



ELSEVIER

Journal of Corporate Finance 4 (1998) 53–70

Journal of
CORPORATE
FINANCE

Board effectiveness and board dissent: A model of the board's relationship to management and shareholders

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Abstract

To date, there has been little modeling of the board of directors as an independent entity in the corporate finance literature. Most theoretical papers omit the board entirely and model only managers and shareholders as active players. In this paper, I model the board as an entity distinct from both management and shareholders. The analysis is based on management's power in the selection and retention of board members and it focuses on the effect of this power on the frequency of open dissent in the boardroom and the board's effectiveness in disciplining management. The model predicts behavior consistent with empirical observation and produces testable implications about the links between board compensation, structure, and information and the frequency of board dissent and the level of board effectiveness. © 1998 Elsevier Science B.V.

JEL classification: G32

Keywords: Boards of directors; Managerial discipline

1. Introduction

The relation between shareholders and managers has justifiably received a great deal of attention in the corporate finance literature. To date, this literature has explicitly included only shareholders and managers in its models. Legally, though,

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shareholders and managers do not interact directly, but through the board of directors — shareholders elect board members who in turn control management. Leaving the board of directors out of a model of shareholders and managers implicitly assumes that the board is perfectly aligned with one side or the other. In this paper, I argue that this assumes away an important factor in the shareholder/manager relationship. The board occupies a position somewhere between perfect alignment with one or the other and this position gives the board its unique character and dynamics. If we wish to accurately understand board behavior, we must acknowledge the board's unique position in corporate governance.

Since Berle and Means (1932), it has been widely accepted that diffuse ownership of the modern corporation makes effective managerial oversight by shareholders difficult or impossible because of free-rider problems and the freely alienable nature of stock ownership. Since shareholders are unable to look after their own interests, the board is supposed to look after their interests for them. A fundamental problem with this line of reasoning is that shareholders unable to control management effectively are, by the same logic, also unable to control the board effectively¹. By default, substantial power to select and dismiss board members falls to management. Herman (1981), Whisler (1984), Mace (1986) and Rosenstein and Wyatt (1990) all conclude that management effectively chooses the board, not the other way around². The person being monitored has the power to select and punish the monitor, so the board is not an independent agent appointed by shareholders and free from managerial pressure.

The endogeneity of board selection and oversight creates a complex dynamic within the board. Management generally prefers a friendly board and usually acts to put friendly members on the board, keep hostile members off the board and eject hostile members when disagreements arise and hostility is revealed³. But management's power is not absolute, and other forces act to keep independent or even hostile members on the board. Shareholders may want such members to improve the monitoring of management, and board members themselves have a

¹ To some extent, the power of shareholders to sue individually mitigates this problem because any one shareholder can act as a monitor for all shareholders. But this is, at best, a crude form of monitoring.

² The following quote from Herman (1981) is typical: "The board of directors 'controls' the corporation in a formal legal sense, because the bylaws give it the power to make key decisions by majority vote. But... top inside managers normally dominate the board selection and decision-making processes and the board and outside directors are best viewed as having various degrees of latent power".

³ Mace (1986), p. 186, puts it bluntly: "If a director feels that he has any basis for doubts and disapproval, most of the presidents interviewed believe that he should resign". Whisler (1984) states this as one of the 'rules of the game' when he says, "[i]n working with the CEO, we must distinguish between counsel and criticism. He [the manager] will, or should, heed the former. Too much of the latter means that one of us should depart".

stake in effective oversight insofar as they want to develop a personal reputation as an effective monitor. The interplay between the forces favoring a docile board and the forces favoring a critical board creates a complex dynamic because of the endogeneity of board membership. As one side or the other gains power in the dynamic bargaining game between management and the board, the composition of the board shifts and management itself can change. Ultimately, the board's composition at any point in time depends on the relative power of each faction at that time and the evolution of the system over time ⁴.

In this paper, I focus on one aspect of the board's complex dynamics – how management's power to select and eject board members affects the behavior of the board. I concentrate on two important dimensions of board behavior: the frequency of open dissent in the boardroom and the board's effectiveness in disciplining management. In concentrating on this aspect of the board, I do not model the larger dynamics of the board. Most notably, I abstract from the question of why management acts to eject an unsuccessful dissenting faction from the board after an open disagreement. Instead, I take the ejection of losers as a given and study the consequences of it for board dissension and effectiveness. The results are neither shocking nor counterintuitive, but their explicit acknowledgment is important to a full understanding of the relation between managers and shareholders as they are currently constituted.

Opinion on board effectiveness in monitoring management can be divided into two broad camps. The first, represented by Fama and Jensen (1983), sees the board as an important part of the firm's monitoring mechanism. The second, represented by Herman (1981), Mace (1986) and many popular commentators, maintains that boards perform little or no real monitoring and do little more than provide contacts and advice for top management.

