Directors, Directors and Officers Insurance, and Corporate Governance

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Abstract: This article models a board of directors consisting of either pure directors or shareholder directors. Pure directors only receive a fee for their service to the board, while shareholder directors receive corporate equity in addition to the fee. The analysis shows that: (1) compensation-maximizing pure directors and shareholder directors are unlikely to act in the best interests of shareholders; (2) if the appointment of directors is controlled by the CEO, directors choose to concur with the CEO’s decisions unless they can form a majority to control the vote; (3) when a board is dominated by shareholder directors who only have equity stakes in the firm, the board will advise the CEO to maximize shareholder value. We also show that it is optimal for directors to be fully insured against the liability risk for endorsing CEO’s suboptimal decisions. If a firm does not offer D&O coverage, directors will pay for the insurance themselves or decline the directorship. The corporate purchase of D&O insurance, therefore, does not change directors’ monitoring actions but does influence their decisions to accept the position. These results have important implications for board composition, director appointment, and the design of director compensation. [Key words: directors, directors and officers insurance, corporate governance]

INTRODUCTION

Corporate governance, and in particular the role of the board of directors, has been the center of debate on corporate governance reform and the focus of considerable research. Outside directors are the great hope of corporate governance reformers. Several new regulations beginning with

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Sarbanes-Oxley Act of 2002 (SOX) require increased representation of outsiders on corporate boards and committees. Many firms increased the number of outside directors on their boards as a result of this act. In the recent financial crisis, the failures of many well-known firms, e.g., Lehman Brothers and AIG, however, have revealed continued weaknesses of corporate governance and inadequate oversight by boards of directors.

The purpose of this paper is to develop a theoretical framework in which directors’ motivations and their monitoring efforts may be analyzed. Our key innovation is to propose a new classification of directors, different from the widely used dichotomy of inside versus outside directors. We categorize directors based on their pecuniary incentives, as pure directors or shareholder directors. Pure directors receive only a director fee for their service to the board, while shareholder directors receive shares of stock as well as the fee. We assume that pure and shareholder directors act in their own self interests in all decision making, including board decisions; further, we show that their pursuit of self-interest in conjunction with their compensation scheme yields each an objective function that they use in making decisions or providing advice on behalf of the corporation. The objective functions maximize the compensation of the directors. It follows that the directors’ interests are not generally aligned with those of shareholders or the CEO. We also note that because the CEO participates in the appointment of directors, directors have an incentive to concur with the CEO’s decisions in order to maintain their positions on the board.

These results suggest that the prevailing compensation schemes and appointment procedures for outside directors are ineffective in aligning directors’ incentives with those of shareholders. If an outside director is paid only a director’s fee then that director is a pure director, and the analysis shows that the pure director is only motivated by creditor interests. When compensated with equity and the fee, the outside director is a shareholder director and has an incentive to maximize the value of shareholder and creditor interests. Moreover, if the appointment to the board is controlled by the CEO then outside directors will choose to endorse the CEO’s decisions in order to maintain their seats on the board; the only exception to simply endorsing the CEO’s decisions would occur if board members can form a majority to counter-balance the CEO. These results demonstrate one condition for an effective board or equivalently a testable hypothesis: when a board is composed of a majority of outside directors who are compensated with shares of stock or shares of stock and a safe fee, then the board will, ceteris paribus, act in the interests of shareholders and overturn any CEO decision that would not maximize shareholder value.4

The model also allows an investigation of the influence of D&O insurance on directors’ actions. The major criticism on corporate purchase
of D&O insurance is that it creates moral hazard problem by indemnifying a board that concurs with the CEO in making corporate decisions that are not in the interests of shareholders and, therefore, weakens the discipline effect of stakeholders’ litigation (e.g., see Barrese and Scordis, 2006; Chalmers et al., 2002). This model shows that directors will seek full insurance protection against the liability risk as a director. If the firm does not offer D&O coverage then directors will decline the job offer or pay for D&O coverage on their own if their director’s compensation exceeds the D&O premium. Hence, this analysis generates another testable hypothesis: the corporate purchase of D&O insurance does not change the directors’ monitoring actions but does influence their decisions to accept the job. This hypothesis is consistent with the mixed evidence on the relationship between D&O insurance and corporate governance.

The paper is organized as follows. In the next section we note the director’s incentives covered in the literature. In the section, Directors’ and Officers’ Insurance, we discuss D&O insurance and its impact on corporate governance. In the next section we present a model that allows us to generate the objective functions of the directors, including the CEO. We conclude, in the last section, by noting our primary results and testable hypotheses and by discussing some of the directions for further research.

