THE DESIGN OF BONUSES AND ITS IMPLICATIONS FOR INVESTMENT CHOICES

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Abstract

In the wake of Enron and other high profile corporate scandals executive compensation has become a key strategic issue for market participants and regulators all around the world. This paper readdresses a very significant, and often controversial issue, namely the impact of managerial bonuses on corporate investment decisions. In doing so, it critically examines two related sets of hypotheses, the "fixed-target" and "ratcheting-target" hypotheses. The comparison of the above predictions reveals a contradiction, which in turn consists a subject of future empirical research.

Keywords: executive compensation, bonus, positive accounting theory, ratchet-principle.

1. Introduction

In the aftermath of Enron and other high profile corporate scandals there have been many proposals and legislation (e.g., the Sarbanes - Oxley Act) designed to improve corporate accountability. Moreover, the scandals have caused the accounting profession to rethink about executive compensation practices and their role in inducing managerial behaviour that maximises shareholder value. An important part of a typical compensation package is the bonus. The main objective of the paper is to readdress the issue of managerial incentives created by bonuses and in particular the impact of bonuses on investment decisions. To do this, the paper critically examines two related sets of hypotheses, namely the "fixed-target" and "ratcheting-target" hypotheses. The comparison of the above predictions reveals a contradiction, which in turn consists a potentially interesting empirical question.

The remainder of the paper is organised as follows. The next section discusses the impact of the non-linear payout bonus structure on investment choices. Section 3 elaborates on the implications of the budgeting process for the investment decision process. Section 4 concludes.

2. Managerial Incentives and Non-Linear Payout Bonus Structure

Accounting researchers have long been concerned with managerial behaviour when it is faced with a choice among alternative accounting techniques. In an early attempt to derive a positive theory of the determinants of accounting choices, Gordon (1964) introduces the proposition that managers select accounting procedures to maximise their own wealth.

Watts and Zimmerman (1978) expand the above by distinguishing between mechanisms that maximise managerial wealth: a) via increases in share price (i.e. common stock and stock options) and b) via increases in accounting income (i.e. incentive bonuses). The choice of accounting methods

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can affect both of these forms of compensation indirectly through: a) taxes, b) regulation, c) information production costs (i.e. book-keeping costs), d) political costs and e) management compensation plans. The first four factors increase managerial wealth by increasing the cash flows and hence, share price. The last factor can increase managerial wealth by altering the terms of the incentive compensation.

Moreover, taxes, regulation as well as information production and political costs lead to the adoption of *income-decreasing* accounting methods and hence cash flow-increasing methods (i.e. less reported income results in fewer taxes and in turn in higher cash flows). In contrast, managerial bonuses - tied to current accounting earnings - result in the selection of *income-increasing* accounting techniques. The extent to which managers will choose income-decreasing over income-increasing accounting methods depends on the incentives of the various groups involved to adjust for a change in accounting methods.

Specifically, according to the analysis of Watts and Zimmerman, the main groups that could be affected by a change in accounting profits due to changes in accounting standards are shareholders, board directors and politicians. Let's assume, for example, that accounting profit and hence, bonus awards have increased due to a change in accounting standards. Obviously, such an increase does not harm politicians; on the contrary, it means more taxes. However, if directors do not adjust the compensation plans, the firm's share price and hence, directors' wealth will decline by the full discounted present value of the additional compensation. Moreover, the decline in firm value will attract potential buyers who will eliminate those activities that are not in the best interest of the shareholders. Higher take-over threat will in turn increase the possibility of a director's removal. Overall, assuming that capital markets are efficient, the rewards for shareholders and board directors to adjust compensation plans for changes in accounting procedures are immediate and direct.

In contrast with the private sector, the benefits of adjusting for changes in accounting standards are lower in the political sector. Let's assume, for example, that a utility's accounting profit has decreased due to a change in accounting methods. Such a decrease will increase the wealth of shareholders and directors (i.e. less taxes resulting in higher cash flows and share price). What are the incentives for a utility regulator (i.e. politician) for adjusting the utility's accounting numbers? First of all, the regulator's wealth will not decline. Secondly the possibility of his removal from office is also minor because of the large monitoring costs incurred by consumer groups. Therefore, the benefits for politicians to adjust accounting profits for changes in accounting standards are not significant at all.

