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Earnings management, incentive contracts and private information acquisition [☆]



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A B S T R A C T

This paper analyzes the optimal design of compensation contracts in the presence of earnings management incentives, and its interplay with investors' information acquisition decisions. We consider a setting in which compensation contract is based on both accounting earnings and stock price when an agent engages in predictable, pernicious earnings management and stock price is endogenously determined in a Noisy Rational Expectations Equilibrium (NREE) that reflects both the public information from reported earnings and a costly, noisy signal privately acquired by investors. We show that an increase in the precision of the firm's financial reporting system could reduce the informativeness of stock price and exacerbate the agency problem by inducing lower productive effort and higher earnings management, implying that the firm may not choose a more precise financial reporting system.

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1. Introduction

Earnings and stock price are widely-used performance measures in managerial incentive contracts.¹ Agency theory suggests tying managers' pay to the performance of their firms for efficiency reasons. Recent empirical studies and corporate scandals (e.g., Enron and WorldCom), however, reveal a "dark side" of using earnings- and price-based compensations: they can induce earnings management (Healy, 1985; Guidry et al., 1999; Ke, 2001; Cheng and Warfield, 2005; Bergstresser and Philippon, 2006). As stock price aggregates information from investors and thus serves as a market monitoring mechanism (Holmstrom and Tirole, 1993), a manager's incentive to manipulate earnings should also be influenced by how informative the stock price is. Meanwhile, an investor's incentive to acquire costly private information is affected by the precision of reported earnings because a more precise public report decreases the profits from informed trading by reducing the information asymmetry between informed and uninformed investors. Thus, it is important to analyze the optimal design of managerial contracts in the presence of earnings management incentives, and its interplay with investors' information acquisition decisions.

Our model features the public firm as a principal-agent contract between the board, representing the interests of long-term shareholders (the principal), and the risk-averse, work-averse manager (the agent); the firm's stock is traded in a market with informed traders, liquidity traders and a market maker. The firm's output (its terminal cash flow) is a noisy measure of the agent's productive effort. Compensation contracts are based on reported earnings and stock price, both of which are noisy measures of the firm's output. Reported earnings are, however, subject to manipulation by the agent. Thus, productive effort and unproductive manipulation are substitutes in terms of increasing the firm's reported earnings and are costly to the agent. In contrast, stock price is endogenously determined in a Noisy Rational Expectations Equilibrium (NREE) that reflects both the public information from reported earnings and a costly, noisy signal of the firm's output privately acquired by investors. We refer to the incremental information conveyed by the stock price that is beyond what is known from the reported earnings as the "filtered" price. Different from the reported earnings, the filtered price can be used as another performance measure to induce productive effort without stimulating costly earnings manipulation. In order to induce a given level of productive effort, the principal chooses the relative incentive rates for the two noisy performance measures to trade off the cost of inducing earnings manipulation and the risk premium paid to the agent. The more informative the filtered price, the higher the relative compensation weight placed on it, thereby suppressing the agent's incentive to manipulate earnings and increasing productive effort. Taking the precision of the earnings report as exogenous, we derive the optimal linear contract, the equilibrium number of informed investors and investigate some of their properties.

We show that an increase in the precision of reported earnings, which is expected to alleviate the agency problem as suggested by the conventional wisdom, may actually lead to the opposite, undesirable outcomes of higher earnings management and lower productive effort (see part (i) of Proposition 2). The key is that a more informative earnings report drives out sophisticated investors, because the better the public information, the lower the profit of the informed investors from acquiring a costly private signal. Under certain conditions, this negative impact on the equilibrium number of informed investors leads to decreased informativeness of the filtered price (see part (ii) of Proposition 1). More compensation weight is then shifted from filtered price to reported earnings, resulting in more manipulative effort substituting for productive effort. We further show that there exist conditions under which the agency problem becomes so acute that the principal may choose to install the least precise financial reporting system (see Proposition 3).

Our paper contributes to two strands of literature: compensation contracts and earnings management. The literature on compensation contracts shows that the optimal contract is determined by the

¹ Murphy (1999) states that most executive pay packages contain four basic components: a base salary, an annual bonus tied to accounting performance, stock options, and long-term incentive plans (including restricted stock plans and multi-year accounting-based performance plans). Despite the use of price-based performance plans has gained popularity since 1980s (Chapter 3 in Ronen and Yaari, 2008), compensation plans based on accounting-based performance goals are still used by a large portion of firms. According to Mishra et al. (2000), about 35% of firms surveyed by the Conference Board in 1995 and 1996 use long-term accounting-based performance plans.

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