績效基礎的紅利發放政策對盈餘管理的影響

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摘要：唯有當盈餘管理能達到操縱盈餘之目的時，以盈餘績效做為獎勵基礎之紅利發放政策方成為盈餘管理之誘因。當經理人擁有較佳紅利獎勵誘因時，更能激發經理人從事盈餘管理行為以增加其紅利。本研究探討台灣員工分紅政策與盈餘管理之關聯。實證結果顯示紅利作為員工績效獎勵將引發更強烈的盈餘管理動機。當紅利發放做為績效獎勵會導致更多盈餘管理行為，因為經理人會藉由操縱盈餘以增加他們的紅利而從中獲利。而當紅利發放政策具有績效獎勵效果時，最佳的紅利獎勵機制應反映出這些績效獎勵所產生之盈餘管理的後果。

關鍵詞：員工分紅，盈餘管理，聯立方程式

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The Effect on Earnings Management of Bonus-Grants as Performance Incentives

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Abstract: The performance-based bonuses system motivates earnings management only if the performance measurement can be manipulated through earnings management. Managers with above bonus incentives are more likely increase the value of the bonus they receive by managing earnings. This study examines the relationship between the bonus-based compensation of employees and earnings management. The empirical results show that granting bonus as a performance incentive leads to more aggressive earnings management. While bonus-grants as incentives of performance can managers get benefit from manipulating earnings reports to increase the value of the bonuses they receive. Therefore, while bonus-based compensation have positive effects on aligning incentives, the optimal bonus compensation system should reflects the consequences of earnings management arising from these performance incentives.

Keywords: employee bonus, earnings management, simultaneous equation

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I. Introduction

Regulators and investors have raised concerns that certain management incentives could lead to earnings management, thus reducing the informativeness of financial reporting. Recent corporate scandals have spurred regulators and investors to re-examine the effects of stock-based compensation on shareholder wealth. In particular, the recent concern in Taiwan has contributed to the adoption in 2008 of accounting regulations for the expensing of employee bonus.

Modern corporation employ various mechanisms to remedy the adverse consequences arising from the separation of ownership and control (Jensen and Meckling, 1976). Compensating management with bonus is an example of one such mechanism in Taiwan. Though a substantial amount of theoretical work suggests that equity grants can align managers' incentives with that of shareholders (Demsetz and Lehn, 1985; Lambert and Larcker, 1987; Morck, Shleifer, and Vishny, 1988; Kim, 1998; Himmelberg, Hubbard, and Palia, 1999; Core and Guay, 1999; Rajgopal and Shevlin, 2002; Hanlon, Rajgopal, and Shevlin, 2003), some researchers have presented evidence that stock grants may engender manager-shareholder conflicts (Jensen, 2005), especially where managers abuse equity grants for their own benefit (Yermack, 1997; Aboody and Kasznik, 2000; Carpenter and Remmers, 2001; Bens, Nagar, and Wong, 2002) and create incentives for earnings management (Jensen, Murphy, and Wruck, 2004; Burns and Kedia, 2006; Efendi, Srivastava, and Swanson, 2007).

There are no regulations in Taiwan which regulates persons allowed to receive bonuses. Thus, when a firm decides to give its employees bonuses, all members of staff under employment at the time of the bonus distribution will be eligible to receive the bonus. The majority of firms calculate the amount of the bonus based on factors such as the employee's position and performance. Therefore, high-level managers tend to benefit the most from the employee bonus scheme.

The incentives for earnings management arise from the fact that the managerial wealth is sensitive to short-term reported earnings. When pricing a firm's equity, capital markets use current earnings to predict future earnings, although managers may have obtained short-term benefits from misstating accounting reports. Thus, management has a strong incentive to use their accounting discretion to manage earnings upwards in order to maximize their own compensation.

The objective of this study is to examine the link between employee bonus compensation and earnings management and, furthermore, to investigate whether expensing employee bonuses under Taiwan's newly adopted accounting regulation

provides an opportunistic incentive for earnings management so as to avoid the potential negative effects on reported earnings. With additional analyses using two-stage least square (2SLS), this study demonstrates from a more comprehensive perspective that taking account of simultaneity is important to further test the simultaneous links between the incentives of bonus compensation and earnings management. This paper is the first documented existence of this simultaneous relation.

Overall, it was found that bonus-grants as performance incentives can motivate earnings management. While bonus-grants given as incentives of performance can increase earnings management behavior, managers can also benefit from manipulating earnings reports to increase the value of the bonuses they receive.

This study makes three contributions to the literature. Firstly, though earnings management has been given considerable attention in the accounting literature, little is known about earnings management incentives arising from bonus-based performance compensation granted to employees, which is a common practice in Taiwan. Secondly, this study responds to Dechow and Skinner (2000), who encouraged academics to focus earnings-management research on capital market incentives, arguing that managers have become increasingly sensitive to key accounting numbers such as earnings. While bonus grants are intended to align manager and owner interests, this paper documents a specific situation where bonus grants create or exacerbate manager-shareholder conflicts (Jensen, 2005) and encourage earnings management. This study aims to examine this relationship, thereby providing evidence that can be used to corroborate or refute allegations of bonus-related earnings management. The understanding of these unintended consequences is important in the prediction of agency theory and the design of efficient compensation mechanisms. The evidence in this paper extends to research on compensation-related opportunistic behavior beyond the bonus-related contracts as documented in Healy (1985) and Warfield, Wild, and Wild (1995). Thirdly, no prior study in Taiwan has simultaneously considered the relationship between the incentives arising from employee bonus compensation and earnings management.

It is evident through the research of this paper that earnings management arises, at least in part, because of the substitutability of financial manipulation and managerial effort in enhancing reported performance and, therefore, executive compensation. The empirical results should be of interest to compensation committees designing compensation packages that balance the incentive provided by bonus grants to align manager and shareholder interests with the incentive to misstate accounting data. While bonus-based compensation can have positive effects in aligning incentives, optimal bonus

compensation should reflect the consequences of earnings management arising in these performance incentives.

The remainder of the paper is organized as follows. Section II discusses research related to bonus compensation and its correlation with earnings management, and then develops the hypotheses. Section III describes the sample data and research design. Empirical results are presented in Section IV. Section V presents the additional analyses of robustness checks and section VI concludes with a summary.

II. Related literature and hypothesis development

Background of the new call for expensing employee bonus in Taiwan

In his opinion piece for the New York Times on 24 July 2002, legendary investor Warren E. Buffett harshly criticized the stock-option accounting of American companies, saying that it results in distorted financial reports. He stated:

When a company gives something of value to its employees in return for their services, it is clearly a compensation expense. And if expenses don't belong in the earnings statement, where in the world do they belong?