**DIRECTORS’ INCENTIVES**

An important stream of research on corporate governance examines the effectiveness of outside directors.\(^4\) To be considered an outside director (also called independent or non-executive directors), a director must not be an employee or a former employee of the firm and usually does not have any business ties with the firm aside from their directorship. As a result, outside directors are supposed to be in a better position to deal with the firm’s agency problems and to improve corporate governance. The effectiveness of outside directors’ governance, however, has been subject to skepticism.\(^5\) A major issue with outside directors is the ambiguity of their

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\(^4\)Mayers and Smith (2010) find a positive relationship between the number of outside directors and the sensitivity of executive compensation to performance but do not have a robust explanation for the empirical result. The analysis here demonstrates a possible connection. If the outside directors are shareholder directors then they will meet their fiduciary responsibility by ensuring that the CEO has the correct pay-for-performance compensation scheme and otherwise convincing the CEO to make decisions that maximize current shareholder value.

\(^5\)Adams et al. (2010) provide a comprehensive review of the literature regarding the role of directors.
incentives (e.g., see Bhagat and Black, 1998, and Hermalin and Weisbach, 2003).

Here we model the behavior of directors with different financial incentives. The prior literature identifies the following incentives for directors—compensation (e.g., Yermack, 2004; Adams and Ferreira, 2007; and Minnick and Zhao, 2009), continuance of appointment (e.g., Yermack, 2004; Hermalin and Weisbach, 1998), and reputation (e.g., Fama and Jensen, 1983; Fahlenbrach et al., 2010). We classify directors as pure or shareholder directors based on the difference in their compensation schemes. Pure directors receive a director’s fee but do not own equity in the firm. Shareholder directors receive a director’s fee and hold a portion of the firm’s equity. These two types of directors have different interests in the firm and so may behave differently. It should be noted that our categorization of directors is different from the widely used classification, i.e., inside versus outside directors. Our classification helps identify the incentives of directors. The outside director classification scheme in the extant literature has proposed incentives but has not derived the incentives; the distinction between pure and shareholder director types here allows us to derive the incentives that each type has in monitoring the firm and providing advice to the CEO. The analysis here provides some explanation for the mixed empirical results in the literature.

In addition to compensation, directors are also concerned with keeping their seats on the board. The fact that boards of directors are typically chosen by the CEO compromises the independence and monitoring role of the board members (e.g., see Hermalin and Weisbach, 1998, 2003; Shivasani and Yermack, 1999).

Reputational capital also creates an incentive for directors to act in shareholders’ interests (e.g., see Fama, 1980; Fama and Jensen, 1983). The reputation a director establishes is valuable to that director (e.g., see Hermalin and Weisbach, 2003; Marshall, 2010). A careful analysis of reputation

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6While some researchers documented a positive effect of outside directors on firm performance (e.g., see Rosenstein and Wyatt, 1990; Core et al., 1999), other studies found that the contribution of outside directors to firm performance is insignificant (e.g., see MacAvoy et al., 1983; Bhagat and Black, 1998, 2001; Hermalin and Weisbach, 1991; Klein, 1998) or even negative (e.g., Agrawal and Knoeber, 1996). Mayers et al. (1997) and Mayers and Smith (2010) suggested that mutual companies rely more on outside directors than stock companies to improve board monitoring, because the mutual organizational form lacks effective corporate control mechanisms. A recent piece by Duchin et al. (2010) suggested that the effectiveness of outside directors depended on the cost of acquiring information. The outside directors improve performance when the information cost is low and degrade performance when the information cost is high.
is required but such an analysis requires a multi-period model and so is left for future research.

It is generally believed that the use of equity in a manager’s compensation package can help align the manager’s interest with that of owners (e.g., MacMinn, 2005a; MacMinn and Page, 2006). In contrast, the use of debt instruments, i.e., fixed compensation, in a CEO’s compensation scheme has received little attention. Sundaram and Yermack (2007) and Gerakos (2007) empirically find that U.S. executives have a substantial amount of deferred fixed compensation. Sundaram and Yermack suggest that executives adjust the ratio of fixed to performance-based compensation over time to match their firms’ debt-to-equity ratios. This result is also implied by Jensen and Meckling (1976) without formal proof. Following Jensen and Meckling (1976), Edmans and Liu (2011) model the agency costs of debt that are borne by shareholders. Edmans and Liu claim that including fixed compensation as a part of the CEO’s compensation can be optimal for shareholders. The CEO, holding a fixed claim against the firm’s liquidation value in bankruptcy, tends to align the CEO’s interests with those of the debtholders. In doing so, the agency costs of debt decline, thus benefiting shareholders. While not making the same claim, MacMinn and Han (1990) formally show that fixed claims in the CEO compensation scheme alter the objective function and align the interest of the CEO with those of debtholders and shareholders. MacMinn and Han (1990) show that when the CEO has a compensation scheme with equal interests in the corporate liability and equity values, the manager will make investment decisions to maximize corporate value, i.e., equity value plus debt value.

