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Design issues in bonus contracts

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Abstract

Bonus plans have become a popular tool for compensating managers and employees. While other accounting studies on bonus plans typically focus on earnings management, for example by examining the association between cash bonuses and stock returns or the incentive for management to manage earnings, our study discusses specific issues that are relevant in designing and understanding bonus plans based on financial performance measures.

Bonus contracts should be designed so they align the interest of management and owners. In practice, this is far more difficult than it sounds. We discuss issues that require special attention in preparing bonus contracts: Choice of performance measure(s), accounting issues, link between performance and bonus, and bonus threshold.

Our study should be of interest to managers, compensation committees, investors and others interested in bonus plans. A proper bonus plan is essential to ascertain that management compensation is closely linked to management's ability to create value.

Keywords
Bonus contracts, design issues, performance measures, accounting problems.

1. Introduction

Executive compensation based on performance measures (e.g., earnings, EVA) or share based compensation (stock options, warrants) has been a topic of considerable controversy in the academic and business communities for a number of years.

While executive compensation is often based on stock options and warrants, they require that market data (i.e., stock prices and stock returns) are available[1]. However, the majority of firms within the EU are non-listed. For instance, only about 200 Danish companies are listed on the OMX (formerly known as the Copenhagen Stock Exchange), while the number of *active* public limited and private limited companies in Denmark amount to 78,825 in 2004 according to Danmarks Statistik (Danmarks Statistik: General Firm Statistics 2006). Since market data (stock prices) are not available for the majority of Danish firms, executive compensation must be based on financial and/or non-financial measures. Among the 1,865 Danish firms with more than 50 employees and a turnover in excess of 50 million DKK more than half of them provide top management with a bonus plan (Greens, 2003)[2]. The size of the bonus varies, but for 35% of the manager's bonus equals at least 40% of the base salary (Greens, 2003). Since financial measures (e.g., earnings) intend to capture a firm's underlying performance, compensation is often based on such measures. We focus entirely on financial measures, but many of our considerations are applicable to non financial measures as well.

We discuss four major issues in designing accounting bonus contracts, which bonus committees and executives should consider: (1) choice of performance measure(s), (2) accounting issues, (3) the relation between bonus and performance measures, and (4) performance standards (bonus threshold). We consider one period performance measures only, as those are the ones used primarily in practice. In most cases, we do not provide solutions to the design issues, as these issues are often case specific making it impossible to generalise.

Our paper should be of interest to anybody involved in accounting based bonus contracts including advisors (e.g., attorneys and auditors), bonus committees, investors and executives (managers and other key personnel). It is our intention to pinpoint major problems that parties involved in designing bonus contracts may use as a checklist when writing bonus contracts.

2. Design issues in bonus contracts

Bonus committees should align shareholders and managements interests. Accounting based performance measures should support corporate strategy in order to maximize shareholder value and, thus, reflect (true) economic income.

According to extant literature executive bonus plans can be categorized in three basic components: choice of performance measure(s), the relation between pay (compensation) and performance and the choice of performance standards (see for example Murphy, 2001). We devote special attention to accounting issues embedded in the three basic components of a bonus contract. Thus, we add accounting issues as a separate component leaving us with a discussion of these four components:

- Choice of performance measure(s)
    a. Does it support the firm's strategy?
    b. Should bonus be based on reported figures (e.g., annual report) or adjusted figures (internal report)?
    c. How should events that management cannot control affect bonus?
    d. How can it be avoided that management focus on short term performance (horizon problem)?
- Accounting issues
    a. How should changes in accounting practices affect bonus?
    b. What are the pros and cons of different accounting measures of performance?
- Relation between performance and bonus
    a. Should bonus be linearly tied to performance or paid as a lump sum?
    b. Should the size of bonus have a minimum and a maximum (floor-caps)?
- Performance standards (bonus threshold)
    a. What should be the threshold (benchmark) for bonus?

These issues are discussed in turn.

3. Choice of performance measure(s)

The fundamental idea behind granting bonus is to align the interests of management (agent) and the owners (principal). Bonus contracts should help ensure that management act in accordance with the selected strategy in order to maximise long term *value creation.* Choice of performance measure is critical since it has been empirically shown that 'you get what you measure and reward' (Wallace, 1996) that is managers take actions consistent with incentives from those performance measures.

