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Agents without Principles? The Spread of the Poison Pill through the Intercorporate Network

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This study compares the agency theory of the firm with interorganizational theory in examining the factors associated with the adoption of the poison pill—a takeover defense issued by a firm's board of directors that can dramatically increase the cost that a hostile buyer would have to pay to acquire the firm—by a panel of *Fortune 500* firms between July 1984 and August 1989. The pill's rapid spread is traced to a combination of ownership structure and other firm-level factors and an interlock network diffusion process. The results support a social structural perspective on the market for corporate control in which the interlock network provides a social context favoring continued managerial dominance. The findings are also more consistent with models of cohesion rather than structural equivalence as the social structural mechanism responsible for diffusion.♦

The ability of a top-management team to assure the control of its organization is a fundamental concern both for corporate managers and for the field of organization studies. Much organization theory is implicitly based on a premise of "managerialism": the ownership of large corporations is dispersed among thousands of stockholders who are not actively involved in the day-to-day operations of the organization, and this separation of ownership and control allows entrenched managers broad discretion (Berle and Means, 1932; Glasberg and Schwartz, 1983). Managerialists argue that control—the rights to determine the management of corporate resources—although legally the province of owners, is effectively in the hands of top managers, who dominate the board of directors and proxy machinery and thereby ensure their continued rule (Herman, 1981). Because the dispersed stockholders have no effective mechanism to constrain or throw out management teams that don't serve their interests, managers are afforded a great deal of discretion in determining the actions of the firm. Thus, the organization's managers are able to balance commitments to various stakeholders, buffer the organization, co-opt or absorb elements of the environment, and otherwise serve the interests of the organization as an ongoing entity even if it comes at the expense of the stockholders' interest in profitability (March and Simon, 1958; Thompson, 1967; Pfeffer and Salancik, 1978).

The notion that a managerial revolution had swept a class of nonowning managers into power attained a degree of "astonishing consensus" by the late 1950s and 1960s, the formative years for modern organization theory (Zeitlin, 1974: 1074). But the plausibility of the assumption that owners do not effectively constrain managerial action has been severely undermined in the 1980s by the surge of large takeovers and by the related trend of increasing activism by institutional investors. Due to a confluence of factors—the availability of large supplies of loan capital, changed tax laws, innovations in financial instruments, such as the use of "junk bonds," and a climate of relaxed antitrust enforcement—large corporations previously thought invulnerable have been increasingly subject to hostile takeover, attempts by outsiders to buy control of the

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corporation against resistance by management and the board (Coffee, 1988). By any measure, the 1980s have been the decade of the large takeover: Grimm's (1990) *Mergerstat Review* 1989 reveals that all but two of the 100 largest merger and acquisition transactions in American history occurred between 1980 and 1989. During this period, over one-quarter of the firms in the 1980 *Fortune* 500—the 500 industrial firms with the largest sales in the U.S.—experienced a takeover or buyout attempt, most hostile, and most successful (Davis and Stout, 1990). This construction of a "market for corporate control" (Manne, 1965) for large corporations during the 1980s provided a mechanism to re-establish the link between ownership and control supposedly severed by the managerial revolution.

The market for takeovers has not gone unnoticed by researchers, although perhaps its significance for theories of organization has. Studies have tended to adopt a theoretical stance informed by the agency theory of the firm (Jensen and Meckling, 1976; Fama and Jensen, 1983) in explaining management resistance to takeovers (Walkling and Long, 1984), the payment of "greenmail" to raiders (Kosnik, 1987), and the adoption of "golden parachute" contracts that cushion management's loss in the event of a change in control (Cochran, Wood, and Jones, 1985; Knoeber, 1986; Singh and Harianto, 1989).¹ In contrast to the assumption of managerialism implicit in organization theory, the agency theory of the firm highlights the inherent potential for conflict in the relation between principals (the owners of the firm) and agents (the board of directors and top management) that takeovers bring into sharp relief. The market for corporate control described by agency theorists is an asocial conceptualization (Abolafia and Biggart, 1989): actors are self-interested and atomistic, and the market is largely uninfluenced by social relations. But managerial action, like all social action, is embedded in ongoing social structures and is not determined entirely by economic incentives and information asymmetries (Granovetter, 1985). Interorganizational and intraclass structures work to inform the perception of interest and the manner in which interests are pursued; in particular, the interlocking directorate network provides a social context for corporate governance that has been ignored by past research on the market for corporate control. Thus, previous studies ignoring such social relations are at best incomplete and at worst misguided.

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In this study, the agency theory of the firm refers to positive or empirical agency theory, also called the contractual model (Bradney, 1985) or the neoclassical theory of the firm (Coffee, 1988). Key works include Alchian and Demsetz (1972), Jensen and Meckling (1976), and Fama (1980). This stream of work is strictly distinguished from the principal-agent literature, which concentrates on formal mathematical models of principal-agent relations. Rather than focusing on the formal aspects of contracts between principals and agents, the agency theory of the firm is concerned primarily with the structure of public corporations. For a comparison of these two approaches and a summary of the first, see Jensen (1983) and Eisenhardt (1989).

This study tries to bridge the theoretical and empirical gap in prior research on the market for corporate control by examining the role of interorganizational structure in the reproduction of intraorganizational control. I examine a particular aspect of corporate control by modeling empirically the characteristics of large firms and their intercorporate environments that influenced the adoption of "poison pill" takeover defenses during the 1980s. The poison pill, or "shareholder rights plan," is a security issued by the board of directors in order to make hostile takeover more difficult by dramatically increasing the potential cost a hostile acquirer would have to pay. The adoption of a poison pill is an exemplar of an agency problem, in which the interests of shareholders (i.e., in retaining an unfettered ability to receive

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takeover offers) conflict with those of managers (i.e., in protecting themselves and their organization from unwanted takeovers). The ability to effect this change both indicates and enhances managerial discretion: the apparent harmfulness to shareholders of poison pills implies that managers who are able to get them adopted already have substantial discretion, and once in place they buffer managers and their organization from the market for corporate control by raising the barriers to takeover. Thus, exploring the question of what factors influenced the poison pill's rapid spread among the population of large corporations provides an opportunity to probe the economic and social determinants of managerial discretion in the large corporation. I contrast and test hypotheses derived from two perspectives, the agency theory of the firm and interorganizational theory, to explain the poison pill's diffusion among a panel of *Fortune* 500 firms between the time of the first adoption in 1984 and mid-1989, at which point roughly 60 percent of the firms in this population had adopted a poison pill.

The Takeover Market for Large Corporations and Management's Response

The wave of takeovers in the 1980s is distinguished from previous merger waves by two features: the size of the targets and the motives behind some of the acquisitions (Coffee, 1988). Since 1980, antitrust enforcement has been relaxed, lowering the barriers to large intraindustry mergers (e.g., in the oil and airline industries); most state antitakeover laws were invalidated by the Supreme Court in 1982; and there have been great improvements in takeover technology, including the availability of financing at an unprecedented level and an increasingly sophisticated supply of legal and financial advisors (Jarrell, 1987). Further, acquisitions were often made with the express purpose of breaking up corporations that had grown too big (de-conglomeration), when the sum of the parts was thought to be worth more than the whole (Lipton and Steinberger, 1988). Thus, even the largest U.S. corporations that were previously viewed as invulnerable experienced the potential threat of hostile takeover in the 1980s.

Hostile takeovers are usually accomplished by an outside entity making a "tender offer" to shareholders of a target corporation without engaging the target's management and board. Potential acquirers (or raiders) will offer shareholders a price for their stock that includes a premium over the current market price to induce them to tender their shares; typically, shareholders gain about 30 percent around the time that successful offers are announced (Jensen and Ruback, 1983). Offers may be any-and-all bids for all outstanding shares, or they may be for some criterion amount (e.g., to bring the total number of shares controlled by the potential acquirer to 51 percent). Once the raider has acquired a sufficient ownership position to exercise control, it may either seek to merge the target with a new parent company, to liquidate its assets to pay off the takeover financing, or some intermediate approach, such as selling off particular divisions (see Gilson, 1986, and Lipton and Steinberger, 1988, for in-depth discussions). The most significant fact

about hostile takeovers for the purposes of this discussion is that they involve an outside team attempting to gain control through by-passing target firm managers and boards and appealing directly to the organization's owners.

Successful hostile takeovers raise the specter of unemployment for the target's top managers and may imply stigma on the managerial labor market. For other stakeholders in the organization, such as workers and surrounding communities, the results of takeover battles can be devastating (Hirsch, 1987). For shareholders, however, takeovers represent a virtual windfall gain in wealth (Jensen and Ruback, 1983). Thus, the bustling market for corporate control in the 1980s threatened the autonomy previously enjoyed by top managers of large corporations as well as the relationships such firms had developed with their employees and communities, and it exacerbated the potential for conflict between shareholders and managers that organization theory has tended to ignore.

In response to this new threat in their environment, top managers and boards of large corporations took various protective actions that made takeovers without their consent more difficult. Beginning around 1983, shareholders of many large corporations were asked to approve so-called "shark repellents"—corporate charter amendments that erect barriers to takeover. Shark repellents can take several forms, but three are by far the most common: the classified board provision, the supermajority provision, and the fair price provision (Rosenbaum, 1987). The classified board provision breaks the board of directors into multiple (usually three) classes, only one of which stands for election each year. This prevents a shareholding group that acquires a majority of shares from electing a new slate and ousting incumbent managers in a single election. The simple supermajority provision raises the minimum number of votes required for approval of a merger (e.g., to two-thirds or three-quarters of outstanding shares), implying that a hostile acquirer needs more than 50 percent of the votes to effect a change in control. The fair price provision, a more recent and more complicated innovation, requires a supermajority vote to approve a merger with a major stockholder unless (a) the merger is approved by the board of directors, or (b) the acquirer pays some minimum fair price for all remaining shares (Cohen and Geisler, 1983). What these amendments have in common is their utility in fending off hostile tender offers. While not insurmountable to a determined takeover team, these amendments make it more difficult to acquire control of the corporation without negotiating with incumbent managers. Within several years, a majority of large corporations had adopted at least one shark repellent (Rosenbaum, 1988).

