Managerial Reputation Concerns, Outside Monitoring, and Investment Efficiency*

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Abstract

This paper argues that an external monitor can be less effective when there is uncertainty regarding the quality of the management and the business environment. In a two-period model, an outside monitor, who initially does not know managerial quality, can have the manager fired. The manager makes investment decisions based on noisy but informative private information, and if she is the empire-building type, derives private benefits from over-investment. Uncertainty imposes extra costs on the monitor, and leads to equilibrium in which the risk-neutral monitor gives up monitoring *ex ante*. The model highlights the limits of external monitoring, and suggests that outside monitoring cannot fully substitute for internal monitoring by the board. Some implications of this model are confirmed in empirical tests.

Introduction

It is often recognized in the theoretical literature (Shleifer and Vishny (1986), Admati, Pfleiderer, and Zechner (1994), Kahn and Winton (1998), Maug (1998), Allen, Bernardo, and Welch (2000), Noe (2002), etc.) that the presence of an outside large shareholder can improve firm value. However, many models have simply assumed a positive value impact of an outside monitor, without pursuing further the mechanism through which value improvements can occur.

Shleifer and Vishny (1986) offer a model in which an outside large shareholder takes over a firm and brings about value improvements. They assume that the outside large shareholder can discover better technology and can manage firms better. As Holmstrom and Kaplan (2001) point out, the hostile takeover market, which served as a disciplinary force in the 1980s, has largely disappeared in the 1990s. Furthermore, an outside shareholder rarely sits in a corporate boardroom, or takes over the entire company. Is there an alternative mechanism through which an outside shareholder can bring about value improvement?

This paper offers such an alternative mechanism, in which an external monitor can pressure the board to remove the manager.[1] It also shows that outside monitoring can be limited. The model focuses on whether an outside monitor can improve a firm's investment efficiency. It argues that outside monitoring in reality may not be as effective as one often believes, where there is often noisy and asymmetric information, and where some managers enjoy "empire-building."

Firm investment activity often suffers agency costs. Jensen's free cash flow theory predicts that managers tend to waste firms' free cash when they face fewer positive NPV projects. Furthermore, Jensen (1986) argues that managerial "empire-building"

[1]This assumption is consistent with empirical findings by Del Guercio and Hawkins (1999), which document a higher top management turnover rate for firms targeted by activist institutions.

behavior leads to inefficient investment decisions. When the manager's interest is not perfectly aligned with shareholders', the standard performance-based compensation policy may not be able to induce an efficient investment outcome. Many researchers believe that an outside monitor may play a crucial role in promoting shareholders' interest, exactly in cases like this.

However, this paper shows that an outside shareholder may decide not to monitor due to noisy and asymmetric information. In a simple model, the market initially does not know whether the manager intends to build her empire or intends to maximize shareholder wealth. At the beginning of the two-period model, the monitor is uncertain about the manager and needs to decide how much to invest in monitoring technology. The manager's private information regarding investment profitability is noisy, and can not be verified by the outside monitor. The "empire-building" manager's "reputation concerns" — the fear of being discovered and subsequently removed — help to discipline him from value-reducing activity in the early stage of his tenure. The uncertainty in the model imposes additional monitoring cost and limits the monitor's capability to improve efficiency. As an equilibrium outcome, the monitor will commit to monitoring only under limited circumstances.

The predictions of this paper highlights the limit of external monitoring, and the importance to have effective internal monitoring. Being an outsider, an institutional investor is not able to verify the private information received by the manager. In contrast, a board can obtain information to verify the manager's private information and reduce the cost associated with information asymmetry. An independent and effective board can be a better monitor under the conditions specified in this model.

In recent years, many activist institutional investors have advocated for board independence[2] and the ability for shareholders to nominate their own directors. For

[2]For example, to determine its Focus List, a list of firms to target, CalPERS uses the following criteria regarding the board structure: 1) board size of between 6-15 members; 2) non-classified

example, CalPERS, the New York State Common Retirement Fund, the American Federation of State, County, and Municipal Employees Pension Funds, and the Illinois State Board of Investment jointly filed a proxy proposal in 2004 to give shareholders the right to nominate up to two directors on Disney's board. It has been a growing issue, sparking much controversy. The implication of this paper suggests that their actions may be well justified.