Fama and Jensen (1983) maintain that the board is an important part of the firm's governance mechanism. It is the top-level court of appeals for the internal agent market and outside directors resolve agency problems between managers and shareholders by setting executive compensation and selecting replacement managers. They hypothesize that outside board members do not collude with managers to expropriate shareholders because of the directors' incentives to develop reputations for effective monitoring in the external market for monitors.

Mace (1986), which is based on extensive interviews with board members and managers conducted before 1970, provides a set of stylized facts about how boards work. He concludes that boards: (1) provide advice and counsel to management; (2) serve as some sort of discipline; and (3) act in crisis situations. He finds that

⁴ Hermalin and Weisbach (1996) have begun the work of fleshing out the dynamic aspects of board behavior by extending this paper's framework to include the negotiation game between the manager and the board. They develop a model to understand the dynamic interactions of management and the board, concentrating on how the relative power of management in the bargaining game allows management more or less power to retain sympathetic board members and eject hostile ones.

boards do not: (1) establish basic objectives, corporate strategies and broad policies; (2) ask discerning questions; or (3) select the president. He makes clear his opinion that boards are not performing the monitoring duties they were intended to perform. Similarly, Whisler (1984), while less rigorous, is a more recent distillation of the author's experiences with boards. Whisler echoes Mace's stylized facts and adds that directors should usually support their CEO and avoid boardroom fighting. Where it may be necessary for directors to remove the CEO, they should not rush into the decision, they should make sure of overwhelming support, and they should proceed quickly when they finally decide that action is necessary. While the popular press indicates that boards have become somewhat more activist since Mace and Herman wrote, many boards are still similar to the boards that they describe.

This paper reconciles to some extent these opposing camps. It does this by arguing that the two camps concentrate on different dimensions of the board and so their conclusions are not as contradictory as they may appear. The ineffective-boards viewpoint focuses on the board's behavior, particularly the scarcity of open dissent in the board room. I show that we should expect little open dissent from the board most of the time. They are simply not structured in such a way as to be the proper forum for regular dissent. On the other hand, the effective-boards viewpoint concentrates on the board's disciplinary effect. I show that a lack of routine dissent is nevertheless consistent with a significant disciplinary role. By their nature, boards are not suited to be political arenas where conflicting opinions are aired and resolved. It is a mistake to assume they should behave as one and to equate a lack of open dissent with a lack of effectiveness. Instead, the board's structure dictates a different type of oversight where stretches of calm are only occasionally broken by episodic open conflict.

In the model, each board member receives information about managerial ability and must vote to retain or fire the manager. A declaration phase precedes the vote where board members may step forward and announce their intention to vote against management. The board members' utility is a function of both the firm's performance and their continued membership on the board. Board members care about firm performance because their reputation and compensation are affected by the firm's fortunes and they care about remaining on the board because of the professional contacts and prestige that accompany board membership. I introduce managerial power by assuming that board members who unsuccessfully vote to dismiss management are ejected from the board.

The model predicts board behavior consistent with the work of Herman (1981), Whisler (1984) and Mace (1986). Individual board members are reluctant to step forward and oppose management. The board appears passive most of the time and operates with little open dissent. Votes are usually unanimous in favor of management. When unfavorable information reaches a critical level, however, and a director steps forward to oppose management, a bandwagon effect develops. Other directors join the opposition and the board moves quickly and usually

unanimously to discipline management. The board does not function as a debating society where opinions are openly expressed and issues are freely argued. Instead, the board swings between the extremes of passivity and action.

Even though the board appears passive most of the time, it can still be an important source of discipline. To some extent then, the model reconciles the opposing opinions about board effectiveness. The board's lack of open debate is not synonymous with ineffectiveness and it is misleading to equate a lack of routine dissent with ineffectiveness. A board which is performing its oversight function well still displays little routine dissent and appears to be ineffective to an observer who equates dissent and effectiveness.

I then use the model to examine what makes a board effective or ineffective. Specifically, I look at how board compensation, composition, and information are related to board effectiveness and firm profitability. This produces a number of testable implications beyond the results discussed above:

- Making board compensation dependent on firm performance can increase board effectiveness but cannot achieve maximum effectiveness.
- Insulating one or more board members against ejection or the negative effects of ejection increases effectiveness — a large shareholder on the board would therefore increase effectiveness.
- Concentrating information in the hands of a single board member increases effectiveness.
- Rewarding board members for being ejected from the boards of firms that do poorly increases effectiveness.
- Insuring board members against the effects of poor firm performance (e.g., with insurance against shareholder lawsuits) decreases board effectiveness.
- Boards of firms with information that is public and easily interpreted are more effective.

Looking beyond the academic literature, other stylized facts about the board are suggested by a survey of the *Wall Street Journal*. Many reformers believe that separating the board from the CEO increases board effectiveness (WSJ 3/15/93, B1; WSJ 12/11/92, A14 and WSJ 10/29/92, B1), the presence of a large shareholder on the board increases board effectiveness (WSJ 6/2/93, A14) and directors who are themselves CEO's of other firms are the most likely to initiate a coup against management (WSJ 3/26/93, B1; WSJ 3/7/96, B1). The model's predictions are consistent with these stylized facts.