A second type of innovation that became popular later in the decade is the shareholder rights plan, or poison pill, adopted by boards of directors at a majority of large corporations during the second half of the 1980s. The pill is issued by the board as a dividend to owners of common stock. The typical pill entitles its holder to purchase shares in the firm at a deeply discounted rate should a takeover attempt occur without board approval. The most popular type of pill also

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includes a "flip-over" feature, by which the rights to buy discounted shares transfer to the acquiring entity if the takeover is successful. The effect is to make takeover prohibitively expensive by "poisoning" the target with the obligations implied by the pill. Boards reserve the right to redeem pills for a nominal sum, allowing them to approve a friendly merger without triggering the pill. In practice, pills are rarely triggered but are meant to encourage potential acquirers to negotiate with the board, rather than with the owners of the firm. Pills are drafted by experts in takeover law to be quite complicated, and they vary in their specifics (see Ryngaert, 1988), but they all have the effect of increasing barriers to hostile takeover and thus increasing the power of management and the board.

The first *Fortune* 500 firm to adopt a poison pill was Crown Zellerbach, on July 19, 1984, and the pill diffused fairly slowly after that. Over the next sixteen months, 21 more firms in the study panel adopted a poison pill, often in response to either rumors or direct threat of takeover. In several instances, shareholders or raiders sued to have the pill rescinded as an illegal management entrenchment device. The legal ambiguity surrounding the poison pill was clarified on November 19, 1985, when the Delaware Supreme Court ruled in favor of the defendant in the *Moran v. Household International* case, legitimating the adoption of the poison pill by boards, without shareholder approval, when the firm was not at the time threatened by a takeover attempt.

Those who adopted a poison pill early on thus tended to be deviants who did so under conditions of legal ambiguity. Immediately after its legitimization in November 1985, however, the rate of adoption leaped for the next 12 months, as illustrated in Figure 1. While less than five percent of the publicly traded firms in the 1986 *Fortune* 500 had poison pills at the time of the *Household* decision, within a year over 35 percent had put one in place, and, by the end of 1989, 60 percent of this population had a poison pill. Moreover, according to reports in the *Wall Street Journal*, whereas roughly half the *Fortune* 500 firms adopting pills prior to the *Household* decision were at the time threatened by takeover, subsequent to *Household* only two firms in this population adopted a pill following a formal tender offer, while three others adopted pills that were clearly in response to imminent bids. Thus, the vast majority of firms adopting a poison pill after November 1985 did so in keeping with the spirit of the *Household* decision. In a brief period, then, the poison pill had gone from being a deviant innovation to a virtual norm of corporate governance.

The stock market tends to react negatively to poison pills (Malatesta and Walkling, 1988; Ryngaert, 1988; Securities and Exchange Commission, 1986). Moreover, large institutional investors such as the College Retirement Equity Fund, the California Public Employees' Retirement System, and others affiliated with the Council of Institutional Investors have opposed the adoption of poison pills by firms in which they hold stock and have placed proposals on several dozen firms' proxy ballots to have pills redeemed or put to shareholder vote (Fleischer, Hazard, and Klipper,

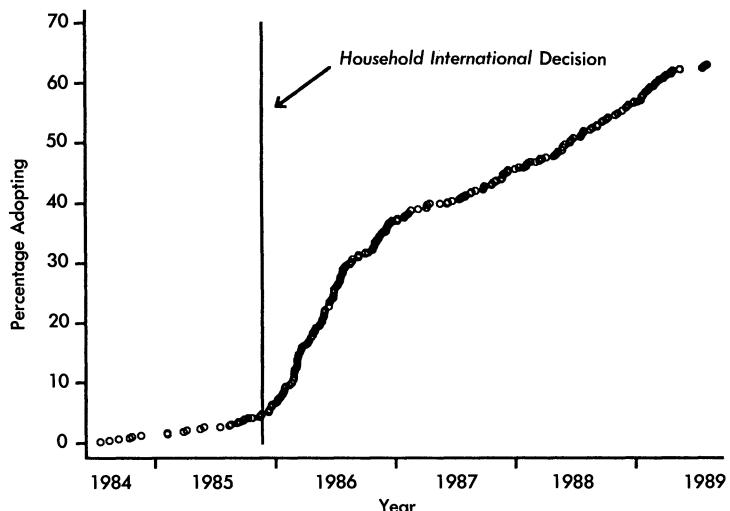


Figure 1. Diffusion pattern of poison pill adoption among *Fortune 500* corporations.

1988: 87–88). The institutions have argued that poison pills deprive shareholders of the fundamental right of owners to sell their shares under conditions of their own choosing and that pills therefore shift the balance of power in the firm from shareholders to management and the board (O'Hara, 1989). Thus, if managerial discretion implies managers' ability to take actions that do not serve shareholder interests, then the adoption of a poison pill can be taken as an indicator of managerial discretion, and by giving top managers more bargaining leverage in a takeover situation, it enhances management's power with respect to shareholders.

Hypotheses

Research on the market for corporate control, or takeover market, is dominated by an agency theory perspective: the conflicts among managers, owners, and boards that takeovers highlight are the defining problematic of this approach. The agency theory of the firm starts from the premise that efficient capital markets would not allow managerial deviation on any widespread level and proceeds to hypothesize mechanisms within and outside the firm that limit the discretion of top managers to deviate from shareholder interests. The principle of survival of the fittest in the crucible of competition for investor dollars implies that those firms that allowed non-owning managers to run away with the store would not last long. Thus, a fundamental concern is, What gives survival value to large corporations in which ownership and control are separated and managers are prone to opportunism? The theory focuses on the incentive structures and monitoring capacities within the organization that limit agency costs, essentially the costs of managerial deviation.

The organization is described as a nexus of contracts among self-interested principals and agents, including managers, stockholders, and boards of directors, and the theory argues

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that the structure of the nexus of contracts that survives is that which best solves the problem of minimizing agency costs (Jensen, 1983: 331). Managerial stock ownership aligns the interests of managers with those of stockholders (Jensen and Meckling, 1976); outcome-based incentive contracts promote more dutiful agency (Eisenhardt, 1989); boards of directors can effectively monitor top management and limit its opportunism (Fama and Jensen, 1983); and concentrated ownership arises when management performance is difficult to monitor (Demsetz and Lehn, 1985). When all else fails, well-functioning managerial labor markets and the market for corporate control will act to limit managerial opportunism by raising its cost. The first four of these mechanisms are related to the conditions under which firms would adopt poison pills.

Management incentive structures in the firm. It is not axiomatic that top managers seek to retain control of their organization. Their interest in adopting protective devices to shield themselves from the market for corporate control is affected by both incentive structures within the firm and by the monitoring capacities afforded by the firm's ownership structure and board of directors.

One of the premises of the managerial revolution described by Berle and Means is that the top-management teams of large firms were increasingly characterized by control without ownership and that this gap was responsible for the pursuit of managerial goals inconsistent with shareholder interests. According to data collected for this study, the management and board of the median *Fortune 500* corporation owned 2.8 percent of the firm's outstanding shares, a stake worth over \$26 million, at the end of 1985. Managers' employment and the positions of board members are put at risk in takeover situations, but to the extent that these parties own stock, they can also benefit from takeover premiums (Manne, 1965). Thus, management's resistance to takeovers decreases with increasing stock ownership, although not necessarily with stock options (Kosnik, 1987; Walkling and Long, 1984: 59), and resistance by adopting a poison pill should be reduced with increasing insider ownership, consistent with previous research (Malatesta and Walkling, 1988):

Hypothesis 1: Higher ownership by insiders will decrease a firm's rate of poison pill adoption.

Firms can also institute outcome-based incentive contracts to align the interests of managers with those of their shareholder principals (Eisenhardt, 1989). In a takeover situation, golden parachute contracts, which provide compensation to one or more executives of the firm if their employment is terminated following a change in control, increase managers' incentives to allow a takeover that would benefit shareholders (Johnsen, 1985). Typically they include several years' salary (usually three, due to tax laws) and often include provisions to accelerate stock options and benefits (see Investor Responsibility Research Center, 1985, for a representative sample). By compensating managers for the loss of employment that can follow a successful takeover, such contracts reduce managers' interest in retaining control at the expense of stockholder wealth

(Jensen, 1988). Almost half the potential takeover targets among the 1986 *Fortune* 500 had adopted golden parachute contracts by the time the *Household International* case legitimated the poison pill, and if these contracts serve their purpose of aligning manager and shareholder interests with respect to takeovers, such firms should be less likely than comparable firms without golden parachutes to adopt poison pills:

Hypothesis 2: The presence of a golden parachute contract will decrease a firm's subsequent rate of poison pill adoption.

The agency theory of the firm points to a second set of corporate characteristics that concern the ability of shareholders or their delegates to monitor managerial performance: ownership structure and board composition.

Mechanisms for monitoring management behavior.