In practice bonus to management may be based on a variety of financial measures. Banghøj (2006) examines which financial measures are most frequently used by Danish listed firms. The results are shown in figure 1:

Rank by frequency of use of financial performance measures (1 = Most frequently used, 4 = Least frequently used)	
Earnings before interest and taxes (EBIT)	1
Turnover	2
Contribution margin	2
Net operating profit after tax (NOPAT)	2
Cash flows	2
Earnings after taxes (net income)	3

Economic value added (EVA)	3
Earnings before interest, tax, depreciation and amortization (EBITDA)	4
Cost reductions	4
Return on equity	4
Return on invested capital	4
Cash flow return on investment (CFROI)	4

Figure 1: Financial and non financial measures in Danish listed companies used to determine bonuses 2001 (Banghøj, 2006)[3]

It is evident from figure 1 that accounting based measures including 'turnover', 'earnings from operations' (EBIT, contribution margin, NOPAT etc.), and 'net income' are among the most popular financial measures used in bonus contracts. If a firm's objective is to maximize shareholders wealth, the chosen earnings measure should reflect this. That is, there should be a clear correlation between the earnings measure and firm value.

If bonus is based on reported figures (and details about bonus contracts are properly disclosed), financial statement users (e.g., investors) are provided with relevant information in regard to bonus contracts. This ensures transparency. However, since reported figures may be a noisy measure of the true underlying performance due to earnings management and/or the inclusion of 'special items', 'transitory items' and the like it may be argued that reported figures should be properly adjusted to better reflect the 'true' performance (internal performance measure). This, again, raises some questions of concern. For instance, which adjustments should be considered? Could it be that the items that should be adjusted for varies over time? This issue is further addressed in section 3 'Accounting issues'.

Management should be awarded bonus to the extent that they act in the interest of the owners; i.e. create value. An important premise is that there is a strict link between management's efforts and the performance measure bonus is based on. Put differently, management should be rewarded only to the extent that they have an *impact* on firm performance. However, a variety of events cannot be 'controlled' by management. Terror, earth quakes, tax rates, interest rates, political inference etc. are just a few examples. A case in point is interest rates that are dependent upon a number of macroeconomic factors that management cannot control. For highly leveraged firms, earnings may fluctuate substantially, when market rates of interest fluctuate. This leaves the obvious questions: How can this be controlled for in the bonus contract? Who decides which events are uncontrollable by management? Is it possible at all to separate the (economic) effects from such events? These, and similar, open questions indicate that the effects of 'uncontrollable events' on bonus should be decided by the compensation committee on a case by case basis.

Finally, warnings-based performance measures may provide management with incentives to focus on short-term performance, which Smith and Watts (1982) and Dechow and Sloan (1991) define as the *'horizon problem'*. The horizon issue is especially problematic if management is close to retirement or plan to quit. Management, close to retiring or leaving office, may focus on short term earnings by for example postponing investments in R&D and marketing and avoiding restructuring plans that affect current year's earnings negatively, but has a positive effect on earnings in future years. Thus, by initiating restructuring, executives may be punished (net earnings are lower) even though restructuring is (presumable) sound from an economic point of view.

To avoid that management focuses on short term profit, one periodic performance measure (e.g., net earnings) might be replaced by a multiple periodic (financial) measure. The use of a bonus bank may also mitigate the horizon problem. Finally, the bonus contract may include *several performance measures* and/or non-financial measures.

4. Accounting issues

How should changes in accounting practices affect bonus
Changes in accounting practices may take place for several reasons. The question is how such changes should be accounted for in bonus contracts. We address two types of changes: mandatory changes and voluntary changes.

Financial statement information shall contain relevant and reliable information and give a 'true-and-fair-view' of a firm's earnings and financial position. This leaves room for management's discretion. *Voluntary changes* in accounting practices (e.g., change in its income recognition policy from point of sale to percentage of completion method) may have a significant effect on the reported numbers. Ideally, voluntary changes should not affect bonuses, as it distorts the measurement of the 'true' underlying performance of the firm. At the least, the bonus contract should include clauses that describe how voluntary changes should be accounted for.

A prominent example of *mandatory changes* in accounting practices is that all listed companies within the EU must comply with the international accounting standards (IAS/IFRS) as of January 1, 2005. Changing from local regulation (e.g., Danish GAAP) to international standards had in many cases significant effect on reported earnings. For instance, as a result of the change from amortizing goodwill over its useful lifetime to an impairment test only approach several listed companies on the Copenhagen Stock Exchange improved earnings by 400 – 500 million DKK. As with voluntary changes mandatory changes should not affect bonuses.