Other papers that model the board theoretically (beyond Hermalin and Weisbach (1996) already discussed above) are Hirshleifer and Thakor (1994), Maug (1994) and Noe and Rebbello (1996). Hirshleifer and Thakor (1994) is closest to this paper and examines issues of information aggregation between the board and outside takeover specialists. Their paper differs from this paper in that it takes as given the vigilance or laxness of the board while this model focuses on what factors make the board vigilant or lax. Maug (1994) looks at the comparative

advantage of the board, debt markets and the takeover market in disciplining management, and Noe and Rebello (1996) show how the board can efficiently monitor projects proposed by management even when they are uninformed about the quality of proposed projects. As in this paper's model, an important feature of their model is that the losing faction in an open disagreement is penalized by dismissal.

The paper proceeds as follows. Section 2 presents the model. Section 3 analyzes the model and uses it to explore issues related to board effectiveness. Section 4 concludes.

2. The model

I model the board as having three members: the manager (acting as chairman of the board) and two outside board members. I include only two outside directors to simplify the analysis. All of the results carry through in modified form for the case where there are more than two outside board members. There are two periods designated $t = 1$ and $t = 2$. At $t = 1$, the firm is formed, a manager is chosen randomly from the pool of available managers and production begins. Then, still at $t = 1$, the outside members receive information about the manager's ability, and the board must decide whether to retain or fire the manager. If the board dismisses the manager, it chooses a new manager from the same pool of managers. After the board's retain/fire decision, the outside board members are either kept on the board or ejected. At $t = 2$, the production cycle ends, the proceeds of production are realized, the firm is liquidated and all proceeds are distributed to shareholders.

Managerial ability is designated a . Managers are of either high or low ability designated a_H and a_L , respectively, and the prior probability that a manager is high ability is p . The liquidation value of the firm at $t = 2$, designated x , has possible values x_H and x_L where $x_H > x_L$. The production outcome is a stochastic function of the manager's ability and high ability makes it more likely that the liquidation value of the firm will be high.

Each of the outside directors has Von Neumann Morgenstern utility which is a function of the liquidation value of the firm and of his continued membership on the board. Outside board members care about the value of the firm, x , because their compensations and reputations are linked to the fortunes of the firm. Gilson (1990) documents the negative impact of a firm's default on its directors. He finds that following default, only 46% of incumbent directors remain on the board and the directors who leave hold fewer seats on other boards following their departure. Directors also care about their continued membership on the board, designated b , because of the reputation, compensation and personal contacts that accompany board membership. A director may also suffer a loss of human capital if labeled as a troublesome board member which would make it difficult to get additional board appointments. I write the utility function of each director as $v(x, b)$, where b

indicates whether the outside member is kept on the board or ejected: $b = K$ if the outside member is kept on the board and $b = E$ if he is ejected from the board. Since their utility is not solely a function of firm value, the board members' interests are not aligned perfectly with shareholder interests.

I begin with the assumptions that director utility is separable, that they prefer high to low profitability, and that they prefer remaining on the board to ejection from the board⁵. The analysis also holds for the case where their utility is not separable provided the cross-effects are not too strong — this assumes that directors prefer to remain on the boards of profitable companies and do not strongly prefer to leave the boards of firms that underperform the market. Under these assumptions, the model yields predictions about board behavior corresponding to that observed by Herman (1981), Whisler (1984) and Mace (1986). Later, I relax the separability assumption when I examine the effects of board compensation and find that a compensation scheme that concentrates on cross-effects can increase board effectiveness.

Since it is easier to think about the board member's utility as a function of managerial ability rather than a function of firm value, it is easier to write the outside members' expected utility as $u(a, b)$ where,

$$u(a, b) = v(x_H, b)\Pr(x_H|a) + v(x_L, b)\Pr(x_L|a). \quad (1)$$

It is then easily shown that board members prefer a high ability manager to a low ability manager⁶.

I summarize the manager's actions by assuming that, if an outside member votes to dismiss the manager or declares opposition to the manager and the manager is not eventually fired, the manager ejects the dissenting director from the board. This phenomenon is clearly documented by both Whisler (1984) and Mace (1986). I assume that board members are not allowed to secretly meet, exchange information and coordinate their voting strategy before voting. Given the large number of people involved, the close relationship of many board members to management, and the role that the manager has in setting the board's agenda, it is reasonable to assume that significant dissatisfaction cannot be hidden from the manager. Generating a coup requires that someone step forward and risk ejection either by approaching other board members or by open confrontation within the boardroom. It is not necessary to assume the manager always finds out about all board opposition. Alternately, it would be sufficient to assume that, while it is possible for a dissatisfied director to approach other directors without the manager's knowledge, there is a nonzero probability that the manager will find out and

⁵ In symbols, I am assuming that $v(x_H, b) > v(x_L, b) \forall b \in \{K, E\}$ and $v(x, K) > v(x, E) \forall x \in \{x_H, x_L\}$.