Agency theory and managerialist theories both focus on the importance of ownership structure as a source of managerial constraint. The basic premise of managerialism is that the ownership of large corporations is dispersed among many stockholders, and thus owners do not constrain managers (Berle and Means, 1932). Effective monitoring of management under such conditions becomes a free-rider problem: no individual owner has the incentive to invest the monitoring costs necessary to keep management acting in the interests of the firm's ownership, leading to a separation of ownership and control. To the extent that ownership is concentrated in a small number of hands, however, this problem will be lessened (Demsetz and Lehn, 1985). Large shareholders have both the incentive and the ability to monitor management action more effectively than small owners: the greater one's share ownership, the more one stands to lose if management attempts to prevent tender offers and the more powerful is one's voice in matters of corporate governance such as proxy votes. A handful of large shareholders dissatisfied with management may be able to elect a new slate of directors and oust incumbent managers, much as an outside raider would. Thus:

Hypothesis 3: More concentrated ownership will decrease a firm's rate of poison pill adoption.

The board of directors also plays a crucial role, according to agency theory, as a device for monitoring top management's decision-making performance. Stockholders delegate virtually all management and control functions to the board of directors, which they approve by vote. Such broad delegation is feasible because the takeover market provides an external court of last resort to protect stockholders from boards that fail egregiously in their monitoring performance. Similarly, the board delegates most decisions to top managers, but it retains ultimate control over major policy decisions and the hiring, firing, and salary of top managers. Although insiders, board members who are also executives of the firm, have a great deal of influence on the board due to their expertise about the organization, outside directors play a particularly important role and carry out tasks that involve "serious agency problems" between managers and shareholders (Fama and Jensen, 1983: 315).

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Inside directors can be presumed to be rubber stamps for management initiatives: either they were involved with their formulation, or loyalty to or fear of the CEO will prevent them from voting against CEO-sponsored proposals (Herman, 1981). Outside directors, however, have greater independence in evaluating management proposals, particularly those involving agency problems related to changes in control, and are less likely to support those that harm stockholders. Outside directors have incentives to signal to "markets for decision agents" that they are experts in decision control by vigilantly monitoring management action such that it serves the interests of shareholders (Fama and Jensen, 1983: 315). The evidence suggests that taking steps to buffer the firm from the market for corporate control is not in the interests of shareholders; thus, to the extent that boards are numerically dominated by insiders they should be more likely to implement a poison pill:

Hypothesis 4: The proportion of insiders on the board will increase a firm's rate of poison pill adoption.

Critique of the agency theory perspective. A significant limitation of the agency theory of the firm is that it fails to consider the broader intercorporate environment in which management acts. Agency theory implicitly relies on an atomistic or undersocialized view of managerial action as largely divorced from social context: behavior is motivated solely by pecuniary self-interest, and cooperation indicates a contract among self-interested parties (Jensen, 1983). But decades of theory and behavioral research on organizations demonstrate the power of the social context to shape organizational and managerial action. Boards of directors, seen in the agency theory of the firm as management monitors acting in the interests of shareholders, serve multiple roles in theories of organization (Palmer, 1983): interlocks among boards, formed by sharing one or more board members, can co-opt elements of the environment (Pfeffer and Salancik, 1978); they trace relations of intercorporate hegemony (Mintz and Schwartz, 1985); they serve as a social infrastructure for elite cohesion (Useem, 1984); and they are conduits of information flows among organizations, transmitting social norms, values, and strategies through intercorporate ties (Mariolis and Jones, 1982). Moreover, in an uncertain world, managers may not know just what their interests and actions should be. The corporate community in which organizations are embedded conditions action by influencing the perception of interest and the availability of social and informational resources, and thus organizations often mimic the behaviors of similar others, independent of the technical rationality of the action (DiMaggio and Powell, 1983). In this view, corporate action is not determined solely by the characteristics of the organization as a social atom but also by the actions and characteristics of other organizations in its environment. Taking a social-structural approach to firm behavior does not imply that ownership structure or managerial incentives are irrelevant; rather, they must take their place in a broader social context in explaining managerial action in the capitalist enterprise.

Three literatures are particularly relevant for understanding the diffusion of the poison pill: studies of the intercorporate

network formed through interlocking boards of directors (Useem, 1984; Mintz and Schwartz, 1985), interorganizational contagion (e.g., Galaskiewicz and Burt, 1991), and institutionalization (DiMaggio and Powell, 1983).

Intercorporate relations and corporate governance. Much previous research on board interlocks has focused on why particular interlocks are created (e.g., Pfeffer and Salancik, 1978) and maintained (e.g., Palmer, Friedland, and Singh, 1986; Stearns and Mizruchi, 1986). More recently, researchers have focused not on the causes of interlock ties but on their effects on corporate action and ideology (see Davis and Powell, 1992, for a review). In the aggregate, the firm-to-firm ties that interlocks create form a dense network that links virtually all large firms into a single social structure (see Figure 2). A firm's position in this structure can be described in terms of its centrality: more central firms are those that are tied to a greater number of other firms. Thus, as shown in Figure 2, the distribution of interlocks among *Fortune* 500 firms is extremely skewed: the median firm was tied to seven others, while a handful of extremely central firms had nearly 50 interlocks.

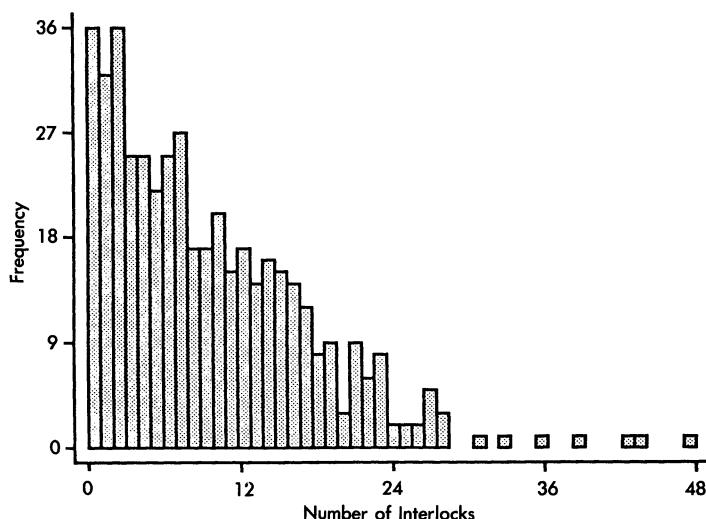


Figure 2. Distribution of interlock network centrality among the largest industrial firms.

Greater centrality gives a firm social capital, particularly in the form of more abundant access to the information that flows through the network (Useem, 1984). By maintaining ties to a large number of other organizations, more central firms are able to notice and respond to environmental changes more rapidly. As a result, they are more likely to adopt normative innovations earlier (Burt, 1982: chap. 5). Thus, to the extent that the poison pill is normative in the social system of large corporations, more central firms should adopt it at a higher rate.

In addition to providing social capital, centrality indicates a firm's status and the degree to which it is integrated into the corporate elite. By definition, a more central board is composed of directors who sit on numerous other boards.

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Individuals who sit on multiple boards tend to come from elite backgrounds and to be mutually acquainted, and they are argued to acquire through their experiences on multiple boards a broader view of the interests of the corporate elite as a whole and to abandon the parochial view that sitting on a single board might engender. Due to this broader outlook, directors of multiple boards come to act as agents of the corporate elite as a class rather than strictly as agents of the shareholders of particular firms. As a result, firms with more interlocks tend to be in the political vanguard of the elite (Useem, 1984), and the ties that directors of multiple boards create provide a basis for cohesion in political strategies among firms (Mizruchi, 1989).

With respect to takeovers, the articulated position of the corporate elite, and thus the one that more interlocked firms should represent, is to limit them and their disruptive effects. Hostile takeover attempts challenge the basis for the elite position of incumbent managers, particularly when these attempts are mounted by outsiders to the elite. Thus, the Business Roundtable, the political lobby that represents the corporate elite's collective interests (Useem, 1984), sought federal legislation to regulate against what they see as abusive takeovers (Sigler, 1985). As agents of the corporate elite, then, directors of multiple boards are more likely to favor policies that limit what they perceive to be the destructive potential of takeovers, both globally, through federal and state regulation, and locally, through firm takeover defenses, and therefore they are likely to support the adoption of poison pills. Thus:

Hypothesis 5: Interlock network centrality will increase a firm's rate of poison pill adoption.

Interorganizational contagion and institutionalization.

Recent research on contagion has focused on trying to identify the specific mechanism responsible for the diffusion of innovations within a social system. In the case of the poison pill, simple awareness of the pill's existence is not sufficient to account for its spread. Managers of all large corporations can be assumed to have known about poison pills very early on because of the extensive coverage they received in the business press, and certain investment banks and law firms were instrumental in promoting the pill. But law firms and investment banks are appropriately regarded with some skepticism by boards of directors—they are selling a product, like used-car salesmen. The problem was an overabundance of facts and the difficulty of finding trustworthy information (Burt, 1987: 1289). Firms may resolve their uncertainty in two ways: through direct contact with other firms that have already adopted and through mimicking others in their environment. Distinguishing between these two possible mechanisms is at the heart of the debate between cohesion and structural equivalence as mechanisms for the diffusion of innovations (see Burt, 1987, for a summary, and Galaskiewicz and Burt, 1991, for an application to interorganization contagion).

The cohesion model of diffusion focuses on direct communication between those at risk of adoption and those that have already adopted. Communication with one's contacts helps to resolve the ambiguity surrounding the

value of an innovation: to the extent that one's contacts have adopted some innovation and communicated their reasoning, the perceived value of adoption will increase. In the case of the poison pill, directors who sit on other boards that have already adopted poison pills can help firms learn vicariously from the experiences of these other firms by providing first-hand expertise in evaluating and promoting adoption. Thus, in addition to promoting class cohesion, directors of multiple boards can serve a more mundane function as information conduits. Moreover, as more of one's contacts adopt, adoption may come to seem normatively appropriate, whatever its technical merit. Thus:

Hypothesis 6: Interlocks with other firms that have already adopted will increase a firm's rate of poison pill adoption.