Some of the predictions of the model can be empirically tested. Major public pension funds started to actively participate in governance activity in the later half of the 80s. I find that prior to 1985, their shareholdings have no effect on firm investment spending. After 1985, the presence of major public pension funds is associated with a reduction in investment spending. However, this effect is reduced by 50% when there is a high level of business uncertainty and the management is more likely to enjoy a good reputation.

The rest of the paper is organized as following. Section I reviews the related literature. Section II introduces the model. Section III describes the equilibrium outcome. Section IV tests empirically some of the predictions. And section V concludes.

1 Literature Review

The monitoring role of large shareholders is much discussed in the theoretical literature. In Admati, Pfleiderer, and Zechner (1994), it is assumed that a large investor can affect a security's expected payoff through monitoring. Maug (1998) models the positive effect that market liquidity has on monitoring. Kahn and Winton (1998) study a large shareholder's choice between trading and monitoring. Noe (2002) characterizes

board; 3) separate Chair/CEO; 4) lead director; 5) greater than 75% independent directors; 6) 100% independent directors on nominating committee; 7) 100% independent directors on audit committee; 8)100% independent directors on compensation committee; 9) "no members of the board are related to each other, or to senior management."

an equilibrium in which monitoring is stochastic. In those models, it is assumed that interventions by the outside monitor will improve share prices. A recent paper by Admati and Pfleiderer (2005) shows that large shareholder exit can have a disciplinary impact.

Although the assumption that an outside investor will monitor and improve firm value is reasonable, it is interesting to explore how, indeed, the monitor can improve firm values. After all, it is the manager who makes the operating decisions that immediately affect the firm value. Shleifer and Vishny (1986) present a model in which the presence of a large shareholder increases the likelihood of a takeover and hence increases the share price. They regard informal negotiations with the management as being less effective in improving the firm's operating strategy, compared to a takeover. This paper attempts to offer an alternative mechanism.

In my model, an outside monitor is able to discover the true type of the manager and is able to terminate an "empire-building" manager once he is discovered. This paper focuses on the outside monitor's ability to improve investment efficiency. Jensen's free cash flow theory predicts that managers tend to waste the free cash when they face fewer positive NPV projects. Stulz (1990) and Hart and Moore (1995) explore how an optimal financing policy can reduce this cost of managerial discretion. This paper does not model the effect of capital structure on investment. Its main interest lies in how an outside monitor can reduce inefficient investment when "empire-building" managers want to over-invest. This model implicitly assumes that there is enough internal funding for the investment. This simplification may be justified by the fact that the problem of overinvestment is more prevalent when there is enough free cash on hand.

This paper is also related to the career-concern and reputation literature. Holmstrom (1999) points out that younger managers with career concern will overwork when

managerial ability is unknown initially and managerial effort is unobservable. Scharfstein and Stein (1990) show that managers mimic the decisions of other managers in their investment decisions due to their reputation concerns. Gibbons and Murphy (1992) show empirically that the implicit incentives from career concerns are much larger for younger managers. In this paper, the uncertainty about a manager is not his effort level or his ability, but his intention. The negotiation process of the contract between the manager and the firm is not modeled and is assumed to be exogenous. This model also assumes that the players are risk-neutral, hence the optimal contract will guarantee that the manager will exert the maximum possible effort. It is also assumed in this paper that both "empire-building" and "non-empire-building" managers observe the same noisy signal. This is equivalent to the assumption that both types of managers are equally capable. The only difference between the two types of managers lies in whether they derive private benefits from investments.

Sobel (1985) presents a model in which it pays for an agent to build a reputation and cash in later. Benabou and Laroque (1992) show that noisy private information allows insiders to manipulate prices repeatedly. Similar to their setup, the "empire-building" manager in my model can hide behind the noisy private information he receives. It is not uncommon for an outside shareholder to be uncertain about the manager, and for the firm-relevant information received by the manager to be noisy. This paper explores the conditions under which an outside monitor can be effective under these kinds of circumstances.

2 The Model

This is a two-period model with two players — a manager and an outside large shareholder. At the beginning of the game, the large shareholder[3] decides whether to invest in a monitoring technology and how much to invest. At the beginning of each period, the manager observes a private, noisy, but informative signal about the profitability of an investment opportunity, then makes investment decisions.

