prior 3 yrs., horizontal	.987	2.97	0	33	299
Current yr., vertical	.155	.72	0	6	309
Prior 3 yrs., vertical	.284	1.30	0	15	299
Current yr., conglomerate	.238	.91	0	10	311
Prior 3 yrs., conglomerate	.581	1.71	0	14	301
Other variables					
Network centrality	1.90	2.49	0	15	327

* Except as noted, untransformed values are reported for variables.

Model Estimation

The dependent variable (number of acquisitions by the focal firm) ranges from zero to nine, with 82 percent of the focal firms completing either zero or one. This means that the dependent variable is nonnegative, by definition, and that a number of observations have a value of zero. Because this is therefore a dependent variable with a limited range, standard multiple regression techniques are inappropriate. More appropriate is the Tobit method, which is designed explicitly to account for limited dependent variables (Tobin, 1958) and has been used in other studies in which the dependent variable is an acquisition count (Amihud and Lev, 1981).

The Tobit method was used to estimate the parameters of all models, using the LIMDEP statistical package (Greene, 1990a). The Tobit model is derived from an underlying regression,

$$y^* = \beta' x_i + e_i, \quad \text{where } e_i \sim N(0, \sigma^2)$$
$$\text{and } E[y] = 0 \text{ Prob } [y = 0] + E[y^*/y^* > 0] \text{ Prob } [y^* > 0].$$

With Tobit, y^* is not directly observed, and in some ranges the true value of y^* is masked (Greene, 1990b). In this

study, y^* represents the focal firm's (unobserved) propensity to merge. The method of estimation is maximum likelihood, and *t*-tests are used to assess the significance of individual coefficients (for more details on the Tobit method, see Maddala, 1983; Greene, 1990a, 1990b). The significance of the results does not vary when the dependent variable is collapsed into a 0, 1 and logistic regression is used instead of Tobit. Further, the results are approximately the same with Poisson regression.

RESULTS

Imitation

Table 3 presents the results of the analysis for imitation. Model 1 shows the results of the test of H1. As predicted, the number of prior acquisitions completed by the tied-to firms is positively related to the number of current acquisitions completed by the focal firm.

Model 2 shows the results of the test of H2. As predicted, the squared term for the number of acquisitions by the tied-to firms is negative and significant. The peak of the linear relationship occurs at 22 acquisitions by the tied-to firms during the prior three years. The model including both acquisitions by the tied-to firms and the square of this term significantly improves model fit over the base model ($\chi^2 = 34.79$, df $= 2$, $p < .001$).

Table 3 also presents results for imitation of the type of acquisitions. Models 3–5 show the results of the tests of H3a, H3b, and H3c. As predicted by H3a, there is a positive relationship between the number of prior horizontal acquisitions completed by the tied-to firms and the number of current horizontal acquisitions completed by the focal firm. Yet there is no relationship between the number of prior vertical or conglomerate acquisitions by the tied-to firms and current horizontal acquisitions by the focal firm. This means that horizontal acquisitions by the tied-to firm result in horizontal acquisitions by the focal firm, but not in vertical or conglomerate acquisitions.

As predicted by H3b, there is a positive relationship between the number of vertical acquisitions completed by the tied-to firms and the number of vertical acquisitions completed by the focal firm. There is no relationship between the number of horizontal and conglomerate acquisitions by the tied-to firms and vertical acquisitions by the tied-to firms. This means that vertical acquisitions by the tied-to firm result in vertical acquisitions by the focal firm, but not in horizontal or conglomerate acquisitions.

As predicted by H3c, there is a positive relationship between the number of conglomerate acquisitions by the tied-to firms and the number of conglomerate acquisitions by the focal firm. There is no relationship between horizontal and vertical acquisitions by the tied-to firms and conglomerate acquisitions by the focal firm. This means that conglomerate acquisitions by the tied-to firm result in conglomerate acquisitions by the focal firm, but not in horizontal or vertical acquisitions.