Consequently, for a given accounting standard change, managers should expect their own shareholders and board directors to make a more complete adjustment than politicians. Given this analysis, Watts and Zimmerman (1978) conclude that managers have greater incentives to choose income-reducing than income-increasing accounting techniques. This prediction is, however, conditional upon the firm being *regulated* or subject to *political pressure.*

While this conception of business environment need not prevent useful analysis, it does have the effect of narrowing the range of phenomena that can be explained. Healey (1985) adopts the positive accounting theory of Watts and Zimmerman in order to explain the managerial behaviour in all companies and not only the regulated ones or those subject to political pressure. In doing so, Healey implicitly assumes that managers have the same incentives to increase or decrease accounting earnings.

Based on this fundamental presumption, Healey examines in further detail the incentive effects of managerial bonuses. In his analysis, bonuses are typically calculated based on a formula that defines the maximum transfer to the bonus pool. He postulates that managers be provided with incentives to manage reported income both upwards and downwards, because of the *non-linear payout structure of bonus schemes*. Specifically:

a) If earnings before discretionary accruals are less than the lower bound on earnings, the manager has an incentive to select income-decreasing accounting techniques. This is because even if he chooses the maximum, reported income will not exceed the lower bound and no bonus will be awarded. By deferring earnings to the next period, the manager maximises his expected future award.
b) If earnings before discretionary accruals exceed the lower bound, but not the upper target of bonus, the manager has an incentive to select accounting policies to increase income.

c) If the compensation scheme specifies an upper limit on earnings and earnings before discretionary accruals exceed that limit the manager has an incentive to choose accounting methods to decrease income. This is because when the bonus plan upper limit is binding, earnings before discretionary accruals exceeding that bound are lost for bonus purposes. By deferring income that exceeds the upper bound, the manager does not reduce his current bonus while he increases his expected future award.

It is often argued that managers alter reported earnings, in order to maximise the value of their annual bonus awards, not only by making certain accounting choices but also by making or deferring expenditures, such as research and development (R&D), advertising or maintenance (e.g. Healey and Wahlen, 1999). Holthausen, Larcker and Sloan (1995) examine the extent to which managers behave opportunistically by manipulating investment expenditure. Their work differs from Healey's study in one main way: bonuses are budget-based and not formula-funded. In the 1970s the bonus pool began to be replaced by the so-called "budget-based" incentive arrangements. Budget standards include plans based on performance measured against the company's annual budget goals (such as a budgeted-net-earnings objective). The bonus actually earned depends on the degree to which performance goals are achieved.

In their analysis, Holthausen et al. employ a number of simplifying assumptions, namely:

a) Managers do not have any other compensation plan tied to accounting earnings.
b) The terms of the compensation contract (e.g. targeted earnings, target bonus, maximum bonus, etc.) will not change in response to the firm's reported performance.
c) The expected level of expenditure is the same across various groups.
d) Any decline in investment expenditure is not offset by immediate declines in sales.

They then develop a set of hypotheses, regarding the incentive effects of bonus award on investment choices, the so-called *fixed-target* hypotheses:

a) If manager's actual bonus equals zero or is less than their stated minimum bonus (i.e. earnings are below the lower bound), the manager has an incentive to decrease earnings and hence, to accelerate R&D, advertising and capital expenditure.
b) If manager's actual bonus is between the minimum and maximum bonus (i.e. earnings are between the lower and upper limit), the manager has an incentive to increase earnings and hence, to postpone investment expenditure.
c) If manager's actual bonus is greater than the maximum bonus (i.e. earnings exceed the upper limit), the manager has an incentive to decrease earnings and hence, to accelerate investment expenditure.
d) Capital expenditures, as opposed to R&D and advertising expenses, can be either capitalised or expensed as incurred. Consequently, an alternative view for capital expenditures is that managers choose to expense more capital expenditure in periods when they are above the upper bound or below the lower bound, and choose to capitalise more capital expenditures when they are between the bounds.