The idea that organizational decision makers determine appropriate courses of action based on what others are doing, rather than simply on the basis of calculated self-interest, is one of the key insights of the institutional school (DiMaggio and Powell, 1983). As applied to the poison pill, this line of argument directly contradicts the agency theory of the firm on two counts. First, to the extent that they spread the poison pill, directors of multiple boards are acting against the apparent interests of stockholders, contrary to the role they are ascribed in agency theory (cf. Fama and Jensen, 1983). Second, the notion that self-interest is in part socially constructed and malleable contradicts the implicit characterization of interests as pre-existing and fixed.

The structural equivalence model of diffusion emphasizes symbolic communication between competitors rather than direct communication among contacts. Two actors (ego and alter) are said to be structurally equivalent to the extent that they share similar reactions with other actors in the system and are therefore implicitly or explicitly in competition. Burt (1987) argued that diffusion is more accurately explained by structural equivalence—the imitation of others who occupy a similar role—rather than cohesion—evaluation based on communication with one's direct contacts: "Once the occupants of his status begin adopting, ego is expected to follow suit rapidly in order to avoid the embarrassment of being the last to espouse a belief or practice that has become a recognized feature of occupying his status" (Burt, 1987: 1294). Firms that fail to adopt are more likely to experience not just embarrassment but the threat of takeover: Given two comparable firms in the same industry, one without a poison pill is certainly a more attractive target than one with a pill. According to this view, imitation of structurally equivalent alters can occur even in the absence of direct contact.

This notion is echoed in the institutional school by the concept of mimetic isomorphism, by which organizations come to resemble each other as a result of imitation of others in their environment (DiMaggio and Powell, 1983). As an innovation becomes prevalent among those in one's comparison group, adoption becomes normative, the appropriate thing to do, independent of the technical rationale behind adoption. For firms, the most obvious group of comparison others are competitors in the same industry:

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industries are defined by similar patterns of relations with suppliers and buyers, and therefore members of an industry can be seen as more or less structurally equivalent. Certainly, the notion of industry raises problems among firms in the population of *Fortune* 500 corporations: most large firms operate in more than one primary industry, and several conglomerates (such as ITT, which has operated bakeries, financial services, hotels, and so on) are spread across a number of unrelated industries. In such cases, it is not clear just what industry would count as their relevant comparison group. Yet for the median *Fortune* 500 firm in 1985, 75 percent of its sales were within a single 2-digit Standard Industry Classification (SIC) category, and more than three-quarters of these firms made most of their sales in a single industry category. Moreover, the industry notion maps most closely onto the logic behind the structural equivalence model of diffusion, according to which imitation of competitors drives adoption. Thus, Fligstein (1985) found that firms were more likely to adopt the multidivisional form to the extent that others in their 2-digit industry had already adopted. Therefore:

Hypothesis 7: The prevalence of adoption in a firm's industry will increase a firm's rate of poison pill adoption.

METHOD

The defining features of the managerial firm—dispersed stockholdings and proportionally small ownership by managers and directors—both increase with greater size. Moreover, until recently, large firms experienced an almost negligible risk of hostile takeover. Thus, the most relevant peer group for discussions of the impact of takeovers in the 1980s is the *Fortune* 500 largest industrials (Coffee, 1988). I therefore tested the hypotheses by undertaking dynamic statistical analyses of data on the largest U.S. industrial firms over the period 1984–1989, inclusive.

Sample. The initial sample included all firms in the 1986 *Fortune* 500 largest industrials, the 500 U.S. firms with the largest sales in 1985, as well as those surviving firms in the 1980 *Fortune* 500 that were not large enough to make the 1986 list. I excluded 32 firms that were not publicly traded (which included agricultural coops such as Mid-America Dairymen, wholly owned foreign subsidiaries such as Lever Brothers, and joint ventures such as Dow Corning), because, by definition, they cannot be taken over through a tender offer, nor can they adopt a poison pill. After excluding 42 firms with missing data, the effective sample size was 440. The proposed time frame covers all poison pill adoptions from the first *Fortune* 500 adopter (Crown Zellerbach in July 1984) up until August 15, 1989, at which point roughly 60 percent of the firms in this population had adopted a poison pill. Firms were considered to be "at risk" as of the time just prior to the first adoption.

Data. Exhaustive data on the adoption dates of all poison pills by large American firms were made available to me by the Corporate Governance Service of the Investor Responsibility Research Center (IRRC), a not-for-profit institution that monitors proxy and other issues of interest to

the investor community. The date reported was the one that the pill was adopted or first publicly reported. Because the point of the poison pill is to deter unwanted bids, boards have an incentive to issue the pill to the firm's shareholders as soon as possible after the decision to adopt is made, and thus the order in which pills were issued is likely to correspond closely to the order in which the decision to adopt was made. I cross-checked these data using an internal document produced by the Merrill Lynch Capital Markets group for the period up to May 1986.

IRRC has also published data indicating whether the firms in this sample had adopted golden parachute contracts and any of the various types of shark repellent, as well as whether the firm issued shares of stock with unequal voting rights (Investor Responsibility Research Center, 1985; Rosenbaum, 1987, 1988). I used a dummy variable to indicate whether the firm had adopted a golden parachute contract for top executives or had shares with unequal voting rights. Using additional IRRC documents and proxy statements, I compiled data on the adoption dates of classified board, supermajority, and fair price shark repellents adopted by each of these firms from 1979 to 1989, inclusive. Shark repellent adoption is represented by a single dummy variable indicating prior adoption of one or more of the three types.

I used the Compact Disclosure database and proxy statements to compile data on firms' ownership structures. Compact Disclosure is a CD-ROM database produced by Disclosure Inc., which contracts with the Securities and Exchange Commission to make publicly available the information filed by firms under the commission's purview. Public firms are required by law to report levels of insider holdings on their annual proxy statements. Entities owning 5 percent or more of a firm's shares must report their identity and the amount they own either annually, for continuing owners, or at the time they surpass the 5-percent threshold, for those that have acquired their shares rapidly. Institutions owning greater than \$100 million in equity assets are required to report the levels of their holdings. My measure of insider ownership is the proportion of all outstanding shares held by all officers and directors of the firm according to the proxy statement dated closest to January 1, 1986. Where Compact Disclosure reported the number of shares held by insiders but not the total number of shares outstanding, I used COMPUSTAT's figure for the relevant time period. In cases in which Compact Disclosure did not have information on the number of shares held by insiders, I went directly to the proxy statement. In cases in which no statement was available for late 1985 or early 1986, I went to the first available proxy statement dated prior to that, which in no case was earlier than January 1, 1984. I did not include stock options in my measure of ownership, because previous research on the factors that encourage managers to resist takeovers found options to have no effect, whereas outright ownership was strong and significant (Walkling and Long, 1984: 59).

Ownership concentration is measured as the percentage of shares held by all large (5 percent or more) blockholders, that is, the sum of all shares held by large holders divided by

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the number of shares outstanding, multiplied by 100. Institutional ownership is measured as the percentage of shares held by all institutions that have greater than \$100 million in equity assets, primarily banks, insurance companies, pension funds, and investment companies. As with the concentration measure, this is measured as of the first quarter of 1986. I also used Compact Disclosure to construct a list of all tender offers made for firms in this sample during the years 1985 to 1989, inclusive.

I compiled data on board of director composition and board interlocks using information on the proxy statement dated closest to January 1, 1986, as reported in Compact Disclosure. In doing network analyses, it is best to be as inclusive as possible in determining which elements of the network to include, particularly when the diffusion of innovations among contacts is at issue; thus, I compiled board data for all firms required to report board composition to the SEC that met any of the following criteria: (1) listed in the 1980 or 1986 *Fortune* 500 largest industrials; or (2) listed in the 1986 *Fortune* largest 50 commercial banks, 25 diversified financials, 25 retail, or 25 transportation companies. This sampling scheme yielded a total of 596 publicly traded firms for which board data were available. Inside board members were those Disclosure identified as executives of the firm. To make certain that all executives were properly identified, I ran a computerized matching procedure comparing apparent outside directors (i.e., non-officers) against a separate comprehensive list of officers for each firm, which identified several dozen more individuals as executives of the firm. Using this refined dataset, I calculated my measure of insider board dominance as the percentage of directors that were executives of the firm.

Board interlocks is defined as the sum of all nonduplicated ties the firm's board had to all other boards in this expanded sample, that is, the total number of other boards each director sat on, summed across all directors, minus any duplicated ties (i.e., cases in which two or more directors sit on the same two boards). I used several techniques to ensure the quality of the data on which this measure was based, including both computerized routines and multiple hand-checks of the data against *Standard and Poor's Register of Corporations, Directors and Executives* (various years). Mariolis and Jones (1982) found a firm's total number of interlocks to be highly stable over time as well as the most stable and reliable measure of network centrality. Because of the extremely skewed distribution of number of interlocks by firm (see Figure 2), the measure used in the analyses is the natural log of the number of interlocks plus unity; this allowed valid values for firms with zero interlocks. This measure implicitly assumes that there are decreasing returns to further interlocks.

Ties to adopters was measured as the number of the focal firm's interlock partners that had previously adopted a poison pill, calculated quarterly. A firm's number of ties to adopters is constrained to be less than or equal to its total number of interlocks, so that the number of interlocks can be partitioned into ties to adopters and ties to nonadopters.