Table 2

Correlations among Key Study Variables*

Variable	1	2	3	4	5	6	7	8	9
Control									
1. Elect. equip.									
2. Transportation	−.30								
3. Wholesale	−.44	−.27							
4. Business svcs.	−.39	−.24	−.34						
5. Assets	−.07	.16	−.04	−.03					
6. Debt/equity	−.09	−.06	.09	.06	.01				
7. Free cash flow	−.04	−.13	−.08	.25	−.05	.10			
8. Adj. income	−.04	.05	−.23	.02	.08	−.23	.25		
9. Adj. ROA	.01	−.01	.01	.01	.14	−.71	.05	.07	
10. Adj. ROE	.01	−.01	.01	.01	.07	.02	.04	−.17	.33
11. No. focal acqsns. (prior 3 yrs.)	−.05	.11	−.05	.02	.21	−.02	−.03	.03	.14
No. focal firm acquisitions									
12. Current yr.	−.16	.10	.11	.18	.16	.07	−.01	.03	.29
13. Horizontal	−.14	−.05	.04	.16	.06	.04	.10	.01	.01
14. Vertical	−.08	.16	.01	−.05	.07	.03	−.06	−.03	−.04
15. Conglomerate	−.08	.14	−.01	−.01	.19	.04	−.06	.06	.51
No. tied-to firm acquisitions									
16. Current yr.	−.07	.20	−.04	−.04	.22	−.03	.04	−.06	.27
17. Prior 3 yrs.	−.07	.19	−.03	−.05	.26	−.01	.03	−.07	.25
18. Prior 3 yrs. (banks only)	−.03	.29	−.11	−.10	.21	−.05	−.07	.01	.36
19. Prior 3 yrs. (nonbanks only)	−.04	.09	−.02	−.02	.24	.03	.06	−.09	.13
20. Horizontal	−.03	.18	−.12	.01	.01	−.01	−.05	−.01	.24
21. Vertical	−.01	.18	−.08	−.08	.16	−.02	−.08	.02	.13
22. Conglomerate	−.06	.18	−.02	−.07	.26	−.03	−.05	−.07	.32
23. Network cent.	−.03	.18	−.02	−.10	.29	−.01	−.06	−.01	.07

* The approximate cutoff for significance at the .05 level is any correlation greater than .11 or less than −.11.

Forty-one percent of the focal firms do not have director ties to other firms, though they may still make acquisitions. To determine whether the imitation relationships hold only for firms that have ties, the above analyses were repeated using only those firms with ties. Results of these analyses support the above hypotheses, e.g., prior acquisitions by the tied-to firms are significantly related to current acquisitions by the focal firm, [$t(193) = 3.24$, $p < .001$].

Similar Conditions

To test H4, whether the relationship between acquisitions at the focal and tied-to firms still holds when the focal and tied-to firms are very dissimilar, the following analysis was performed. First, ties were classified by the industry of the tied-to firm. This classification shows that the largest proportion of ties are to commercial banks. Across firms, 22 percent of ties are to banks. Banks are in many ways dissimilar to firms in the sampled industries, and the financial services industry is quite different from the manufacturing and service industries sampled in this study, having undergone a great deal of deregulation during the 1980s. Given that banks represent such a large proportion of ties, and that banks are in many ways dissimilar to the focal firms, I performed an analysis to test whether the

Table 2 (*continued*)

10	11	12	13	14	15	16	17	18	19	20	21	22
.05												
−.01	.53											
−.01	.32	.65										
−.04	.11	.48	.04									
−.02	.50	.79	.11	.25								
.03	.21	.31	.25	.15	.21							
.01	.32	.37	.24	.18	.29	.79						
−.03	.29	.35	.10	.22	.34	.54	.61					
.16	.24	.31	.24	.16	.22	.69	.90	.28				
−.01	.21	.36	.26	.17	.24	.58	.70	.64	.53			
.01	.04	.32	.11	.42	.29	.54	.60	.30	.72	.42		
.03	.23	.39	.11	.21	.43	.62	.82	.43	.80	.46	.42	
−.01	.17	.27	.09	.21	.24	.60	.58	.38	.51	.44	.44	.36

relationship between acquisitions by the focal and tied-to firms varies by whether the tied-to firm is a bank. To do this, the number of acquisitions completed by the tied-to firms was separated into two variables, according to whether the tied-to firm was a bank or a nonbank, one variable representing the number of acquisitions completed by banks during the three years before the sampled year was created and the other representing the number of acquisitions completed by nonbanks during the three years before the sampled year. If the similarity explanation is true, the relationship between acquisitions by the tied-to and focal firms should hold only when the tied-to firm is not a bank. Table 4 presents the results. Model 1 shows that the relationship between acquisitions at the tied-to and focal firms does not differ by whether the tied-to firm is a bank. Both the number of acquisitions by tied-to banks and the number of acquisitions by tied-to nonbanks are significantly related to acquisitions by the focal firm. Thus H4 receives no support from this test. The relationship between acquisitions by the focal and tied-to firms holds even when the focal and tied-to firms are dissimilar. Another model, not reported here, shows that the squared terms for both banks and nonbanks are significant when included in this model. This also supports the hypothesis that both banks and nonbanks are a source of imitation.

