

## EXECUTIVE COMPENSATION AND CONTRACT-DRIVEN EARNINGS MANAGEMENT

Lan Sun

UNE Business School, Faculty of the Professions,  
University of New England, Australia NSW2351

E-mail: lansun@une.edu.au

### ABSTRACT

*Earnings management is found to be driven by different managerial incentives. Previous studies have identified that executive compensation contracts create incentives for earnings management. The agency theory and the positive accounting theory provide explanations for contract-driven earnings management. This study links the agency theory and the positive accounting theory and reviews the early executive compensation studies, bonus plan maximisation hypothesis and equity-based compensation. The aim of this study is to shed light in explaining contractual incentives and provide useful information in understanding the executive compensation contract-driven earnings management behaviour.*

**Keywords:** Executive compensation, earnings management, contractual incentives, agency theory, positive accounting theory

**JEL classifications:** M41, M52

### INTRODUCTION

In the literature, the executive compensation contract has been found to create strong incentives for earnings management. Two theories explain this behaviour. The agency theory predicts that there is potential conflict of interest between managers and owners/shareholders, owners/shareholders design management compensation contracts in order to constrain management to act in their best interest (Jensen & Meckling, 1976). Theoretically, management compensation contracts are viewed as devices to reduce the conflict of interest between managers and shareholders and, thereby, maximise a firm's value. However, these compensation contracts may induce earnings management simply because managers' compensation is either tied to accounting earnings (for example, bonus) or stock prices (for example, stock

options). There is a possibility that rewarding managers on the basis of reported earnings or stock performance may induce them to manipulate earnings figures to improve their apparent performance and, ultimately, their related compensations. Watts and Zimmerman (1978) propose the positive accounting theory to explain contract-driven earnings management.

They argue that a firm can be viewed as a nexus of contracts and is inclined to minimise contracting costs associated with various contracted parties. The firms' accounting choice should be chosen to minimise the contracting costs and to attain efficient corporate governance. They examined three contractual agreements: the compensation contract between managers and firms; the debt contract between firms and lenders; and the political contract between firms and regulators. However, they found that managers try to influence contractual outcomes of the compensation plan, the debt covenant and the political costs by exercising judgment over financial reporting. Both the agency theory and the positive accounting theory are consistent in arguing that firms should use the compensation contract as a device to motivate managers to act in the best interest of shareholders. However, managers may myopically distort firm's true performance to obtain gain on their performance contracts. Later, Scott (1997) refers the positive accounting theory as "contracting theory" and suggests that the compensation contract provides the major insight explanation for the opportunistic earnings management behaviour. The previous findings are mixed and inconsistent. On one hand, some researchers claim that they have detected earnings management behaviour that is driven by compensation incentives. The existence of a compensation agreement induces management choice of accounting policies that will increase reported earnings (Watts & Zimmerman, 1978; Hagerman & Zmijewski, 1979; Zmijewski & Hagerman, 1981). On the other hand, some researchers argue that empirical evidence linking compensation and accounting policy choices are not conclusive (Holthausen, 1981; Bowen, Noreen, & Lacey, 1981). The inconsistency of the evidences across studies therefore casts doubt on the impact of compensation on earnings management.

This paper links the agency theory and the positive accounting theory and reviews the early executive compensation studies, bonus plan maximisation hypothesis and equity-based compensation. The aim of this study is to shed light in explaining contractual incentives and provide useful information in understanding the contract-driven earnings management behaviour. The remainder of the paper is organized as follows. Section 2 reviews the early executive compensation studies; Section 3 discusses the bonus plan maximisation hypothesis; Section 4 discusses the equity-based compensation; Section 5 concludes the paper.

## **THE EARLY EXECUTIVE COMPENSATION STUDIES**

Jensen and Meckling (1976) pointed out the separation of ownership and control creates a conflict between managers and shareholders. This is the agency theory that implies that managers have the intent to maximise their person utility at the expense of shareholders. In order to align the interest of managers with that of shareholders, a firm designs management compensation contracts to constrain management to act in the best interest of shareholders. Watts and Zimmerman (1978) extended the agency theory and developed a proposition that managers attempt to maximise their utility through the choice of accounting policies. This is the positive accounting theory and the early compensation hypothesis stems from this theory. They argued that there are several factors that can increase management wealth: (1) decreased (delayed) tax payments, (2) favourable regulations, (3) reduced political costs, (4) reduced information production costs, and (5) increases in reported earnings that are used as a base measure in incentive bonus plans. The first four factors would, *ceteris paribus*, increase firm cash flows and thus lead to higher stock prices, while the last factor would directly increase management compensation. Using a sample of 52 firms which made submissions to the FASB (Financial Accounting Standards Board) about the proposed GPLA (General Price Level Adjustment) standard in 1974, they also found that managers will to choose accounting standards to report lower earnings that will result in lower tax, regulatory and political costs.