⁶ In symbols, $u(a_H, b) > u(a_L, b)$.

there is a nonzero probability that the manager will retaliate against the dissenting director ⁷.

At this point, the endogeneity of board selection becomes important. If the manager has no say in who sits on the board, the board can debate openly and its decision is undistorted by the endogeneity. In practice, the manager has substantial power in determining board membership and a reluctance to challenge the manager enters the model, giving us the board behavior we observe in practice.

At $t = 1$, after the firm is formed, the board is formed and the manager is randomly selected from the pool of available managers. Each board member then receives information about the manager's ability. For now, I assume that this information is private to the board member who receives it. The information may be information that only the individual board member is privy to, or it may be his interpretation of publicly available information. For simplicity, I assume there is no public information, although the results would not be substantially different without this simplification. (Later, I discuss the effects of public information.) I model each board member's information as the result of a series of Bernoulli trials, each of which has possible outcomes h and l , where

$$\Pr(h|a_H) > \Pr(l|a_H) \quad \text{and} \quad \Pr(l|a_L) > \Pr(h|a_L). \quad (2)$$

The board members' information is described by the ordered pairs (m_1, n_1) and (m_2, n_2) where m is the number of trials that come up h and n is the total number of trials. (Throughout, the two board members will be designated with the subscripts 1 and 2.) In this framework, one person's signal is more informative than another if his n is larger. Informational differences between the board members could come from differences in experience, effort, or ability to interpret publicly available information. This formulation allows a clear distinction between the amount of information and the favorableness of the information.

After receiving their information, the board members are allowed to publicly declare their intention to oppose the manager in the coming vote and these declarations are made simultaneously. By stepping forward to oppose management, a board member takes an irrevocable step, so I assume the declaration to dismiss is binding: an outside member who declares for dismissal in the declaration phase must vote to dismiss in the voting phase. This simplifies the analysis significantly although none of the results depend on it. A board member who does not declare his intention to dismiss is treated as tacitly declaring his intention to retain. This declaration to retain, however, is not binding.

The board then votes to retain or fire, and the voting is simultaneous. A simple majority is needed to dismiss, and the manager always votes to retain, so both

⁷ The Wall Street Journal points out the difficulty directors face in forming a consensus out of earshot of management. "Since management prefers to call its own shots, it least of all wants to be confronted with consensus views of outside directors that challenge or threaten its power. Therefore, no forum exists for such a consensus to develop" (WSJ 11/23/92, A14).

outside directors must vote to fire in order to actually fire the manager. This supermajority requirement is not essential to any of the results. Its purpose is to eliminate annoying concerns about how to break ties.

I use this sequence of events to capture the idea that, before a manager is removed, someone must step forward to openly oppose the manager. It also allows the model to capture bandwagon effects since a declaration of opposition by one board member will affect the vote of the other board member. A single round of simultaneous, secret balloting cannot capture these effects.

After the vote, if the original manager remains, dissenting outside members are removed from the board, and the firm's profitability is a function of the original manager's ability. If the original manager is fired, she is replaced with another randomly selected manager, no board members are ejected, and profitability is a function only of the replacement manager's ability.

3. Analysis

In this section, I analyze the model. The manager's play is trivial and requires no analysis. I examine only the strategies of the outside board members and therefore refer to them as the two players. The intuition for most of the results is fairly clear ⁸.

I begin with some basic lemmas.

Lemma 1: If both outside members declare their intention to retain, they will both vote to retain.

The intuition here is straightforward: the information of each outside member was good enough to make them declare for retention. In the voting phase then, the only additional information available is that the other outside member's information is also good. This only increases the members' beliefs that the manager is, in fact, high quality, and the outside members are motivated *a fortiori* to vote for retention.

Lemma 2: If both outside members declare their intention to fire, both outside members will vote to fire.

This is simply a tautology given the rule that an outside member who declares for firing must vote to fire. Even in the absence of that rule, each outside member would still vote to fire for the same reasons given for Lemma 1: the fact that the other board member's information is also bad increases the probability that the

⁸ The formal proofs, however, are surprisingly complex and add little to the intuition. Therefore, the formal proofs are left to a separate appendix which is available from the author.

manager is low quality and the outside members are motivated *a fortiori* to vote for dismissal.

