A Multi-dimensional Test of the Use of Equity Grants to Manage Optimal Equity Incentive Levels

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Abstract

In this paper, we examine whether firms manage CEO equity portfolio incentives toward an optimum from a multi-dimensional perspective. Prior studies have produced mixed evidence on whether firms grant new incentives consistent with principal-agent theory. A number of papers have documented that firms grant stock options and restricted stocks to set optimal pay-performance sensitivity levels toward optimal levels (Core and Guay 1999; Himmelberg et al. 1999). Another set of papers present mixed evidence on whether firms grant equity incentives consistent with optimal contracting theory (Yermack 1995; Ofek and Yermack 1997). Yet another research stream argues that managers exert power in pay-setting process and firms grant inefficient equity incentives (Bebechuk et al. 2002, 2004). Our research objective is to extend the debate on efficiency of executive incentives to a multi-dimensional perspective and test whether firms grant stock options and restricted stocks in a manner consistent with multi-task principal-agent model.

It is important to study optimal incentive from a multi-dimensional perspective. First, there is mixed evidence that annual executive compensation is tied to current financial performance. The reason may be that CEOs have multi-tasks. They need to manage not only the current year’s performance but also long term value creation. There is often a trade-off between managing for short term profit and investment for long-term value creation. The observed weak link between pay and performance can be attributed to the need for providing long term incentives. Given the multi-tasks faced by CEOs, it is therefore important to examine CEO incentives from a multi-dimensional view. Second, the current debate on the efficiency of
executive incentives focuses on levels of CEO pay. Other important parameters of CEO pay include pay-performance sensitivity, pay-volatility sensitivity, and the rate of pay-performance relation changes. Without a full understanding of critical parameters in CEO incentives, we cannot draw conclusion about efficiency of CEO incentives. Third, optimal incentive is a multi-dimensional concept (Holmstrom and Milgrom 1991). Firms need to motivate executives to exert appropriate effort, manage risk appropriately and create shareholder value. Prior research has so far focused on the use of new grants to manage the sensitivity of CEO’s equity portfolio to change in stock price (“delta”, e.g. Core and Guay 1999). We fill this gap in the literature by looking at Vega and Gamma (discussed below) in incentive contracts.

We test the predictions from multi-task principal-agent theory by examining three parameters in CEO incentives: (1) pay-performance sensitivity (also called delta); (2) pay-volatility sensitivity (also called vega), and rate of change in delta (also called gamma or convexity of options). These measures represent sensitivity of CEO wealth in the form of equity portfolio to stock price and stock return volatility. We examine whether firms adjust these three measures to the optimal level when deviations from the optimal incentive level occur. We specify our models consistent with existing literature on the determinants of CEO equity portfolio incentives and of new equity grants. Corresponding to the process of firms’ adjustment to optimal incentive level, we examine the question in a structural equation modeling (SEM) setting. One advantage of a structural equation configuration is that we are allowed to estimate path weights on prior period’s equity incentive portfolio and the deviations from the optimal incentive level to the new equity grant incentives at the same time.
We collect data from the ExecuComp database, CRSP database, and Compustat database for a sample of firms on which ExecuComp report CEO pay during the period of 1993 to 2005. We find that firms do adjust each measure of CEO equity portfolio incentives to the optimal level via the corresponding sensitivity measure embedded in new equity grants.

We make three contributions to the optimal incentive literature. First, we contribute to the literature in terms of methodology by employing structural equation modeling. As aforementioned, a structural equation configuration allows us to estimate path weights on prior period’s equity incentive portfolio and the deviations from the optimal incentive level to the new equity grant incentives at the same time. In SEM, the unobserved latent/error variable from the equity portfolio incentive equation conceptualizes the “deviations from the optimal incentive level” suggested in the optimal incentive hypothesis and is free of measurement error. Second, we fill the gap in the literature by examining three key parameters of CEO equity incentives, i.e., delta, vega, and gamma. Adjustments of executive equity portfolio incentives to the optimal level are a multi-dimensional concept as many input parameters can affect the valuation of equity portfolio and thereby executive incentives. Therefore, a multi-dimensional test contributes to the literature by offering a more complete picture on the optimal adjustment process. Third, our results show that firms generally use new equity grants to manage the incentive to the optimal level. We therefore provide additional support for the optimal incentive hypothesis in the context of the debate on optimal incentive and managerial power hypothesis.