New York Times　July, 24, 2002

Similarly relevant is this view:

The stock giveaways, which typically come out of the retained earnings of Taiwan tech companies, often account for half, or more, of total employee compensation.

But companies report a fraction of the actual cost to investors -- if they report it at all. That is because Taiwan accounting rules allow companies to record the bonus shares as part of profit distribution rather than as an expense on their income statements.

Growing concerns about corporate bookkeeping scandals in the U.S. are prompting closer scrutiny of accounting practices in Taiwan, home to some of the world's most generous employee-stock-giveaway systems.

Asian Wall Street Journal　July, 18, 2002

In the 1980s, Taiwanese firms, especially high-technology firms, commonly granted cash and stock in lieu of salary to compensate employees. Such employee bonuses, however, were reported directly as a profit distribution rather than as an expense in the income statements, a practice that came under fire amid closer scrutiny of local accounting methods. The widespread use of stock-bonus compensation as an incentive was prompted not only by the companies' desire to motivate employees, but also by the

fact that the expense for bonus compensation plans were not subject to reporting requirements until the adoption of the new accounting regulation in 2008. In conjunction with the employee stock bonus expensing scheme promulgated on 1 January 2008, the Financial Supervisory Commission (FSC) announced that the calculation of employee bonus must consider the closing price on the last trading day of the previous accounting year, and take into consideration the influence of ex-rights and ex-dividends on closing price.

From table 1, it can be seen that bonus compensation grants to all levels of employees have emerged as a primary component of compensation packages in Taiwan. Cash bonus compensation increased from 4.915 billion dollars in 2001 to 53.722 billion dollars in 2009. However, the use of share bonus appears to sharply decrease, in stock value terms, to 40.430 billion dollars in 2008, continuing downwards to 14.075 billion dollars in 2009 since the adoption of new accounting regulation, which directly reports employee bonus compensation as an item on the income statement. One reason for the prior prevalence of share bonus compensation was its favorable accounting treatment in the past in Taiwan. Firms appear to be adjusting compensation package in 2008-2009, with larger cash bonus grants and smaller stock bonus grants to mitigate the influence of reduced implicit salary.

Table 1　Bonus compensation grant to employees in Taiwan listed firms

Year	Cash Bonus firms in millions		Stock Bonus firms in millions		None of either	Total firms
2001	207	4915	232	60791	300	674
2002	300	6439	249	65508	253	691
2003	336	10216	276	72613	221	702
2004	410	18442	263	93374	208	703
2005	414	21884	244	99050	228	709
2006	456	33212	251	155570	201	722
2007	490	40148	275	137468	167	736
2008	417	31074	109	40430	291	740
2009	501	53722	36	14075	225	739

Ownership structures and information transparency

The existence of differing ownership structures results in different types of agency problems. The prevalence of concentrated ownership in East Asian companies has led to

the belief that controlling shareholders have opportunistic incentives to take advantage of weak domestic legal systems and ineffective corporate governance mechanisms to increase their own wealth at the expense of minority shareholders (Shleifer and Vishny, 1997; La Porta, Lopez-de-Silanes, and Shleifer, 1999; Johnson, Boone, Breach, and Friedman, 2000; Claessens, Djankov, and Lang, 2000). When the controlling owner is entrenched by their voting power, the negative entrenchment effect therefore leads to greater opportunistic incentives to expropriate property from minority shareholders and thus, the credibility of the accounting information is subsequently reduced.

Performance measure hypothesis vs. opportunistic earnings management hypothesis

If financial reports are to convey managers' information on their firms' performance, standards must permit managers to exercise judgment in financial reporting. Managers can then use their knowledge about the business and its opportunities to select reporting methods, estimates and disclosures that match the firms' business economics, potentially increasing the value of accounting as a form of communication. However, because auditing is imperfect, management's use of judgment also creates opportunities for "earnings management," in which managers choose reporting methods and estimates that do not accurately reflect their firms' underlying economics (Healy, 1999).

Academic studies have examined whether the presence of performance-based bonuses in compensation contracts influences executives' accounting and accruals decisions. Watts and Zimmerman (1986) was among the first to examine the motivations for earnings management. They argued that managers in firms with earnings-based compensation agreements have the incentive to manipulate earnings to maximize their award by selecting income-increasing accounting policies. Healy (1985) provides the seminal paper that managers have strong incentives to accomplish certain earnings growth targets if their compensation also increases. The paper also shows that earnings management is related to earnings-based compensation and incorporates the definition and parameters used in bonus agreements in the empirical tests of income-increasing accounting policy choices. Important follow-up research relating to Healy's bonus plan suggests that increasing the amount of stock-based compensation also induces more earnings management (Gaver, Gaver, and Austin, 1995; Holthausen, Larcker, and Sloan, 1995; Degeorge, Patel, and Zeckhauser, 1999; Bergstresser and Philippon, 2006; Burns and Kedia, 2003). The research differs in the manner they measure earnings management, as follows: Bergstresser and Philippon (2006) used discretionary accruals and Burns and Kedia (2003) used earnings restatements, while Cheng and Warfield (2005) capture

earnings management by detecting earnings announcements that meet or beat analysts' forecasts.

Earning management could occur in any part of the external disclosure process, and can take a number of forms. "Real" earnings management could be accomplished by timing investment or financial decisions to alter reported earnings. Different forms of accruals-based and "real" earnings management are not equally easy to discern. For example, it might be difficult to distinguish empirically between investment or production decisions (such as choosing the level of expenditures on research and development or on advertising, changing a product line, or acquiring another firm) that are undertaken purely to maximize share values and those undertaken purely to manage earnings. However, those actions are relatively dramatic and transparent in the year of the change, and may be flagged by the auditor in a public manner, receiving footnote discussion. Given those disclosure requirements, "real" earning manage techniques are not likely candidates for managers to use as opposed to accruals-based earnings management.

Guay (1999) point out the possibility that discretionary accrual may satisfy either the performance measure hypothesis or the opportunistic accrual management hypothesis. The performance measure hypothesis argues that accruals lead future cash flows, and managers use discretionary accruals to enable outsiders to more reliably forecast future performance. In contrast, the opportunistic accrual management hypothesis claims that managers use accruals to exploit information asymmetry, manipulating current year income in order to achieve various benefits for themselves or their firms.

In equilibrium, the risk level results from a balance of two opposing forces. From an incentive-alignment perspective, equity incentives help motivate managers to work in shareholders' interests, thereby reducing agency costs. On the other hand, equity incentives do not always align manager and shareholder interests as intended (Jensen, 2005). Dechow and Skinner (2000) argued that because of the continued importance of stock-based compensation, managers are increasingly sensitive to stock price and their relationship with key accounting numbers such as earnings. Popular especially among shareholder rights activists is that senior managers control the pay-setting process and compensate themselves in excess of the level optimal for shareholders. Stock grants do not exhibit empirical relationships consistent with the economic motivations behind granting them (Yermack, 1995) and may be a politically expedient way of cloaking senior mangers' pay as such compensation is generally not recorded in the firms' financial statements (Crystal, 1991).