Conceptually, however, these measures are distinct in that interlock network centrality measures a firm's social capital and status in the social system of firms (hypothesis 5), whereas ties to adopters measures the firm's access to direct information about the merits of adoption (hypothesis 6). Thus, while overall interlock centrality constrains the number of ties to adopters a firm can have, it does not determine what this number will be. Again, because this measure is highly skewed by a handful of outliers, the analyses used the natural log of ties to other adopters plus unity. By definition, this measure is monotonically nondecreasing over time.

The prevalence of adoption by 2-digit SIC industry was also calculated in three-month increments. Each firm was assigned a measure that indicated the percentage of firms in its primary industry that had adopted as of the beginning of the current quarter, where primary industry is defined by the 2-digit category in which the firm made most of its sales.

Control variables. Several factors not included in the discussion of the hypotheses are also likely to be related to the timing and likelihood that large firms will adopt poison pills. These include the size and prior performance of the firm, whether they have previously adopted other takeover-defense mechanisms, whether they are institution-owned, and where they were incorporated.

Greater firm size and better prior performance decrease a firm's risk of takeover and thus the board's incentive to take measures to prevent the firm from being taken over (Davis and Stout, 1990). I therefore included measures of total market value (i.e., the market price of all the firm's outstanding common shares) and two performance measures, total market return (adjusted for 3-digit industry) and market-to-book ratio, as control variables. Total market return measures the value accruing to stockholders during the year. It is defined as the capital gain (i.e., price change) in the share over a year plus the value of dividends paid during the year, divided by the value of the share at the beginning of the year, all multiplied by 100. Market return provides a percentage measure of rate of return that serves as an objective indicator of firm performance for stockholders. Because industries face fluctuations beyond the control of individual firms, this measure was adjusted by subtracting the mean market return for *Fortune* firms in the firm's primary 3-digit industry to reflect its performance relative to others in its industry. Market-to-book ratio is a longer-term measure of performance that has been found to be consistently related to firms' risk of takeover (Davis and Stout, 1990). It is defined as the market value of the firm's outstanding common equity divided by the book (accounting) value of common equity. A higher market-to-book ratio implies that the stock market more highly values the firm.

I compiled annual data on market value (in millions), total market returns, and market-to-book ratio using Standard and Poor's COMPUSTAT PC+ for 1983–1988, inclusive. I also calculated average market return by industry for firms in each 3-digit SIC category for each of these years and used this to compile a measure of industry-adjusted market return

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(i.e., the difference between the firm's total returns for a given year and the average market return for *Fortune 500* firms in the same primary industry category for that year).

Firms that had already adopted a shark repellent may be either less likely to adopt a poison pill, because the two are substitutes, or more likely, because the firm may simply adopt every takeover defense that becomes available (cf. Ryngaert, 1988). I included a dummy variable to indicate whether the firm had previously adopted any of the three main types of shark repellents (i.e., the classified board, supermajority approval for merger, or fair price provision).

A final feature of a firm's governance structure that can affect its risk of takeover, and thus management's incentive to adopt a poison pill, is the use of multiple classes of stock with unequal voting rights. A number of firms issue equity shares with preferential voting power; for example, by charter, the Ford family controls a class of stock with 40 percent of the voting rights in Ford Motor Company. Firms with unequal voting shares are much more difficult to take over without insider approval: Given that a raider must generally acquire at minimum 51 percent of the voting shares to guarantee control, firms with multiple classes of stock may be virtually takeover-proof and therefore their boards have little reason to adopt a poison pill. Thus, I included a dummy variable to indicate the presence of stock with unequal voting rights.

The impact of institutional ownership (beneficial stock ownership by banks, insurance companies, pension funds, mutual funds, and so on) on corporate governance is murky but potentially of great significance, given that institutions are now the largest ownership category among large firms (Scherer, 1987). Financial-hegemony theorists argue that institutional ownership is not a mechanism for intercorporate control, that institutions rarely vote against management on proxy issues, and that the "Wall Street Rule" of stock dumping rather than activism is the more typical mode of influence (Mintz and Schwartz, 1985: chap. 4). According to this approach, institutional ownership generally serves as a bulwark for management control, and thus it is likely to promote the adoption of a poison pill. By contrast, bank-control theory argues that banks and insurance companies use their ownership positions to influence or even control management in many large corporations and that they have a history of opposing "management attempts to increase management power and privilege and reduce shareholder power and privileges" (Kotz, 1978: 127). This suggests that they would be opposed to the adoption of poison pills, as would public pension funds (cf. Brickley, Lease, and Smith, 1988, on voting patterns on shark repellent amendments). Thus, the overall impact of institutional ownership on this issue is an open empirical question. I therefore included a measure of the percentage of shares held by institutional investors.

Finally, I included indicator variables for incorporation in Delaware or New York, the first- and second-most popular states of incorporation, as matters of corporate governance, such as the appropriateness of the poison pill, are regulated

at the state level. These measures came from COMPUSTAT PC+.

Statistical technique. The primary form of analysis I used was continuous-time event-history analysis with time-changing covariates. This technique is analogous to multivariate regression in which the dependent variable is the (unobserved) rate of transition from one state to another. In this case, the transition of interest is the adoption of a poison pill. Like regression, event-history techniques allow hypothesis testing by comparing coefficient estimates to their standard errors and deriving *t*-statistics (Tuma and Hannan, 1984).

An issue that arises in the use of event-history analysis is how time dependence in transition rates is handled. Often, rates fluctuate as a function of time, independent of the effects of measured covariates. Several parametric approaches to modeling time dependence exist (see Tuma and Hannan, 1984). The most frequently used models, such as the Gompertz or the Makeham, assume that rates change monotonically, either increasing or decreasing with time. More recently, researchers have used the log-normal distribution (Levinthal and Fichman, 1988) or the log-logistic distribution (Brüderl and Schüssler, 1990) to model rates that initially increase with time but then decrease. Unfortunately, the pattern of time dependence in this population appears to conform to neither a monotonic nor a single-peaked distribution. Figure 3 shows how the observed rate of adoption varied by quarter, where the rate is calculated by dividing the number of firms that adopted a pill during the quarter by the number of firms in the risk set (i.e., those firms that had not yet adopted at the beginning of the quarter). As Figure 3 demonstrates, the rate was initially quite low, jumped dramatically after the *Household* decision, dropped again during 1987, rose to another peak during early 1989, then dropped again. This pattern of time dependence fits no simple parametric distribution and calls for another approach.

Fortunately, there is a well-developed partially parametric technique for situations in which time dependence is likely to exist but fits no simple parametric formulation. The proportional hazards model separates the transition rate into two components, one that varies over time identically for all members of the population and another that depends on the measured characteristics of the individual members of the risk set (Cox, 1972). The Cox model takes the form

$$h(t) = q(t)\exp\{\alpha'X(t)\},$$

where $h(t)$ is the hazard rate of adoption at time t , $q(t)$ is a (possibly time-dependent) nuisance function that is not estimated, $X(t)$ is a vector of covariates, some of which may vary over time, and α' is the vector of coefficients corresponding to the covariates. By relegating time dependence to a nuisance function, the proportional hazards model in effect purges coefficient estimates of such dependence, thus neatly avoiding the problems raised by fully parametric approaches.

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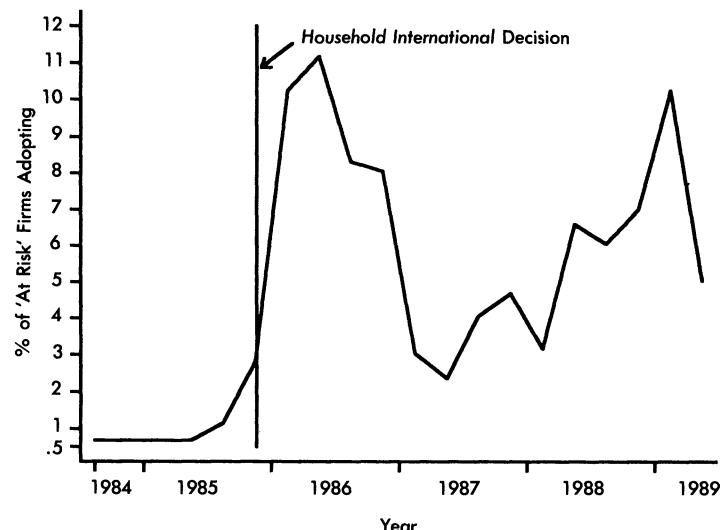


Figure 3. Observed poison pill adoption rate by quarter among sampled industrials.

One of the assumptions of this model is that the event in question is a single, nonrepeatable (fatal) event. Thus, for the purposes of this study, I treat the adoption of any type of poison pill as equivalent, i.e., the adoption by the board of directors, without shareholder approval, of a device that raises barriers to takeover. Some subtlety is lost by this approach, as there is variation among poison pills. However, the overwhelming majority of pills are of the "flip-over" type, which was specifically legitimated by the *Household International* decision: only 7 of the 24 pills adopted in this population prior to the *Household* decision were of some other type, and less than 8 percent of those adopted in the six months after the decision were not flip-over plans. Thus, the inferential risk associated with aggregating all poison pill adoptions into a single category of events is negligible.

Because I had complete data on adoption dates from the first adoption in this population until August 1989, there is no problem of left-censoring, but since roughly 40 percent of the firms had not adopted by the end of the sample period, there is a potential problem associated with right-censoring. With large samples such as the one described here, however, the partial likelihood estimation technique used in the Cox model provides high-quality estimates even when many observations are right-censored (Tuma and Hannan, 1984: chap. 8). Models were estimated using the RATE program (Tuma, 1991).