The outside members' strategies are summarized by critical values of m in the declaration and voting phases. In the declaration phase, I characterize the outside members' strategies by the critical values $\hat{m}_1$ and $\hat{m}_2$, where the member will declare in favor of firing the manager when his m is less than $\hat{m}$, and will declare in favor of keeping the manager when his m is greater than or equal to $\hat{m}$. It is not trivial that $\hat{m}_1$ and $\hat{m}_2$ are complete descriptions of the strategies in the declaration phase. Obviously, the worse a player's m , the higher the probability that the manager is low ability and should be fired. But it is also the case that the worse a player's m , the higher the probability that the other player's m is also bad and that the other player will declare for firing. This second effect gives the player an incentive to not declare for firing and to instead 'let the other guy do it'. It is not clear *a priori* which effect dominates, and a formal proof is necessary to show that $\hat{m}_1$ and $\hat{m}_2$ are, in fact, complete descriptions of the strategies in the declaration stage. We therefore have our first proposition.

Proposition 1: Board member 1 will declare to fire if and only if $m_1 < \hat{m}_1$. Similarly, board member 2 will declare to fire if and only if $m_2 < \hat{m}_2$.

From the lemmas above, the strategies in the voting stage are trivial when both players declare either for firing or for retention. The only interesting vote occurs when the declarations are split — one declares for firing and the other for retention. This is the case I analyze now. In what follows, I designate the player declaring for firing as player 1 and the player declaring for retention as player 2. In this case, only player 2 casts a nontrivial vote and I describe his voting strategy by the critical value $\tilde{m}_2$ where, analogous to the definition of $\hat{m}_2$, the member will vote to fire the manager when his m is less than $\tilde{m}$ and will vote to keep the manager when his m is greater than or equal to $\tilde{m}$.

I now analyze the effects of the ejection penalty on the board's behavior. As a benchmark, I use the case where outside members are never ejected from the board for voting against management (or, alternatively, where outside members suffer no penalty if they are ejected from the board.) I call this the no-penalty case and designate the critical values of m in this case with the subscript 0, e.g., $\hat{m}_{0,1}$ and $\tilde{m}_{0,2}$.

The following proposition characterizes the effect of the ejection penalty on the voting stage strategies.

Proposition 2: Holding player 1's declaration strategy constant, if player 1 declares for firing and player 2 declares for retention, player 2 casts his vote as if there were no ejection penalty ⁹.

⁹ In symbols, this proposition is written as $\tilde{m}_2(\hat{m}_1) = \tilde{m}_{0,2}(\hat{m}_1)$. I adopt this notation to emphasize that $\tilde{m}$ is a function of the first player's strategy, $\hat{m}$.

This is easily seen to be true by noting that the second player's vote decides the outcome of the voting. If he votes to retain, the manager will be retained, and if he votes to fire, the manager will be fired. In either case, the second player remains on the board and suffers no ejection penalty. The ejection penalty, therefore, has no direct effect on his decision, and the second player will vote to fire if his information (combined with what he infers from the first player's decision to declare in favor of firing) indicates that the probability that this manager is high ability is less than p , the prior probability that a replacement manager will be high ability¹⁰.

In making his voting decision, player 2 updates his beliefs about the manager's ability based on the information that player 1 declared for firing. This inference is a function of player 1's equilibrium declaration strategy, $\hat{m}_1$. This leads to the following proposition.

Proposition 3: Player 2's voting strategy is inversely related to player 1's declaration strategy. Increasing player 1's critical value of m in the declaration phase decreases player 2's critical value of m in the voting phase¹¹.

Intuitively, a declaration for firing when $\hat{m}_1$ is lower transmits a more powerful negative signal about managerial ability and will move player 2 towards voting to fire. Therefore, when $\hat{m}_1$ is lower, $\tilde{m}_2$ is higher. Implicitly, the amount of information each player has (n_1 and n_2) are being held constant.

I come now to a central result of the paper. I am interested in how the endogeneity of board membership affects board behavior. To make this comparison, I compare the case where there is no threat of ejection or no penalty to being ejected, to the case where there is a threat of ejection and directors suffer from ejection. I get the following result.

Proposition 4: When there is a penalty to ejection, if we hold the other player's strategy constant, the critical value of m in the declaration phase is lower than in the no-penalty case and the critical value of m in the voting phase is higher¹².

This proposition says that the probability that a given board member will declare for firing is lower in the penalty case than in the no-penalty case. That is, board members are less likely to be the first one to step forward and oppose management. Consequently, there are more votes unanimously supporting management when there is a penalty to ejection. Further, the proposition says that

¹⁰ In symbols, player 2 will vote to fire if $\Pr(a_H | m_1 < \hat{m}_1, m_j) < p$. Conversely, player 2 will vote to retain if $\Pr(a_H | m_1 < \hat{m}_1, m_j) \geq p$.

¹¹ In symbols, $\partial \tilde{m}_2(\hat{m}_1) / \partial \hat{m}_1 < 0$.