In addition, Gao and Shrieves (2002) utilized the ExecuComp and CRSP database, covering 1,200 firms over the period 1992 to 2000. They showed that earnings

management intensity, as measured by the absolute value of discretionary accruals scaled by asset size, is related to managerial compensation contracts. They find that the amount of stock options and bonuses, and the incentive intensity of stock options are positively related to earnings management intensity. Based on these arguments, the first research hypothesis (H1) is posed as follows:

H1: Earnings management is positively associated with bonus-related incentives.

Incentives of Taiwan's expensing of employee bonus and earnings management

Theoretically, the intention of standard setters and regulators in allowing some degree of reporting flexibility provides sufficient latitude so that financial statements can become more informative. Nevertheless, in a world of asymmetric information and agency problems, the discretionary nature of accrual accounting can lead to earnings management. Bonus compensation tied to earnings will be enhanced by the capacity to manage earnings through discretionary accruals. Thus, managers can use their accounting discretion to affect reported earnings if capital markets have difficulty in detecting earnings management.

Earnings-based bonus plans often include the stated objective of firm value maximization and formally link compensation with a measure of firm value, such as earnings. For example, Ittner, Larcker, and Rajan (1997) documented earnings per share, net income and operating income as the most common financial measures used in a sample of 317 bonus plans. Murphy (2000) found that 91% of firms in the chosen sample used accounting measures in their bonus plans.

The primary role of financial reporting is to provide executives with a credible means of communicating private information of a firms' performance, and has often become entangled with executives' desire to maximize their own compensation. Such motives give rise to the phenomenon of earnings management. Managers who confront the newly adopted accounting regulation for expensing employee bonus have an opportunistic incentive to manage earnings if the following two conditions hold: (1) the capital markets rely on reported earnings in forming beliefs about future earnings such that earnings management can affect accounting numbers, and, (2) managers can take advantage of the short-term benefits from misstating accounting reports.

Managers in firms with earnings-based compensation agreements have the incentive to manipulate earnings to maximize their compensation by selecting income increasing accounting policy. In other words, if managers are focused on reported earnings, the role of accruals as an earnings management tool becomes increasingly clear. The larger the

value of the bonus compensation granted to employees, the greater is the managers' incentive to manage earnings upwards. Hypothesis two is thus developed to explore the effect of the opportunistic incentive of Taiwan's newly adopted accounting regulation for expensing employee bonus on earnings management.

H2: Earnings management positively increases with opportunistic incentive under Taiwan's new accounting regulation for expensing employee bonuses.

Using discretionary current accruals for detecting earnings management

Earnings management has highlighted the role of accruals in a way that complements the existing studies relating to the information content of cash flows against accruals. The entire demand for earnings management in such a setting would be based on specific contractual frictions, such as compensation contracts and bond covenants (Healy, 1999). Considering that the newly adopted accounting regulation for expensing employee bonus in Taiwan has not been introduced for very long, if firms intend to undertake earnings management during the period of time after the regulation became effective, they are more likely to manage earnings using current accruals. Therefore, this research uses discretionary current accruals (*DCA*) for detecting earnings management behavior.Specifically, in this study, an estimate of *DCA* scaled by total assets is used as a proxy for earnings management.

I first calculated total accruals as the difference between earnings and cash flows from operations, following Dechow, Sloan, and Sweeney (1995) and Teoh, Welch, and Wong (1998). I calculated total accruals for firm *i* in year *t*, *TAit*, as:

$$TA_{it} = (\Delta CA_{it} - \Delta Cash_{it}) - (\Delta CL_{it} - \Delta LD_{it}) \tag{1}$$

TA_{it}	=	total accruals
ΔCA_{it}	=	change in current assets
$\Delta Cashit$	=	change in cash and cash equivalent
ΔCL_{it}	=	change in current liabilities
ΔLD_{it}	=	change in debt that comes from the maturation of firm's existing long-term debt

To distinguish between discretionary and nondiscretionary components of total accruals, this study adopts of DeFond and Subramanyam method and conducts the following cross-sectional regression using all firms with the same industry code for each year:

$$\frac{TA_{it}}{A_{i,t-1}} = \alpha_0 \frac{1}{A_{i,t-1}} + \alpha_1 \frac{\Delta Sales_{it} - \Delta AR_{it}}{A_{i,t-1}} + \varepsilon_{it} \tag{2}$$

TA_{it} =   total accruals

$A_{i,t-1}$ =   beginning-of-period total assets

$\Delta Sales_{it}$ =   change in sales

ΔAR_{it} =   change in accounts receivables

Where *TA* is total accruals, *ΔSales* is the change in sales in year *t* for firm *i* and *A* is total assets. Nondiscretionary current accruals (*NDCA*) are calculated as:

$$NDCA_{i,t-1} = \hat{\alpha}_0 \frac{1}{A_{i,t-1}} + \hat{\alpha}_1 \frac{\Delta Sales_{it} - \Delta AR_{it}}{A_{i,t-1}} \tag{3}$$

Where α_0 is the estimated intercept, α_1 is the slope coefficient for firm *i* in year *t*, and ΔAR_{it} is the change in accounts receivable in year *t* for firm *i*. The increase in accounts receivable is subtracted from the change in sales to allow for the possibility of credit sales manipulation.

Discretionary current accruals, DCA_{it}, for firm *i* in year *t* are represented by the residual:

$$DCA_{it} = \frac{TA_{it}}{A_{i,t-1}} - NDCA_{it} \tag{4}$$

III. Empirical methods

Methodological issue: Panel data

This research uses panel data regression procedures to consider both individual firm effects and time effects, and uses Hausman's specification test applied to the comparison of the fixed-effects models with the random-effects model. When performing Hausman's specification test, all tests accept the nullity that the random-effects models are appropriate and indicate that the results of a random-effects regression are the preferred specification. The random effects approach is robust to the presence of omitted firm-specific variables that can lead to biased estimates in an OLS framework.

Firstly, I estimated the ordinary least squares (OLS) regression on the pooled data and then resolved the problem of potential missing variables, I used panel data regression procedures to consider both the individual firm and time effects when estimating using the fixed and random-effects models. The screening process for the panel data is the combination of cross-sectional and time-series models, and has the following unique

advantages: (1) It can demonstrate individual heterogeneities, (2) they allows shorter time periods and solves the problem of insufficient data time periods, and (3) It amalgamates the information provided by cross-sectional and time-series models to minimize the problem of missing variables. In addition, this method assumes every firm displays unique firm characteristics, and that such characteristics will not change over the research period. Therefore, it also has the advantage of being able to manage the effect of firm characteristic heterogeneity on the dependent variables (Greene, 2000).

