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Executive compensation and earnings management under moral hazard

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ABSTRACT

This paper analyzes executive compensation in a setting where managers may take a costly action to manipulate corporate performance, and whether managers do so is stochastic. We show that an increase in the possibility of manipulation actually calls for executive pay to be more responsive to reported performance. In addition, regulatory reforms that increase the cost involved in manipulation may lead to reduced pay-for-performance sensitivities. The time-series and cross-sectional variations of executive compensation lend support to our model.

1. Introduction

The lack of adequate and accurate information in financial markets has played a significant role in enlarging the financial crisis that began in 2007.[1] In particular, Lehman Brothers announced that its capital position was "strong" just days before it filed for bankruptcy. The mortgage giants Freddie Mac, and to a lesser extent Fannie Mae, were found to be playing games with their accounting, which ultimately led to the largest-ever financial rescue.[2] Is improperly structured compensation an important factor underlying the recent corporate scandals and financial meltdown? A growing body of empirical literature documents exponential increases in both incentive compensation and earnings management since the late 1980s. The

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[1] In a recent article entitled "Capitalist Fools", Joe Stiglitz listed "faking the numbers" as one of five major causes of the economic crisis in 2008.

[2] Morgan Stanley determined that accounting tactics, while legal, enabled Freddie Mac, and to a lesser extent Fannie Mae, to overstate the value of their reserves. Both companies also pushed losses into the future by sharply curtailing their repurchases of soured mortgages out of the securitizations they guaranteed. "Fannie Mae and Freddie Mac were 'playing games with their accounting' to meet reserve requirements, prompting the government to seize control of the companies," U.S. Senator Richard Shelby said (Bloomberg [September 9, 2008]). In the case of AIG, PricewaterhouseCoopers prompted an announcement about material accounting weaknesses related to the valuation of AIG's derivatives holdings. Prosecutors insisted that five former executives from the American International Group deliberately mounted a fraud to manipulate its financial statements, after a string of AIG scandals early this decade."Accounting flaws at American International Group significantly understated the insurance giant's losses on complex financial instruments linked to mortgages and corporate debt." (The New York Times [February 12, 2008]).

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evidence seems to identify executive compensation as a central contributor to the widespread practice of earnings management. To shed light on the current debate on regulatory reforms of pay practices, we examine the implications of earnings management opportunities for executive compensation.

Our model departs from the existing literature in that the manager may take a costly action to distort the firm's reported performance in order to maximize his compensation, and whether the manager has such an opportunity is stochastic. The principal takes into account the possibility of manipulation but fails to perfectly infer the value of true earnings, because of the uncertainty about the manager's ability to manipulate. In our setting the stochastic opportunity to manipulate breaks down the direct mapping between actual earnings and reported earnings, obscuring the true performance under the optimal contract. In reality, because the degree of reporting discretion available varies with economic situations, and managers are not all equally versed in manipulating financial records, shareholders are often faced with a significant degree of information asymmetry as to whether financial results are biased. In fact, empirical studies show that earnings restatement and SEC enforcement actions lead to adverse capital market reactions,[3] which suggests that the market is taken by surprise and does not see through earnings management. We show that such manipulation uncertainty has a systematic impact on the characteristics of the optimal incentive contract.

A key insight of our model is that an increase in the possibility of manipulation actually calls for executive pay to be more responsive to reported performance. In our optimal contracting model, the potential to artificially inflate performance serves as insurance for managers against a low compensation payoff and thus weakens incentives to exert costly effort. A more high-powered compensation scheme is therefore necessary to incentivize effort when earnings management is possible. In a closely related paper, Goldman and Slezak (2006) also consider an agency problem in which compensation structure is determined so as to strike a balance between effort and manipulation. By making earnings management an ex-ante choice (made before earnings realize), they allow market participants to correctly discount the manager's reporting choice, and predict that the pay-performance sensitivity is lower than it would be in the absence of opportunities for manipulation. In sharp contrast, we analyze an environment where earnings management is *not* fully unraveled by a rational and sophisticated principal, and produce the opposite implication.

Our simple model of manipulation helps us understand the time series and cross sectional variation of executive pay structure. In the time-series data, companies' management of earnings and the use of performance-based compensation both trended upwards since the late 1980s until the passage of the Sarbanes–Oxley Act (SOX) (Hall and Liebman, 1998; Murphy, 1999; Brown, 2001; Bartov et al., 2002; Lopez and Rees, 2002; Cohen et al., 2008). Gao and Shrieves (2002) and Bergstresser and Philippon (2006) also provide evidence that firms with a higher level of earnings management are the firms with more incentive pay in the cross section. While the positive association between misreporting and incentive pay has been mostly interpreted as evidence of suboptimality, we show that it could be consistent with optimal contracting and need not reflect inefficiency.

This paper also provides implications for the effects of tightened corporate governance legislations on compensation structure. We model the cost managers incur when manipulating earnings as a policy parameter. This manipulation cost may vary according to the effectiveness of governance policies, or in the cross section according to the stringency of internal control systems over financial reporting. Because financial incentives to inflate earnings are stronger when economic performance is weaker, regulatory reforms that make manipulation more costly to managers increases incentives for managerial effort. More specifically, when the manipulation cost increases due to more stringent corporate governance, in an environment where managerial effort positively influences output, the manager has stronger incentives to exert productive effort in order to avoid unfavorably high manipulation costs incurred during episodes of weak performances. As a result, less monetary incentive is required in compensation to motivate effort. This implication is compatible with the empirical finding that firms responded to the additional liabilities SOX imposed on executives by reducing the proportion of incentive compensation (Cohen et al., 2004; Narayanan and Seyhun, 2005).

A final feature of the model that deserves mention is the identification of the condition for earnings management to emerge under the optimal contract. The paper shows that earnings management arises, at least in part, due to the substitutability of financial manipulation for managerial effort in enhancing reported performance and hence executive pay. If the manipulation cost is small compared to the manager's cost of expending effort, it becomes prohibitively difficult to elicit the truth while maintaining managerial incentives to put forth effort, and earnings management emerges endogenously under the optimal contract. A similar tradeoff is also discussed in Goldman and Slezak (2006), and our result can be viewed as complementary to theirs.

In the contracting literature with manipulation, Evans and Sridhar (1996) show that it is never optimal for the principal to use the contracting system to induce truthful reporting. Liang (2004) models earnings management as a consequence of various economic trade-offs in a strategic context (involving managers, shareholders and regulators) than in a standard principal–agent framework. Taking the standard bilateral contracting approach, Hertzberg (2003) and Peng and Roell (2008) analyze the interplay of short-term and long-term incentives with a central focus on asset price efficiency. Abstracting away from market efficiency, our focus on costly manipulation in an agency model has antecedents in Lacker and Weinberg (1989), which examines optimal contracts under costly state falsification. Lacker and Weinberg (1989) investigate the main

[3] In these studies (Turner et al., 2001; Palmrose et al., 2004; Wu, 2002), on average, stock returns fall by about 10% on the days around earnings restatement announcements.