

Incentive Contracting When Boards Have Related Industry Expertise

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Abstract- We investigate how board expertise affects executive incentives and firm value in a project investment setting. To increase the probability of project success, the CEO engages in a sequence of tasks: first acquiring information to evaluate a potential project, then reporting his assessment of the project to the board, and finally implementing the project if invested. We show that the CEO will get a higher compensation if the board and the CEO agrees. Such a compensation arrangement is purely an outcome of optimal contracting, even though the managerial power view may interpret it as evidence that more powerful CEOs get more pay. In addition, board expertise in evaluating the project helps motivate the CEO to acquire information, but may hurt the CEO's incentives to properly implement the project. Consequently, higher board expertise can improve or hurt firm value. We also show that when board expertise is high enough, the CEO has incentives to underreport his assessment of the project to the board.

will get more pay. In this paper, we study the interaction between the board and the CEO in a principal-agent model and show that the same prediction can also be generated through optimal contracting.

We show that the board's expertise in evaluating the project helps motivate the CEO to evaluate the project. As both the CEO and the board conduct analysis about the same project, their assessments are inherently positively correlated, and the more carefully the CEO evaluates the project, the stronger is the correlation. Exploiting this, the board will optimally pay the CEO a higher compensation if the two parties have similar assessment about the project, simply because such agreement is indicative of high evaluation effort by the CEO. Such a compensation arrangement is purely an outcome of optimal contracting, even though the managerial power view may interpret it as evidence that more powerful CEOs get more pay, because board agreeing with CEO is often interpreted as weak boards rubber-stamping powerful CEOs' proposals.

I. INTRODUCTION

There has been a long debate on executive compensation in both academia and the public arena. One side is the "optimal contracting" view, which argues that executives' contracts are chosen optimally by the board to maximize shareholder value. The other side is the "managerial power" view (Bebchuk, Fried, and Walker [2002], Bebchuk and Fried [2004]), which claims that the traditional agency models are inconsistent with current compensation practice: because boards of directors at public companies are beholden to the firms' top executives, executives' contracts are effectively chosen by executives themselves to maximize their own rents. Though challenged by some leading researchers (e.g., Murphy [2003], Holmstrom and Kaplan [2003], Holmstrom [2005], Core, Guay and Thomas [2005], among others),¹ the managerial power perspective has been taken very seriously by both scholars and policymakers, and led to major regulatory changes. For example, the SEC mandated increased disclosure of compensation in 2006, and say-on-pay legislation was passed as part of the Dodd-Frank Act in 2010. One central piece of evidence supporting the managerial power view is that managers with more power over boards

II. MODEL SETUP

We consider the interaction between a board of directors and a CEO, where the CEO is to be motivated to: (1) evaluate a potential project, (2) truthfully report his assessment of the project to the board, and (3) if the project is adopted, implement the project. The board of directors designs the CEO's compensation contract upfront and actively influences the firm's course of actions in the following sense: (a) the board uses its expertise to further evaluate the project; (b) it makes the investment decision;⁵ (c) it renegotiates the compensation contract with the CEO.

The CEO's (first-stage) evaluation effort a_1 and (second-stage) implementation effort a_2 are binary: $a_1 \in \{0, 1\}$ and $a_2 \in \{0, 1\}$. The cost of $a_t = 0$ is normalized to zero, and the cost of $a_t = 1$ is $kt > 0$, where $t = 1, 2$. If the project is adopted, the project returns a cash flow x depending on the realized project quality $\theta \in \{0, 1\}$, the CEO's implementation effort a_2 and the exogenous size of the project X : $x = \theta \cdot a_2 \cdot X$. That is, the project is a success only if the project is of

good quality $\theta = 1$ and the CEO has exerted effort to implement it. If the project is rejected, the firm's cash flow is 0 and the CEO receives a wage as specified in the contract, ending the game. The project quality θ is either bad ($\theta = 0$) or good ($\theta = 1$), with ex-ante probability of $\theta = 1$ being $1/2$. The CEO can expend effort a_1 to gather information about the project. If the CEO exerts evaluation effort, he receives an informative signal $s \in \{G, B\}$ with precision $0.5 + i$ about the project quality, where $i \in (0, 0.5)$. If the CEO does not exert evaluation effort, the signal s is pure noise. $P r[s = G|\theta = 1] = P r[s = B|\theta = 0] = 0.5 + i \cdot a_1$. After the CEO privately receives the signal, he submits a report \hat{s} about s to the board. Based on the CEO's report, the board uses its expertise to conduct further analyses and generates an additional signal $m \in \{H, L\}$ about the project quality. The informativeness of the board's signal m depends on the board's expertise $i_B \in (0, 0.5)$, whether the CEO has truthfully reported his signal, and the CEO's evaluation effort:

$$P r[m = H|\theta = 1, s, \hat{s}] = P r[m = L|\theta = 0, s, \hat{s}] = 0.5 + i_B \cdot 1_{\hat{s}=s} \cdot a_1, \text{ (Info - Main)}$$

where $1_{\hat{s}=s}$ is an indicator function that takes the value of 1 if $\hat{s} = s$. This information structure aims to capture an important feature of the board's project evaluation: the quality of the board's project evaluation depends on the quality of the CEO's

III. ANALYSIS

We solve the game by backward induction. First, we examine the contract renegotiation at Date 6. Then we study the board's investment decision at Date 5. Finally we describe the board's optimization problem at Date 1.

3.1 Contract Renegotiation at Date 6

After the investment is made, the board's objective shifts to ensuring that the invested project is implemented efficiently. At this moment (Date 6), the board can offer a revised contract to the CEO which keeps the CEO no worse off but is beneficial for the board. Note that renegotiation happens only when the investment is undertaken. The CEO's compensation contract can be written as $(W_{sm}^{\hat{s}}, W_{sm}^{\hat{s}})$, depending on the CEO's report \hat{s} , the board's signal m , and the final project outcome x .⁶ If the final project outcome is zero, i.e. $x = 0$ (either due to project failure or no investment),

IV. THE OPTIMAL CEO CONTRACT

The Optimal CEO Contract In this section, we characterize the CEO's optimal renegotiation-proof contract. As the board's optimization program P suggests, the CEO's off-equilibrium payoff when he deflates his report (the right hand side of constraint (T TG)) is affected by the investment

decision $d * BH$, which is in turn affected by the level of board expertise. Therefore, we consider the following two cases.

V. CONCLUSION

Boards of directors have become more active in influencing firms' courses of actions. We investigate how board expertise affects executive incentives and firm value in a project investment setting. To achieve a higher probability of a success, the CEO engages in a sequence of tasks: firstly expends effort to evaluate a potential project, then reports his assessment of the project to the board, and finally expends effort to implement the project. We show that high board expertise helps motivate the CEO to exert evaluation effort, but may inadvertently create incentives for the CEO to under-report his assessment and may weaken the CEO's incentives in project implementation. Higher board expertise can either improve or hurt firm value. To focus on the main trade-offs, we silent some features for boards of directors. For example, we focus on the CEO's strategic reporting behavior but assume the board is always truthful. There are studies that focus on the board's incentives in communicating its information to the CEO but assume the CEO always truthfully discloses his information (e.g., Adams and Ferreira 2007). The interplay between the two parties' strategic reporting behavior will be interesting to explore. Another interesting feature for boards of directors is that there are committees in charge of different functions: executive compensation, project review, etc. How information (relevant for decision making or for performance evaluation) is transmitted and utilized among different committees is another fruitful venue to explore