Our model establishes pure directors’ and shareholder directors’ objective functions in a framework similar to that in MacMinn and Han (1990). The analysis shows that the director’s objective function is to maximize the value of his or her own corporate compensation. Pure directors are only concerned about creditor interests since their monetary stake in the firm is equivalent to that of a creditor. Shareholder directors are concerned with both shareholder and creditor interests since the shareholder directors’ monetary stake in the firm reflects both sets of interests. Like the manager or equivalently the CEO,7 shareholder directors are motivated to maximize corporate value if they have equal equity and liability stakes in the firm. If directors dissent from the CEO without the support of a majority of the board, they face the possibility of being terminated as a director. Thus, directors, whether pure or shareholder, have the incentive to endorse CEO decisions and want D&O insurance to protect themselves from lawsuits.

7The term “manager” is used interchangeably with “CEO.”
DIRECTORS AND OFFICERS INSURANCE

In recent years, firms and their directors and officers have experienced an increasing number of claims and large settlements. According to a Towers Watson survey (2011), 46% of respondents reported shareholder/investor suits in 2010, compared to 18% in 2008. A study by Cornerstone Research (2011) reports that the median settlement amount for cases settled in 2010 increased to $11.3 million from $8.0 million in 2009; 2010 was the first time that the median settlement amount, with adjustment for inflation, exceeded $10 million in the last ten years. In light of these numbers, it is not surprising that today nearly all public companies maintain D&O insurance.

D&O insurance reimburses officers and directors and the corporation itself for the cost of defending and settling lawsuits against them. Coverage is provided for “wrongful acts” as defined in the policy. D&O insurance does not cover actions that are knowingly fraudulent or actions that are illegal. In the United States, firms are often mandated to indemnify directors and officers either by state corporate law or big firm bylaws. D&O insurance in turn reimburses the firm for the litigation costs and pays the directors’ and officers’ costs directly when the firm cannot. In countries where legislation prevents firms from purchasing the insurance, a premium split between the directors and the firm is often done to demonstrate that the directors have paid a portion of the premium.

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8See, e.g., Chubb D&O specimen insurance policy (2002) stating that “Wrongful Act means: (a) any error, misstatement, misleading statement, act, omission, neglect, or breach of duty committed, attempted, or allegedly committed or attempted by an Insured Person in his or her Insured Capacity, or for purposes of coverage under Insuring Clause 3, by the Organization, or (b) any other matter claimed against an Insured Person solely by reason of his or her serving in an Insured Capacity”; Hartford D&O insurance specimen policy (2008) defining “Wrongful Acts” as “(a) any error, misstatement, misleading statement, act, omission, neglect, or breach of duty committed, attempted, or allegedly committed or attempted by an Insured Person in his or her Insured Capacity, or for purposes of coverage under Insuring Clause 3, by the Organization, or (b) any other matter claimed against an Insured Person solely by reason of his or her serving in an Insured Capacity.”

9A typical D&O policy includes both individual-level coverage and entity-level coverage. Individual coverage provides coverage directly to each individual officer or director for covered losses resulting from claims made against them for their wrongful acts (referred to as “Side A” coverage), and reimburses the corporation when the corporation indemnifies its directors and officers for claims against them (referred to as “Side B” coverage). B-side coverage does not provide coverage for the corporation. Entity-level coverage protects the corporation for its own liability. Baker and Griffith (2007a, 2007b) provide a careful review of D&O insurance coverage.
The major arguments in support of corporate purchase of D&O insurance include: (i) D&O insurance can attract and retain talented individuals to serve as directors and (ii) the absence of insurance may encourage conservative management that may not be in the interests of shareholders (e.g., Holderness, 1990; O’Sullivan, 1997). The major criticism of corporate purchase of D&O insurance is that it creates moral hazard problems for the CEO and directors and mitigates the effectiveness of shareholder suits (e.g., Barrese and Scordis, 2006; Chalmers et al., 2002).