Table 3

Imitation Results*

Variable	Model (1)	(2)	(3)	(4)	(5)
Intercept	−1.53••	−1.63••	−1.76•	−1.96	2.96••
	(.535)	(.502)	(.734)	(1.51)	(.937)
N Acqsns. by tied-to firms					
Prior 3 years	.085••	.296••			
	(.026)	(.050)			
(Prior 3 years)^2		−.007••			
		(.001)			
Horizontal			.114•	.177	−.031
prior 3 yrs.			(.055)	(.181)	(.101)
Vertical			−.105	.173•	.300
prior 3 yrs.			(.271)	(.059)	(.269)
Conglomerate			.129	−.084	.291•
prior 3 yrs.			(.108)	(1.76)	(.118)
Control variables					
(Log) Debt/equity	1.24•	1.23••	.715	2.73•	1.78•
	(.511)	(.476)	(.702)	(1.18)	(.819)
Adj. Income growth	.001	.001	.001	.001	.001
	(.001)	(.001)	(.001)	(.001)	(.001)
Adj. ROA	.085	.069	−.018	−.017	.227••
	(.063)	(.058)	(.078)	(.116)	(.073)
Adj. ROE	−.303	−.305	.019	−.265	−.134
	(.221)	(.200)	(.142)	(.436)	(.167)
(Log) Free cash flow	−.173	−.213	−.345	−1.18	−.015
	(.143)	(.136)	(.208)	(.999)	(.199)
Year 1982	−.731	−.909	−1.37	−2.23	.637
	(.591)	(.553)	(.990)	(.143)	(.914)
1983	−1.61•	−1.73••	−.828	−.816	−.543
	(.655)	(.615)	(.886)	(.654)	(1.05)
1984	−.753	−1.14•	.005	−.139	−.103
	(.596)	(.567)	(.771)	(.984)	(1.01)
1985	−.618	−.553	1.00	−.645	−.121
	(.604)	(.559)	(.737)	(1.13)	(.970)
1986	.311	−.096	.626	−.083	1.01
	(.571)	(.539)	(.746)	(.997)	(.913)
1987	.787	.643	1.85•	.022	.478
	(.588)	(.547)	(.738)	(1.04)	(.972)
1988	−1.97••	−1.85••	−1.59	−1.20	−.594
	(.714)	(.660)	(1.06)	(1.14)	(1.01)
1989	−.768	−.848	−1.56	−3.14•	−.272
	(.568)	(.529)	(1.03)	(1.59)	(.965)
1990	−.791	−.854	.521	−1.63	−.059
	(.607)	(.564)	(.757)	(1.23)	(1.01)
Transportation	.489	.307	−.259	1.65•	.824
	(.445)	(.416)	(.606)	(.866)	(.623)
Wholesale	.707•	.820•	.394	.154	.350
	(.353)	(.332)	(.486)	(.766)	(.571)
Business svcs.	.763•	.760•	.920•	−.258	.752
	(.371)	(.348)	(.478)	(.888)	(.570)
Assets†	2.99	−17.71	52.14	85.57	126.67•
	(25.99)	(24.56)	(40.30)	(60.67)	(59.08)
N focal firm acqsns.	.453••	.448••			
prior 3 yrs.	(.067)	(.062)			
Log-likelihood	−324.71	−312.43	−156.04	−86.07	−152.19
N	327	327	289	289	289

• $p < .05$; •• $p < .01$.

* The dependent variable for models 1 and 2 is the number of current-year acquisitions by the focal firm. The dependent variable for model 3 is the number of current-year horizontal acquisitions by the focal firm, for model 4 it is the number of current-year vertical acquisitions by the focal firm, and for model 5 it is the number of current-year conglomerate acquisitions by the focal firm.

† To correct for right skew, the negative reciprocal of the assets variable (originally measured in thousands) was used.