Although Watts and Zimmerman (1978) developed a theory hypothesising the economic incentives managers have in selecting accounting policies, they did not provide direct evidence on the association between management compensation and earnings manipulation. Hagerman and Zmijewski (1979) later examined whether the existence of incentive compensation plans in addition to size, industry concentration, risk, and capital intensity effected management discretions. In this study, management discretions are measured as four accounting choices of inventory method (LIFO versus FIFO), depreciation method (accelerated versus straight-line), the treatment of the investment tax credit (deferral versus flow-through), and pension costs amortization (less than 30 years versus more than 30 years). Using a random sample of 300 non-regulated industrial firms in 1975, they found that the existence of incentive compensation plans induced a management choice of accounting methods that would increase reported earnings.

Zmijewski and Hagerman (1981) extended Hagerman and Zmijewski (1979)'s finding that a management accounting choice is driven by incentive

compensation and argued that management would adopt a multi-dimensional income strategy with each accounting policy choice being one dimension of that optimal strategy. An optimal strategy means management faces the trade-offs between income-increasing policies and income-decreasing policies. For instance, management compensation plans induce managers to inflate earnings while firm size encourages managers to deflate earnings. Using the same sample of Hagerman and Zmijewski (1979), Zmijewski and Hagerman (1981) found the existence of a profit-sharing plan, size, degree of concentration and debt to total assets ratio all influence a firm's accounting strategy. Based on the assumption that accounting policy decisions are made jointly, Zmijewski and Hagerman (1981) tested positive accounting theory using an overall model and individual factors that were hypothesised to be important in a manager's decision of accounting choices.

Using a sample of 96 firms which voluntarily switched depreciation method from an accelerated method to a straight-line method covering the period from 1955 to 1978, Holthausen (1981) modelled abnormal stock returns as a function of the existence of a management compensation plan, the impact of the depreciation change on reported earnings, the firm's deviation from its dividend constraint and the size of the firm. The function addresses two issues. First, there should be an impact of an unanticipated change of depreciation policy on the market value of the equity at the time of announcement. Second, abnormal stock returns should have a negative association with the existence of a management compensation plan if managers use income-increasing depreciation techniques to inflate their bonus. However, the evidence is not consistent with the hypothesis that management compensation contracts are important determinants of the decision to change depreciation techniques.

Skinner (1993) related management compensation agreements with a firm's investment opportunity set. First, firms using incentive bonus plans are found to have higher mean and median gross property, plant and equipment to firm value ratios (more assets-in-place) but smaller Tobin's Q and R&D ratios (fewer growth opportunities). Second, firms with bonus plans are more likely to select income-increasing depreciation and goodwill procedures. Based on these two findings, Skinner (1993) suggested that investment opportunity set affects accounting choice indirectly through its effect on the nature of a firm's compensation contracts. However, this study has two limitations. First, the sub-sample Skinner (1993) used in testing the relation between the investment opportunity set and compensation contracts consists of the 100 largest firms from an estimation sample. Such a self-

selection problem could result in a bias test as large firms have relatively more assets-in-place. Second, simultaneity problem could arise when investment opportunity, compensation and accounting choice determines each other. In this case, the error terms in the logit regression will be correlated with some of the independent variables, leading to inconsistent estimates of the coefficients. These studies focus on one-time events such as changes in a specific accounting method and ignore all other accounting choices. They typically use a single 0-1 dummy variable to estimate the impact of a short-term bonus plan and use a dichotomous variable or a categorical variable to capture income-increasing or income-decreasing earnings management through the choice of accounting policies.

### **BONUS PLAN MAXIMISATION HYPOTHESIS**

Rather than using a single dummy variable to estimate the impact of a short-term bonus plan, there is another line of research that focuses on detailed bonus plans. Moreover, it uses discretionary accruals to capture earnings management through aggregate accounting choice. This line of research forms a more complete theory of earnings management and management compensation.

One of the most widely cited papers in this line of research is Healy (1985). Using a sample of 1,527 firm-year observations covering the period from 1930 to 1980, this study discovered that bonuses were not simple linear functions of accounting earnings. Instead, they are piecewise linear functions with lower and upper bounds defined in the funding formula for use in bonus computations.<sup>1</sup> That is; (1) managers decrease income when earnings before discretionary accruals is below the lower bound of the bonus plan; (2) managers increase income when earnings before discretionary accruals fall between the upper and lower bounds of the bonus plan; (3) managers decrease income when earnings before discretionary accruals is above the upper bound of the bonus plan. Such a piecewise linear bonus function contradicts the conventional wisdom that managers with a bonus plan will always choose income-increasing accounting choices. In fact, when earnings are far below the lower bound, managers are more likely to adopt a "bath taking" strategy to further reduce current earnings in order to increase the probability of meeting future earnings' targets. Later researchers refer Healy's theory of managers using discretionary accruals to maximise short-term bonus compensation as the bonus-maximisation hypothesis.