Many have investigated the influence of D&O insurance on corporate governance. Barrese and Scordis (2006) provide a thorough review of the literature on this topic. Some research, e.g., Bhagat et al. (1987), Janjigian and Bolster (1990), and Brook and Rao (1994), showed that D&O insurance had no significant impact on firms’ stock return; this implied that D&O insurance had little effect on corporate governance. Holderness (1990) argued that D&O insurance promotes corporate governance because D&O insurers help monitor the corporate governance of the insured firm. O’Sullivan (1997) provided supporting evidence that D&O insurance serves to promote internal monitoring by facilitating the recruitment of outside directors. Core (2000) documented the link between the cost of and the demand for D&O insurance and argued that the D&O premium reflects the quality of a firm’s corporate governance. The monitoring role of D&O insurers, however, was challenged by Baker and Griffith (2007a), who investigated the D&O insurers’ underwriting process and loss prevention services. They find that the quality of a firm’s corporate governance is reflected in a limited way in D&O insurance pricing and that D&O insurers do not provide loss prevention services or otherwise monitor corporate governance of the insured firm. Baker and Griffith concluded as follows: “Our findings raise significant questions about the value of D&O insurance for shareholders as well as the deterrent effect of corporate and securities liability.” Other studies have examined the moral hazard issues related to D&O insurance. Barrese and Scordis (2006) suggested eliminating D&O coverage for outside directors since it creates moral hazard problems. Chalmers et al. (2002) and Lin et al. (2011) found a positive relationship between D&O coverage and opportunistic managerial behavior.10

10Chalmers et al. (2002) found that initial public offering (IPO) firms with substantial D&O insurance coverage were more likely to be sued in the future for mispricing. Lin et al. (2011) examined the effect of D&O insurance on the outcomes of merger and acquisition (M&A) decisions. They found that acquirers whose executives had a higher level of D&O insurance coverage experienced significantly lower announcement-period abnormal stock returns. Further analyses suggested that acquirers with a higher level of D&O insurance protection tended to pay higher acquisition premiums and their acquisitions appear to exhibit lower synergies.
In light of mixed evidence concerning the role of D&O insurance on corporate governance, we investigate the influence of D&O insurance in a new framework. The model shows that corporate purchase of D&O insurance has little influence on corporate governance. It is optimal for a director to be fully insured if he or she accepts the position as a director. If a firm does not offer to pay for D&O coverage, directors will either pay out of their own pockets or decline the job depending on the tradeoff between directors’ compensation and the D&O insurance premium.

THE MODEL

Consider an economy operating between the dates $t=0$ and 1, referred to subsequently as now and then, respectively. All decisions are made now and all payoffs on those decisions are received then. The economy is composed of investors, managers, and directors. All agents are risk averse and make portfolio decisions on personal account to maximize expected utility subject to a budget constraint. The managers and directors make decisions on personal account as investors but also make decisions on corporate account.

Let $\Xi$ be the state space for the economy. All risks are functions mapping from $\Xi$ to the real numbers. State $\xi$ in $\Xi$ represents an index of economic conditions and $\Xi$ is the set of these index numbers. The corporate payoff is the random variable $\Pi: \Xi \to \mathbb{R}$.

Suppose the financial markets are competitive. A basis stock in this economy is a promise to pay one dollar then if state $\xi$ occurs then and zero otherwise; let $p(\xi)$ be the price of the basis stock that pays one dollar in state $\xi$ and zero otherwise. There are as many basis stocks as there are states in $\Xi$.

The following summarizes the notation used in the development of the model:

- $\xi$: economic state variable
- $\Xi$: set of economic states
- $(c_0,c_1(\xi))$: consumption now and consumption then in state $\xi$
- $(y_0,y_1(\xi))$: income now and then from non-corporate sources
- $F(\xi)$: distribution function of states
- $N$: number of corporate shares of stock previously issued to corporate outsiders
In this setting the stock market value of the corporation now is $S$, 

$$S(I) = \int_{\Xi} \max \{ 0, \Pi( I, \xi ) - (b + c) \} dP(\xi),$$  \hspace{1cm} (1)$$

where $I$ is the investment decision made now, $b$ is the promised payment on a zero-coupon bond then, and $c$ is promised payment to creditors then. Letting $D$ denote the value of the corporate liabilities, i.e., bond and other creditor claims, we note that 

$$D(I) = \int_{\Xi} \min \{ \Pi( I, \xi ), b + c \} dP(\xi).$$  \hspace{1cm} (2)$$

It follows that the bond value and other creditor values may be expressed as 

$$B = \int_{\Xi} \min \left\{ \frac{b}{b + c} \Pi, b \right\} dP = \frac{b}{b + c} D$$  \hspace{1cm} (3)$$