What are the pros and cons of different accounting measures of performance
Financial measures include a variety of earnings measures from the top line (turnover) to the bottom line (net income). As many different accounting performance measures are used in compensation contracts (as seen in figure 1), we discuss pros and cons of commonly used performance measures: turnover, EBIT, net earnings and EVA. We hypothesize that these performance measures are used widely, also by non-listed companies.

Net turnover

If growth is desired for instance because the firm wants to penetrate new markets, turnover might be a relevant performance measure (i.e. management is rewarded based on growth in turnover). The advantage of this measure is that it is unaffected by accounting policies[4]. Thus, earnings management is not an issue. On the other hand, turnover does not account for costs and invested capital. For instance, by acquiring a new company turnover will increase ‘automatically’, when the two companies merge.

Another accounting issue is whether management should be rewarded (punished) for a favourable (unfavourable) development in the exchange rate. Changes in the exchange rate might affect turnover significantly. A case in point is Novo Nordisk. In its annual report for 2000 (page 5) Novo states that: ’….a favourable development in the exchange rate contributed to sales growth by 11 percentage points.’

EBIT

EBIT is a highly relevant performance measure, as it measures the outcome of the core business (before tax) regardless of how the company has financed its activities. However, it raises several issues including (but not limited to):

- Should R&D and other forward looking costs (e.g., marketing costs) be expensed or capitalized?
- How should transitory items be accounted for?
- How should changes in accounting estimates affect compensation?

It is paramount for biotech and high tech firms to invest in R&D to become commercially successful. For those firms recognition of investments in R&D as expenses may make it difficult for management to achieve bonus especially for new firms if bonus is based on earnings measures like EBIT.

A further complication is the fact that EBIT does only partially account for investments (e.g., depreciation and amortisation are expensed). For instance, EBIT growth may be obtained simple by raising additional share capital and investing the proceeds in assets (e.g., bank deposit) even though this operation may destroy value (negative NPV).

Examples of elements, which are often labelled ‘special items’, ‘transitory items’ or the like include gains and losses from disposal of assets, restructuring charges, discontinued activities etc. The treatment of those items raises at least two questions in relation to compensation:

1. Should transitory items affect compensation?
2. Who decides what is considered a transitory item?

These issues are discussed below.

(1) Should transitory items be included in performance measures?

Bonuses based on various earnings measures give management an incentive to manipulate accounting principles and estimates in order to increase bonuses.

Management may thus be tempted to write-off large amounts on assets in periods, where they will not be able to meet bonus targets. In that case expenses are charged to current year's income, while making it easier to reach targets in the coming years. Obviously, earnings measures should rely on the same accounting principles and estimates over time.

If management are paid a cash bonus based on operating measures (e.g., EBIT), it might be argued that 'special items' should be expensed at least to the extent they are related to core operations. For example, restructuring or reorganising a firm to better meet the challenge of changing market conditions is clearly an ongoing part of running a business. However, as the following examples illustrates, there is a need to consider these items on a case by case basis.

Example 1: Transitory item should be included in performance measure
A Group has sold its packaging division after an attractive offer from a competitor. The accounting profit amounts to 250 million DKK. Board (and management) find that they have made an excellent deal, as they believe that they will never be able to get a satisfactory return (as measured by WACC) on the sales price. The board estimates that the transaction has improved the value of the firm by 100 million DKK. The question is whether the 250 million DKK should be recognized in the accounting measure that bonus is based on. There is no doubt that the accounting profit of 250 million DKK. is a transitory item. At the same time investors' real profit is less than 250 million DKK (100 million DKK.). Management has created value for the investors by selling off the packaging division.

This ought to be reflected in the earnings measure that bonus is based on, which stresses that the profit from disposing off packaging division should be recognized. Alternatively, managements might be awarded a separate bonus for divestment of the packaging division.

Example 2: Transitory item should not be included in performance measure
There are, however, also transitory accounting items that should not be included in EBIT, as shown in the following example. A paint producer has just closed down a production line an experienced an accounting loss of 25 million DKK. However, due to assumed cost savings of 15 million DKK. per year for the next10 years the total effect is a positive NPV of 67 million DKK (assuming a WACC of 10%). If management do not close down the production line, the owners will forego a profit of 37 million DKK.