Nevertheless, this study has three limitations. First, errors in measuring earnings before discretionary accruals are perfectly negatively correlated with measurement errors in discretionary accruals.<sup>2</sup> This implies a number of firm-years observations with positive measurement error in earnings before discretionary accruals are more likely to present negative measurement errors in discretionary accruals. Such relation increases the probability of incorrectly rejecting the null hypothesis. Second, Healy (1985) used the *chi*-square test of independence in the contingency table. This method is useful in determining whether a relationship exists between two variables, for example accruals and bonus plan parameters. However, it does not enable researchers to estimate or predict the value of one variable based on the value of the other (Kenkel, 1989). Finally, Healy (1985) introduced discretionary accruals as a new proxy for earnings management which later was widely applied in measuring earnings management. However, the expected level of non-discretionary accruals is assumed to be zero and total accruals are used as a substitute of discretionary accruals. Kaplan (1985) pointed out those non-discretionary accruals are unlikely to be zero as working capital accounts fluctuate with the changing economic conditions of the firm. The substitution of total accruals for discretionary accruals makes the results of Healy's empirical tests difficult to interpret.

Gaver, Gaver and Austin (1995) extended Healy's work. The principle difference between the two studies is that Healy (1985) used total accruals while Gaver et al. used Modified Jones Model and Industry Index Model to estimate discretionary accruals. Using updated data with 837 firm-years covering the period from 1980 to 1990, Gaver et al. found that when earnings before discretionary accruals fall below the lower bound, managers appear to exercise positive discretionary accruals. Hence, Gaver et al. believed that their results were more consistent with the income smoothing hypothesis than with Healy's bonus hypothesis.

Holthausen, Larcker and Sloan (1995) also extended Healy's work. These two studies have two essential differences. First, Healy (1985) made inferences about CEO incentives based on funding formulas while Holthausen et al. used a budget-based compensation scheme. Unlike funding formulas, a budget-based compensation scheme clearly defines minimum, target, and maximum bonus payments at the beginning of the year and thus allows authors to directly determine whether CEOs are below the lower bound, above the upper bound, or in between the lower and upper bound. This budget-based compensation scheme hence provides a direct linkage between the financial performance of the firm and the annual bonus earned

by an executive. Second, Healy made predictions about earnings management based on *ex ante* earnings before discretionary accruals.

In contrast, Holthausen et al. (1995) replaced earnings before discretionary accruals with an *ex post* actual bonus. They predicted that managers have an incentive to select income-decreasing discretionary accruals if the actual bonus is below (above) the lower (upper) bound; while managers have an incentive to select income-increasing accruals if the actual bonus is between the lower and upper bounds. Their approach is *ex post* and called as fixed-target hypothesis. Using confidential compensation data with 443 firm-year observations provided by two different human resources consulting firms that covered periods of 1982 to 1984 and 1987 to 1991, Holthausen et al. estimated discretionary accruals from the Modified Jones Model. The results from *t*-tests and *chi*-square tests show a downward earnings manipulation at the upper bound relative to those between the lower and upper bound. However, results do not support that managers manipulate earnings downwards when compensations are below the lower bound of their contract.

Guidry, Leone and Rock (1999) tested the bonus maximisation hypothesis at the business unit level for a multinational conglomerate. Using 117 different U.S. business units and 179 business-unit-years observations over the 1994–1995 time periods, they documented that business-unit managers manipulated earnings in order to maximise their short-term bonus plans. Given that incentives of individual managers may differ from one business unit to the other, income-increasing discretionary accruals in one business unit can offset income-decreasing discretionary accruals in another business unit. The investigation of business-unit level increases the probability for earnings management behaviour to be detected. Thus, this examination of earnings management at business-unit level was innovative. In all, the focus of above studies is on whether discretionary accruals are consistent with the incentive provided by bonus plans. In the examination, they used discretionary accruals but not accounting choices as proxies for earnings management; they used bonus plan but not the actual compensation paid.