An Outside Large Shareholder

At time 0, a risk-neutral large outside shareholder (e.g., an institutional investor) is endowed with ω ownership of the company's share. His gain from the investment is proportional to his holdings in the firm. He can choose to invest x in a monitoring technology at time 0, which enables him to discover the true type of the manager with a probability $f(x) = \frac{bx}{1+bx}$ when the investment is not profitable. $f(x) \in (0, 1)$, and is a continuous and concave function reflecting diminishing returns. The large shareholder can punish the manager for bad returns even when the manager's type remains unknown. The punishment $G(\lambda_t)$, where λ_t is his assessment of how likely the manager is the "good" type at time t, is lower if he believes that the manager is more likely to be the "good" type. In the basic model, the punishment is exogenous:

$G(\lambda_t) = \frac{(1-\lambda_t)(k+(1-\omega)(1-2\gamma))a}{\gamma}$.

The monitoring costs, the monitoring technology, and the punishment are common knowledge.

Two Types of Managers

A risk-neutral manager owns the remaining shares of the company with $1 - \omega$ ownership. He observes at the beginning of the game whether the monitor invests

[3]For the rest of the paper, the following three phrases: the large shareholder, the outside shareholder, and the monitor, will be used interchangeably.

in a monitoring technology and how much the investment is. He makes investment decisions in both periods. At the beginning of each period, the manager receives an investment opportunity and a signal indicating its profitability. The sizes of the investment projects are normalized to 1. If the investment is profitable, it returns R = a, if not, returns R = -a.

The manager's utility is a linear and additive function of the expected investment returns on his share $1-\omega$, his private benefits from investment, and the expected punishment.

There are two types of managers. The "good" type maximizes the expected investment returns. His utility if he invests is $U_g(R, G(\lambda_t)) = E[(1-\omega)R] - E[G(\lambda_t)]$. The "empire-building" type of manager derives private benefits, B = ka ($k \geq 1$), from any investment. His utility if he invests is $U_b(R, B, G(\lambda_t)) = E[(1-\omega)R + B] - E[G(\lambda_t)]$.

The Information Structure

The outside shareholder does not know the manager's type initially. Let $\lambda_0 \in (0,1)$ denote his estimate at time 0 of the probability that the manager is good. This is the manager's *initial reputation*, which is common knowledge.[4]

At the beginning of each period, the manager observes a private, noisy, but informative signal {-1,1} indicating the profitability of the investment opportunity. Each signal (1 or -1) occurs with probability 1/2. The signals are accurate with probability $\gamma \in (1/2, 1)$. This accuracy is common knowledge. The outside shareholder can only observe the manager's action {I,N} (I —invest; N — no investment), and the outcome of the investment {-a, a}. The outside shareholder wants the manager to invest only when he receives a good signal.

When the investment yields positive returns, the shareholder's monitoring effort

[4]For example, the initial reputation may be formed according to some commonly observable signals.

uncovers no new information about the manager. When the investment fails, his monitoring can uncover the manager's true type with probability $f(x) \in (0,1)$.

The Game and the Definition of Equilibrium

This two-period model defines a game between the large shareholder and the manager. At time 0, nature chooses the type of the manager ($i \in \{b,g\}$). The shareholdings of the monitor, ω, is given exogenously. The monitor forms a prior, λ_0, on the type of the manager and then decides whether to invest in a monitoring technology and how much to invest, $x \in (0,\infty)$. Then the first period begins. The manager faces an investment project, which requires investment $\tilde{S} = 1$. He observes his private noisy signal and decides whether to invest. At the end of the first period, the outcome of the investment is observed. The monitor updates his assessment of the manager type λ_t. He punishes the bad outcome according to the function $G(\lambda_t)$. His monitoring activity uncovers the manager's type with probability $f(x)$ when the investment fails. The manager will be fired once he is discovered to be "empire-building," and the game terminates.

When the managerial type is not discovered, or the manager is confirmed to be the "good" type, the game proceeds to the second period. The manager again faces an investment opportunity of size 1, observes his noisy private signal, and makes his investment decision. At the end of the second period, the investment outcome is observed. Again, the monitor can investigate and punish failed investment. Finally, the firm liquidates and the game ends.