The issue here is also a horizon problem – management should act as to secure long term profitability of the firm. This can be obtained by measuring EBIT exclusive of transitory items that have an effect on future years performance (EBIT). Another way to mitigate the horizon problem would be to award management a separate bonus based on the expected profit from closing down the production line. Finally, the horizon problem may be overcome by using multi period performance measures.

(2) Who decides if an item is transitory
A further complication is the question of who eventually decides if an item is 'transitory' or 'permanent' – the bonus committee or management. A solution to this problem may be to specifically list every transitory item in the bonus contract. However, it seems a daunting task to imagine every possible transaction that might be characterised as a transitory item. Deciding what constitutes a transitory item on a case by case basis is an alternative solution. This solution is also problematic for a number of reasons. For example, it's bureaucratic since it (potentially) leaves the bonus committee and management with an ongoing discussion of which items are *truly* transitory. Thus, it is difficult to provide a general recommendation.

Net earnings
Net earnings as a performance measure has the advantage that it captures all income and expenses no matter how these items are classified in the income statement. Nonetheless, it raises the same concerns as listed under EBIT. In addition, the effects of capital structure and taxes come into play. A firm may often have a politic of a certain capital structure leaving little discretion to management. On the other hand, if the capital structure is changed by issuing new capital and repaying interest bearing debt, earnings increase (cost of capital to the owners is not an expense in the income statement). Should this increase in earnings affect bonus? If not, how should it be accounted for in the bonus contract?

The corporate tax rate has declined considerable over time, which has had a positive effect on earnings. Management has no control over the development in corporate tax rates questioning the wisdom of measuring performance on an after tax basis.

EVA (Economic Value Added)
In its pure form, EVA seems to be the ideal performance measure. Economic profit (economic value added) is not obtained until all capital providers have been compensated. However, EVA is prone to accounting distortion. In fact, the EVA literature recommends a host of accounting adjustments before calculating EVA. To avoid this tedious task, bonus may alternatively be based on the change in EVA from year to year. In this case, a low (high) initial invested capital due to, say, conservative (aggressive) accounting initially produces high (low) EVA figures. A positive change in EVA, thus, requires a higher future level of EVA.

Even though EVA from a theoretical point of view has its merits as a measure of a firm's value creation (economic profit), it's not a perfect measure. For instance, it does not take the *horizon problem* (single vs. multiple period performance measures) into consideration in the sense that it only considers the effects of transactions on current year's financial statements. Restructuring costs, for example, has a negative effect on current years EVA even though future periods EVA may improve (NPV positive). In fact, the findings in the extant EVA literature question if EVA is a better measure of value creation than (various) earnings figures. For instance, Biddle et al. (1996) find that on average EVA does not dominate earnings as a performance measure.

5. Relation between performance and bonus

An open question in designing bonus contracts is how bonus should be tied to performance. The following represents likely candidates:

- Linearity between performance and bonus
- Lump sum bonus
- A minimum and a maximum bonus (floors-caps)

At first glance, linearity seems to be the proper way to link bonus to performance. The better the performance (in whatever way it's measured), the higher the awarded compensation. However, without a lower and upper limit for the size of the bonus, linearity between bonus and performance raises some concern. Compensation committees must consider issues like: Is it reasonable that compensation may be exorbitant if performance is excellent? What if the performance is excellent, but the main competitors are performing even better? What if the company has negative earnings? Does this imply that bonus should be negative? In this case should executives pay cash to the firm or should the negative bonus be off-set against future positive bonuses (bonus bank)?

Alternatively, bonus may be paid out as a lump sum, if management are able to perform as stipulated in the bonus contract. It is critical in this respect that if executives during the year find it hard to reach target, they may not be motivated to work in the best interest of the company's owners. Moreover, if they have already met the target before year end, they may not be motivated to work as hard in the remaining part of the (fiscal) year.

A final possibility is to limit bonus to a certain range (floor and caps). In between the minimum and maximum bonus, the correlation between performance and bonus is linear. An issue in this respect, that is not easy to overcome, is the likelihood that executives may engage in earnings management. For instance, if performance is below the floor (e.g., earnings below minimum requirement as set forth in the bonus contract), management may be tempted to take 'a big bath' (make too large provisions for restructuring, depreciate and amortize assets too quickly etc. in order to improve future profitability). Research document that floors and caps on bonus contracts provide incentives to shift reported earnings between periods (Healy, 1985).