A notable feature of this model is that it is log-linear and thus its effects combine multiplicatively rather than additively, as exponentiating a coefficient yields an estimate of the multiplier effect that a one-unit change in the independent variable has on the rate of adoption. This implies that the magnitude of the effects of particular covariates vary over the range of the other covariates. For example, if the hypothesized model is correct, then the effect of network centrality will be particularly great for firms with low insider ownership, because these effects are

multiplicative. Another notable feature of the proportional hazards model is that a firm's risk factors can be updated over time, so that, for example, as more of the firm's interlock partners adopt poison pills, the firm's estimated risk of adoption can change accordingly (cf. Marsden and Podolny, 1990, on the use of event-history methods to model network diffusion processes). This feature makes event-history analysis uniquely suited to the study of interorganizational diffusion processes, in which one firm's rate of adoption is hypothesized to depend on the adoption patterns of others in its environment.

For this study, the data were arranged into 20 spells starting at July 1, 1984, updated in three-month increments, and ending with a spell from April to August 1989. Thus, firms in this population were considered to be at risk of adoption starting at the point just prior to the first adoption. Because adoption is treated as a fatal event, firms were dropped from the risk set upon adoption. Valid data were available for a total of 5,859 firm-quarters. The date of adoption or first public announcement, from which the dependent measure was computed, was known precisely. The independent variables, which were available at different levels of temporal aggregation, were lagged so that a firm's estimated risk during each period depended on its characteristics as measured in the previous period as available. Thus, the number of adoptions in a firm's industry and among a firm's interlock partners was measured as of the beginning of each quarter (spell); the financial measures (market value, market return, market-to-book ratio) and the shark repellent indicator were measured annually and lagged one year; presence of a golden parachute was measured for 1984, 1986, and 1987; and the other independent measures were assumed to be constant over the sample period.

Descriptive statistics and a correlation matrix for the variables across all periods are presented in Table 1. The correlation matrix indicates that several distinguishing features of managerial firms are moderately to highly intercorrelated: firms with low ownership by officers and directors tend to have less concentrated ownership overall, to be owned proportionally more by institutions, and to have more interlocks. Firms with more interlocked boards tend to

Table 1

Descriptive Statistics and Correlation Matrix*

| Variable | Mean | S.D. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|------------------------------|---------|---------|------|------|------|------|------|------|------|------|------|------|-----|------|------|-----|------|
| 1. Poison pill | 0.04 | 0.21 | | | | | | | | | | | | | | | |
| 2. Insider stake | 9.61 | 13.74 | -.07 | | | | | | | | | | | | | | |
| 3. Golden parachute | 0.38 | 0.49 | .07 | -.17 | | | | | | | | | | | | | |
| 4. Ownership concentration | 26.97 | 8.36 | -.07 | .47 | -.13 | | | | | | | | | | | | |
| 5. Insider board dominance | 31.21 | 13.35 | -.04 | .18 | -.12 | .08 | | | | | | | | | | | |
| 6. Interlocks (log) | 1.88 | 0.98 | .06 | -.40 | .00 | -.25 | -.29 | | | | | | | | | | |
| 7. Ties to adopters (log) | 0.58 | 0.78 | .11 | -.14 | -.06 | -.04 | -.09 | .47 | | | | | | | | | |
| 8. Industry adopters | 18.59 | 20.20 | .07 | .08 | -.06 | .06 | .03 | -.09 | .53 | | | | | | | | |
| 9. Market value (\$M) | 2694.53 | 6614.93 | -.02 | -.16 | -.16 | -.21 | .02 | .37 | .36 | .11 | | | | | | | |
| 10. Market return (adjusted) | -.63 | 28.65 | .00 | .02 | -.02 | .00 | -.02 | -.01 | -.04 | -.03 | .02 | | | | | | |
| 11. Market/book | 1.81 | 1.60 | .00 | .00 | -.05 | .04 | .02 | .00 | .12 | .12 | .10 | .13 | | | | | |
| 12. Shark repellent | 0.49 | 0.50 | .10 | -.14 | .22 | -.16 | -.08 | .07 | .10 | .10 | -.11 | -.04 | .00 | | | | |
| 13. Unequal voting shares | 0.11 | 0.31 | -.06 | .19 | -.19 | .28 | .04 | -.07 | .05 | .04 | -.01 | .01 | .01 | -.07 | | | |
| 14. Institutional ownership | 46.01 | 16.29 | .06 | -.38 | .10 | -.23 | -.11 | .27 | .07 | -.06 | .03 | .05 | .03 | .03 | -.17 | | |
| 15. Delaware incorporation | 0.49 | 0.50 | .00 | -.02 | .06 | -.02 | .09 | -.08 | -.02 | .02 | -.06 | .00 | .04 | .07 | .07 | .01 | |
| 16. New York incorporation | 0.08 | 0.27 | .00 | -.07 | -.02 | -.06 | -.08 | .13 | .10 | .01 | .20 | -.02 | .01 | -.12 | -.06 | .03 | -.29 |

* The size of the risk set declined over time as follows: 1984 (440); 1985 (425); 1986 (397); 1987 (252); 1988 (209); 1989 (139).

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be larger, to have less concentrated ownership, to be owned more by institutions, and to have proportionally more outsiders on the board. Thus, the historical description of the rise of the managerialist firm (e.g., Useem, 1984) can be seen cross-sectionally as well: As firms get bigger, insiders tend to own less, stockholdings become more dispersed, and the firm comes to be owned more by institutions and less by individuals and families. The correlates of managerialism, then—size, dispersed ownership, and small management stockholdings—are the correlates of network centrality.

Across all periods, network centrality is also highly correlated with ties to adopters, as one would expect, and ties to adopters is highly correlated with the prevalence of adoption by industry. These correlations are somewhat misleading, however. During any particular period, the correlation between ties to adopters and industry prevalence never exceeds an absolute value of .05; its high correlation across periods is due to the fact that both increase monotonically over time. The correlation between centrality and ties to adopters, however, starts low but increases dramatically over successive periods, surpassing .9 during the final periods. This is because the number of ties that firms have to prior adopters comes to be roughly proportional to the number of ties they have overall by the end of the sample period: On average, we would expect that for firms that do not adopt by the end of the sample period, about 60 percent of the firm's interlock partners would have adopted, leading to a high correlation between ties to adopters and interlocks. Because of the potential problems of collinearity this introduces, each of these covariates is introduced separately into the model.

RESULTS

The first column of Table 2 reports the results of an event-history analysis of all poison pill adoptions over the sample period, July 1, 1984 through August 15, 1989, including all the firm-level covariates. The results provide strong support for the hypotheses regarding ownership structure: Both higher insider ownership and greater concentration of ownership significantly depressed firms' propensity to adopt a poison pill. The multiplier effect associated with insider ownership was about .96; thus, an increase of one percentage point in the amount of insider ownership is associated with a decline in the rate of adoption of about 4 percent. Contrary to my prediction, however, firms with golden parachutes in place were no less likely subsequently to adopt a poison pill and tended to be somewhat more likely to adopt (the estimated multiplier is 1.25). Also, contrary to hypothesis 4, boards with more insiders tended to be less likely to adopt.

The control variables indicate few surprises: Larger firms were significantly less likely to adopt poison pills, as were firms with unequal voting shares, who adopted at roughly one-quarter the rate of otherwise comparable firms. However, firms that had already adopted a shark repellent and those owned proportionally more by institutions adopted at a significantly higher rate. Neither of the two

Table 2

Event-History Analysis of Poison Pill Adoption, July 1984–August 1989 (Time-Changing Covariates)*

| Variable | (1) | (2) | (3) | (4) | (5) | (6) |
|--------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Insider ownership | -0.0381** (-3.59) | -0.0258** (-2.48) | -0.0300** (-2.89) | -0.0299** (-2.88) | -0.0382** (-3.60) | -0.0265** (-2.55) |
| Golden parachute | 0.2260 (1.70) | 0.2265 (1.71) | 0.2058 (1.55) | 0.2058 (1.55) | 0.2284 (1.72) | 0.2100 (1.58) |
| Ownership concentration | -0.0142** (-3.95) | -0.0147** (-4.15) | -0.0151** (-4.31) | -0.0153** (-4.35) | -0.0143** (-3.97) | -0.0154** (-4.35) |
| Insider board | -0.0098 (-1.86) | -0.0039 (-0.72) | -0.0062 (-1.15) | -0.0066 (-1.23) | -0.0100 (-1.90) | -0.0051 (-0.91) |
| Interlocks (log) | | 0.3933** (4.19) | | | | 0.2094* (1.63) |
| Ties to adopters (log) | | | 0.4201** (4.34) | 0.8072** (3.33) | | 0.6435** (2.46) |
| Ties ² | | | | -0.1738** (-1.74) | | -0.1689** (-1.69) |
| Industry adopters | | | | | -0.0062 (-0.99) | -0.0061 (-0.98) |
| Control variables | | | | | | |
| Market value (\$M) | -0.0001** (-3.52) | -0.0001** (-4.62) | -0.0001** (-4.59) | -0.0001** (-4.28) | -0.0001** (-3.51) | -0.0001** (-4.44) |
| Market return (adjusted) | -0.0006 (-0.25) | -0.0005 (-0.19) | -0.0004 (-0.15) | -0.0003 (-0.12) | -0.0006 (-0.25) | -0.0003 (-0.11) |
| Market/book | -0.0828 (-1.46) | -0.0615 (-1.02) | -0.0754 (-1.30) | -0.0799 (-1.37) | -0.0838 (-1.50) | -0.0748 (-1.27) |
| Shark repellent | 0.5794** (4.02) | 0.5063** (3.50) | 0.5248** (3.62) | 0.5311** (3.66) | 0.5919** (4.09) | 0.5246** (3.59) |
| Unequal voting rights | -1.3600** (-2.97) | -1.4300** (-3.11) | -1.4810** (-3.22) | -1.4750** (-3.21) | -1.3800** (-3.01) | -1.4860** (-3.23) |
| Institutional ownership | 0.0160** (3.58) | 0.0126** (2.75) | 0.0133** (2.90) | 0.0132** (2.88) | 0.0159** (3.58) | 0.0123** (2.67) |
| Delaware incorporation | -0.1533 (-1.14) | -0.1323 (-0.99) | -0.1358 (-1.02) | -0.1185 (-0.88) | -0.1580 (-1.18) | -0.1185 (-0.88) |
| New York incorporation | -0.2888 (-1.15) | -0.3714 (-1.47) | -0.4029 (-1.59) | -0.3974 (-1.57) | -0.2874 (-1.14) | -0.4025 (-1.59) |
| χ^2 | 184.98 | 203.43 | 203.94 | 207.06 | 185.94 | 210.97 |
| D.f. | 12 | 13 | 13 | 14 | 13 | 16 |

* $p = .05$; ** $p < .05$.

