

# Overinvestment and fraud

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## Abstract

We analyze the interactions between two managerial tasks: investing and revealing information. We assume that a manager can invest influencing the firm's quality, then he reports this quality to investors. Whenever truthful reporting is not an equilibrium, the manager has incentives to overinvest relative to shareholders. Therefore, the potential for market manipulation is the key in understanding investment policy; it is the desire to manipulate prices that leads to inefficient investment. Also, more manipulation occurs when the manager is in control, so prices are less informative. Finally, we show that the manager is better off with an exogenous reporting policy.

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## 1. Introduction

Corporate scandals have permeated the news in the past few years with an ensuing debate over the pros and cons of existing executive compensation packages. The governance failures at Enron, Tyco and WorldCom, among others, have cast a shadow over the corporate governance system in the US. More importantly, it cast doubt over the effectiveness of using stocks and options as part of executives' pay packages with the intent of aligning their interests with shareholders'.

In the center of this discussion is the idea that short-termist behavior has been a major negative consequence of packages that are highly sensitive to stock price performance. At a first glance providing stock-based compensation may align incentives as both managers and shareholders now have a common component in their objective function, but it may also create countervailing incentives as these agents may have different horizons. Extra sensitivity to stock price may lead managers to engage in activities that maximize short-run value and neglect the long-run value of the firm since managers are not guaranteed to be around for the long run.

We analyze these issues under a new framework modified to let the potential for information manipulation have spillover effects and influence investment policy. Investment is inefficient when the potential and temptation to manipulate information is greatest. More precisely, we show how managers end up investing over and above the shareholders'

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optimal level.<sup>1</sup> The driving force behind this result comes from two components: first, as the novel part of the model, the manager chooses not only how to invest but also how to reveal information to the market. Second, agents' expected horizons differ. The result that we wish to emphasize here is the ensuing interaction between information revelation (or manipulation) and investment distortion. Inefficient investment takes place because of the desire to inflate prices through information manipulation.

Our model has three types of agents: the manager, existing shareholders and investors (or new shareholders). The existing shareholders are present at the time the manager is hired but may need to sell their shares and exit in the next period. On the other hand, the manager either sells his shares (cash in his pay package) or just quits the firm and takes an outside option; he is never around for the long haul.<sup>2</sup> Finally, investors come into the picture as participants in the market for the stock; they become the new shareholders that hold the firm until its final value is realized. Therefore, we see that managers have the shortest horizon, followed by the “existing” shareholders, and finally the investors. As a consequence, stock price maximization is essentially the only objective of the manager while investors only care about final value and shareholders' objectives are in-between. One can view short-termism in the current paper as a greater concern with stock price than is optimal for shareholders. It is this excessive weight put on stock prices by the manager that leads to the incongruence of incentives between the managers and other agents. Alternatively, this could be viewed as a model of mere “fraud”, but, naming it short-termism is natural because it is the manager's shorter horizon that leads to the desire for fraud.

We focus on the comparison between the manager's behavior and the behavior that would arise if shareholders were running the firm. To complete the analysis, we also compare these with value-maximizing action and the action that maximizes investors' utility. Throughout the analysis we assume that investment is costly.<sup>3</sup> In the model, the investors are risk averse while the manager and the shareholders are risk-neutral.<sup>4</sup> The manager has his compensation package tied to the stock price performance and he faces a two-dimensional decision problem. First, he decides how much to invest. The amount invested stochastically influences the firm's quality.<sup>5</sup> After the investment takes place, the quality of the company is privately revealed to the manager (and to the shareholders). Then, he has to report the observed quality to investors. At this point, he may try to manipulate the market by issuing misleading reports. We assume that if a misleading report is issued the SEC may find out and “punish” (sue) the manager for improper behavior. Hence, this strategy can be seen as costly lies. After the manager's report has been issued, investors rationally update their beliefs and submit their demand schedule. A portion of the investors has relative performance objectives.<sup>6,7</sup> They care about their performance relative to a benchmark. Market clearing then determines prices. In the following period, the company's payoff is realized and fully paid out to shareholders.

Surprisingly, depending on the strength of the investors' relative performance objective, the manager may want to invest MORE than it is optimal for the shareholders and reveal less information to the market. We see this as a striking result since most of the agency problems literature would predict shirking on part of the manager, which translates into under-investment in our model's language.<sup>8</sup> Therefore, the potential for market manipulation (through misleading information) is crucial in determining managers' investment policy. We also show that for low strength

<sup>1</sup> As explained below, we can interpret the investment policy as an effort choice. However, we adhere to the “investment” terminology since it is more in line with our motivating idea.

<sup>2</sup> The model could be modified, at the expense of tractability, presentation and clarity, to incorporate the fact that the manager may not need to sell all his shares, or he may not quit. More precisely, we could allow for a situation where the manager is hit by a shock with some probability and in this case needs to decide whether to sell his shares or quit. With complementary probability, he stays on board. Qualitatively all results would follow as long as the probability of this shock was higher than the probability of the shock that hits shareholders.

<sup>3</sup> Investment is costly because it takes effort to choose the right policy. So, we model this as a private cost. We are abstracting from the “real” cost of investing, the cost of the project. Results would be identical if we additionally assumed a fixed real cost to invest, and would be strengthened if we modeled projects with a higher likelihood of success as more expensive.

<sup>4</sup> These investors are funds controlled by risk-averse portfolio managers.

<sup>5</sup> One should think about the investment policy as a choice among projects with differing likelihood of success, with “better” projects being more costly.

<sup>6</sup> They can be thought of as representing institutional investors (mutual or hedge funds).

<sup>7</sup> Later we further generalize the model by allowing for the presence of so-called arbitrageurs, i.e., investors that are fully informed about the state of the world. Since this seemingly simple change to the model creates a lot of difficulty in obtaining closed form solutions and interpreting the results, it is left for the [Appendix E](#). We show that the results are in essence the same as the ones presented in the main text.

<sup>8</sup> The investment policy can be interpreted as costly effort choice.

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