6. Performance standards (bonus threshold)

As discussed above, bonus should be linked to performance. A related issue is what the various performance measures should be benchmarked against. Murphy (2001) argues that bonuses in practice are based on performance measured relative to a performance standard. Arguably, a high level of, say, turnover or EBIT does not in itself suggest that value is created neither in the short term nor in the long term. For performance measures to be useful there must be a standard of comparison. Milgrom and Roberts (1992) argue that reasonable, objective ways to set performance standards are: Past performance, determination of how difficult it is to carry out particular operations, for example required return on capital (benchmarking) and performance of executives in comparable firms or industries (peer-groups). Based on Milgrom and Roberts (1992) relevant basis for comparison includes:

- Past performance (e.g., net earnings)
- Benchmarks (e.g., WACC)
- Peer groups (comparable firms)

From a pure criterion of costs associated with measuring performance, standards based on past performance should be preferred since historical performance data are easily available (Murphy, 2001).

Benchmarking includes for example comparing return on invested capital (ROIC) to the cost of capital (WACC) or return on equity (ROE) to investors required return on equity capital (r_e). This is basically equivalent to using EVA as a performance measure, and introduces the same issues (benefits and pitfalls).

A third way of comparison includes benchmarking against competitors, for instance comparing ROIC with the average ROIC from firms in the peer group. A benefit of this comparison is that macro economic factors are 'evened out'. If ROIC, for example, is at an all time high due to an economic upturn, competitors are also likely to perform exceptionally well effectively limiting the size of bonus. On the other hand, it may be difficult to find a peer-group, since these firms should be comparable in respect to risk and accounting practices.

While not included by Milgrom and Roberts (1992), comparing performance to an approved budget seems to be a possible performance standard. For instance, if market penetration is high on the agenda, turnover may be the relevant performance measure. A gauge for turnover could be the approved budget effectively linking bonus to growth in turnover. Likewise, EBIT or other earnings measures could be linked to budget. A pitfall in this regard is that the budget may be overly pessimistic, as it is prepared by management, who might be tempted to prepare a budget that is easy to fulfil.

7. Conclusion

In designing bonus contracts the parties involved should pay close attention to the choice of performance measure(s), accounting issues, the link between performance and bonus, and performance standards. While we discuss design issues in preparing bonus contracts, we do not provide clear-cut answers as how to control for all these issues. In fact, we raise a number of questions that bonus committees at a minimum should consider in writing bonus contracts. We hope that a thorough discussion of those issues *prior* to writing bonus contracts may prevent intense interpretation discussions once the contract has been issued. It all adds up to establishing a bonus contract that aligns the interest of management and owners.

Literature

Biddle, G., Bowen, R.M., Wallace, J.S. (1996). Evidence on the relative and incremental information content of EVA, residual income, earnings and operating cash flow, Working paper, University of Washington, Seattle, WA.

Dechow, P. M. and Sloan, R. G. (1991). Executive incentives and the horizon problem, *Journal of Accounting and Economics 14 (1),* 51 - 89

Healy, P. (1985). The effect of bonus schemes on accounting decisions. *Journal of Accounting and Economics 7,* 85 - 107

Milgrom, P. and Roberts, J. (1992). Economics, Organisation & management, Prentice Hall: New Jersey.

Murphy, Kevin (2001). Performance standards in executive contracts. *Journal of Accounting and Economics, 30 (2001),* 245 - 278

Smith, C. and R. Watts (1982). Incentive and tax effects of executive compensation plans, *Australian Journal of Management 7,* 139-157.

[1] Even if a firm is not listed on a stock exchange, stock options may be used for compensation purposes. This requires that firm value is estimated on a regular basis as a proxy for what the market price would have been. This raises a variety of issues as discussed in Petersen et al. (2006).
[2] Greens Analyseinstitut is a large institution that conduct political and marked analysis.
[3] Average illustrates the extent to which each single measure is used to gauge the size of compensation. For example, if compensation is based on 'contribution margin' this performance measure has a weight of 48% in calculating (the potential) bonus.
[4] Except for changing recognition criteria from, say, point-of-sale to production criteria.