In the base model, the exogenous punishment, $G(\lambda_t)$, satisfies the following two conditions.

Condition a) $\gamma(1-f(x))U_b(-a,ka,G(\lambda_t)) + \gamma f(x)U_b(-a,ka,G(0))$
$+ (1-\gamma)U_b(a,ka,0) > 0,$

Condition b) $\gamma U_g(a,0) + (1-\gamma)(1-f(x))U_g(-a, G(\lambda_t))$
$+ (1-\gamma)f(x)U_g(-a,0) > 0.$

Condition (a) says that when considering single period utility, the "empire-building" manager (undiscovered) always wants to invest, regardless of his signal.

Condition (b) says that the good manager will always invest after receiving a good signal, although there is a chance that the signal may be wrong, and he may be punished for the bad outcome when his type is not revealed.

A strategy for the monitor is simply a rule that specifies how much he should invest in the monitoring technology at the beginning of the game, given his prior assessment of the manager's type, the noise level of the manager's signal, and his shareholdings.

A strategy for the manager has two components. The first is a rule that specifies his investment decision given his private signal in the first period for each type the manager might be. The second is a rule that specifies his investment decision given his private signal in the second period, if he stays in the game.

In addition to a strategy for the monitor, we need also to specify the monitor's beliefs about the type of the manager, which will depend on the manager's initial reputation and the manager's first-period record.

A perfect Bayesian equilibrium of this game consists of a strategy for the manager, a strategy and beliefs for the monitor that satisfy three properties. First, the monitor's beliefs are consistent with the manager's strategy in the sense that they are generated by Bayes updating whenever possible. Second, the monitor's strategy is optimal given his beliefs and the strategy of the manager. Third, the manager's strategy is optimal given the monitor's beliefs and strategy.

3 Equilibrium and Improvement in Investment Efficiency

This section solves for the equilibrium of the game by backward induction, and analyzes the manager's equilibrium investment choices.

The Manager's Second-Period Behavior

Condition (b) ensures that the good manager will invest when he receives a good signal, since the noisy signal is informative — it is accurate with a probability larger than 1/2.

The strategy of the "empire-building" manager is different. During the second period, the "empire-building" manager has no concern for termination. By condition (a), he will invest regardless of his signal. If there is no monitoring during the last period, his expected utility is

$$E[V_{b,t2}] = \tfrac{1}{2}(U_b(-a, ka, 0) + U_b(a, ka, 0)),$$

If the "empire-building" type was discovered during the previous period, he is terminated from the game. His expected utility will be zero in the second period.

The Manager's First-Period Behavior

In the first period, the good manager will invest only if he receives a good signal. Our attention is focused on the "empire-building" manager. We want to know when there will be an improvement in investment efficiency, i.e., when the "empire-building" type will not invest after receiving a bad signal.[5]

When the "empire-building" manager receives a bad signal at the beginning of the

[5]The bad manager will invest with probability 1 if he receives a good signal. Although with probability $1-\gamma$, the investment return will be negative and he will be discovered and punished with a positive probability $(1-\gamma)f(x)$, his expected utility from investing is higher than from not investing.

first period, his expected total payoff from investing will be,

$$\begin{aligned} E[V_{b,\lambda_0,t1}(-1,I)] &= \gamma(1-f(x))U_b(-a,ka,G(\lambda_1)) \\ &\quad +\gamma f(x)U_b(-a,ka,G(0)) \\ &\quad +(1-\gamma)U_b(a,ka,0)+\delta(1-\gamma f(x))E[V_{b,t2}], \end{aligned}$$

and his expected payoff from not investing will be,

$$E[V_{b,\lambda_0,t1}(-1,N)] = 0 + \delta E[V_{b,t2}].$$

If

$$E[V_{b,\lambda_0,t1}(-1,I) > E[V_{b,\lambda_0,t1}(-1,N)], \tag{1}$$

then the "empire-building" manager will always invest when receiving a bad signal; and if

$$E[V_{b,\lambda_0,t1}(-1,I) < E[V_{b,\lambda_0,t1}(-1,N)], \tag{2}$$

then the "empire-building" manager will never invest when receiving a bad signal; and if

$$E[V_{b,\lambda_0,t1}(-1,I) = E[V_{b,\lambda_0,t1}(-1,N)], \tag{3}$$

then the "empire-building" manager can play a mixed strategy — he will invest with probability p $\in$ (0, 1) when receiving a bad signal.