## **ACTUAL CASH COMPENSATION AND BONUS**

Recently studies began to investigate the effect of discretionary accruals on actual compensation paid. Using 3,439 firm-years observations from Compustat between 1980 and 1993, Balsam (1998) found that cash flows, discretionary accruals, and

non-discretionary accruals are all significant determinants of CEO cash compensation; discretionary accruals receive less weight than other earnings components in the compensation function since they are subject to management manipulation. Furthermore, managers use income-increasing discretionary accruals to increase compensation. The significant positive coefficient on this variable reveals that positive discretionary accruals are given more emphasis in compensation decisions than negative discretionary accruals. In addition, the association between discretionary accruals and CEO cash compensation varies depending on the circumstance of the firm. The circumstance is defined as whether positive discretionary accruals are used to achieve earnings benchmarks: (1) report profits; (2) report income increases; (3) report income increases plus a drift factor.<sup>3</sup> The compensation committees can distinguish between the components of earning and reward managers when their discretionary behaviour achieves the firms' goals.

Shuto (2007) examined the effects of discretionary accruals and extraordinary items on Japanese executive compensation. In Japan, executive compensation is not publicly available and only the total amount of compensation paid to all directors is disclosed. Shuto used the total cash compensation data (the sum of salary and bonus) of the board of directors as a proxy for executive compensation and discretionary accruals were estimated from the Cash Flow Modified Jones model (Kasznik, 1999). Using a large sample of 16,368 firm-year observations from the period between 1991 and 2000, Shuto first analysed the relation between earnings components and executive compensation and found that non-discretionary earnings components are more value-relevant than discretionary components and shareholders are in favour of these more value-relevant earnings components in evaluating executive compensation. Moreover, this study found that managers who do not receive any bonus are more likely to exercise income-decreasing discretionary accruals and extraordinary items. Shuto interpreted this finding as evidence that managers engage in "big bath" earnings management when there is no bonus rewarded. Both Balsam (1998) and Shuto (2007) argued that the association between discretionary accruals and executive compensation varies depending on the circumstances of a firm; the latter study examined two other circumstances: (1) when firm managers use unusually high (low) discretionary accruals to increase (decrease) income; (2) when firm managers use discretionary accruals to smooth income. The results from the Vuong (1989) test<sup>4</sup> suggested that shareholders should distinguish between the components of earnings and rewards managers when they smooth income to beat earnings target.

While beating relevant earnings benchmarks is found to be a circumstance

under which managers will exercise positive discretionary accruals to maximize their compensation, neither study further explored the effects of missing earnings benchmarks on the CEO's compensation. Matsunaga and Park (2001) filled this gap by pointing out that CEO compensation would be reduced when a firm misses an earnings benchmark because the compensation committee may view this as a signal of poor management performance. Three earnings benchmarks were tested: (1) quarterly consensus analyst forecast; (2) the earnings for the same quarter of the previous year; and (3) zero profit. Using 3,651 firm-year observations from 1993 to 1997, results showed significantly negative associations between the change in CEO cash bonuses and earnings below consensus analysts' forecasts and prior year earnings. Moreover, the Wald tests report the negative coefficient is significantly stronger when a firm misses the prior year's earnings more frequently, suggesting an incremental penalty on executives' compensation if the firm misses earnings benchmark more frequently. Although Matsunaga and Park's study did not involve the estimation of discretionary accruals, it has implications for studies of earnings management and executive compensation. Earnings benchmarks create incentives for managers to engage in earnings management as managers are penalised for lower bonuses when they missed earnings benchmarks.

## **EQUITY-BASED COMPENSATION INCENTIVES**

Modern corporations adopt various mechanisms to align managers' incentives with those of shareholders. A contemporary executive compensation package mainly contains five components, base salary, annual bonus, stock options, stock grants, and long-term incentive plans (Murphy, 1999). As different form of compensation may have different risk and incentive profiles (Anderson, Banker, & Ravindran, 2000), recent compensation related earnings management studies considered the interplay between the compensation components and their different incentives that may cause earnings management. Further, there has been a large increase in the level of CEO pay since 1980 and this growth has been driven drastically by the substantial increase in stock-option grants (Hall & Liebman, 2000). By tying executive pay to stock price outcomes, equity-based compensation encourages managers to make operating and investing decisions that maximise shareholder wealth. However, researchers suggest that tying management compensation to the stock price may bring a new set of problems. For example, CEOs who have high levels of option and stock holdings are found to manipulate earnings in order to increase their own utility at the expense of

shareholders, which contrary to the designed incentive effects of equity compensation.