Table 4

Alternative Explanation Results*

Variable	Model (1)	(2)	(3)	(4)	(5)
Intercept	−1.56••	−1.68••	−.713	−1.99••	−2.18••
	(.529)	(.507)	(.944)	(.532)	(.490)
N Acqsns. by tied-to firms					
Current year only		.056			
		(.072)			
Prior 3 years		.269••	.515••	.239••	.276••
		(.061)	(.046)	(.058)	(.081)
(Prior 3 years)^2		−.007••		−.006••	−.007••
		(.001)		(.001)	(.002)
Prior 3 years (banks only)	.149•				
	(.072)				
Prior 3 years (nonbanks only)	.075••				
	(.029)				
Network centrality				.332••	
				(.124)	
(Network centrality)^2				−.025•	
				(.011)	
Period					−.154
					(.316)
Period × tied-to acqsns.					.053
					(.085)
Control variables					
(Log) Debt/equity	1.23•	1.25••	−.568	1.13•	.833
	(.504)	(.476)	(.987)	(.476)	(.499)
Adj. income growth	.001	.001	.001	.001	.001
	(.001)	(.001)	(.001)	(.001)	(.001)
Adj. ROA	.061	.063	.173	.080	.056
	(.066)	(.059)	(.105)	(.058)	(.079)
Adj. ROE	−.249	−.314	.015	−.306	−.331
	(.217)	(.200)	(.142)	(.196)	(.223)
(Log) Free cash flow	−.160	−.213	−.185	−.219	−.272
	(.142)	(.136)	(.272)	(.135)	(.146)
Year—1982	−.741	−.870	−.213	−.940	
	(.582)	(.556)	(.990)	(.555)	
1983	−1.62•	−1.67••	−2.75•	−1.70••	
	(.646)	(.619)	(1.32)	(.611)	
1984	−.869	−1.15•	.205	−.964	
	(.597)	(.569)	(1.03)	(.567)	
1985	−.623	−.538	.342	−.612	
	(.597)	(.560)	(1.03)	(.562)	
1986	.235	−.107	.595	.052	
	(.566)	(.540)	(1.03)	(.546)	
1987	.683	.681	−1.23	.743	
	(.582)	(.550)	(1.13)	(.550)	
1988	−1.98••	−1.82••	−2.25	−1.78••	
	(.704)	(.662)	(1.23)	(.656)	
1989	−.815	−.794	−1.90	−.628	
	(.562)	(.534)	(1.09)	(.533)	
1990	−.853	−.809	−.481	−.746	
	(.598)	(.567)	(1.08)	(.564)	
Transportation	.455	.284	.809	.175	.317
	(.442)	(.417)	(.720)	(.416)	(.441)
Wholesale	.768•	.817•	−.139	.807•	.903•
	(.349)	(.332)	(.643)	(.331)	(.358)
Business services	.820•	.752•	.079	.799•	.942••
	(.368)	(.348)	(.673)	(.348)	(.373)
Assets†	−.919	−17.17	148.88•	−25.80	−7.78
	(25.73)	(24.60)	(60.13)	(24.69)	(26.39)
N focal acqsns. prior 3 yrs.	.449••	.455••	−.187	.440••	.454••
	(.066)	(.063)	(.126)	(.061)	(.066)
Log-likelihood	−323.31	−312.13	−318.62	−308.79	−326.44
N	316	327	327	327	327

• $p < .05$; •• $p < .01$.

* The dependent variable for models 1, 2, 4, and 5 is the number of focal-firm current-year acquisitions. The dependent variable for model 3 is the number of tied-to firm current-year acquisitions.

† To correct for right skew, the negative reciprocal of the assets variable was used.

Model 2 in Table 4 presents the results of the test of H5, whether current acquisitions by the tied-to firms are related to current acquisitions by the focal firm. Results show no support for this hypothesis. Only prior acquisitions, not current acquisitions by the tied-to firms, are related to current acquisitions by the focal firm. Other results, not reported here, show that this relationship also holds for the number of horizontal, vertical, and conglomerate acquisitions by the focal firm. Further, this result holds for the number of acquisitions by banks and nonbanks. Only prior, not current acquisitions by both banks and nonbanks are related to current acquisitions by the focal firm.

Model 3 in Table 4 presents the results of the test of H6, whether the relationship between the tied-to and the focal firm can be reversed. The dependent variable in this analysis is current-year acquisitions by the tied-to firms, and the main independent variable is prior year acquisitions by the focal firm, the reverse of the relationship tested in model 1 in Table 3. Prior acquisitions by the focal firm are not related to current acquisitions by the tied-to firms. Thus, the imitation relationship does not reverse. This result supports the idea that it is not some third variable common to both the focal and tied-to firms that is causing the observed acquisition relationship.

