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## Changes in Directors' Incentive Plans and the Performance of Firms in the UK

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**Abstract**

Although many companies in the UK adopted an incentive plan for their directors in response to the Cadbury recommendation, few studies have examined the effect of these incentive programmes on firm performance. We investigate whether companies with these incentive plans achieve better performances than those without. The most striking feature of this research may be that we find a strong connection between incentive compensation plans and the performances of firms. In particular, we find a positive relationship between the *change* of compensation policy and the *change* of firm performance.

**Changes in directors' incentive plans and the performance of firms in the UK**

## 1. Introduction

In response to recommendations by the Cadbury committee, many firms in the UK tried to strengthen the link between executive compensation and firm performance. However, relatively few studies have investigated whether companies with these new incentive plans perform better than companies that have not adopted them. The purpose of this paper is to investigate the effect of incentive plans for directors on the performance of their companies in the UK. Particularly, we investigate whether companies that changed their pay policies improved their performances.

There are relatively few studies on the effect of salary policies on the performance of firms, although there are many studies on the determinants of executive compensation (Abowd and Kaplan, 1999; Conyon, Gregg and Machin, 1995; Cosh and Hughes, 1997). Abowd (1990) also showed that higher sensitivity of compensation to corporate performance yields a better economic return the next year, while Mehran (1995) found that firm performance is affected by the percentage of CEO compensation that is equity-based. In contrast, Vafeas (2000) failed to find a link between operating performance and incentive plans for outside directors.

In this paper, we find a strong connection between these variables. In particular, this research shows that companies that change their pay policies are more likely to achieve better performances than others. This result is consistent with principal-agent theory that predicts a positive relationship between

pay-performance sensitivity and performance.

## 2. Hypothesis: incentive plan and performance

According to principal-agent theory, higher performance-pay sensitivity yields higher company performance. Then, we analyse the relationship between these two variables. The hypotheses analysed here are:

> *Hypothesis 1*: Companies with higher pay-performance sensitivities achieve better performances; and
>
> *Hypothesis 2*: Companies that increase their performance-pay sensitivities achieve higher company performances.

The difficulty in this study is that we cannot directly observe each company's pay-performance sensitivity for a given year. Thus, we redefine pay-performance sensitivity as the percentage change of payment divided by the percentage change of company performance, that is,

$$\eta \equiv \frac{\Delta pay_t \big/ pay_t}{\Delta performance_t \big/ perofmance_t}$$

Using this new definition, we compute each company's pay-performance sensitivity in 1993 and 1994. This sensitivity shows the percentage by which pay increases/decreases when company performance increases by 1 per cent. We calculate this sensitivity measure for two performance variables: profit and earnings per share (EPS). We choose these two variables because they are the most

frequently used performance criteria in incentive plans for directors in large UK companies (Williams, 1994).

We also calculate the 'sensitivity change dummy variable', which is set to 1 if this sensitivity in 1994 is larger than that in 1993. This sensitivity change dummy shows whether the company intensified its performance-pay sensitivity.

Large numbers of British companies have some kind of incentive programme, such as annual incentive (AI) (Monks partnership, 1994). Many companies introduce annual bonuses in their compensations for executives to motivate directors to raise their awareness of short-term performances (Williams, 1994). Thus, we test the following hypotheses:

> *Hypothesis 3:* Companies with annual incentive schemes achieve higher company performances than those without such schemes; and
>
> *Hypothesis 4*: The performances of companies with newly introduced annual incentive programmes are better than other companies.

We assume that pay-performance sensitivity in 1994 has an effect on the company performance of that same year, rather than on performance in 1995. One reason is that, in many large companies in the UK the performance-pay sensitivity for year t is set at the beginning of that year by the remuneration committee (Williams, 1994).

## 3. Research method

In this research, we focus on the probability that companies improve their performances in 1994, as a performance variable. The following regression model

is estimated:

$$probability\ \ (\Delta performance > 0)$$
$$= f(AI, newAI, sensitivity, sensitivity\,change, industy\_dummies)$$

where AI, the dummy variable that shows whether the company has an Annual Incentive (AI) plan, has value 1 if the company has AI;

NewAI, the dummy variable that shows if the company introduced an annual bonus, has value 1 if the company has a new AI;

Sensitivity is the variable for performance-pay sensitivity; and

Sensitivity change, which shows whether the sensitivity increased this year, has value 1 if the company intensifies its pay-performance sensitivity.

Our hypotheses suggest that all the coefficients for AI, newAI, sensitivity, and sensitivity change will be positive, as these variables show companies' incentive plans for their directors. Each equation includes an industry dummy to exclude industry-specific factors.

**4. The data**

We estimate above logistic regression for listed companies in 1994. To obtain pay-performance sensitivity and the sensitivity change dummy, we need data for companies from 1992 to 1994. The data analysed here are taken from Monks Partnership's 'United Kingdom Board Earnings, October 1995', and 'United Kingdom Board Earnings, October 1994'. These data sets contain comprehensive data on executive compensations, which are collected from the annual reports of the companies. The number of companies in these data is 1545.