Furthermore, with the potential to contribute to diluted *EPS*, Taiwan's newly adopted accounting regulations for expensing employee bonuses is expected to result in variations in the firm-specific and time-specific components. The methodological choice and econometric specification of prior studies may lead to low statistical power in detecting the relationship between earnings management and bonus compensation. The importance of these components is isolated and quantified when the OLS model is compared with the firm-effect and time-effect models and identified by the panel data analysis.

Empirical models

Tests of H1 are based on OLS and random-effect estimates of the linear probability of discretionary current accruals (*DCA*) on bonus grant measures (*BonusP*) and various control variables as regression (5). Explanatory variable *BonusP* of the regression model, which is the value of cash and stock bonus in the current year scaled by the number of employees, is examined for the robustness of the results.

$$DCA_{i,t} = \alpha_0 + \alpha_1 BonusP_{i,t} + \alpha_2 Size_{i,t} + \alpha_3 Debt_{i,t} + \alpha_4 Growth_{i,t} + \alpha_5 CF_{i,t}$$
$$+ \alpha_6 DCA_{i,t} + \alpha_7 Electron_{i,t} + \varepsilon_{i,t} \tag{5}$$

The next section investigates whether the sensitivity of Taiwan's newly adopted accounting regulation for expensing employee bonuses further induces a positive relationship between incentives of bonus compensation and earnings management, as hypothesized in H2.

$$DCA_{i,t} = \alpha_0 + \alpha_1 BonusP_{i,t} + \alpha_2 Size_{i,t} + \alpha_3 Debt_{i,t} + \alpha_4 Growth_{i,t} + \alpha_5 CF_{i,t}$$
$$+ \alpha_6 DCA_{i,t\text{-}1} + \alpha_7 Electron_{i,t} + \alpha_8 Exp_{i,t} + \alpha_9 Exp \times BonusP_{i,t}$$
$$+ \alpha_{10} Exp \times Size_{i,t} + \alpha_{11} Exp \times Debt_{i,t} + \alpha_{12} Exp \times Growth_{i,t}$$
$$+ \alpha_{13} Exp \times CF_{i,t} + \alpha_{14} Exp \times DCA_{i,t\text{-}1} + \alpha_{15} Exp \times Electron_{i,t} + \varepsilon_{i,t} \tag{6}$$

Earnings management measures for employee bonus compensation:

DCA 　　= 　value of discretionary current accruals

BonusP　　　　=　value of cash and stock bonus in the current year/ number of employees

Control variables:

Size　　　　　=　firm size measured by the natural logarithm of total assets
Debt　　　　　=　total debt divided by total assets
Growth　　　　=　*M/B* ratio computed as the market value of equity/book value of equity
CF　　　　　　=　Cash flow scaled by total assets
DCA_{t-1}　　　=　Discretionary current accruals of the prior year

Dummy variables:

Electron　　　=　electron industry dummy variable 1, otherwise 0
Exp　　　　　=　expensing year dummy variable 1, otherwise 0
Exp*BonusP　=　value of cash and stock bonus per employee after expensing year

　　Other motivations for earnings management as proposed in the prior literature are also controlled within this model. Firstly, size is often suggested as a control variable (Fama and French, 1996). Larger firms are more likely to design and maintain more sophisticated and effective internal control systems in comparison to smaller firms, reducing the likelihood of earnings being manipulated by management (Beasley, Carcello, Hermanson, and Lapides, 2000). In contrast, larger firms are more likely to manage earnings than smaller firms as large firms face more pressures to meet or beat analysts' expectations (Rangan, 1998; Barton and Simko, 2002). Additionally, large firms may have greater bargaining power with auditors or more room to maneuver, given the wide range of accounting treatments available (Nelson, Elliott, and Tarpley, 2002). Controlling for firm size also minimizes the problem of potentially correlated omitted variables (Becker, Defond, Jiambalvo, and Subramanyam, 1998).

　　Contracting theory suggests that high-growth firms with lower asset-in-place and higher future discretionary investment expenditures by managers (Myers, 1977) are more difficult to observe and monitor (Gaver and Gaver, 1993) and thus managers in high-growth firms are more likely to engage in opportunistic behavior (Watts and Zimmerman, 1986). If the stock price in high-growth firms is more sensitive to deviations from earnings expectations, managers may have a greater incentive to use discretionary accruals to reach earnings targets. Therefore, high growth firms are more likely to engage

in earnings management in this study. The natural logarithm of total assets and market-to-book ratio are used as proxies for firm size and growth opportunities, respectively.

Watts and Zimmerman (1986) found that avoiding violations of debt contract covenants are an important motivation for management to inflate earnings. DeFond and Jiambalvo (1994) and Sweeney (1994) reported that managers use discretionary accruals to satisfy debt covenant requirements. Leverage also accounts for financial risk. Therefore, this paper hypothesizes that favorable earnings numbers will lower the cost of external capital, and this phenomenon is controlled to properly assess the role of compensation as a determinant of earnings management behavior.

Finally, firms with strong operating cash flow are less likely to engage in income-increasing earnings management as they already experienced good operating performance. Following Becker et al. (1998), this paper includes operating cash flow deflated by total assets to control for this effect. Given the above considerations, firm size, firm leverage, growth opportunities and operating cash flow are included in the regression analysis.

IV. Empirical analysis

Description statistics for the sample

Table 2 provides descriptive statistics and the sample consists of 443 publicly listed firms with an unbalanced panel of employee-level data for 3,227 firm-year observations during the period from 2003 to 2009 and includes firms that have complete financial information available on employee bonus compensation. All variables are winsorized at the 1 and 99-percentiles to reduce the effects of outliers.

The key measures of discretionary current accruals (*DCA*), *BonusP*, *CashBP and StockBP* have mean (median) values of 0.003137 (-0.003961), 185,674.55 (60,606.06), 56044.51 (23809.52) and 1129446.30 (0.000), respectively. As for other variables, the average (median) firm size as estimated by the natural logarithm of total assets is 22.71 (22.52). The average (median) financial leverage is 35.45% (35.29%), the average (median) market ratio to book is 142.28% (112.64%) and the average (median) *EPS* is 2.82 (2.10).

Table 3 provides the Pearson correlation matrix for the explanatory variables. Discretionary current accruals are significantly positively correlated with *BonusP* (0.037, p-value = 0.017), respectively.