In sum, both Healey and Holthausen et al. attribute managerial incentives for earnings manipulation, through either accounting or investment choices, to the non-linear payout structure of bonus schemes. The following section elaborates on a related stream of research, namely "the ratchet-principle" literature, which asserts that incentives for investment manipulation are also provided by the *budgeting process* itself.

3. Managerial Incentives and the Budgeting Process

The use of current performance as a partial basis in determining future targets is a common practice of economic planning. The result is the familiar "ratchet principal"; current performance acts like a notched gear wheel in fixing the point of departure for next period's goals. This ratchet principle creates a dynamic incentive problem that can be found in many situations, e.g. from the determination of piecework standards for individual workers to the setting of budgets for large companies. In particular, agents face a dynamic trade-off between present rewards from better current performance and future losses from the assignment of higher targets.

The ratchet effect was introduced by Weitzman (1980) who formulates the problem as a multi-period stochastic optimisation model incorporating an explicit feedback mechanism for target setting.

Weitzman assumes that the planner commits himself in advance to an intertemporal sequence of incentive schemes. In other words, the planner announces the current scheme and the revision procedure at the start and the firm solves its dynamic problem given the planner's intentions. Although the model is a gross oversimplification of reality, it captures the main ingredients of the dynamic incentive problem and it does allow a sharp quantification of the basic trade-offs involved in the ratchet-effect.

Freixas, Guesnerie and Tirole (1985) relax Weitzman's assumption of commitment and assume that the planner is not able to commit himself to an intertemporal revision procedure of incentive schemes at the start. They argue that the no-commitment assumption is a more realistic one because: a) the planner has the discretion not only to design incentive schemes but also to change them over time, b) the planner may be replaced by another one who may not wish to adopt the scheme designed by his predecessor, c) the costs of designing intertemporal incentive schemes may be very high and d) the planner may obtain new information about the company over time (e.g. inside information about effort). Given the above, the sequential choice of reward schemes by the planner and outputs by the firm is modelled as a game between the partners. But, the ratchet effect continues to exist even under the no-commitment assumption, in the sense that the planner may choose a scheme that is sub-optimal from a static point of view in order to induce revelation.

The ratchet principle was further studied by numerous scholars (e.g. Lazear 1986, Gibbons 1987 and Kanemoto and MacLeod 1992 among others). The optimal solution to the ratchet -effect problem is beyond the scope of this paper. What is of interest here is that a fundamental implication of the ratchet-effect is that superior performance in year t is rewarded through higher bonuses in year t but penalised through higher performance standards in year t+1.

Drawn on the ratchet-effect literature, Holthausen et al. (1995) characterise a typical budgeting process as a ratcheted target. That is, the budget goal is increased in years in which prior-year actual performance exceeds the prior-year performance standard but is not decreased when actual performance falls short of the standard. Based on the above, Holthausen et al. derive the *ratcheting-target* hypotheses predicting the association between bonuses and investment expenditure:

a) If manager's actual bonus equals zero or is less than their stated minimum bonus (i.e. earnings are below the lower bound), the manager has an incentive to decrease earnings and hence, to accelerate R&D, advertising and capital expenditure.
b) If manager's actual bonus is between the minimum and maximum bonus (i.e. earnings are between the lower and upper limit), the manager has an incentive to smooth income.
c) If manager's actual bonus is greater than the maximum bonus (i.e. earnings exceed the upper limit), the manager has an incentive to decrease earnings and hence, to accelerate investment expenditure.

Murphy (1999) elaborates on the managerial incentives for investment manipulation when actual bonus is between the minimum and maximum limit. He argues that budget-based compensation arrangements can yield incentives for managers to *achieve*, but not to *surpass*, the established performance standard. This, of course, may vary depending on the actual terms of the compensation agreements. Given the above, Murphy predicts the following:

a) If current performance is lower than budgeted or prior-year performance (i.e. if actual bonus is above the stated minimum bonus but below the targeted bonus), then managers have incentives to increase earnings and hence postpone investment expenditure in order to achieve the predetermined target.
b) If current performance is higher than budgeted or prior-year performance (i.e. if actual bonus is above the targeted bonus but below maximum bonus), then managers have incentives to decrease earnings and hence accelerate investment expenditure in order not to increase next year's performance standard.