**Definitions**

- $m$ number of corporate shares of stock issued to the CEO
- $n$ number of new shares of stock issued to finance the investment
- $b$ promised payment on a zero coupon bond then
- $c$ promised payment to creditors then
- $\Pi(I, \xi)$ corporate payoff given investment $I$ and state $\xi$
- $p(\xi)$ basis stock price now
- $P(\xi)$ sum of basis stock prices $\epsilon \leq \xi$; $P(\xi) = \int_{0}^{\xi} p(\epsilon) d\epsilon$
- $S$ stock value of corporation now
- $B$ bond value of corporate debt now
- $C$ creditor value now
- $D$ bond plus creditor value now
- $\alpha$ manager’s initial proportion of corporate equity; $\alpha = \frac{m}{N + m}$
- $\beta$ manager’s proportion of fixed compensation then
- $\gamma$ director’s proportion of corporate equity
- $\delta$ director’s proportion of fixed compensation then
and

\[
C = \int_{\Xi} \min_{c} \left\{ \frac{c}{b + c} \Pi(c) \right\} dP = \frac{c}{b + c} D
\]  

respectively. It follows that the corporate value is \( V = S + D = S + B + C \).

**Manager (CEO)**

To demonstrate the situations in which directors agree with or disagree with the manager, we first model the behavior of the manager or equivalently the CEO. The manager makes decisions on personal account and corporate account now to maximize expected utility subject to a budget constraint and a financing constraint. The constrained maximization problem is

\[
\text{maximize} \int_{\Xi} u(c_0, c_1(\xi))dF(\xi)
\]  

subject to \( c_0 + \int_{\Xi} c_1(\xi)dP(\xi) = y_0 + \int_{\Xi} y_1(\xi)dP(\xi) + \beta \int_{\Xi} \min_{c} \left\{ \frac{c}{b + c} \Pi(c) \right\} dP(\xi) + \frac{m}{N + n + m} \max_{\xi} \{ 0, \Pi - (b + c) \} dP(\xi) \)

and \( \frac{n}{N + n + m} \max_{\xi} \{ 0, \Pi - (b + c) \} dP(\xi) = I \).

The second constraint is the financing constraint and it says that the value of the new stock issue equals the investment expenditure; the financing constraint may be equivalently written as

\[
\frac{n}{N + n + m} S(I) \equiv S^n(I) = I
\]  

where \( S^n \) is the value of the new issue. Similarly, the value of the existing or old stock issue can be expressed as

\[
\frac{N + m}{N + n + m} S(I) \equiv S^0(I).
\]

Note that Equation (6) implicitly defines the number of new shares required for an investment of \( I \). The explicit expression is the following:
Using (4) and (7), the constrained maximization problem may be equivalently expressed as

$$\text{maximize } \int \! u(c_0, c_1(\xi))dF(\xi)$$

subject to \( c_0 + \int \! c_1(\xi)dP(\xi) = y_0 + \int \! y_1(\xi)dP(\xi) + \beta C(I) + \alpha(S(I) - I) \)

Then it follows by direct calculation that the manager makes decisions on corporate account to

$$\text{maximize } \alpha(S(I) - I) + \beta C(I) \equiv \alpha S^0(I) + \beta C(I).$$

Note that in absence of a positive \( \beta \), the manager will select the investment to maximize the value of current shareholders’ interests. With a positive \( \beta \), however, the manager selects the investment to maximize the weighted average of current shareholders’ interests and creditors’ interests. The first-order condition for the manager’s optimal investment choice is

$$\alpha(S'(I) - 1) + \beta C'(I) = 0.$$  

Let \( I^m \) denote the investment implicitly defined by equation (10).

The socially optimal investment is the one which maximizes the interests of all the stakeholders in the firm, or equivalently an investment implied by

$$V'(I) - 1 = 0.$$  

Let \( I^p \) denote the investment implicitly defined by equation (11). If there is no insolvency risk so that the investment does not have an impact on the bondholders’ or creditors’ value, the maximization of current shareholders’ value yields the socially optimal investment, i.e., \( I^m = I^p \). If there is a positive probability of insolvency, the investment \( I^m \) and its relationship to \( I^p \) is less clear. Note that
\[ \alpha(S(I) - I) + \beta C(I) = \alpha \left( \int_{\Xi} \max \{ 0, \Pi(I, \xi) - (b + c) \} dP(\xi) - I \right) + \tag{12} \]
\[ \beta \left\{ \frac{c}{b + c} \int_{\Xi} \min \{ \Pi(I, \xi), b + c \} dP(\xi) \right\} = \]
\[ \alpha \left( \int_{\Xi} \Pi(I, \xi) dP(\xi) - I \right) + \left( \beta \frac{c}{b + c} - \alpha \right) \int_{\Xi} \min \{ \Pi(I, \xi), b + c \} dP(\xi) = \]
\[ \alpha(V(I) - I) + \left( \beta \frac{c}{b + c} - \alpha \right) D(I). \]