Table 2   Descriptive statistics for the regression variables
(2003~2009, 3,227 observations)

variables	mean	median	Std. Dev.	min	max
DCA	0.003137	-0.003961	0.133975	-0.313792	0.412049
BonusP	185674.55	60606.06	312329.35	1827.833	1576923
CashBP	56044.51	23809.52	85945.73	0.000000	432432
StockBP	129446.30	0.000000	283005.00	0.000000	1411879
Electron	0.22	0.00	0.417	0.00	1.00
Size(LnTA)	22.702908	22.524321	1.200098	20.773865	26.123436
Debt (%)	0.354450	0.352937	0.146182	0.094012	0.676305
Growth (%)	1.422782	1.126393	0.985330	0.429411	5.432275
CF (%)	0.087646	0.080105	0.088395	-0.121923	0.311644
DCA_{t-1}	0.005476	-0.004262	0.143223	-0.316848	0.462722
EPS	2.821283	2.100000	2.404564	0.170000	11.080000

1. To mitigate any undue influence from outliers all variables are winsorized at the 1% level.
2. The final sample excludes financial institutions.
3. *BonusP* = the value of cash and stock bonus in the current year/number of employees
4. ***: Significance at 0.01 level, **: Significance at 0.05 level, and *: significance at 0.10 level.

Table 3   Pearson correlation matrix for the explanatory variables

	DCA	BonusP	Size	Debt	Growth	CF	DCA_{t-1}
BonusP	0.037** (0.017)						
Size	0.012 (0.256)	0.147*** (0.000)					
Debt	0.096*** (0.000)	-0.058*** (0.000)	0.143*** (0.000)				
Growth	0.052*** (0.002)	0.348*** (0.000)	0.017 (0.161)	-0.090*** (0.000)			
CF	-0.208*** (0.000)	0.145*** (0.000)	-0.006 (0.362)	-0.335*** (0.000)	0.278*** (0.000)		
DCA_{t-1}	-0.231*** (0.000)	0.064*** (0.000)	0.000 (0.493)	0.085*** (0.000)	-0.008 (0.333)	-0.016 (0.179)	
Electron	-0.035** (0.025)	0.142*** (0.000)	0.184*** (0.000)	-0.066*** (0.000)	0.029** (0.049)	0.057*** (0.001)	-0.017 (0.167)

1. The final sample excludes financial institutions and consists of 3227 firm-year observations for years 2003-2009.
2. *BonusP* = the value of cash and stock bonus in the current year/number of employees.
3. ***: Significance at 0.01 level, **: Significance at 0.05 level, and *: significance at 0.10 level.

4.2 Empirical results

Firstly, this study examines the link between bonus-based compensation and earnings management. It is hypothesized that management has a strong incentive to use their accounting discretion to manage earnings upwards in order to maximize their own bonus compensation. To test H2, this research uses the variables of bonus compensation that interacts with dummy variables in the expensing period *Exp×BonusP* in the regressions to investigate whether there are changes in the incentive to manage earnings due to Taiwan's recent adoption of the accounting requirement to expense employee bonuses.

The Breusch-Pagan Lagrange multiplier (LM) test is designed to test random effects and tell us whether the model constant is random or fixed. The null hypothesis of the one-way random-effects model is that the cross-sectional variance components are zero. If the null hypothesis is not rejected, the pooled regression model is appropriate.

With the large chi-squared [Wald chi2(7) = 446.32, p-value<.001] in table 4 for testing H1, the Lagrange multiplier test rejects the OLS specification in favor of the random-effects model. The overall effect (cash and stock bonus) of bonus compensation on earnings management for testing of H1 are positive and statistically significant (coef.=0.243e-08; p-value<.001). These results are generally consistent with the prediction that the incentive of bonus grants will lead to earnings management. In addition, from Table 5, the overall effect on earnings management after expensing employee bonus remain positive and statistically significant at the 5% level (coef.=0601e^{-07}; p-value =2.31) and the empirical results are as hypothesized.

Control variable results are generally consistent with relationships in the expected direction. However, the effects of firm size on earnings management are not significant. Growth has a significantly positive impact on *DCA*. Debt covenants, as proxied by the ratio of total debt to total assets, have statistically significantly positive effect on earnings management (coef.=0.0431475; p-value=0.011). The results support the statement that managers have an incentive to reduce the likelihood of technical default on debt covenants by increasing earnings when they are close to violating their debt contracts. As hypothesized, firms with operating cash flow are less likely to engage in income-increasing management because they already have good operating performance. Finally, it was not found that the dummy variable electron industry (*Electron*) has an incentive to manage earnings upwards.

Before expensing employee bonuses, the coefficients for the control variable of the regression (5) in Table 5 are broadly consistent with the regression (4) results. However,

Table 4 OLS and random-effect estimates of linear probability model of employee bonus for years 2003~2009 (3,227 observations)

Model (1*a*) $DCA_{it} = \alpha_0 + \alpha_1 BonusP_{it} + \alpha_2 Size_{it} + \alpha_3 Debt_{it} + \alpha_4 Growth_{it} + \alpha_5 CF_{it} + \alpha_6 DCA_{i,t-1} + \alpha_7 Electron_{it} + \varepsilon_{it}$

Variables	Random-effects (Model 1a)			OLS (Model 1a)		
	Coefficient	z-value	p-value	Coefficient	t-value	p-value
BonusP	$0.243e^{-08}$	3.04^{***}	0.002	$0.225e^{-07}$	2.91^{***}	0.004
Size	0.0001468	0.07	0.942	0.0003119	0.16	0.871
Debt	0.0431475	2.53^{**}	0.011	0.0413063	2.51^{***}	0.000
Growth	0.0130932	5.16^{***}	0.000	0.0132840	5.36^{***}	0.000
CF	-0.3841499	-13.66^{***}	0.000	-0.3747447	-13.55^{***}	0.000
DCA_{t-1}	-0.2230974	-14.34^{***}	0.000	-0.2169815	-13.91^{***}	0.000
Electron	-0.0078756	-1.37	0.172	-0.0080898	-1.48	0.140
F-test	$F(597,2623) = 1.00$		0.5103			
LM test	Wald chi2(7) = 446.32		0.0000			
R^2			15.89%	Adj- R^2		11.62%

1. To mitigate any undue influence from outliers all variables are winsorized at the 1% level.
2. Panel data analysis use one-way random-effects estimation method.
3. LM test = Breusch and Pagan Lagrangian multiplier test for random effects.
4. ***: Significance at 0.01 level, **: Significance at 0.05 level, and *: significance at 0.10 level.

when the compensation effect interacts with dummy variables in the expensing period *Exp×Growth*, *Exp×Debt* in the regression maintains a positive relation but loses its significance (coef.=0.0023473; p-value =0.669；coef.=0.0256943; p-value =0.486).