* t-statistics are in parentheses. Reported significance levels are one-tailed for hypothesis tests, two-tailed for control variables.

market-based performance measures (market return and market-to-book ratio) had a significant effect on adoption. Analyses using alternative performance measures (return on equity, price/earnings ratio, and total market returns with no adjustment for industry) also yielded no significant results. Finally, state of incorporation had no significant effect.

The second column of Table 2 introduces the measure of interlock network centrality into the model. Inclusion of this measure significantly improves the fit of the model. The estimated effect that a firm's number of interlocks had on its expected rate of adoption is calculated by

$$y = \exp\{b_1 z\}$$

where y is the multiplier of the rate, z is the natural log of the number of interlocks plus unity, and b_1 is the parameter associated with the logged interlock term. According to this model, firms with three interlocks (the 25th percentile) adopted at a rate roughly 73 percent higher than comparable firms without interlocks, while those with fourteen interlocks

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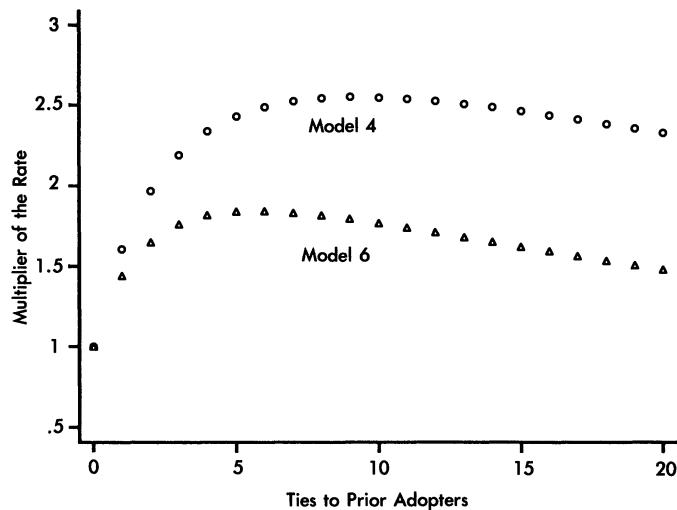


Figure 4. Multiplier effect of interlock ties to other adopters on rate of poison pill adoption among sampled industrials.

(the 75th percentile) adopted at nearly three times the rate of those without interlocks.²

The third column reports a model that includes ties to prior adopters. As predicted, this measure significantly increased the estimated rate of adoption: As more of a firm's contacts adopted the pill, the firm's own predicted rate of adoption subsequently increased. By the end of the sample period, however, this measure was highly skewed: A handful of highly central firms never adopted, despite the fact that a large number of their interlock partners had already adopted. Much as someone immune to a virus fails to catch the disease even when everyone else in the office has contracted it, these firms seemed immune to adoption: By the end of the sample period AT&T was tied to 32 adopters in this sample, General Electric had 27 ties, and IBM had 23 ties, yet none of these firms had itself adopted. I therefore included a measure of logged ties squared in model 4 in order to capture curvilinearities. Inclusion of this measure provided a somewhat better-fitting model. According to the estimates in the fourth model, the multiplier effect of ties to other adopters increased up to nine, at which point additional ties were associated with modest declines in the multiplier. These effects are displayed graphically in Figure 4. As this figure indicates, being tied to one other adopter increased the rate by about 61 percent, ties to two other adopters nearly doubled the rate, and firms with six ties to other adopters subsequently adopted at about 2.5 times the rate of comparable firms with no ties. Those who "survived" past the estimated maximum adopted at a somewhat lower rate, however, and only 7 of the 22 firms that survived 12 ties to other adopters went on to adopt a pill themselves.

The fifth model includes a measure of the prevalence of adoption in a firm's primary industry. Contrary to hypothesis, however, this measure had no significant effect. Alternative model specifications using the raw number of adopters in a firm's industry yielded similar null results.

²

Previous researchers have argued that "strong" tie centrality (where only interlocks created by an executive of one or the other firm are included) is a better indicator of power relations among firms than overall centrality (Mizruchi and Bunting, 1981). An executive of Firm A that sits on the board of Firm B is more likely to represent the interests of Firm A than a neutral individual that sits on both boards but is employed by neither firm. To discover whether strong ties had any independent effect, I estimated models that distinguished sent, received, and neutral interlocks (where "sent" indicates that the interlocking director was an executive of the focal firm and "received" indicates that the director was an executive of another firm). I found that neither the number of sent nor received interlocks had any effect independent of neutral interlocks, consistent with findings by Palmer, Jennings, and Zhou (1989), and that the best-fitting model uses the total number of interlocks without distinguishing between strong and weak ties. I also found no independent effect for interlocks in which the tie is created by an officer of a commercial bank or other financial corporation, contrary to the implications of bank control theory (Kotz, 1978).

The final column includes all the covariates in a single model. The major difference from the previous models is that the effect of interlock network centrality is substantially attenuated and achieves only borderline significance ($p = .051$), while the estimated impact of ties to other adopters also declines slightly (see Figure 4). This suggests that much of the estimated total effect of interlocks is attributable more specifically to ties to prior adopters; that is, centrality appears to have two effects, one direct and one indirect through ties to other adopters.³

DISCUSSION

These results provide mixed support for the agency theory hypotheses and somewhat stronger support for the interorganizational hypotheses for when and why firms would adopt poison pills. Consistent with previous work (Malatesta and Walkling, 1988), firms in which officers and directors owned a larger proportion of the outstanding equity adopted poison pills at a somewhat lower rate. Firms with more concentrated ownership also experienced lower rates of adoption. While both these results are consistent with the predictions derived from agency theory, their interpretation is not unambiguous. The arguments used to support these predictions revolved around incentive alignment (in the case of insider ownership) and the monitoring capacity of owners (in the case of ownership concentration). An alternative interpretation is that insiders that own a large stake in the firm have an effective veto over unwanted takeovers and thus have less need for a poison pill (cf. Ryngaert, 1988); similarly, firms with more concentrated ownership are also unlikely to receive the sort of unanticipated takeover bids that poison pills are meant to prevent (Davis and Stout, 1990). Alternative model specifications that used the value of the shares held by insiders (expressed in raw dollar value, as a multiple of the CEO's salary and as a multiple of the average salary of the top five executives) in order to capture the degree of incentive alignment yielded no significant results, consistent with this interpretation. Thus, while the ownership-structure results are congruent with the hypotheses I derived from agency theory, it is not clear whether firms with high insider ownership or more concentrated ownership don't adopt poison pills because they have appropriately aligned incentives and increased monitoring capacity, as agency theory would predict, or because they simply don't need them as much.

3

An alternative specification, suggested by one reviewer, reduces problems of collinearity by eliminating the interlocks measure and including separate measures for ties to adopters and ties to nonadopters (which by definition sum to interlocks). The results from a model using the log of each of these measures yield a parameter estimate for ties to adopters roughly twice that of ties to nonadopters. Ties to adopters was positive and statistically significant at $p < .001$, while ties to nonadopters was positive and marginally significant at $p = .056$ (one-tailed), providing additional support for the contagion hypothesis.

Contrary to my prediction, firms with golden parachutes in place were no less likely subsequently to adopt a poison pill. I argued that by putting in place a contract that compensates executives if the firm is taken over, firms aligned the incentives of these executives such that they would not resist takeovers that benefit shareholders. By reducing the incentives of managers to resist takeovers, these contracts should also reduce their incentives to adopt poison pills, but the results do not support this contention. Undoubtedly, the types of firms that adopt parachutes are more at risk of takeover than those that don't, and thus, other things being equal, they should be more likely to adopt pills (cf. Singh and Harianto, 1989). But parachutes should eliminate the

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other-things-being-equal clause by appropriately aligning managerial incentives with respect to takeovers; instead, this result suggests that golden parachutes are not sufficient to do so.

Also contrary to hypothesis, boards with more insiders were no more likely to adopt a poison pill. When the effects of interlocks are not included in the model, the estimates indicated that boards with more insiders were actually somewhat more likely to adopt, rather than less, although this effect was eliminated when overall centrality (which is negatively correlated with insider board dominance) was included in the model. Previous research has found that greater outsider representation on the board is associated with a higher likelihood of having a golden parachute (Cochran, Wood, and Jones, 1985; Singh and Harianto, 1989), which is consistent with the models reported here. These recent findings are contrary, however, to Williamson's (1964) early research indicating that insider-dominated boards promote the pursuit of managerial goals. Such inconsistencies in research findings over time may be due to the fact that, during the years since Williamson's (1964) study, large firms have responded to calls for more active boards of directors by inviting more outsiders to sit on the board: On average, only 31 percent of the board members of firms in this population were paid employees of the corporation, whereas in previous years insider-dominated boards were common. This study gives no evidence that these outsiders are more effective monitors, however, contrary to the implications of Fama and Jensen (1983).