¹² In symbols, $\hat{m}_1(\hat{m}_2, \tilde{m}_2) < \hat{m}_{0,1}(\hat{m}_2, \tilde{m}_2)$ and $\tilde{m}_1(\hat{m}_2) > \tilde{m}_{0,1}(\hat{m}_2)$.

when one declares to fire and the other declares to retain, in the voting phase, the second member is more likely to follow the first outside member and vote for firing in the penalty case than in the no-penalty case.

Here, the structure of the board and the endogeneity of board membership cause the board to tend towards either unanimous support or unanimous opposition. Each board member is reluctant to be the first one to step forward and begin the opposition, but once opposition has been announced, a bandwagon effect tends to develop, and the other board member tends to go along. The board then is not analogous to a parliament where differences of opinion are common and openly aired, and where split votes are common¹³. Usually, there is little dissent, but when negative information reaches a critical level, the board becomes active and moves decisively to discipline management — often unanimously. The absence of open conflict within the board does not necessarily indicate an absence of effectiveness. A board which is, in fact, effectively monitoring management will appear to be inactive most of the time because the process entails little routine open conflict and when conflict does occur, it tends to be resolved quickly. Casual empiricism supports these results since intra-board conflict usually comes with little public warning and is resolved quickly one way or the other. The case of a protracted board struggle is rare enough that its occurrence is considered newsworthy.

To some extent, the model can be seen as a reconciliation of the two main lines in the literature on boards. The first group, represented by Fama and Jensen (1983), views the board as an important part of the firm's monitoring mechanism. The second group, represented by Herman (1981), Mace (1986) and most popular commentators, concentrates on the lack of active dissent from most boards and concludes that boards perform little or no real monitoring, and provide only contacts and a source of advice for top management. This model points out that these two views are not completely inconsistent. A board can appear passive most of the time because of the lack of routine dissent but can actually be an important source of discipline. Knowing that this discipline exists, even in latent form, will restrain management's rapacious tendencies which in turn reduces further the need for overt discipline. The apparent conflict in the literature comes from concentrating on different aspects of the board. The first concentrates on the board's effect while the second looks at its outward appearance.

I turn now to an examination of how board compensation and composition affects effectiveness. An effective board should translate directly into superior firm performance; I therefore define board effectiveness as the firm's expected profitability, i.e., as $E[x]$. The expectation is the unconditional expectation or the

¹³ As Mace (1986) puts it, "Board meetings are not regarded as proper forums for discussions arising out of questions asked by board members. It is felt that board meetings are not intended as debating societies".

expectation before the m 's are drawn. For ease of exposition, I make the simplifying assumption that the ejection penalty is independent of the manager's ability. (The analysis is easily extended to the case where the ejection penalties are different and I discuss that extension later in the paper.) I define the ejection penalty as

$$z = u(a_H, K) - u(a_H, E) = u(a_L, K) - u(a_L, E) \quad (3)$$

The ejection penalty and the resulting reluctance to challenge management reduces the board's effectiveness. The expected payoff from production is lower when there is a penalty to ejection and the loss in effectiveness is monotonically related to the size of the ejection penalty. This is summarized in the following proposition.

Proposition 5: $E[x]$ is inversely related to the size of the ejection penalty. Also, $E[x]$ is maximized when the ejection penalty is zero.

Board effectiveness can therefore be improved by shielding board members from the effects of ejection. This suggests that board members be given golden parachutes to improve board effectiveness¹⁴. It also suggests that board members who own a large block of shares or are employed by a large shareholder should be more independent because they are shielded from the repercussions of ejection by their association with the large shareholder who would not penalize them for actively opposing management. Shivdasani (1993) finds empirical support for this when he finds that the presence of directors who own a large block of shares improves a firm's performance¹⁵.

A recent trend in boardroom reform is to try to separate the board from managerial influence. Some firms have split the positions of CEO and chairman of the board, IBM has created a committee of outside directors to focus on corporate governance and Eastman Kodak has set up a 'corporate directions' committee of outside directors to oversee strategy (WSJ 7/30/93, A3 and WSJ 6/2/93, A14). The model predicts that these moves will increase board effectiveness.

With regard to the amount of information the board possesses, it is immediately apparent that effectiveness increases when the board has more information (i.e., when n_1 and/or n_2 are increased). Shivdasani (1993) finds that director quality (proxied by the number of outside directorships held) is positively related to firm performance. Interpreting larger values of n as a measure of director quality, this result is consistent with the model.

The model also has something to say about the effect of an unequal distribution of information among the outside board members. I get the following proposition.

¹⁴ This may, however, introduce moral hazard considerations which are beyond the scope of this paper.

¹⁵ However, this leaves open the question of why large blocks do not form at more firms if such a block increases value.

Proposition 6: Holding the total amount of information constant (i.e., holding $n_1 + n_2$ constant), board effectiveness (i.e., $E[x]$), is maximized when all information is concentrated in the hands of a single outside board member ¹⁶.