It follows from Equation (12) that the manager selects the value-maximizing investment level if her equity stake equals her creditor stake, i.e., \( \alpha = \beta(c/(b + c)) \) then \( I^m = F \). Since the creditor value \( D(I) \) is an increasing function, it also follows that \( I^m < F \) if \( \alpha < \beta(c/(b + c)) \) and \( I^m > F \) if \( \alpha > \beta(c/(b + c)) \). Hence, the manager under-invests if her creditor stake exceeds her equity stake and over-invests otherwise.

**Pure Directors and Shareholder Directors**

The pure and shareholder directors represent two subsets of the directors usually referred to as outside directors in the literature. The outside directors have a fiduciary responsibility to provide direction and advice that is in the best interests of shareholders, but their incentives for providing that advice can be in conflict with that fiduciary responsibility. The outside directors’ incentives are considered here by specifying the directors’ compensation and deriving the objective function that the directors use in providing advice to the CEO. This first version of the model is designed to show incentives prior to the introduction of lawsuits; this subsequently allows us to compare the motivations of both types of outside directors with or without those lawsuits.

Now consider the directors on the corporate board. Suppose each director is paid a fixed fee that represents a portion \( \delta \) of the creditor value \( C \). A pure director is only compensated with the fixed fee. A shareholder director also owns a portion \( \gamma \) of the firm’s equity. Directors make decisions on personal account and provide advice on corporate account to solve the following constrained maximization problem

\[ \text{maximize} \int_{\Xi} u(c_0, c_1(\xi)) dF(\xi) \tag{13} \]

subject to \( c_0 + \int_{\Xi} c_1(\xi) dP(\xi) = y_0 + \int_{\Xi} y_1(\xi) dP(\xi) + \gamma(S(I) - I) + \delta C(I). \)
The shareholder director has $\gamma > 0$ while the pure director has $\gamma = 0$, and so the pure director’s objective function is a special case of that for the shareholder director. The shareholder director is considered next.

**Shareholder Directors**

The first order conditions for (13) yield the following shareholder director objective function for providing advice on corporate account:

$$\text{maximize } \gamma (S(I) - I) + \delta C(I). \quad (14)$$

The stock value minus the investment, i.e., $S(I) - I$, is the net present value of the investment decision or equivalently the current shareholder value while $C(I)$ is creditor value. It should be noted that in the absence of insolvency risk, $C(I)$ is a constant and shareholder directors are motivated to advise management to select the investment $I^*$ that maximizes the current shareholder value, i.e., $S'(I) = S(I) - I$. If there is insolvency risk, it is also apparent that shareholder directors are motivated to provide advice consistent with the wishes of the manager only if their equity stake relative to creditor stake is the same as that of the CEO, or equivalently,

$$\frac{\gamma}{\delta} = \frac{\alpha}{\beta}. \quad (15)$$

**Pure Directors**

In contrast, pure directors, having no stake in corporate shares, i.e., $\gamma = 0$, provide advice on corporate account to

$$\text{maximize } \delta C(I) \quad (16)$$

Consequently, pure directors are motivated to provide advice that increases creditor value. If there is no insolvency risk, pure directors are indifferent to the investment choice of the manager. In the presence of insolvency risk, any additional investment that reduces the probability of insolvency and increases directors’ liability stake in the firm is supported by pure directors. Hence, given insolvency risk, pure directors have the incentive to advise investment levels lower than the levels that maximize corporate value.

**Remark 1:** Neither shareholder directors nor pure directors are, in general, motivated to act in the best interests of the current shareholders. When compensated with equity and fees, shareholder directors have the incentive to maximize the weighted average of shareholders’ interests and creditors’ interests. Pure directors are motivated only by their creditor
stakes in the firm. Directors’ wishes are consistent with those of CEOs only when directors and the CEO have the same shareholder stake relative to their creditor stake.