Comparing the implications of the ratcheting-target hypotheses with those of the fixed-target hypotheses we observe that managerial incentives differ only when actual bonus is between minimum and maximum bonus (i.e. when firm's earnings are between the lower and upper bound). In other words, for this particular range of earnings, positive accounting theory predicts that managers may wish to *decrease* investment expenditure. In contrast, ratchet-principle literature predicts that managers may wish either to *increase* or *decrease* spending on R&D, advertising and fixed assets, depending on whether actual performance is below or above targeted performance.

The main reason for the above contradiction is that under the fixed-target hypotheses the parameters of the bonus contract (i.e. target bonus) are assumed to be fixed. In contrast, under the ratcheting-target hypotheses, performance goals are assumed to increase in years in which firm performance exceeds targeted performance but not decreased when firm performance is less than targeted performance. Whether positive accounting theory has a better predictive power than ratchet-principle literature is an issue of empirical testing.

In sum, the effect of bonuses on investment expenditure is not clear. Instead, as Diagram 1 illustrates the bonus impact can be either positive or negative:

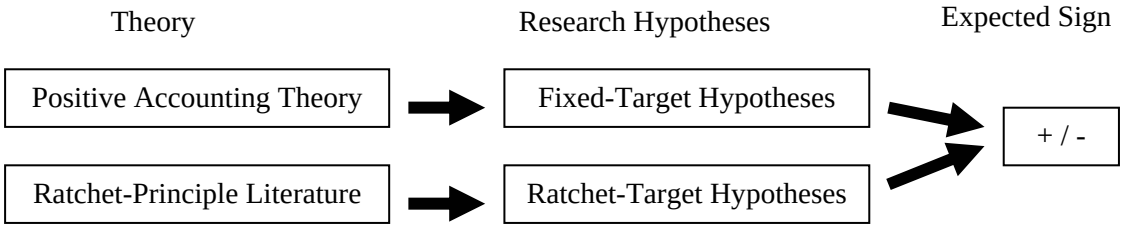

Fig. 1. The Impact of Bonus Awards on Investment Expenditure

In the particular case when actual bonus is between minimum and maximum bonus (i.e. when firm's earnings are between the lower and upper bound) the contradicting predictions between positive accounting theory and ratchet-principle literature are presented in Diagram 2:

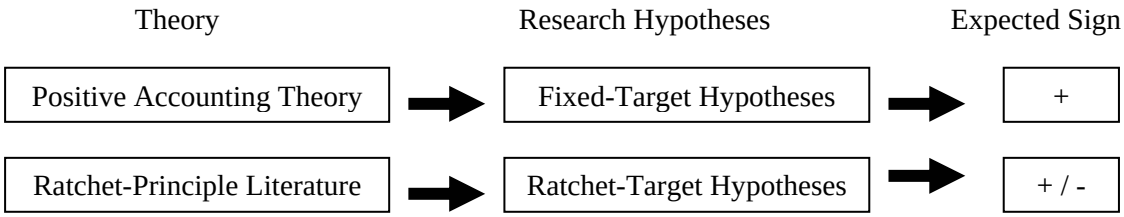

Fig. 2. Positive Accounting Theory versus Ratchet-Principle Literature

4. Conclusions

This paper discusses a very significant and often controversial issue, namely the impact of accounting-based compensation (i.e. bonus awards) on corporate investment decisions.

The paper elaborates two related theories, the positive accounting theory and the ratchet-principle literature, paying particular attention at the underlying assumptions. Assumptions, however simplifying they may be, are essential and inevitable as the means of defining the boundaries of a research approach and guaranteeing the internal coherence of the theories and ideas involved.

The analysis of the two theories reveals an important controversy regarding the impact of managerial bonuses on investment choices: the contradicting predictions between the fixed-target hypotheses, drawn on the positive accounting theory, and the ratcheting-target hypotheses, drawn on the ratchet-principle literature. According to the former, managers may wish to *decrease* investment expenditure. According to the latter, managers may wish either to *increase* or *decrease* investment spending. Which of the two theories explains better the economic reality remains the subject of future empirical research.

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