Behavior of the monitor and his beliefs

The monitor's strategy is to determine how much to invest in the monitoring technology at the beginning of the game. Larger investment in the technology increases the likelihood of discovering the manager's type in the event of bad returns. A sufficiently large probability of discovery will discourage the "empire-building" manager from over-investment. For the monitor, it is subgame perfect to fire the "empire-building" type once he is discovered in the first period, since the expected return for the second period is zero when the manager is "empire-building". The gain from monitoring is the improved investment efficiency when the manager is the "empire-building" type.

Entering the second period, the monitor is fully aware of the "empire-building" type's strategy. The threat of termination is no longer real and the monitoring activity will not improve the expected returns for the monitor. He is indifferent to the choice between monitoring and not monitoring. The basic model assumes that he gives up monitoring and the subsequent punishment in the second period.[6]

How much to spend on the monitoring technology is determined through the monitor's utility maximization function,

$$\underset{x}{\mathcal{MAX}} \ \tfrac{1}{2}\omega a(\lambda_0(1+\delta)(2\gamma-1)+(1-\lambda_0)(2\gamma-1)(1-p))-x,$$

with the participation constraint,

$$\tfrac{1}{2}\omega a(1-\lambda_0)(2\gamma-1)(1-p)-x\geq 0,$$

where $\frac{1}{2}\omega a(1-\lambda_0)(2\gamma-1)(1-p)$ is the expected gain from monitoring.

In a mixed strategy equilibrium, the monitor observes the first period outcome and updates his belief. He cannot observe or verify the signal. His belief evolves according to the Bayes' rule:

$$\lambda_1(\lambda_0, I, -a) = Pr(\text{good manager}|I,-a) = \tfrac{\lambda_0}{\lambda_0+(1-\lambda_0)(p\frac{\gamma}{1-\gamma}+1)},$$

[6]We can assume a small variable cost ϵ of monitoring to break the tie. The outcomes of the model do not change. The basic model assumes no punishment in the second period to simplify the algebra.

$\lambda_1(\lambda_0, I, a) = Pr(\text{good manager}|I, a) = \frac{\lambda_0}{\lambda_0+(1-\lambda_0)(p\frac{1-\gamma}{\gamma}+1)}$,

$\lambda_1(\lambda_0, N) = Pr(\text{good manager}|N) = \frac{\lambda_0}{\lambda_0+(1-\lambda_0)(1-p)}$.

The "bad" manager invests more often than the "good" manager, so the manager's reputation improves only if there is no investment. It deteriorates less when the investment is profitable.

Proposition 1: There are three possible outcomes, depending on parameter values:

- the monitor does not invest in a monitoring technology and the "empire-building" type invests regardless of his signals in both periods;
- the monitor invests a positive amount in a monitoring technology, $x = \frac{\lambda(k-(1-\omega)(2\gamma-1))}{bk\gamma\delta}$. The "empire-building" manager invests only when he receives a good signal in the first period, and invests regardless of his signal in the second period;
- the monitor invests a positive amount in a monitoring technology, $x = \frac{\sqrt{a\omega\lambda(k-(1-\omega)(2\gamma-1))(1-\gamma)(2\gamma-1)}}{\gamma \quad \sqrt{\quad 2 \quad b \quad k \quad \delta}}+\epsilon$. The "empire-building" manager invests only when he receives a good signal in the first period, and invests regardless of his signal in the second period.

Proof in Appendix.

For example, with reasonable parameter values such as k=1, $\delta = 0.9$, a=0.1, b=100, and $\omega = 0.05$, figure 1 demonstrates the equilibrium outcome.

In area A, inequality (1) is satisfied, and there is no monitoring. In area D, inequality (2) is satisfied, and the "empire-building" type does not invest in the first period with a bad signal. In area C, the monitor has incentives to deviate from the mixed-strategy equilibrium by investing ϵ more, which reduces the "empire-building" type's first period investment probability to zero when he receives a bad signal.