**Director Appointments and Choices**

Although corporate law states that shareholders choose the board of directors, in practice, the CEO plays an important role in selecting board members (e.g., Mace, 1971; Lorsch and MacIver, 1989; Demb and Neubauer, 1992; Hermalin and Weisbach, 1998; Shivdasani and Yermack, 1999). To the extent that a director’s position depends on the CEO’s goodwill, directors are inclined to concur with the CEO. Equation (12) shows that the CEO acts in the interest of all stakeholders if $\alpha = \beta(c/(b + c))$; otherwise the CEO over- or under-invests. The advice from directors is motivated by their equity and creditor stakes, i.e., $\gamma$ and $\delta$, respectively. The shareholder directors have the incentive to support the CEO when their equity and creditor stakes are the same as those of the CEO. The CEO under-invests and selects $I^I < I^F$ if $\alpha < \beta(c/(b + c))$; shareholder directors will concur at least with the direction of the under-investment decision if $\delta < \gamma(c/(b + c))$. Similarly, the CEO over-invests, i.e., $I^I > I^F$, if $\alpha > \beta(c/(b + c))$, the shareholder directors will concur at least with the direction of the over-investment if $\delta > \gamma(c/(b + c))$. In other cases, shareholder directors’ advice will diverge from the CEO’s decision. Similarly, as the pure directors have a financial incentive to increase creditor value, they will not provide advice that supports the optimal investment or any other decision of the CEO. Directors, however, without majority support of the board, cannot reverse the CEO’s decision and may lose their directorship by voting against the CEO. As a result, board members, whether pure or shareholder, have the incentive to concur with the CEO to maintain their positions on the board.

**Remark 2:** Even though the directors’ self-interests may diverge from that of the CEO, when the appointment of directors is controlled by the CEO those directors will concur with the CEO’s decisions to maintain their directorship. If the board is composed of a majority of directors who have the same equity and creditor stakes in the firm, then that board will be able to control the corporate decision making and so select decisions to maximize corporate value, i.e., the interest of all stakeholders. If the board is composed of a majority of shareholder directors with only equity stakes, then that board will be able to control the corporate decision making and so select decisions that maximize current shareholder value.
D&O Insurance and Directors’ Choices

In principle, the CEO and directors are likely to be sued so long as the CEO’s decisions deviate from those which maximize current shareholder value. When sued, directors’ and officers’ wealth is exposed to liability claims. To simplify the problem, we assume θ to be the probability that the CEO and directors are successfully sued, and that L is the judgment against each. The introduction of this liability risk changes the specification of the budget constraint. Let

\[ f(I, \xi) \equiv \delta \frac{c}{b + c} \min \{ \Pi(I, \xi), b + c \} \quad (17) \]

denote the director’s fee then. It follows that the pure directors’ consumption then may be written as

\[ c_1(\xi) = \begin{cases} 
    y_1(\xi) + f(I, \xi) & 1 - \theta \\
    y_1(\xi) - L + f(I, \xi) & 0 
\end{cases} \quad (18) \]

where the liability loss \( L \) is experienced with probability \( \theta \). It may be shown that by going long in puts and short in calls where the puts and calls have the same exercise price equal to the expected loss, the director may generate the same expected income then in either event. Such a scheme will not alter income now, and so Jensen’s Inequality shows that a director always prefers the hedge.11 The expected income then is

\[ \int_{\Xi} [(y_1(\xi) + f(I, \xi))(1 - \theta) + (y_1(\xi) - L + f(I, \xi))\theta]dP(\xi) = \]

\[ -p\theta L + \int_{\Xi}(y_1(\xi) + f(I, \xi))dP(\xi) \]

where \( p \equiv \int_{\Xi} dP(\xi) \) is the sum of the basis stock prices or equivalently the price now of one dollar then. The budget constraint for the pure director becomes

\[ c_0 + \int_{\Xi} c_1(\xi) dP(\xi) = y_0 - p\theta L + \int_{\Xi} y_1(\xi) dP(\xi) + \int_{\Xi} f(I, \xi) dP(\xi) \quad (19) \]

11This point is discussed in more detail in MacMinn (2005b).
or equivalently by equation (4),

\[ c_0 + \int_{\Xi} c_1(\xi) \, dP(\xi) = y_0 - p\theta L + \int_{\Xi} y_1(\xi) \, dP(\xi) + \delta C(I). \] (20)

This is the same budget constraint that the pure director would face if she purchases full D&O insurance at the fair price, \( i.e., p\theta L \). The optimal choice for directors is full insurance, if and only if the insurance premium is not greater than the director’s fee, \( i.e., p\theta L \leq \delta C(I) \).

If the firm pays for D&O insurance, pure directors will accept the position unconditionally. Otherwise, pure directors will accept the job and purchase D&O insurance out of their own pockets if the premium is less than the director’s fee, and decline the job otherwise. Hence, it is clear that D&O insurance does not alter pure directors’ incentives to side with the CEO. It is also clear that their decisions to take the director position hinges on \( \theta \) and \( L \). \( L \) depends on the seriousness of the wrongdoing, jury judgment or out-of-court settlement; \( \theta \), on the other hand, is the likelihood that directors are successfully sued. A firm that clearly communicates with investors and honestly reports results is less likely to be sued by its stakeholders and thus bring a lower litigation risk to directors, \( i.e., \) a smaller \( \theta \).