V. Additional analyses for robustness checks

Simultaneity: 2-Least-Least-Square (2SLS)

An important issue that may limit these tests is the endogenous nature of compensation plan design. Relatively high earnings provide several benefits for executives. Firstly, this increases executives' wealth as compensation is often directly linked to earnings-related factors. Secondly, executives of firms that perform well are less likely to be removed or otherwise censored by their boards (Weisbach, 1988; Engel, Hayes, and Wang, 2003). Thirdly, relatively high earnings ability lowers the existing shareholders' cost of raising additional capital (Fischer and Merton, 1984; Stein, 1996). In light of these benefits, it is not surprising that a large body of literature has found that corporate executives manage

earnings measures and trends in relation to those measures (Burgstahler and Dichev, 1997; Degeorge et al., 1999; Schrand and Walther, 2000).

Table 5　OLS and random-effect estimates of linear probability model of employee bonus for years 2003~2009 (3,227 observations)

Model (1b) $DCA_{it} = \alpha_0 + \alpha_1 BonusP_{it} + \alpha_2 Size_{it} + \alpha_3 Debt_{it} + \alpha_4 Growth_{it} + \alpha_5 CF_{it} + \alpha_6 DCA_{i,t-1} + \alpha_7 Electron_{it} + \alpha_8 Exp_{it} + \alpha_9 Exp \times BonusP_{it} + \alpha_{10} Exp \times Size_{it} + \alpha_{11} Exp \times Debt_{it} + \alpha_{12} Exp \times Growth_{it} + \alpha_{13} Exp \times CF_{it} + \alpha_{14} Exp \times DCA_{i,t-1} + \alpha_{15} Exp \times Electron_{it} + \varepsilon_{it}$

Variables	Random-effects (Model 1b)			OLS (Model 1b)		
	Coefficient	z-value	p-value	Coefficient	t-value	p-value
BonusP	$0.248e^{-08}$	2.93***	0.003	$0.244e^{-08}$	2.92***	0.004
Size	-0.0012778	-0.28	0.574	-0.0012684	-0.28	0.570
Debt	0.0450905	2.30**	0.022	0.0448377	2.31**	0.021
Growth	0.0131379	4.42***	0.000	0.0132031	4.49***	0.000
CF	-0.3689114	-11.18***	0.000	-0.3647528	-11.12***	0.000
DCA_{t-1}	-0.2078090	-11.87***	0.000	-0.2049944	-11.70***	0.000
Electron	-0.0058843	-0.91	0.363	-0.0058957	-0.93	0.354
Exp	0.2333703	2.34**	0.019	0.2358748	2.36**	0.018
Exp×BonusTA	$0.601e^{-07}$	2.31**	0.021	$0.609e^{-07}$	2.34**	0.019
Exp×Size	0.0191709	2.28**	0.023	0.0193914	2.30**	0.021
Exp×Debt	0.0256943	0.70	0.486	0.0270881	0.73	0.463
Exp×Growth	0.0023473	0.43	0.669	0.0023636	0.43	0.667
Exp×CF	0.0026032	0.04	0.966	0.0028041	0.05	0.964
$Exp×DCA_{t-1}$	-0.0762659	-1.98**	0.048	-0.0762695	-1.98**	0.048
Exp×Electron	-0.0093756	-0.75	0.451	-0.0096299	-0.77	0.440
F-test	F(597,2615) = 0.97		0.6754			
LM test	Wald chi2(15) = 462.91		0.0000			
R^2			16.05%	Adj- R^2		12.03%

1. To mitigate any undue influence from outliers all variables are winsorized at the 1% level.
2. LM test = Breusch and Pagan Lagrangian multiplier test for random effects.
3. ***: Significance at 0.01 level, **: Significance at 0.05 level, and *: significance at 0.10 level.

If the causation is that managers can benefit from manipulating earnings reports to increase the value of bonuses they receive, rather than vice versa, I attempt to control this possibility using two-stage least square (2SLS). If the bonus amount granted to managers

increases with earnings management, managers in firms with earnings-based compensation agreements have the incentive to manipulate earnings upwards as they are compensated more than if they did not. The incentive to maximize bonus grants by managing earnings will persist if compensation contracts reward efforts to manage earnings (Holthausen et al., 1995; Balsam, 1998). The findings of these papers suggest that executives have an incentive to manage earnings to maximize bonus grants. Therefore, the relationship between the amount of bonus grants and the behavior of earnings management is that of mutual effect.

Several tests have been developed in connection with the use of instrumental variables estimation. The most common is the Hausman test (Hausman, 1978) which provides a formal test on whether the instrument variable (IV) estimator is significantly different from the OLS estimator (Larcker and Rusticus, 2010). When performing the Hausman's specification test, all tests accept the nullity that the random-effects models are appropriate and indicate that the results of a random-effects regression are the preferred specification. Furthermore, by using two-stage least square (2SLS), in addition to considering discretionary current accruals and bonus-related incentives as endogenous variables, the analysis includes *EPS*, growth opportunities and operating cash flow as exogenous variables. In case of over-identified models (i.e., where the number of instruments exceeds the number of endogenous regressors), I use this test to determine the appropriateness of the instruments under the assumption that at least one of the instruments is valid (see also Hausman, 1978).

This study demonstrates that accounting for simultaneity is important to test the simultaneous links between the incentive of bonus compensation granted to employees and earnings management. Tests of H1 are based on the use of two simultaneous equations. The third hypothesis and the two simultaneous equations are as follows.

H3: the relationship between the amount of bonus grants and the behavior of earnings management is a mutual and positive effect.

$$DCA_{i,t} = \alpha_0 + \alpha_1 BonusP_{i,t} + \alpha_2 Size_{i,t} + \alpha_3 Debt_{i,t} + \alpha_4 Growth_{i,t} + \alpha_5 CF_{i,t} + \alpha_6 DCA_{i,t} + \varepsilon_{i,t} \qquad (7)$$

$$BonusP_{i,t} = \alpha_0 + \alpha_1 DCA_{i,t} + \alpha_2 EPS_{i,t} + \alpha_3 Growth_{i,t} + \alpha_4 CF_{i,t} + \varepsilon_{i,t} \qquad (8)$$

Discretionary current accruals (*DCA*) and bonus-related incentives are included as endogenous variable.EPS, growth opportunities, and operating cash flow are included as exogenous variable.

From Table 6, the results illustrated in this paper are useful in classifying the endogeneity of earnings management in bonus compensation. Controlling for endogeneity, a positive correlation between manipulation and incentive compensation has been observed in the simultaneous equations. Additionally, it is jointly consistent with incentives in bonus contracts which reward earnings more heavily as executives manage earnings upwards. Since annual earnings are determinative of the amount of bonus compensation, it can also be inflated through earnings management to earn a higher bonus. As such, it is possible to have a bidirectional causality existing between the amount of employee bonus and earnings management.