Gao and Shrieves (2002) investigated whether the five separate compensation—salary, bonus, options, restricted stock, and long-term incentive plans—embody different incentives for earnings management. They suggested that the non-linear payoffs from the stock options and bonus component of compensation create managerial incentives to exploit earnings manipulation to the large extent. Compared to options, restricted stocks create less incentive for earnings management because restricted stocks have linear payoffs based on stock price movements. With base salary, a manager who receives a fixed salary would have an incentive to reduce earnings management behaviour since earnings management behaviour is costly, with the costs of losing reputation, losing job, and increasing litigation risk. Finally, long-term incentive plans are compensated at a firm's long term performance, usually three to five years. Given the mean-reverting property of accruals, managers are likely to mitigate incentives to manage earnings. Results from empirical analysis are generally consistent with the predication. Bonus and option compensation are positively and significantly related to discretionary accruals while salary is significantly negatively associated with discretionary accruals. Restricted stocks are weakly associated with discretionary accruals with a positive sign. Long-term incentive plans are not associated with discretionary accruals. Moreover, they show that the relationship between compensation components and earnings management is conditional on proximity of pre-managed earnings to an earnings benchmark, the closer the level of pre-managed earnings to earnings benchmarks (zero earnings and prior year's earnings), the more likely that managers engage in earnings management.

Cheng and Warfield (2005) investigated five elements of executive equity incentives: option grants, unexercisable options, exercisable options, restricted stock grants, and stock ownership. They found that CEOs are more likely to sell shares in the year after earnings announcements when they have high unexercisable options or stock ownership. Moreover, the probability of earnings management is also higher for CEOs with high unexercisable options and ownership, and they tend to increase stock sales after earnings management. The underlying logic is that CEOs who are compensated heavily by equities tend to sell their shares in the future in order to reduce the risk exposure for holding them. Such trading behaviour induces earnings management to take place in an attempt to increase the price of the shares to be sold. Without estimating discretionary accruals, Cheng and Warfield used the probability of meeting or just beating analyst's forecasts as proxy for earnings management and quantified that earnings management will be increased by 16.3% for every one

standard deviation increase in unexercisable options. Likewise, for every one standard deviation increase in managerial ownership, earnings management will increase by 30.5%.

Ke (2001) linked beating profits and last year's earnings behaviour with CEOs' compensation and pointed out that CEO compensation incentives formed one set of economic determinants of benchmark beating behaviour. Using a sample of ExecuComp 1,311 publicly traded firms with 18,623 quarterly data during 1992 to 1998, the study showed that the probability of reporting small earnings increases is higher for CEOs with high equity-based compensation (measured by stock options and direct stock ownership), low future growth opportunities, low analysts pressure and low debt covenant constraints. Moreover, the duration of consecutive earnings increases is longer for CEOs with high equity-based compensation and bonus, low future growth opportunities, and low debt covenant constraints. Hence, Ke (2001) suggested that CEO compensation incentives, especially equity incentive, are important determinants of benchmark beating behaviour. Baker, Collins and Austin (2003) suggested if managers are rewarded with large portion of options relative to other forms of compensation, one way they could increase the value of the options would be to take actions to reduce the exercise price. This lower exercise price increases the likelihood that options would be "in the money" in the future. They found firms that compensate their executive with greater shares of options relative to other forms of pay manage earnings downwards through negative discretionary accruals before the award date to reduce reported earnings and thus reduce the exercise price.

Bergstresser and Philippon (2006) found that option holdings, option exercises and other insiders sell stocks that are associated with discretionary accruals. They suggested that stock and option holdings create strong incentives for CEOs to manipulate earnings upward. McAnally, Srivastava and Weaver (2008) reported that managers with larger option grants are more likely to miss earnings benchmarks by reporting small losses and small year-over-year earnings declines. As missing an earnings benchmark can lead to stock price decline which gives CEOs a lower strike price on option grants, they suggested that option grants create strong incentives for CEOs to miss earnings benchmarks via downward earnings management. The executive compensation incentives have not yet been well examined in the Australian context. Balachandran, Chalmers and Haman (2008) found that Australian managers with option holdings use two mechanisms (discretionary current accruals and on-market buyback announcements) to drive up share prices. However, other forms of

executive compensation, such as salary, bonus, and shares are not examined. Also, they focus on on-market share buyback firms only with a small sample size of 138 firms. This may limit the generalisability of the findings.

## **CONCLUDING REMARKS**

In theory, a link between a CEO's compensation and a firm performance will promote better incentive alignment and higher firm values (Jensen & Meckling, 1976). However, executive compensation contract is an incentive where opportunistic earnings management behaviour is likely to be detected since CEOs are expected to have incentives to manipulate earnings if executive compensation is strongly linked to performance. A substantial literature has emerged to test the relationship between executive compensation and earnings management and has documented that compensation contracts create strong incentives for earnings management. This study takes a comprehensive view of the compensation contract and provides insight summary on executive compensation and earnings management. When earnings management is driven by opportunistic management incentives, firms will ultimately pay a price and its negative impact on shareholders is economically significant. This study will contribute to investors since rational investors make investment decision primarily based on the prediction of firms' future performance and such prediction is largely influenced by current reported earnings.