Area B illustrates the extra "uncertainty" cost borne by the monitor. If the monitor decides to monitor and invests $x = \frac{\sqrt{a\omega\lambda(k-(1-\omega)(2\gamma-1))(1-\gamma)(2\gamma-1)}}{\gamma \quad \sqrt{\quad 2 \quad b \quad k \quad \delta}}$, the "empire-building" manager invests with bad signal in the first period with a probability of $p = \frac{\sqrt{2\lambda(1-\gamma)(k-(1-\omega)(2\gamma-1))}}{\gamma(1-\lambda)\sqrt{abk\omega\delta(2\gamma-1)}} - \frac{1-\gamma}{\gamma(1-\lambda)}$. However, the monitor's ex ante expected gain relies on the expected improvement when the manager is "empire-building". When the manager's initial reputation is above certain threshold, this expected gain diminishes too much, and no longer covers the monitoring cost. As a result, in area B, the monitor gives up monitoring ex ante.

4 Empirical Implications

Black (1992),Pound (1992), Guercio (1996), Karpoff, Malatesta, and Walkling (1996), Wahal (1996), Smith (1996), Gillan and Starks (2000), among many others, have documented that major public pension funds are the most active institutional investors in monitoring corporate governance. They started to be active in the later half of 80s. The model indicates that a favorable assessment on the management and higher level of uncertainty in the business environment will reduce the effectiveness of this group of activist. This section tests this implication empirically.

The firm sample is CRSP and COMPUSTAT firms from 1980 to 2000. There are a total of 36,922 firm-year observations and a total of 7,277 firms in the sample. Firm size is the log of market capitalization at the end of June each year. Firms with prior annual stock return higher than the value-weighted market return (with dividends) are considered to be those with more favorable assessment on their managers. The level of uncertainty in the business environment is measured by the dispersion of analyst earnings forecasts. Analyst earning's predictions are obtained through I/B/E/S. The standard deviation of all forecasts covering the current year is normalized by the mean

of all forecast to proxy for the level of uncertainty of the current year. For firms with dispersion ratio above the sample medium in a given year, it is considered to have an uncertain business environment for that year.

This section tests whether the presence of major public pension funds is correlated with firms' investment expenditure, and if there is any interaction among the fund presence, assessment of the management, and the level of business uncertainty. A firm's investment expenditure is the total of its capital expenditure and acquisition expenditure (Compustat item 128 and 129) scaled by its total assets (item 6). Share holdings by major public pension funds at the end of June each year is obtained from Thomson Financial. Under the Securities Exchange Act of 1934 (Rule 13f), institutional investment managers who exercise investment discretion over accounts with publicly traded securities (section 13(f) securities) and who hold equity portfolios exceeding $100 million are required to file Form 13f within 45 days after the last day of each quarter. Investment managers must report all holdings in excess of 10,000 shares and/or with a market value over $200,000.

The major public pension funds that are included in this study are: California public employees retirement system (CalPERS), California state teachers retirement system, Colorado public employees retirement association, Florida state board of administration, Kentucky teachers retirement system, Michigan state treasury, Montana board of investment, New Mexico educational retirement board, New York state common retirement fund, New York state teachers retirement system, Ohio public employees retirement system, Ohio school employees retirement system, Ohio state teachers retirement system, Virginia retirement system, and State of Wisconsin investment board. I am not able to find the holding information for other public pension funds through the 13f data. The likely reason is that their assets are reported by their outside money managers.

The model predicts that an "empire-building" manager is better able to hide when his/her prior reputation is better and when there is more uncertainty in the business environment. In this scenario, the effectiveness of an monitor is reduced. Table 1 confirm the model's equilibrium predictions. The presence of major public pension funds is significantly and negatively correlated with firm's expenditure on investments in the period 1985 to 2000, after they became activists in corporate governance. On average they reduce investment expenditures by 1% of their total assets. However, if the firm performed better than market in the prior year and it has an uncertain business environment in the current year, this effect is reduced by about 50%. This interaction between the manager's reputation, the business uncertainty, and the presence of public pension fund corresponds to area B on figure 1.