Further support for this characterization of the board comes from the finding that interlock network centrality is positively related to firms' rates of poison pill adoption. Moreover, much of this effect is attributable to the fact that more central firms tended to be more heavily tied to adopters; ties to adopters, in turn, had an independent positive effect on adoption. This finding is broadly consistent with Palmer, Jennings, and Zhou's (1989) finding that firms that were more heavily tied to companies with a multidivisional structure were subsequently more likely to adopt this structure themselves. Thus, firms that cast their social net broadly by sharing directors with a large number of other organizations were better placed to learn vicariously from the experiences of other firms earlier on. Together, these findings also support the notion that the interlock network functions as a mechanism for elite cohesion (Useem, 1984): By spreading an innovation that makes hostile takeover more difficult, directors who span multiple boards promoted stability among the corporate elite by raising barriers to the major threat to the elite's position, i.e., the threat of unwanted takeover.

Part of the impact of ties to adopters can be explained with reference to the nature of boards as decision-making groups. When the board is faced with a decision, such as whether to adopt a poison pill, the opinions of those with relevant previous experience naturally will be given more weight. Moreover, research in group decision making has shown that a group must have two or more experts for this expertise to be effective in changing the group's

decision-making performance (Bottger and Yetton, 1988), which suggests that having directors who form two ties to prior adopters may be necessary for this expertise to have an impact. Yet the evidence presented here indicates that the more a firm was tied to others that had adopted a poison pill, the more likely it was to adopt a pill itself (up to a point), a finding that suggests a normative element: The knowledge that several interlock partners had adopted poison pills provides information above and beyond the simple pros and cons of adoption that having one or two directors with prior poison pill experience would give.

This normative or institutional interpretation must be qualified by the null result for hypothesis 7, however. I found no evidence that firms imitated others in their industry, as the structural equivalence model of diffusion would suggest. Thus, to the extent that there was evidence of mimicry, as predicted by institutionalists, it was mimicry of the organization's direct contacts rather than of its competitors. While this may be seen as contrary to recent research on interorganization contagion (e.g., Galaskiewicz and Burt, 1991), it can be readily explained by the nature of the diffusion process at hand. Whereas contagion seeks to explain the flow of information across an "interpersonal synapse" separating ego and alter (Burt, 1987: 1288), interlocking boards have no such synapse; rather, they are connected by overlapping membership, a director or directors who are simultaneously board members for both firms. The synapse analogy does not map onto the interlocking directorate network: The director who creates the contact with a prior adopter was personally involved with the prior decision, and thus there is no gap between ego and alter.

The normative interpretation must also be qualified by the fact that firms at the peak of the interlock network adopted at a lower rate than the population overall: Of the six most interlocked firms, only two had adopted a pill by the end of the sample period, whereas AT&T, IBM, and General Electric had not adopted a pill despite their extensive ties to prior adopters. Such enormous and well-connected firms are extremely unlikely to experience a takeover threat, and the results reported here suggest that they are unlikely to take controversial actions that shareholders may oppose, such as adopting an unnecessary poison pill, simply out of mimicry. The actions of interlocked firms are connected not so much by mimicry as by sharing a common decision input; the content of the tie between tied firms is an individual involved in the governance of both organizations.

The control variables suggest that larger firms were less likely to adopt a poison pill, which is likely due to the fact that larger size itself is an effective barrier to takeover. Firms that had already adopted a shark repellent were more likely to adopt, which suggests that the same types of firms sought multiple forms of protection from unwanted takeover, while those with unequal voting rights, which are particularly difficult to take over, were much less likely to adopt a redundant poison pill.

Finally, firms with greater institutional ownership were significantly more likely to adopt a pill. This result, along with

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the finding that firms with officers of banks or other financial institutions on their board were no less likely to adopt a pill, contradicts the implications of bank-control theory (Kotz, 1978). It would be inappropriate to attribute this to greater quiescence on the part of institutional investors in general, however: Large pension funds affiliated with the Council of Institutional Investors have fought actively against poison pills adopted in firms in which they hold stock, and they have been among the most proactive investors with respect to proxy issues (O'Hara, 1989). Banks and insurance companies, as debtholders and potential business affiliates of firms that adopt poison pills, may not oppose pills, but other institutional owners clearly do (cf. Brickley, Lease, and Smith, 1988). This finding is more likely to reflect the fact that managers of firms owned largely by institutions such as pension funds have more reason to fear a successful takeover, as these institutions have demonstrated their willingness to sell their shares in a takeover situation rather than supporting incumbent management. Thus, higher institutional ownership, like smaller size, may increase managers' incentives to protect themselves against unwanted takeovers by adopting a poison pill.

CONCLUSION

In this study I have considered two perspectives on large corporations as organizations, an economic approach to firm behavior (i.e., the agency theory of the firm) and an interorganizational approach. Organization theory and agency theory have several complementarities, but they differ in their understanding of corporate control and, in particular, their stance regarding managerialism, as well as in their characterization of the role and function of the board of directors. Most broadly, where organization theory relies on an assumption of widespread managerialism that allows top managers the discretion to pursue various strategies with respect to their environment, agency theory denies this premise and argues that for an organizational form to survive the competition of the financial markets it must contain the agency costs that managerial discretion promotes, primarily through its incentive structures and monitoring capacities. This difference alters the substance of their perspectives on problems of the corporation and establishes grounds for a dialog between these approaches.

The research presented in this study tests predictions derived from the agency theory of the firm and interorganizational theory by examining what is an exemplar of an agency problem, in which the interests of shareholder/principals and manager/agents conflict to some extent. The results, however, provide only limited support for agency theory; moreover, they undermine two of its essential elements, the notions that managerial control is sharply constrained by capital markets through the takeover mechanism and that boards of directors act as effective agents of shareholder interests.

Takeovers pose a constraint on managerial discretion by setting minimum levels of acceptable performance, as argued by managerialist economists (Marris, 1964). Although

this constraint may have become tighter in the 1980s, however, it was not decisive in determining firm behavior. The fact that 60 percent of the *Fortune* 500 had a pill by the end of 1989 suggests that managerial discretion is still widespread, contrary to the agency theory conception of the firm but as expected by organization theory.

The agency theory of the firm is also distinguished by its benign view of the functioning of boards of directors. In this view, outside directors are agents of shareholders acting as top-level monitors of management performance and protecting the shareholders from managerial opportunism (Fama and Jensen, 1983). In a strict managerialist account, by contrast (e.g., Herman, 1981), the board is essentially powerless, and outside directors are ornaments on the corporate Christmas tree. Interorganizational theories take a more central position on this pawns vs. potentates continuum: The organization uses the board to articulate the organization with its environment (Pfeffer and Salancik, 1978) and as a learning mechanism through which it enhances its information flow from its business environment (Useem, 1984). The finding that directors on multiple boards are more receptive to poison pills argues in favor of this conception. Moreover, the finding that the poison pill diffused through a social process formally similar to other diffusions of innovation indicates that, as proposed by organization theory, the population of large corporations is best conceived as an intercorporate network with the properties of a social system. It is not simply an aggregate of atomistic firms whose actions are relatively autonomous, as in agency theory.

Finally, these findings shed light on the nature of the intercorporate system itself. Not all innovations diffuse, and knowledge of which types do and the mechanisms responsible for diffusion gives insight into the character of the social structure that provides the medium of diffusion. The findings of this study imply that the interlock network provides a social context for corporate governance that supports a kind of stability or social order among corporations: It provides a diffusion mechanism for information and strategies that potentially reproduce the control of existing management, with the unintended consequence of supporting the integrity of the interlock network itself. Takeovers disrupt the stability of the interlock network as a social structure. In effect, however, this social structure reproduces itself such that those firms that are most central have better access early on to strategies that in turn allow them to remain central, while those that are peripheral are left more exposed to the hazards of the market for corporate control.

This study also provides evidence that direct contact through interlocks rather than imitation of structurally equivalent others was the mechanism responsible for the spread of the poison pill. While this is contrary to some recent research on contagion (e.g., Galaskiewicz and Burt, 1991), it is consistent with Fligstein's (1990: 19) contention that "Organizational fields have shifted in definition from those based on product lines to industry to the population of the largest firms" as the dominant conception of the firm has come to be a

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financial one: The relevant comparison group for the largest corporations appears to be other large corporations in general, most of which face the same financial hazards (such as takeover), rather just than those in the same industry. The combination of moderate (and occasionally high) levels of diversification among the largest firms, coupled with the broad coverage provided by SIC industry classifications, calls into question the value of defining structural equivalence and comparison groups in terms of the industry categories that are most commonly used.

Both agency theory and interorganizational theories provide useful and to some extent complementary insights into the functioning of the modern corporation. The agency theory of the firm is correct in calling attention to fundamental issues of control and their relation to ownership structure in capitalist organizations. Yet economic action is inherently social action, and as this research demonstrates, a more complete understanding of how issues of corporate control are resolved requires the researcher to attend to both the incentive structures and monitoring mechanisms within the firm as well as the social system in which corporate action is embedded (cf. Granovetter, 1985). In particular, corporate governance takes place in a social context marked by overlapping and interdependent decision-making units. The task of future research on governance in the large corporation is to integrate agency theory's focus on incentives and information with an appreciation for the dynamic and interdependent nature of the intercorporate social system in explaining corporate action.

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