## **NOTES**

1. The lower bound, usually defined as invested capital, is the threshold that net income must exceed before a bonus can be earned. The upper bound, often defined as a percentage of cash dividend paid out or a maximum percentage of invested capital, limits the maximum bonus that can be rewarded.
2. The sum of the proxy variables (earnings before discretionary accruals and discretionary accruals) are constrained to equal the sum of the measured variables (cash flows and total accruals) by the accounting earnings identity where accounting earnings = cash flows + total accruals; also, accounting earnings = earnings before discretionary accruals + discretionary accruals.
3. Two drift factors are used, the first being the change in the consumer price index, and the second being the average growth in income over the previous five years
4. Vuong (1989) test is designed to compare the explanatory power of the two competing models by computing the ratio of adjusted R-square of two competing

models. Shuto (2007) used this test to imply that Net Income explains significantly more of the variation in Bonus than Non-discretionary Earnings.

## REFERENCES

- Anderson, M. C., Banker, R. D., & Ravindran, S. (2000). Executive compensation in the information technology industry. *Management Science*, 46(4), 530.
- Balachandran, B., Chalmers, K., & Haman, J. (2008). On-market share buybacks, exercisable share options and earnings management. *Accounting & Finance*, 48(1), 25–49.
- Baker, T., Collins, D., & Austin, R. (2003). Stock option compensation and earnings management incentives. *Journal of Accounting, Auditing & Finance*, 18(4), 557–583.
- Balsam, S. (1998). Discretionary accounting choices and CEO compensation. *Contemporary Accounting Research*, 15(3), 229–252.
- Bergstresser, D., & Philippon, T. (2006). CEO incentives and earnings management. *Journal of Financial Economics*, 80(3), 511–529.
- Bowen, R. M., Noreen, E. W., & Lacey, J. M. (1981). Determinants of the corporate decision to capitalize interest. *Journal of Accounting and Economics*, 3(2), 151–179.
- Cheng, Q., & Warfield, T. D. (2005). Equity incentives and earnings management. *Accounting Review*, 80(2), 441–476.
- Gao, Pengjie, & Shrieves, R. E. (2002). Earnings management and executive compensation: A case of overdose of option and underdose of salary? Paper presented at EFA 2002 Berlin, University of Notre Dame.
- Gaver, J., Gaver, K. M., & Austin, J. R. (1995). Additional evidence on bonus plans and income management. *Journal of Accounting and Economics*, 19(1), 3–28.
- Guidry, F. J., Leone, A., & Rock, S. (1999). Earnings-based bonus plans and earnings management by business-unit managers. *Journal of Accounting and Economics*, 26(1–3), 113–142.
- Hagerman, R., & Zmijewski, M. (1979). Some economic determinants of accounting policy choice. *Journal of Accounting and Economics*, 1(2), 141–161.
- Hall, B. J., & Liebman, J. B. (2000). The taxation of executive compensation, Working paper no. 7596, National Bureau of Economic Research.
- Healy, P. M. (1985). The effect of bonus schemes on accounting decisions. *Journal of Accounting and Economics*, 7(1–3), 85–107.

- Holthausen, R. W. (1981). Evidence on the effect of bond covenants and management compensation contracts on the choice of accounting techniques: The case of the depreciation switch-back. *Journal of Accounting and Economics*, 3(1), 73–109.
- Holthausen, R. W., Larcker, D. F., & Sloan, R. (1995). Annual bonus schemes and the manipulation of earnings. *Journal of Accounting and Economics*, 19(1), 29–74.
- Jensen, M. C., & Meckling, W. C. (1976). The theory of the firm: Managerial behaviour, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305–360.
- Kaplan, R. S. (1985). Comments on Paul Healy-evidence on the effect of bonus schemes on accounting procedure and accrual decisions. *Journal of Accounting and Economics*, 7(1–3), 109–113.
- Kasznik, R. (1999). On the association between voluntary disclosure and earnings management. *Journal of Accounting Research*, 37(1), 57–81.
- Ke, B. (2001). Why do CEOs of publicly traded firms prefer reporting small increases in earnings and long strings of consecutive earnings increases? Working paper, The Pennsylvania State University.
- Kenkel, J. L. (1989). *Introductory statistics for management and economics* (3rd Ed.). Boston, MA: PWS-KENT.
- Matsunaga, S. R., & Park, C. W. (2001). The effect of missing a quarterly earnings benchmark on the CEO's annual bonus. *Accounting Review*, 76(3), 313.
- McAnally, M. L., Srivastava, A., & Weaver, C. D. (2008). Executive stock options, missed earnings targets, and earnings management. *Accounting Review*, 83(1), 185–216.
- Murphy, K. J. (1999). Executive compensation. In O. Ashenfelter, & D. Card (Eds.), *Handbook of Labor Economics*, 3B, North-Holland: Elsevier.
- Scott, W. R., (1997). *Financial accounting theory*. Scarborough: Prentice Hall.
- Shuto, A. (2007). Executive compensation and earnings management: Empirical evidence from Japan. *Journal of International Accounting, Auditing & Taxation*, 16(1), 1–26.
- Skinner, D. (1993). The investment opportunity set and accounting procedure choice: Preliminary evidence. *Journal of Accounting and Economics*, 16(4), 407–445.
- Vuong, Q. H. (1989). Likelihood ratio for model selection and non-nested hypotheses. *Econometrica*, 57(2), 307–333.
- Watts, R. L., & Zimmerman, J. L. (1978). Towards a positive theory of the determination of accounting standards. *Accounting Review*, 53(1), 112.