This says that it is beneficial to delegate information-gathering to a single board member. The designated monitor then acts as a leader in the declaration phase. The other board members will then follow the informed director's lead in the voting phase. A representative of a large shareholder is well suited to this task as is a representative of a major lender. Endogenizing the costly acquisition of information would emphasize this leadership role as a shareholder or lender's representative has greater incentive to acquire costly information. Board members who are CEO's of other companies also tend to be better informed about management's performance because of their similar experience and we therefore expect CEO's of other companies to be leaders of boardroom revolts. As confirmation, an article in the Wall Street Journal finds, (to the surprise of the article's author) that "a pattern is discernible in these deposings: The person most likely to plot the CEO's doom is an outside director who formerly ran his or her own company" (WSJ 3/26/93, B1).

There has been much commentary suggesting that board members should be compensated with stock or stock options to align their interests with those of stockholders. The model says that such compensation will increase board effectiveness but will not completely solve the problem.

Proposition 7: The effects of the ejection penalty can be attenuated but not eliminated with a contract dependent solely on the liquidation value of the firm, x .

Thus, compensating the board with stock or stock options rather than a straight salary will move the board's incentives in the right direction, but a complete solution requires the elimination of the ejection penalty. The intuition behind this proposition is that a contract dependent only on x can make board members care more about the production outcome relative to the ejection penalty, but when m is close enough to the critical value, the expected increase in x from stepping forward is small and outweighed by the repercussions of ejection. Something more than performance-based contracts are needed to make the board fully effective.

Another result regarding board compensation points out how the board can be made less effective.

¹⁶ I should note that there are two types of inefficiency in this game. The first is the one I have concentrated on so far: the reluctance to step forward due to the ejection penalty. The second is due to incomplete information aggregation and is a byproduct of the specific form of the game. Concentrating all information with one board member eliminates both of these problems. Since the second inefficiency is tangential to our investigation, I do not discuss it further.

Proposition 8: Insuring the outside members against the repercussions of a low liquidation value reduces the effectiveness of the board.

Things such as liability insurance against shareholder lawsuits will insulate outside members from the forces that align their interests with those of shareholders and render the manager's influence over them even more important. The manager, on the other hand, would like to separate the outside members from shareholder influence and liability insurance could be evidence that the manager is trying to reduce the board's effectiveness and entrench management.

Lawsuit insurance also affects a potential board member's decision to join the firm in the first place. If insurance helps the firm attract higher-quality board members, it will also have a beneficial effect on effectiveness. The model does not explicitly acknowledge this. It therefore implicitly assumes that insurance does not affect the quality of the board members — it assumes that other forms of compensation can be substituted for insurance so that the absence of insurance has no effect on the board's quality.

The degree to which the board's information is public also affects the board's behavior. By public information, I mean information that is observed by all players. Further, each player knows that the other player observed this information and each player knows the other knows he observed this information, etc. I then get the following result.

Proposition 9: Where all of the board's information is public information, $E[x]$ in the penalty case is equal to $E[x]$ in the no-penalty case.

The intuition and proof are straightforward. Where each knows the other's information, each knows the other's choices with certainty and ejection will never occur and so any ejection penalty is irrelevant.

'Public information' here means more than the public availability of the raw data. It also means that the interpretation of the data is unambiguous. When different people draw different conclusions from the same information, the conclusions are classified as private information in this model. The proposition above should be seen more as a statement about the clarity of information rather than the publicness of the raw data. Thus, the model says that easily understood public announcements and events are more likely to trigger board action than announcements and events that are ambiguous and require skillful interpretation.

I now relax the assumption that the board members' utility is separable. Accordingly, I define the ejection penalty separately for the cases where managerial ability is high and where it is low and define z_H to be the ejection penalty in the first case and z_L to be the ejection penalty in the second case¹⁷. The next

¹⁷ In symbols, $z_H = u(a_H, K) - u(a_H, E)$ and $z_L = u(a_L, K) - u(a_L, E)$.

proposition tells us how these ejection penalties should be set up to make a board fully effective so that $E[x]$ is maximized.

Proposition 10: The board will be fully effective if and only if $z_H/z_L = -\Pr(a_L|m_2 > \tilde{m}_2, \hat{m}_1)/\Pr(a_H|m_2 > \tilde{m}_2, \hat{m}_1)$.

Full effectiveness therefore requires $z_L < 0$ and that z_L be of the same order of magnitude as z_H . The incentive scheme should be such that board members actually prefer stepping forward and being ejected when a company is in trouble. Directors should be rewarded for voting correctly, i.e., with the manager when the manager is good and against her when she is bad. Interestingly, when this condition holds, it is unimportant how strongly the board's utility depends on x . Gilson (1990) reports evidence that board members of troubled companies subsequently hold fewer positions on other boards which indicates that board members suffer when they sit on the board of a distressed firm. Kaplan and Reishus (1990) report similar results for CEO's of troubled firms where troubled firms are identified as those that cut their dividend. The proposition above implies that board members should not only be penalized for remaining on the board of a distressed firm, but should also be rewarded for opposing the management of a firm which then becomes distressed.