5 Conclusion

This model of outside monitoring demonstrates that no improvement in investment efficiency are equilibrium outcomes under information asymmetry. This weakness of outside monitoring does not apply to internal monitoring, such as monitoring by the board. Being insiders, the board members are able to obtain the relevant information to reduce the information asymmetry. However, the existing literature on board monitoring is mixed. Weisbach (1988) documents a stronger association between prior performance and CEO resignation for companies with outsider-dominated boards. Byrd and Hickman (1992) find that bidding companies with outside directors holding majority seats on the board have higher announcement abnormal returns during a tender offer bid. In contrast, Yermack (1996) finds no association between the percentage of outside directors and firm performance, and an inverse relation between board size and firm value. Shivdasani and Yermack (1999) find evidence that CEO involvement in the selection of new board members leads to fewer independent outside directors. The

implication of this paper points out the importance of an independent and effective board in corporate governance.

In this model, the shareholder's monitoring effort is facilitated by managers' own reputation concerns. In the last period of the game, the "empire-building" manager no longer has reputation concerns. The presence of an external or internal monitor can no longer improve efficiency. This implication suggests that compensation policy linking retirement benefits to the last period performance may be very important to correct agency problems. Bebchuk and Fried (2004) show that companies are able to camouflage large amounts of executive compensation through retirement benefits. The end-game implication of our model supports Bebchuk and Fried (2004)'s argument of making retirement benefits more transparent and performance sensitive.

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Appendix

To obtain the pure-strategy equilibrium in which p = 0, the monitor chooses the minimum level of x that deters the "empire-building" type from investing with bad signals, and that satisfies his participation constraint.

In the pure-strategy equilibrium where p = 1, the monitor does not invest in monitoring. This occurs when $E[V_{b,\lambda_0,t1}(-1, I) > E[V_{b,\lambda_0,t1}(-1, N)]$. It also occurs when the monitor's participation constraint is not satisfied.

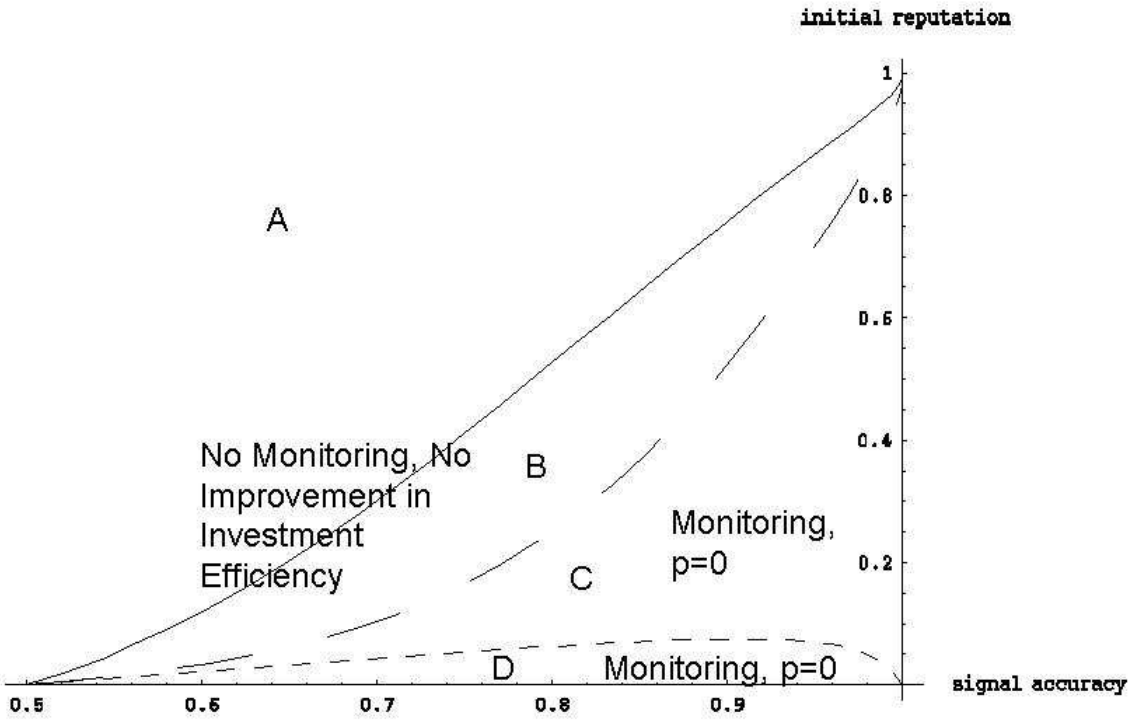
In the case of a risk-neutral manager with linear utility, a mixed strategy equilibrium is,