The analysis is the same for shareholder directors. If the firm purchases D&O insurance for its \( k \) directors and officers, the stock value becomes

\[ S^i(I) = -k\theta pL + \int_{\Xi} \max\{0, \Pi(I, \xi) - (b + c)\} \, dP(\xi) \]

\[ = -k\theta pL + S(I) \] (21)

where the stock value on the right-hand side is defined by (1). The shareholder director’s objective function is

\[ \gamma(S(I) - k\theta pL - I) + \delta C(I). \] (22)

Compare this to the case that the D&O insurance is paid on personal account

\[ \gamma(S^i(I) - I) + \delta C(I) = \gamma(S(I) - I) - p\theta L + \delta C(I). \] (23)

The shareholder directors would prefer that the firm pay for D&O insurance if \( \gamma k p\theta L < p\theta L \) or equivalently if \( \gamma k < 1 \). The objective function in (22) shows that the D&O insurance does not alter shareholder directors’ incentives to provide advice to the CEO. This analysis also shows that large firms
with small $\gamma$ will pay for the D&O insurance while small firms with large $\gamma$ will not pay for D&O insurance. Of course, pure directors all want the firm to pay for the D&O insurance.

**Remark 3:** In face of liability for endorsing any CEO suboptimal decisions, an individual would accept a directorship unconditionally if also offered D&O coverage paid by the firm; otherwise, her decision would depend on the tradeoff between directors’ compensation and the cost of D&O insurance. D&O insurance coverage, however, does not change directors’ decisions to follow the CEO.

**CONCLUDING REMARKS**

Boards are an important mechanism of corporate governance and have received considerable research and regulatory attention. The literature on boards, however, has not provided conclusive or convincing evidence that the presence of outside directors has a positive impact on corporate governance. We develop a model to analyze directors’ motivations and monitoring efforts. Our model is built on the premise that pure and shareholder directors act in the pursuit of self-interest. Pure directors receive only a director’s fee, while shareholder directors receive corporate equity and the fee. This classification provides clear incentives and allows us to derive the objective function that each director type uses in making decisions or providing advice on corporate account.

We show that neither pure nor shareholder directors have incentives that are strictly aligned with those of either the shareholders or the CEO. Pure directors have incentives that are aligned with those of the creditors, while shareholder directors have incentives that are aligned with those of the creditors and shareholders. When the selection of board members is controlled by the CEO, pure and shareholder directors have the incentive to concur with the CEO in decision making since maintaining their income stream will dominate the incentives provided by their compensation scheme. These results suggest that outside directors, whether pure or shareholder, will not perform their duties as well as might be expected.

The analysis does provide some insight into how to structure boards with outside directors to make them effective. First, outside directors should not be appointed by the CEO. Second, the board should be composed of a majority of shareholder directors. Third, the compensation should be entirely composed of shares of stock; in this case the board will reach unanimous decisions that are in the best interests of the shareholders. If a director’s fee is included then that fee must be default free; in this case the board will still be able to reach unanimous decisions in the interests of
shareholders. Hence, the model developed here generates the following testable hypothesis: If a majority of the corporate board members are outside directors who are compensated with shares of stock or shares of stock and a safe fee, then the board will, ceteris paribus, act in the interests of shareholders.

Our model also shows that when facing liabilities for endorsing sub-optimal decisions, directors seek full D&O insurance protection. If a firm does not purchase D&O insurance for its directors, then the director will either purchase it on his or her own personal account or decline the position if the insurance premium exceeds the director compensation. The corporate purchase of D&O insurance does not change directors’ monitoring actions but it does influence the decision to accept a director position. Hence, the model developed here generates the following testable hypothesis: The corporate purchase of D&O insurance does not alter the monitoring activity of the board. This hypothesis is consistent with the mixed evidence on the relationship between D&O insurance and corporate governance but bears further testing.

The analysis here contributes to the literature by providing a framework for the analysis of director behavior. Our model can be extended to endogenize more risks. For example, the litigation risk faced by directors in our model is exogenous, i.e., independent of directors’ actions. When litigation risks and directors’ actions are endogenous, it is not yet clear that the director’s objective function will remain the same; another moral hazard problem may be introduced. This requires further study. Extending the time horizon in the model would be necessary to introduce reputation capital, and that could also provide different incentives for the directors. These factors have not been incorporated in the current version of the model but do form the basis for new lines of research.

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