4. Conclusion

To date, there has been little modeling of the board of directors. Most theoretical papers in corporate finance omit the board as a separate entity and model only managers and shareholders as active players. This usually assumes, at least implicitly, that the board is perfectly aligned with either management or shareholders, but the details of the alignment are unspecified. In this paper, I explicitly model the board of directors as an entity distinct from both management and shareholders and I examine factors that determine the level of board effectiveness and dissent.

The analysis concentrated on a distinctive feature of the board/management relationship: the power of management in the selection and retention of board members. I built a model incorporating this feature and used it to generate the board behavior we observe empirically. I then used the model to explore issues of board composition and compensation.

These results suggest directions for future empirical research by pointing out the links between board effectiveness and board compensation, structure and information. The interactions of board information and board behavior appears to be a particularly worthwhile line of future research. The model's prediction that boards will behave differently when their information is public rather than private appears to be readily testable and the effects of concentrating information acqui-

tion to one board member could be explored further. The effects of liability insurance on board behavior and the effects of board compensation in general also appear to be fruitful avenues for further work. More generally, much of the empirical literature on boards has focused on relating board characteristics to firm performance. The model in this paper suggests a somewhat different perspective which could redirect that line of research. Rather than relating board characteristics to firm performance, we should think more in terms of the relation between board characteristics and board *behavior*, specifically, the frequency of dissension within the board.

A number of extensions to the model are possible. The addition of insiders, debtholders and takeover specialists is promising as well as the introduction of costly information acquisition. Another promising path is the examination of the benefits of unanimity. A strong theme that emerges from Whisler (1984) and Mace (1986) is the board's aversion to open conflict. If harmony is beneficial, then firm value is not maximized when management is fired as soon as its performance falls below that of the replacement managers. If this is the case, then the corporate finance literature should be expanded to recognize the benefits of unanimity. The public choice literature has explored the benefits of unanimous decision-making as opposed to majoritarian decision-making (e.g., Buchanan and Tullock (1962) who argue that a unanimous decision rule is the best way to ensure that everyone's interest is served). It is possible that the insights of that literature could be brought to the corporate finance literature.

The model has the potential for wider application. This general setup is relevant whenever a monitor is supposed to represent the interests of a large, diffuse group but is subject to pressure from the entity being monitored. An example of another setting where this is relevant is a regulatory agency formed to oversee an industry on behalf of the public while subject to political pressure from the industry it regulates.

Acknowledgements

I thank Cliff Asness, Harry DeAngelo, Doug Diamond, Bruno Gerard, Robert Gertner, Milton Harris, Steven Kaplan, John Matsusaka, Vik Nanda, Robert Vishny, Mike Weisbach and seminar participants at the University of Chicago and USC and the Western Finance Association Meetings. Financial support from The State Farm Companies Foundation as well as the University of Chicago and USC is gratefully acknowledged.

References

- Berle, A.A., Means, G.C., 1932. *The Modern Corporation and Private Property*. Macmillan, New York.
- Buchanan, J.M., Tullock, G., 1962. *The Calculus of Consent*. The University of Michigan Press, Ann Arbor, Michigan.

- Fama, E.F., Jensen, M.C., 1983. Separation of ownership and control. *Journal of Law and Economics* 26, 301–325.
- Gilson, S.C., 1990. Bankruptcy, boards, banks and bondholders: Evidence on changes in corporate ownership and control when firms default. *Journal of Financial Economics* 27, 355–387.
- Herman, E.S., 1981. *Corporate Control, Corporate Power*. Cambridge University Press, Cambridge.
- Hermalin, B.E., Weisbach, M.S., 1996. Endogenously chosen boards of directors and their monitoring of the CEO. Working paper, University of Arizona.
- Hirshleifer, D., Thakor, A.V., 1994. Managerial performance, Boards of Directors and takeover bidding. *Journal of Corporate Finance* 1, 63–90.
- Kaplan, S.N., Reishus, D., 1990. Outside directorships and corporate performance. *Journal of Financial Economics* 27, 389–410.
- Mace, M.L., 1986. *Directors, Myth and Reality*. Harvard Business School Press, Boston, MA.
- Maug, E., 1994. Boards of Directors and capital structure: Alternative forms of corporate restructuring. Working paper, Duke University.
- Noe, T.H., Rebello, M.J., 1996. The design of corporate boards: Composition, compensation, factions and turnover. Working paper, Georgia State University.
- Rosenstein, S., Wyatt, J.G., 1990. Outside directors, board independence and shareholder wealth. *Journal of Financial Economics* 26, 175–191.
- Shivdasani, A., 1993. Board composition, ownership structure and hostile takeovers. *Journal of Financial Economics* 16, 167–198.
- Whisler, T.L., 1984. *Rules of the Game*. Dow Jones. Irwin, Homewood, IL.