## 5. Empirical results

There are a number of noticeable features concerning the results in Tables 1 and 2. One of the most striking results is that we find a positive relationship between the *change* of pay policy and the *change* of firm performance. A strong positive correlation is observed between the change of pay-performance sensitivity and company performance. In other words, it is suggested that companies that intensify their pay-performance sensitivities are more likely to improve their performances.

The coefficients for newAI are also positive, though some are not significant. In equation 2 in Table 1, the coefficient for newAI is positive and significant, suggesting that companies that introduce annual incentives are more likely to improve their performances in the year than are other firms. These results are considered to be very important as both dependent and independent variables show changes. In other words, the change of pay policy is positively correlated with the change of firm performance.

The other important feature is that the coefficient for annual incentive (AI) is positive and significant. All coefficients for AI are positive and significant. In other words, the companies with annual incentive programmes are more likely to improve their performances than those without. One important point is that the AI dummy does not show the level of the payment, but the way directors are paid.

Lastly, we find that coefficients for pay-performance sensitivity are all positive and significant. In other words, companies with performance-sensitive incentive plans achieve higher performances than those companies without

incentive plans. This finding supports our hypothesis. These coefficients clearly show positive effects of performance-pay sensitivity on increases of company performance.

## 6. Conclusion

The most striking feature of this research is that it shows that there is a strong connection between changing directors' incentive plans and changes in the performances of firms. We redefine pay-performance sensitivity to assess whether companies intensify their sensitivities or not. This research is important as many UK companies are trying to change their incentive contracts for directors, in response to the Cadbury and Greenbury recommendations.

Although there have been many papers on the determinants of the compensations of executives, relatively few studies have examined the effect of pay policies of companies on the performances of firms. This research has provided the first systematic evidence that there is a positive relationship between directors' incentive plans and firm performances in the UK.

It should be noted that our independent variables show *how* directors are paid, not *how much* they are paid, as they are not affected by the size of the company or level of compensation. In other words, the way directors are paid, not what they are paid, is important for firm performance.

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Table 1 Logistic regression: Dependent variable: Probability that the company increases its profit in 1994

| Equation number | Eq. 1 | Eq. 2 | Eq. 3 | Eq. 4 | Eq. 5 | Eq. 6 |
|---|---|---|---|---|---|---|
| Annual Incentive (AI) | 0.314** | | 0.261* | | | |
| | (0.138) | | (0.149) | | | |
| New AI | | 0.263* | 0.156 | | | |
| | | (0.151) | (0.163) | | | |
| Total pay sensitivity | | | | 0.573*** | | 0.493*** |
| | | | | (0.300) | | (0.122) |
| Total pay sensitivity change | | | | | 0.824*** | 0.422*** |
| | | | | | (0.140) | (0.151) |
| Constant | 0.882*** | 1.024*** | 0.882*** | 1.166*** | 0.934*** | 1.013*** |
| | (0.287) | (0.275) | (0.287) | (0.300) | (0.297) | (0.304) |
| Industry dummy | Yes | Yes | Yes | Yes | Yes | Yes |
| log likelihood | -790 | -791 | -790 | -676 | -706 | -672 |
| Pseudo-R2 | 0.0644 | 0.0632 | 0.065 | 0.1212 | 0.0832 | 0.1263 |
| valid cases | 1415 | 1415 | 1415 | 1358 | 1358 | 1358 |

Sensitivity change 1 if sensitivity intensified, 0 otherwise

Heteroscedasticity adjusted standard errors are in parenthesis.

***: Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level

Table 2 Logistic regression: Dependent variable: Probability that the company increase its EPS in 1994

| Equation number | Eq. 1 | Eq. 2 | Eq. 3 | Eq. 4 | Eq. 5 | Eq. 6 |
|---|---|---|---|---|---|---|
| Annual Incentive (AI) | 0.354*** | | 0.324** | | | |
| | (0.134) | | (0.145) | | | |
| New AI | | 0.218 | 0.0858 | | | |
| | | (0.149) | (0.162) | | | |
| Total pay sensitivity | | | | 0.752*** | | 0.659*** |
| | | | | (0.131) | | (0.128) |
| Total pay sensitivity change | | | | | 1.025*** | 0.529*** |
| | | | | | (0.141) | (0.157) |
| Constant | 0.858*** | 1.033*** | 0.858*** | 1.158*** | 0.807*** | 0.964*** |
| | (0.286) | (0.275) | (0.286) | (0.287) | (0.288) | (0.292) |
| Industry dummy (2digit) | Yes | Yes | Yes | Yes | Yes | Yes |
| log likelihood | -817 | -819 | -816 | -657 | -710 | -651 |
| Pseudo-R2 | 0.0777 | 0.0751 | 0.0779 | 0.1569 | 0.0896 | 0.165 |
| valid cases | 1392 | 1392 | 1392 | 1298 | 1298 | 1298 |

Sensitivity change 1 if sensitivity intensified, 0 otherwise

Heteroscedasticity adjusted standard errors are in parenthesis.

***: Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level