Private Information

Table 4 also presents results of tests for private-information explanations. Model 4 shows the results of the test of H7, whether access to private information accounts for the relationship between acquisitions by the tied-to and focal firms. Support for this hypothesis requires that network centrality be positively related to the number of acquisitions by the focal firm. Yet if the imitation relationship is just a proxy for private-information transmission, then including network centrality in this model should result in a nonsignificant effect for the number of acquisitions by the tied-to firms. As shown in model 4, independent of the number of acquisitions by the tied-to firms, those firms that have more director ties to other firms, and are therefore more central in the network, are completing more acquisitions in the current year, which supports the private-information explanations. Centrality squared is negative and significant, however, suggesting that there is a limit to the effect of private information. But even controlling for network centrality, imitation predictions are still supported.

Because evidence of private-information transmission through director ties was found, I tested whether the information communicated is private information about opportunities. What we want to know is whether there is a relationship between the industries in which the tied-to firms are acquiring and the industries in which the focal firms are acquiring. If this relationship exists, then the number of acquisitions by the focal firm in a particular industry should be greater when the tied-to firms also acquired in that industry. To test this, the number of acquisitions by the focal firm were classified by whether the tied-to firms acquired in that industry or not. This analysis was performed for those 72 pairs of firms in which both the focal and tied-to firms

completed one or more acquisitions. There were only twelve cases in which the focal and tied-to firms completed one or more acquisitions in the same industry. A *t*-test of the mean number of focal-firm acquisitions in an industry when the tied-to firms also acquired in that industry (mean = 1.60, SD = 1.24) and of the mean number of focal-firm acquisitions in an industry when the tied-to firms did not acquire in that industry (mean = 1.89, SD = 1.55) is not significant [$t(250) = -1.11$, $p < .27$]. This suggests that director ties were not used to communicate private information about acquisition opportunities.

The final test of the private-information explanation assesses whether the imitation relationship is stronger later in the 1981–1990 period. A model including the dummy variable for period and the interaction of period with tied-to firm acquisitions was run. As shown in model 5 in Table 4, the interaction of period by tied-to firm acquisitions is not significant, indicating there is no difference in the impact of imitation over the period covered by this study.

Control Variables

Although there does not appear to be support for free cash flow as an explanation for either the number or types of acquisitions completed by the focal firm, it appears that firms with more debt relative to equity make more acquisitions, especially vertical and conglomerate acquisitions. This result is the opposite of Jensen's prediction and may reflect the rise of debt as a financing tool in the 1980s. Since prior acquisitions are associated with current acquisitions, the relationship between debt and current acquisitions may be the result of financing these earlier acquisitions. Measures of average free cash flow and debt over the prior three years were used in all analyses. Results do not change when prior year free cash flow and debt were used instead of averages.

There is some support for the theory that prior firm performance is positively related to conglomerate acquisitions. High return on assets, relative to the rest of the firms in the industry, is positively related to the number of conglomerate acquisitions completed by the focal firms. This supports either a hubris or availability-of-financing explanation for conglomerate acquisitions.

As expected, the inclusion of dummy variables for year shows that the number of acquisitions varies for some years. When annual GNP, cost of capital, and NYSE volume were included instead of the dummy variables for year, the coefficients on GNP and NYSE volume were significant. GNP was negatively related and NYSE volume was positively related to acquisition activity, although these models did not fit as well as the models with year. The dummy variables for year, being more global proxies for macroeconomic conditions, capture more variance and are more conservative controls. Therefore, the year dummies were included in all other analyses reported in this study.

The number of acquisitions varies by the industry of the focal firm. Firms in the wholesale and business services industries completed more acquisitions than firms in the

electrical equipment and transportation industries. Further, the type of acquisition varies by industry. Firms in the business services industry completed more horizontal acquisitions than firms in the electrical equipment and wholesale industries. Firms in the transportation industry completed more vertical acquisitions than firms in other industries.

The relationship between the size of the sampled firm and the number of acquisitions completed is not significant. Yet size is positively related to the number of conglomerate (but not horizontal or vertical) acquisitions. Finally, the number of acquisitions by the focal firm in the prior three years has a positive effect on acquisitions in the current year. This is consistent with Amburgey and Miner's (1992) finding that firms exhibit repetitive momentum in merger activity, tending to repeat specific strategic actions.