Table 6　Two-stage least squares (2SLS) of employee bonus for years 2003~2009 (3,227 observations)

Model (3) $DCA_{it} = \alpha_0 + \alpha_1 BonusP_{it} + \alpha_2 Size_{it} + \alpha_3 Debt_{it} + \alpha_4 Growth_{it} + \alpha_5 CF_{it} + \alpha_6 DCA_{i,t-1} + \varepsilon_{it}$

$BonusP_{it} = \alpha_0 + \alpha_1 DCA_{it} + \alpha_2 EPS_{it} + \alpha_3 Growth_{it} + \alpha_4 CF_{it} + \varepsilon_{it}$

	Simultaneous Equations (Model 3)					
	Random Effects			Fixed Effects		
	Dependent variable: DCA			Dependent variable: $BonusP$		
Variables	Coefficient	z-value	p-value	Coefficient	z-value	p-value
DCA				30070.16	0.40	0.687
$BonusP$	9.23e^{-08}	5.69***	0.000			
$Size$	-0.0029179	-1.46	0.143			
$Debt$	0.0494090	2.97***	0.003			
$Growth$	-0.0059290	2.03**	0.042	25233.53	4.86***	0.000
CF	-0.3859406	-13.73***	0.000	49863.05	0.79	0.429
DCA_{t-1}	-0.2260861	-14.20***	0.000			
EPS				55234.16	20.73***	0.000
F-test	F(597,2623) = 1.00		0.4876	F(597,2625) = 8.47		0.000
LM test			0.0000			
R^2			15.80%	R^2		21.00%

1. To mitigate any undue influence from outliers all variables are winsorized at the 1% level.
2. LM test = Breusch and Pagan Lagrangian multiplier test for random effects.
3. ***: Significance at 0.01 level, **: Significance at 0.05 level, and *: significance at 0.10 level.

In summary, the empirical results demonstrate that, while optimal bonus-based compensation yield positive incentive to manage earnings, optimal bonus-based compensation should also reflect the earnings management consequences arising from the

incentives of such compensation. This evidence contributes to the extant compensation literature by extending research on compensation-related opportunistic behavior.

Breaking down total bonus into cash bonus and stock bonus as independent variables

The same regression in regression (5) was estimated with a break down of total employee bonus grants into cash bonus and stock bonus to examine whether there is a change in earnings management behavior that can be contributed to changes in the rewards for managing earnings. Regression (9) and (10) provide further analysis.

$$DCA_{i,t} = \alpha_0 + \alpha_1 CachBP_{i,t} + \alpha_2 StockBP_{i,t} + \alpha_3 Size_{i,t} + \alpha_4 Debt_{i,t} + \alpha_5 Growth_{i,t}$$
$$+ \alpha_6 CF_{i,t} + \alpha_7 DCA_{i,t} + \alpha_8 Electron_{i,t} + \varepsilon_{i,t} \quad\quad (9)$$

Where:

$CashBP$ = the value of cash bonus in the current year/number of employees, and

$StockBP$ = the value of stock bonus in the current year/number of employees

$$DCA_{i,t} = \alpha_0 + \alpha_1 CachBP_{i,t} + \alpha_2 StockBP_{i,t} + \alpha_3 Size_{i,t} + \alpha_4 Debt_{i,t} + \alpha_5 Growth_{i,t}$$
$$+ \alpha_6 CF_{i,t} + \alpha_7 DCA_{i,t-1} + \alpha_8 Electron_{i,t} + \alpha_9 Exp_{i,t} + \alpha_{10} Exp \times BonusP_{i,t}$$
$$+ \alpha_{11} Exp \times Size_{i,t} + \alpha_{12} Exp \times Debt_{i,t} + \alpha_{13} Exp \times Growth_{i,t}$$
$$+ \alpha_{14} Exp \times CF_{i,t} + \alpha_{15} Exp \times DCA_{i,t-1} + \alpha_{16} Exp \times Electron_{i,t} + \varepsilon_{i,t} \quad\quad (10)$$

The results for regression (9) and (10) are reported in Table 7 and 8. Compared to the regression in Table 4, the sign and magnitude of the coefficients are qualitatively similar, while the significance of the model and goodness of fit measures improve slightly. From Table 7, the overall effect of stock bonuses on earnings management are positive and remain statistically significant (coef.=$2.75e^{-09}$; p-value<.003). However, the overall effect of cash bonus granted to employees is positive but loses its significance (coef.=$6.75e^{-09}$; p-value=0.815). Compared to cash bonuses, stock bonuses are able to accumulate employee wealth in a short period. Therefore, this is likely to lead to management focusing on short-term wealth and cause an earnings management issue and inflated earnings to achieve maximum personal interest.

From Table 8, it is found that cash bonus and stock bonus differ in the incentives generated for earnings management after expensing employee bonus, though both provide benefits for performance incentives. The overall effect of stock bonus on earnings management in the period of expensing employee bonus remains positive but loses its significance. On the other hand, the overall effect of cash bonus on earnings management changes and becomes negative and statistically significant. The results are generally

Table 7　OLS and random-effect estimates of linear probability model of expensing employee (cash and stock) bonus for years 2003~2009 (3,227 observations)

Model (2a) $DCA_{it} = \alpha_0 + \alpha_1 CachBP_{it} + \alpha_2 StockBP_{it} + \alpha_3 Size_{it} + \alpha_4 Debt_{it} + \alpha_5 Growth_{it} + \alpha_6 CF_{it} + \alpha_7 DCA_{i,t-1} + \alpha_8 Electron_{it} + \varepsilon_{it}$

Variables	Random-effects (Model 2a)			OLS (Model 2a)		
	Coefficient	z-value	p-value	Coefficient	t-value	p-value
$CashBP$	$6.75e^{-09}$	0.23	0.815	$4.11e^{-09}$	0.15	0.883
$StockBPA$	$2.59e^{-08}$	2.94^{***}	0.003	$2.44e^{-08}$	2.84^{***}	0.005
$Size$	0.0003376	0.17	0.869	0.0005018	0.26	0.796
$Debt$	0.0426603	2.49^{**}	0.013	0.0407840	2.47^{**}	0.013
$Growth$	0.0132918	5.22^{***}	0.000	0.0134764	5.42^{***}	0.000
CF	-0.3834760	-13.63^{***}	0.000	-0.3740617	-13.52^{***}	0.000
DCA_{t-1}	-0.2233822	-14.35^{***}	0.000	-0.2172885	-13.92^{***}	0.000
$Electron$	-0.0081361	-1.41	0.160	-0.0083656	-1.52	0.128
F-test	$F(597,2622) = 1.00$		0.4691			
LM test	Wald chi2(8) = 446.35		0.0000			
R^2			15.84%	Adj- R^2		11.81%

1. To mitigate any undue influence from outliers all variables are winsorized at the 1% level.
2. Panel data analysis use one-way random-effects estimation method.
3. LM test = Breusch and Pagan Lagrangian multiplier test for random effects.
4. ***: Significance at 0.01 level, **: Significance at 0.05 level, and *: significance at 0.10 level.

consistent with the trend in Table 1, with firms appearing to adjust the policy of compensation package from 2008 to 2009, with larger cash bonus grants and smaller stock bonus grants to mitigate the influence of reduced implicit salary. Furthermore, earnings management can only influence a change on accounting earnings, but does not increase or reduce corporate cash flow. This could be the reason for the weak correlation between employee cash bonus and earnings management. Therefore, for companies that only offer cash bonus, their cash bonus will not increase as a result of rising share prices. Hence, for the purpose of their own long-term benefit, the management teams may focus on creating long-term value for the company and realizing wealth for shareholders. As a result, the degree of earnings management in companies that provide cash bonus only will be lower than in stock bonus only companies.