Zmijewski, M. E., & Hagerman, R. L. (1981). An income strategy approach to the positive theory of accounting standard setting/choice. *Journal of Accounting and Economics*, 3(2), 129–149.

**APPENDIX**

**Review of Empirical Studies on Executive Compensation and Earnings Management**

Sample	Dependent Variable	Independent Variable	Methodology	Findings	
Watts & Zimmerman (1978)	52 U.S. firms response to General Price Level Adjustments (GPLA) in 1974	Dichotomous variable for corporate lobbying on accounting standards (firm favored versus firm opposed GPLA)	Dummy variable for the existence of bonus plans (1 if firm had a management incentive scheme and 0 otherwise)	Mann-Whitney U test Discriminant analysis	1. Managers of unregulated small size firms with lower political costs will increase earnings 2. Managers of regulated or large firm will decrease earnings which result in lower tax, regulatory and political costs
Hagerman & Zmijewski (1979)	300 non-regulated U.S. industrial firms in 1975	Dichotomous variable for accounting choices (1 if income-increasing policy and 0 if income-decreasing policy)	Dummy variable for the existence of incentive plan (1 if firm had management profit-sharing plan and 0 if no profit-sharing plan)	Probit analysis	The existence of incentive compensation plans induce management choice of depreciation method, the treatment of investment tax credit and pension costs amortization period that will increase reported earnings
Zmijewski & Hagerman (1981)	300 firms used in Hagerman and Zmijewski (1979)	N-chotomous variable for the combination of income-increasing and income-decreasing strategy	Dummy variable for the existence of incentive plan (1 if firm had management profit-sharing plan and 0 if no profit-sharing plan)	N-chotomous probit analysis	The existence of a profit-sharing plan, size, degree of concentration and debt to total assets ratio all influence the accounting strategy of a firm.
Holthausen (1981)	96 firms switched depreciation from an accelerated method to a straight-line method (1955–1978 )	Abnormal stock returns around depreciation switch announcement	Dummy variable for the existence of bonus plans	Multiple regression analysis	No evidence supports management compensation contracts are important determinants of the decision to change depreciation techniques
Healy (1985)	94 Fortune U.S. industrial firms (1930–1980)	1. Total accruals (estimated as the difference between reported earnings and operating cash flows) 2. Voluntary changes in accounting procedures on earnings.	Bonus plan parameters group with lower, middle, and upper bounds	Contingency table Chi-square test T-test compare the mean differences	1. Managers are more likely to choose income-decreasing accruals when their bonus plan upper and lower bounds are binding, and income-increasing accruals when these bounds are not binding 2. changes in accounting procedures are associated with adoption or modification of bonus plan