DISCUSSION AND CONCLUSIONS

Overall, the results provide strong evidence that imitation plays a powerful role in corporate acquisition activities. There is a relationship between a focal firm's acquisition activity and acquisition activity by those firms that are tied to a focal firm through directorships. A predicted nonlinear relationship between the number of acquisitions by the tied-to firms and the number of acquisitions by the focal firm was found. When further broken down into acquisition types, the relationship also holds for the number of horizontal, vertical, and conglomerate acquisitions by the tied-to firms. These results hold independent of several controls for financial and managerial explanations for acquisitions.

Analyses also showed that the imitation relationship is not restricted to those cases in which the focal and tied-to firms are subject to similar conditions. Three pieces of evidence help demonstrate that imitation, not some variable related to both firms being subject to similar conditions, is driving the relationship between acquisitions by the focal and tied-to firms: (1) the focal firms are imitating the acquisition activities of banks, and banks are quite dissimilar to the focal firms, (2) there must be a one-year lag before imitation occurs, and (3) focal firms are imitating their tied-to firms, but tied-to firms are not imitating focal firms.

Results are also consistent with the idea that acquisition-related information may be communicated through director ties. Results show that firms with many ties to other firms are also making many acquisitions, suggesting that they are exposed to "better" acquisition information than firms with few ties to other firms. This may be especially true of bank ties. Because of their role as financial intermediaries, banks may be particularly good sources of private information. Although support for private information was found through this network centrality test, it is important to realize that the number of acquisitions by the tied-to firms is still related to the number of acquisitions by the focal firm. This relationship holds for both bank and nonbank ties and is independent of the effect of the number of ties (network

centrality). This suggests that director ties are not only a potential source of private information, they are also a source of models to be imitated.

Further, the information that is being communicated does not appear to take the form of information about acquisition opportunities. The results showing no relationship between the industries in which the focal and tied-to firms are acquiring indicates that it is unlikely that private information about opportunities is being transmitted. This is closest to a financial or efficiency-based theory of private information. Rather, private information is likely to take the form of more general acquisition know-how or normative information about the appropriateness of acquisitions.

The fact that the imitation relationship does not appear to vary over the period included in this study provides no support for an institutional interpretation of the imitation relationship. It may be that imitation is occurring for noninstitutional reasons. Another explanation for the lack of variation rests on the fact that the origins of the 1980s merger wave date back to the mid-1970s. If acquisitions were becoming normative and socially accepted during the 1975–1980 period, the imitation model would fit better during this earlier period than the period that was tested in this study. Tentative support for this explanation was found when the 1981 and 1982 acquisition data were dropped from the sample, and models were run on the 1983–1990 period alone. All imitation results hold for the 1983–1990 period but do not hold for the 1981–1982 period. It appears that the imitation results are stronger later in the 1981–1990 period, where later means after 1982. This suggests that had data for 1975–1980 been available, and had the sample been split between 1975–1982 and 1983–1990, the interaction term may have been significant.

The above explanations and interpretations of results are quite conservative in that they gave the private-information explanation every possible chance to work. Yet most of the results that were obtained not only support private-information theory, they also support imitation. It was outlined above how the relationship between network centrality and acquisitions by the focal firm could support the private-information explanation. Yet two other interpretations of the relationship between network centrality and the number of acquisitions are possible. First, it could be that the tied-to firms are being exposed to some kind of normative information about the appropriateness of acquisitions, which is not related to the tied-to firms' completing acquisitions themselves. Being tied to more firms means being exposed to more of this normative information. The transmission of normative information is very different from the transmission of information about opportunities or know-how. Thus, it can be argued that this result does not support the private-information interpretation, at least not in the way that private information has been discussed in other literatures. The second alternative interpretation is that this relationship could be the result of second-order imitation or exposure to information. Firms

with many ties are likely to be tied to firms that are tied to other firms completing acquisitions. Information about these acquisitions may filter back to the focal firm through director ties and cause imitation by the focal firms. These various interpretations cannot be disentangled in this study.

One limitation of this study is a lack of direct indicators of what types of information are being communicated through director networks. Thus, only one form of private information, information about acquisition opportunities, could be tested. There are no other interlock studies that measure the information transmitted through the interlock. This study shows that this information may vary and may have important effects on the interlocked firms. Better measures of both private and nonprivate information transmission would be valuable for future studies.

