

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

Katsuyuki KUBO<sup>(1)</sup>

## Abstract

We investigate whether companies with incentive plan for their directors achieve better performances than those without. We find a strong connection between incentive compensation plans and the performances of firms. In particular, we find a positive relationship between the *change* in compensation policy and the *change* in firm performance.

## 1. Introduction

More attention has paid to executive cash bonus plan after the decline in executive stock options (Hall and Murphy, 2003). One of the main issues in cash bonus plan may be whether cash incentive plan give executive an incentive to act in the interest of shareholders, as in stock options. 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. Many firms in the UK tried to strengthen the link between executive compensation and firm performance by cash compensation while use of stock option is limited compared with U.S. (Conyon and Murphy, 2000).

There are relatively few studies on the effect of salary policies on the

---

(1) Nishi-waseda Shinjuku, Tokyo, Japan, tel. +81-3-5286-1899, kkubo@waseda.jp

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 agency 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 pay-performance sensitivities achieve better 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,

$$\eta \equiv \frac{\Delta \text{pay}_t / \text{pay}_t}{\Delta \text{performance}_t / \text{performance}_t}$$

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* ( $\Delta performance > 0$ )

$$= \alpha + \beta_1 AI + \beta_2 newAI + \beta_3 sensitivity + \beta_4 sensitivity\ change + industry\_dummies$$

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 rela-

**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** (0.138)		0.261* (0.149)			
New AI		0.263* (0.151)	0.156 (0.163)			
Total pay sensitivity				0.573*** (0.300)		0.493*** (0.122)
Total pay sensitivity change					0.824*** (0.140)	0.422*** (0.151)
Constant	0.882*** (0.287)	1.024*** (0.275)	0.882*** (0.287)	1.166*** (0.300)	0.934*** (0.297)	1.013*** (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*** (0.134)		0.324** (0.145)			
New AI		0.218 (0.149)	0.0858 (0.162)			
Total pay sensitivity				0.752*** (0.131)		0.659*** (0.128)
Total pay sensitivity change					1.025*** (0.141)	0.529*** (0.157)
Constant	0.858*** (0.286)	1.033*** (0.275)	0.858*** (0.286)	1.158*** (0.287)	0.807*** (0.288)	0.964*** (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

tionship 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. These findings support our hypotheses. 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 there is a strong connection between change in 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.

## References

- Abowd, J. (1990) "Does performance-based managerial compensation affect corporate performance?", *Industrial and Labor Relations Review*, 43, S52-73.
- Abowd, J. and Kaplan, D. (1999) "Executive compensation: Six questions that need answering", *Journal of Economic Perspectives*, 13, 4, 145-16.
- Canyon, M., Gregg, P. and Machin, S. (1995) "Taking care of business: Executive compensation in the United Kingdom", *The Economic Journal*, 105, 704-14.
- Canyon, M., Murphy, K. (2000), "The prince and the pauper? The CEO pay in the United States and United Kingdom", *Economic Journal*, 110, F640-71
- Cosh, A. and Hughes, A. (1997) "Executive remuneration, executive dismissal and institutional shareholdings", *International Journal of Industrial Organization*, 15, 469-92.
- Hall, B., Murphy, K., "The trouble with stock options", *Journal of Economic Perspectives*, 17, 3, 49-70
- Mehran, H. (1995) "Executive compensation structure, ownership, and firm performance", *Journal of Financial Economics*, 38, 163-84.
- Monks Partnership, (1994) *Board bonus plans in FT-SE 350 companies*, Monks Partnership.
- Vafeas, N. (2000) "Operating performance around the adoption of director incentive plans", *Economic Letters*, 68, 185-90.
- Williams, A. P. (1994) *Just Reward? The truth about top executive pay*, Kogan Page, London.