$$x = \frac{\sqrt{a\omega\lambda(k-(1-\omega)(2\gamma-1))(1-\gamma)(2\gamma-1)}}{\gamma \quad \sqrt{\quad 2 \quad b \quad k \quad \delta}},$$

$$p = \frac{\sqrt{2\lambda(1-\gamma)(k-(1-\omega)(2\gamma-1))}}{\gamma(1-\lambda)\sqrt{abk\omega\delta(2\gamma-1)}} - \frac{1-\gamma}{\gamma(1-\lambda)},$$

where $p \in (0, 1)$, and the monitor's participation constraint is satisfied. However, the monitor has incentives to deviate by increasing its investment in monitoring by ϵ. This increase changes the payoff to the manager, and he will choose not to invest after receiving a bad signal in the first period, i.e., p=0. As long as ϵ is smaller than the gain in improved investment efficiency, the monitor will increase his investment at time zero. There is no mixed strategy equilibrium.

Figure 1: Managerial Initial Reputation, Noise Level, and Equilibria



k=1, $delta = 0.9$, a=0.1, b=100, $\omega = 0.05$. Initial reputation $\lambda_0 \in (0, 1)$. Signal accuracy $\gamma \in (0.5, 1)$.

Table 1: Investment Expenditures and Outside Monitoring

This table reports the coefficients and standard errors from fixed effects regressions. The robust standard errors are estimated using a Huber-White "sandwich estimator" and adjusted for firm-level clustering. The dependent variable is a firm's investment expenditure ((data128+data129)/data6). The dummy variable "PPF" takes the value of one if there is positive public pension fund shareholdings at the end of June each year. Firm size is measured as the log of market capitalization at the end of June each year. The dummy variable "noise" equals one if the dispersion of analyst earnings forecasts of the current year is above the sample mean. The dummy variable "good" equals one if the firm's prior annual return is above the value-weighted market return including dividends. The variable "noise*PPF" is the interaction between PPF and noise. The variable "good*PPF" is the interaction between PPF and good. The variable "noise*good*PPF" is the interaction between PPF, noise and good.

Dependent variable — investment expenditures								
	1985-2000				1980-1984			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PPF	-0.007***	-0.008***	-0.008***	0.000	0.012**	0.011**	0.015**	0.011
	(0.002)	(0.002)	(0.002)	(0.002)	(0.006)	(0.006)	(0.007)	(0.008)
noise*good*PPF		0.005***	0.004**	0.004**		0.003	0.004	0.004
		(0.001)	(0.002)	(0.002)		(0.005)	(0.010)	(0.010)
noise*PPF			-0.002	-0.005**			-0.011	-0.004
			(0.001)	(0.003)			(0.007)	(0.008)
good*PPF			0.003**	-0.012***			0.006	0.003
			(0.001)	(0.003)			(0.007)	(0.008)
noise				0.003				-0.008*
				(0.002)				(0.004)
good				0.015***				0.003
				(0.002)				(0.004)
size	0.013***	0.012***	0.012***	0.011***	-0.002	-0.002	-0.003	-0.003
	(0.001)	(0.001)	(0.001)	(0.001)	(0.006)	(0.006)	(0.006)	(0.007)
Constant	0.029***	0.030***	0.032***	0.027***	0.103***	0.103***	0.104***	0.110***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.034)	(0.034)	(0.034)	(0.034)
Observations	33,885	33,885	33,885	33,885	3,037	3,037	3,037	3,037
Number of firms	6,986	6,986	6,986	6,986	1,870	1,870	1,870	1,870
firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.014	0.015	0.015	0.018	0.003	0.004	0.006	0.009

* significant at 10%; ** significant at 5%; *** significant at 1%