Another limitation of this study has to do with the causes of imitation behavior by these managers. We know that acquisitions are imitated, but we don't know why. Imitation may be the result of an effort to increase legitimacy, it may be a form of interorganizational learning or a strategic response to competitor activities, or it may also be that managers are responding to uncertainty and doing whatever those other firms they are familiar with are doing. But perhaps the most compelling explanation for imitative behavior lies at the intersection of various theories of social structure, resource dependence, and institutionalization. If a tied-to firm acquires another firm as a means to manage dependence, then the focal firm might do the same thing either because (1) the logic of such an action becomes clear, a variation of the private-information argument, or (2) an eat-or-be-eaten sense of urgency is transmitted through the tie, which is likely, given that the direct tie turns this event into something proximate and concrete.[1] Or it may be that generalized beliefs about the efficacy of acquisitions are highlighted by direct ties.

These ideas point to some limitations in the current state of organizational imitation theory. We know little about what dimensions of activities will be imitated under various conditions. Do firms imitate exact practices, or some variant of them? How much of the activity surrounding a transaction will a firm imitate? Evidence from this study suggests that firms are imitating the type of acquisition completed by the tied-to firms. But are they imitating other acquisition-related activities, like deal negotiation techniques or use of a particular investment banking firm? We also know little about why firms imitate other firms. Furthermore, we know little about when firms imitate and whether uncertainty is a necessary condition. Finally, there is more to be learned about who imitates. The results of this study, as well as of Galaskiewicz and Wasserman's (1989), show that imitation flows along the interpersonal networks of members of different firms. Presumably, these are people who know and trust each other and may also be similar to each other. But there are others that may be imitated. DiMaggio and Powell (1983), for example, suggested that prestigious firms are more likely to be imitated. These are all issues we need to explore.

1
Thanks to Marshall Meyer for suggesting these connections.

Implications

This study enhances our understanding of the scope and potential mechanisms of interorganizational imitation. We know that director interlocks are a source of imitative behavior among firms. Most imitation studies, especially those that use the percentage of adopters as support for imitation, do not specify exactly how imitation takes place (see Galaskiewicz and Wasserman, 1989 for an exception). A major contribution of this study is that support for imitation is achieved through rigorous development and testing of alternative explanations for results consistent with imitation.

This study also represents a contribution to the interlock literature. The results of this study are consistent with studies that show a relationship between interlocks and the adoption of firm practices and structures (O'Reilly, Main, and Crystal, 1988; Davis, 1991; Mizruchi, 1992; Palmer, Jennings, and Zhou, 1993). There are no other studies that investigate interlocks as a source of models to be imitated, however, and researchers are only beginning to look at interlocks as a source of information. This study is consistent with Useem's (1984) proposition that interlocks serve as a tool for firms to use in their scan of the business environment. While Useem and others have not directly measured information transmission through interlocks, the results of this study suggest that interlocks serve as a source of both acquisition models and acquisition information. Further, the information transmitted through interlocks appears to be inconsistent with predictions generated by financial theories of information transmission.

Existing acquisition theories focus on financial and market conditions or managerial motives. To date, little consideration has been given to exploring the effect on acquisition activities of the social context surrounding firms and firm managers. The results of this study support a social embeddedness perspective on corporate acquisitions. Further, a specific mechanism for how social structure affects firm activities is specified. Social networks are an important source of acquisition models and acquisition information. This provides a social explanation in an area in which much disagreement about other explanations exists.

Further research related to imitative processes seems promising. Director ties are not likely to be the only mechanism through which imitation occurs. The business press, which regularly reports on firm practices, may diffuse models. The media also provides an evaluation of the success of various practices, which may affect the likelihood of adoption. Professional firms are another mechanism through which practices and structures are spread from firm to firm (DiMaggio and Powell, 1983). Investment bankers, consultants, accounting firms, and other professionals may have influenced the spread of acquisition models from firm to firm in the 1980s and are likely to influence the adoption of other important practices. It is clear from this study that imitation is an important influence on a substantive strategic action: corporate acquisitions. Other major structures and practices are also likely to be subject to imitative pressures. For example, the recent proliferation of Total Quality

Management practices is likely to be partially due to interorganizational imitation. Practices and structures are proliferating every day, and the same forces that led to imitation in the merger wave may also be fueling the spread of these other practices.

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