Skinner (1993)	A estimation sample of 504 firms in 1987 with a sub-sample of the 100 largest firm	Categorical scale: 0 for income-decreasing strategy; 1 for neither income-increasing nor decreasing ; 2 for income-increasing strategy	Dummy variable for the existence of bonus plans	T-test Wilcoxon tests Logit regression	Firms with bonus plans are more likely to select income-increasing depreciation and goodwill procedures after controlling for investment opportunity
Gaver et al. (1995)	837 firm-years (1980–1990)	Discretionary accruals: Healy's total accruals Modified Jones model Industry index model	Bonus plan parameters group with lower, middle, and upper bounds	T-test Chi-square test	Support income smoothing hypothesis-managers select positive (income-increasing) discretionary accruals when earnings before discretionary accruals fall below the lower bound
Holthausen et al. (1995)	443 firm-year observations (1982 to 1984, and 1987 to 1991)	Discretionary accruals: Healy's total accruals Modified Jones model	Budget-based compensation scheme with defined lower, inside, and upper bounds	T-test Chi-square test	Found managers manipulate earnings downwards when their bonuses are at the maximum
Balsam (1998)	3,439 firm-years observations from COMPUSTAT (1980–1993)	Cash salary and bonuses paid to CEO	Discretionary accruals from Jones model	Regression analysis	Found positive association between discretionary accruals and CEO cash compensation, such association depends on the circumstance of the firm
Guidry et al. (1999)	117 U.S. business units with 179 business-unit-years observations (1994–1995)	Total accruals Discretionary accruals from Modified Jones model Inventory reserve	The parameters of compensation plans with lower, middle, and upper bounds	Two-sample t-tests Two-sample Wilcoxon tests	Found managers make discretionary accrual decisions to maximize their short-term bonuses at the business unit level for a multinational conglomerate
Matsunaga & Park (2001)	3,651 firm-year observations (1993–1997)	Change in CEO's bonus deflated by prior year salary	Dummy variables: equals to 1 if earnings are below the consensus analyst forecast, last year earnings and zero; and 0 otherwise	Pooled regression Wald tests	The board reduces CEO pay when the firm's quarterly earnings fall short of the consensus analyst forecast or the earnings for the same quarter of the prior year
Ke (2001)	1,311 publicly traded firms with 18,623 quarterly data from EXECOMP database (1992–1998)	Change in quarterly EPS	The ratio of bonus to total compensation Equity incentives measured from Core & Guary (1998) method	Probit model Cox hazards model	The probability of reporting small increase in earnings is higher and The duration of consecutive earnings increases is longer for CEOs with high equity-based compensation
Gao & Shrieves (2002)	7,301 firm-year observations from ExecuComp database (1992–2000)	Absolute value of the scaled discretionary current accruals	Dollar value of salary, bonus, option, restricted stock, long-term incentive plans, incentive intensity of stock option awards and restricted stock	Multiple regression	1. Discretionary accruals are positively related to bonuses and options while negatively related to salary 2. The relationship is conditional on

*Executive Compensation and Contract-Driven Earnings Management*

			award		proximity of pre-managed earnings to an earnings benchmark
Baker et al. (2003)	168 firms with 1100 firm-year observations collected from Wall Street Journal survey (1992–1998)	Signed discretionary accruals from Modified Jones Model	1. The ratio of option award to the sum of salary, bonus, and option exercises 2. The fitted value of option ratio	2SLS using fitted value of option ratio	Firms that compensate their executive with greater shares of options manage earnings downwards through negative discretionary accruals before the award date
Cheng & Warfield (2005)	9472 firm-years observation ExecuComp database (1993–2000)	1. CEOs' net sales of share in year t+1 2. the probability of earnings surprise per share be either negative, zero or one cent	Equity incentives—option grants, unexercisable options, ownership, exercisable options	Multiple regression Logistic regression	CEOs with high equity incentives are more likely to meet or beat analysts' forecasts; CEOs with high equity incentives increasing their stock sales after earnings management
Bergstresser & Philippon (2006)	Entire Compustat for Accounting Data (1976–2000); 4199 ExecuComp data (1993–2000); 15654 Thomson Financial Insiders trading data (1996–2001)	Absolute and signed total accruals Modified Jones model	CEO equity incentive measured as the ratio of a CEO's total compensation that would come from a one percentage point increase in the equity value of the firm	Regression	1. CEOs with overall compensation that is more closely tied to the value of stock and option holdings are associated with higher levels of earnings management 2. CEOs exercise unusually large numbers of options and sell large numbers of shares during the high accruals periods
McAnally et al. (2006)	1,744 firms with 9,954 firm-years observations (1992–2004)	Dummy variable equals to 1 if a firm miss earnings benchmark and zero otherwise	Option grants, exercises and holding book-tax difference proxy for earnings management	Logistic regression OLS regression Seemingly unrelated regression (SUR)	option grants create strong incentives for CEOs to miss earnings benchmarks via downward earnings management
Shuto (2007)	16,368 firm-year observations (1991–2000)	Total cash compensation data (the sum of salary and bonus) of the board of directors as a proxy for executive compensation	Discretionary accruals from modified CFO Jones model (Kasznik, 1999)	Regression Logistic regression Vuong (1989) test the difference of explanatory power between two models 2SLS	1. Managers use discretionary accruals to increase compensation 2. Managers who do not receive bonus adopt bath taking strategy 3. The association between discretionary accruals and executive bonus varies depends on the circumstances of the firm
Balachandran et al. (2008)	138 on-market buyback firms (1996–2003)	Discretionary current accruals measured from a variation of the cross-sectional modified Jones model (Teoh et al., 1998a)	On-market share buybacks, exercisable share options	Cross-sectional regression	Managers with option holdings rely on reported earnings to influence share price. They use two mechanisms: discretionary current accruals and on-market buyback announcements to drive up share prices