



Debt, managerial compensation and learning

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Abstract

Using a dynamic model with uncertainty and asymmetric information, we study the impact of debt and bankruptcy on managerial compensation and learning. In this model, compensation has two roles to play—providing incentives to the manager and learning about his type. We show that debt, through bankruptcy, acts as a substitute of compensation in both dimensions and derive conditions under which debt lowers average compensation, pay–performance sensitivity and increases learning. We also examine the choice of debt and show that firm value can be increased due to debt’s effect on managerial compensation, abstracting from other costs and benefits of debt. Finally, we conduct comparative statics with respect to the underlying parameters.

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1. Introduction

The issue of aligning managerial interests with those of the owners is important and has received considerable attention in the economics and finance literature. The traditional tool for aligning these interests has been thought to be managerial compensation contracts.¹ However, it is increasingly recognized, especially in the

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¹For example, Holmstrom (1979), Harris and Townsend (1981) and Jeitschko and Mirman (2002).

finance literature, that the firm's capital structure, that is, the proportion of debt financing, also has a bearing on the manager's incentive to act in the owners' interest. For example, [Jensen \(1986\)](#) argues that debt may provide a useful tool to discipline managers by restricting the amount of 'free cash flow' in their control.² In addition, it is well-known that managers incur pecuniary and non-pecuniary costs in bankruptcy states associated with debt, such as loss of job, loss of reputation or loss of compensation. These effects of debt on managerial payoffs suggest that managerial compensation contracts should be different with debt than without. Given that firms borrow, the design of compensation contracts as well as the choice of debt ought to take into account the relationship between the two.

In this paper, we study the effect of debt on managerial compensation contracts, in a dynamic model with the manager's ability unknown to the owners. That is, we ask how the compensation contract with debt compares with the compensation contract without debt. In particular, is debt a substitute for compensation, that is, do firms with debt need to offer lower compensation for a given performance level?³ How does debt affect the pay-performance sensitivity, that is, do firms with debt offer less performance-based compensation? Further, we ask whether firms that borrow learn more about the manager's type. Finally, we study how these effects of debt on compensation feed back into the choice of debt itself. In particular, we examine whether firms borrow more or less due to its effect on managerial performance?

The motivation for assuming that managers have private information about their skills is straightforward. Asymmetric information characterizes contractual relationships among various agents participating in the firm's activities and is at the heart of the agency theory. If adverse selection exists, managers with superior abilities find it easier to shirk or equivalently consume more perquisites if these actions are unobservable and managerial performance is noisy. Thus, compensation contracts need to address not only the problem of inducing the optimal effort level for a manager with known ability (that is, the moral hazard problem) but also the problem of inducing the optimal effort from the manager given that his ability is unknown (that is, the adverse selection and the moral hazard problem). In this paper, we study the latter environment.

Further, we assume that there is a repeated relationship between the firm and the manager. In dynamic settings, learning about the manager's type becomes an important part of the design of contracts (see [Holmstrom, 1999](#); [Jeitschko and Mirman, 2002](#); [Jeitschko et al., 2002 \(JMS\)](#), for dynamics with hidden abilities). The benefit of learning is increased profits due to more efficient economic decisions in the future. However, it is costly to learn since the manager rationally anticipates losing the informational rent in the future—this is known as the ratchet effect in the literature (see [Freixas et al., 1985](#); [Laffont and Tirole, 1993](#); [Meyer and Vickers, 1997](#)). Thus, in designing the optimal compensation contract under asymmetric

²See also [Grossman and Hart \(1982\)](#), [Stulz \(1990\)](#), [Harris and Raviv \(1990\)](#) and [Hart and Moore \(1995\)](#).

³Empirical evidence is inconclusive (for example, see [Mehran, 1992](#); [Smith and Watts, 1992](#); [Berger et al., 1997](#)). Our paper provides more insight, especially into the effect of debt on compensation, rather than the other way around.

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