　　Finally, the type of bonus compensation package will influence the degree of earnings management. Stock bonus, relative to cash bonus, is more likely to initiate managers to conduct earnings management behavior. This also indicates that after considering the potential existence of earnings management, an employee's stock bonus

Table 8 OLS and random-effect estimates of linear probability model of expensing employee (cash and stock) bonus for years 2003~2009 (3,227 observations)

Model (2b) $DCA_{it} = \alpha_0 + \alpha_1 CachBP_{it} + \alpha_2 StockBP_{it} + \alpha_3 Size_{it} + \alpha_4 Debt_{it} + \alpha_5 Growth_{it} + \alpha_6 CF_{it} + \alpha_7 DCA_{i,t-1} + \alpha_8 Electron_{it} + \alpha_9 Exp_{it} + \alpha_{10} Exp \times CachBPs_{it} + \alpha_{11} Exp \times StockBP_{it} + \alpha_{12} Exp \times Size_{it} + \alpha_{13} Exp \times Debt_{it} + \alpha_{14} Exp \times Growth_{it} + \alpha_{15} Exp \times DCA_{i,t-1} + \alpha_{16} Exp \times Electron_{it} + \varepsilon_{it}$

Variables	Random-effects (Model 2b)			OLS (Model 2b)		
	Coefficient	z-value	p-value	Coefficient	t-value	p-value
$CashBP$	$5.39e^{-08}$	1.42	0.156	$5.15e^{-08}$	1.37	0.170
$StockBP$	$1.92e^{-08}$	1.94^*	0.052	$1.90e^{-08}$	1.95^*	0.051
$Size$	-0.0015361	-0.67	0.504	-0.0015065	-0.67	0.505
$Debt$	0.0466844	2.36^{***}	0.018	0.0462881	2.38^{**}	0.017
$Growth$	0.0131928	4.44^{***}	0.000	0.0132716	4.51^{***}	0.000
CF	-0.3696343	-11.20^{***}	0.000	-0.3650042	-11.13^{***}	0.000
DCA_{t-1}	-0.2076774	-11.86^{***}	0.000	-0.2045524	-11.67^{***}	0.000
$Electron$	-0.0052853	-0.81	0.417	-0.0053337	-0.83	0.404
Exp	-0.2449264	-2.45^{**}	0.014	-0.2476298	-2.47^{**}	0.014
$Exp \times CashBP$	$-9.15e^{-08}$	-1.56	0.119	$-8.97e^{-08}$	-1.53	0.126
$Exp \times StockBP$	$6.98e^{-08}$	2.04^{**}	0.041	$7.18e^{-08}$	2.11^{**}	0.035
$Exp \times Size$	0.0107444	2.40	0.017	0.0108816	2.42	0.016
$Exp \times Debt$	0.0280836	0.76	0.447	0.0295697	0.80	0.424
$Exp \times Growth$	0.0024879	0.45	0.655	0.0024928	0.45	0.654
$Exp \times CF$	-0.0037920	-0.06	0.951	-0.0039828	-0.07	0.948
$Exp \times DCA_{t-1}$	-0.0765908	-1.99^{**}	0.047	-0.0765511	-1.99^{**}	0.047
$Exp \times Electron$	-0.0090462	-0.72	0.469	-0.0092522	-0.74	0.460
F-test	F(597,2613) = 0.98		0.6070			
LM test	Wald chi2(17) = 464.91		0.0000			
R^2			16.09%	Adj- R^2		12.48%

1. To mitigate any undue influence from outliers all variables are winsorized at the 1% level.
2. LM test = Breusch and Pagan Lagrangian multiplier test for random effects.
3. ***: Significance at 0.01 level, **: Significance at 0.05 level, and *: significance at 0.10 level.

is not necessarily better than the employee's cash bonus. Therefore, whilst planning stock bonuses, companies should consider that managers might perceive a moral crisis issue, earnings management, in order to approach perfection in developing their firms' bonus system.

VI. Conclusions

While bonuses granted to employees for performance can yield positive incentive effects, they can also have side effects including increased earnings management. When employees are largely compensated by bonuses instead of a salary, the incentives for earnings management arise from managers' wealth being sensitive to short-term reported earnings. In this paper, the relationship of bonus-based incentive with earnings management is examined. Using a sample of 3,227 firm-year observations from 2003 to 2009, it is found that employee bonus compensation (*BonusP*) is positively correlated with the incentive of earnings management (*DCA*), and this relationship remains unchanged even after Taiwan's adoption of new accounting regulation in 2008 on the expensing of employee bonus. The key inferences of stock bonus compensation on earnings management are valid. Compared to cash bonuses, stock bonuses are able to accumulate an employee's wealth in a short period. Therefore, it is likely to lead to the management of a company focusing on short-term wealth and causes an earnings management issue and inflated earnings to achieve maximum personal benefit.

Furthermore, this study examine whether there exists a mutual and positive effect between the amount of bonus grants and the behavior of earnings management. By estimating a simultaneous equation model linking employee bonuses and contemporaneous earnings management behavior, the empirical results indicate significant positive simultaneous relationship between employee bonus and discretionary current accruals.

 Together these findings suggest that employee bonus granted for performance can encourage earnings management. If the incentive of bonuses can increase earnings management behavior, managers also can benefit from manipulating reported earnings to increase the value of bonus compensation.

The scale of the modern corporation commonly leads to the separation of ownership and control, especially at largest firms. Dispersed investor-owners rely on professional managers who rarely own more than a tiny fraction of the companies they manage and are largely compensated by bonuses, instead of salaries. Hence, those with a higher proportion of bonus relative to their base salary may be more inclined to misstate earnings.

The empirical results find evidence of earnings management. Such behavior makes sense for managers whose bonus-linked incentives are focused on meeting explicit targets for earnings. Given the increased importance and widespread use of bonus-based compensation in Taiwan as an incentive alignment mechanism, the results of this research

indicate that regulatory responses to address opportunistic earnings management should consider the incentives arising from bonus-based compensation.

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