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THE HONG KONG POLYTECHNIC UNIVERSITY

SCHOOL OF ACCOUNTING AND FINANCE

ACCOUNTING CONSERVATISM AND THE STRUCTURE OF CEO COMPENSATION

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A Thesis submitted in Partial fulfillment

of the requirements for the Degree of

Master of Philosophy

November 2007

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Abstract of dissertation entitled "Accounting Conservatism and the Structure of CEO Compensation" Submitted by WEN Yantu for the degree of Master of Philosophy in Accountancy at The Hong Kong Polytechnic University in November 2007

ABSTRACT

Using a large sample of US firms during the period 1993-2005, this study investigates the relation between structures of the CEO compensation package from a management incentive perspective, and accounting conservatism; In other words, this study investigates how the managerial incentives of CEO compensation plans influence conservative accounting policy choices.

This paper adopts Basu's (1997) conditional accounting conservatism proxied by stock returns response to bad news relative to good news as a measure of accounting conservatism. There are two types of CEO compensation: one is cash compensation consisting of basic salary and bonus; the other is equity-based compensation comprised of stock options and restricted stock. This study anticipates that firms with larger cash compensation are more conservative and reflect bad news in a timelier manner. In contrast, firms with larger equity-based compensation may encourage CEOs to delay the recognition of bad news for opportunistic reasons. The results of this study show that conditional accounting conservatism varies with the structure of CEO compensation. It provides evidence which is consistent with the view that different managerial incentives affect the choice of accounting conservatism. In particular, when the compensation contract is more incentive-based, the degree of accounting conservatism tends to be lower.

Due to the existence of different characteristics of components of the CEO compensation package, this study considers structure of CEO compensation package rather than treats the CEO compensation package as a whole. The interaction between accounting conservatism and different components of CEO compensation is employed as a proxy to measure the degree of accounting conservatism in different elements of CEO compensation. The findings of this thesis show that the coefficients of these interaction terms on accounting conservatism are significantly different for various components of CEO compensation. The coefficient of interaction on accounting conservatism and CEO cash compensation is positive and significant. It implies that accounting is more conservative for CEO cash compensation. While the coefficient of interaction on accounting conservatism and CEO equity-based compensation is negative and significant, this means that accounting conservatism tends to be lower for CEO equity-based compensation than for CEO cash compensation. The results are robust after controlling for firmspecific, manager-specific and industry-specific characteristics.

The purpose of this paper is to examine whether firms recognize bad news in a timelier manner than good news and whether to a greater extent under certain components of the CEO compensation. More particularly, when a CEO equity-based compensation contract is the dominant choice, although firms recognize bad news in a timelier manner than they do good news, the timeliness of their doing so is less efficient compared to a cash-based compensation contract. The influence of the structure of CEO compensation on conservative accounting policy choices implies that the compensation committee should consider the relation between components of CEO compensation and conservative accounting policy choices when designing CEO compensation contracts and programs for improving accounting quality.

Keywords: Accounting Conservatism, CEO Cash Compensation, CEO Equity-based Compensation, Investment Opportunity, Risk-taking

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CHAPTER I INTRODUCTION

1.1 Objectives and Motivations

In this study, I investigate the relation between accounting conservatism and the structure of CEO compensation, and study managerial incentive effects of a CEO compensation plan on conservative accounting. Accounting conservatism refers to conditional conservatism which is defined as the asymmetric response of earnings to positive and negative share returns (Basu, 1997; Ball et al., 2000; Beaver et al., 2005; Ball and Shivakumar, 2005). The compensation of CEOs is classified under two types: cash compensation comprised of basic salary and annual bonus, and equity-based compensation consisting of stock options and restricted stock granted to CEOs. I examine whether the two types of compensation have significantly different effects on accounting conservatism. More specifically, I test whether, depending on investment opportunities, equity-based compensation is less conservative than cash compensation.

This study is motivated by the following factors: First, in the past few decades, CEO compensation has increased dramatically and widened the disparity between the compensation of CEOs and workers. For example, top management compensation at U.S. companies has increased from eight-two (82) times the average earnings of the average worker to over 400 times. Even for companies that reported a negative growth rate or suffered a loss, top-management continues to receive high pay. The expansion of compensation packages granted to top management has not only affected the interests of top management themselves, but has also adversely impacted the interests of shareholders. Concerns about executive compensation have attracted much attention from academicians, politicians and others. Some financial commentators oppugned the existing pay schemes and argued that an efficient compensation contract is not a matter of how *much* you pay top executives, but rather how you pay them. More specifically, the manner in which top executives' compensation is structured plays an important role in the design of efficient compensation contracts as well as the level of compensation.

Second, the relationship between ownership and management is one of the principal agent relationships in which CEOs of a firm are agents and shareholders are principals due to the separation of ownership and management in modern corporations. A "perfect" agent would consider all situations and allocate scarce resources efficiently. However, CEOs are not only the agents of shareholders, but also defenders of their own interests. Just as Ekanayake (2004) said, "*The premise*

of agency theory is that agents are self-interested, risk-averse, rational actors, who always attempt to exert less effort (moral hazards) and project higher capabilities and skills than they actually have (adverse selection)" (Ekanayake, 2004, p. 49). According to agency theory, CEOs' self-interest may conflict with the interest of owners for wealth maximization. There is evidence that the components of executive compensation encourage executives to manage corporate information since asymmetrical information exists between shareholders and managers. Gao and Shrieves (2002) argue that the components of executive compensation influence earnings management. Any changes in the design of compensation contracts will potentially lead to a change in managers' actions. For example, an over-emphasis on incentives in compensation contracts will expose executives to higher risk. To reach a certain level of pre-required accounting performance, executives shift to risky management by managing and manipulating earnings, risks and information disclosure. Shareholders are trying to discover the optimal mechanism by which to maximize their best benefits and are, as such, aligning the interests of CEOs with the goals of the firm. An executive compensation plan is well defined by Scott in 2006 (p. 303) as "... an agency contract between the firm and its managers that attempts to align the interests of owners and managers by basing the manager's compensation on one or more measures of the manager's performance in operating the firm". An efficient compensation plan involves a delicate mix of incentives, risks, and decision horizon considerations (Scott, 2006, P. 303). So the well designed compensation contract plays a key role in alleviating the conflict between agents and principals.

Third, researchers have conducted a number of studies on conservative accounting and CEO compensation. Watts (2003a) suggests that accounting conservatism serves as an efficient mechanism in a CEO compensation contract. He argues that accounting conservatism constrains management from taking opportunistic action where their earnings-based incentive compensation is concerned. Furthermore, no systematic study has been conducted on this topic. Leone et al. (2006) claim cash compensation to be less sensitive to stock returns when stock returns contain unrealized gains (positive returns) than when stock returns contain unrealized losses (negative returns) due to ex post settling up costs. In other words, cash compensation contracts mitigate the *ex post* settling up problem by limiting unrealized gains payment which were described to executives as having a high degree of verifiability. Vasvari (2006) explores the effect of managershareholders incentive structures in the debt market. He finds that ex ante conditional accounting conservatism decreases loan spreads and increases the number of financial covenants when managers receive average or below-average equity compensation. The papers mentioned above explore the links between the structure of CEO compensation and earnings management and debt market. However there has been little empirical evidence on the direct association between accounting conservatism and the structure of CEO compensation, particularly on how accounting conservatism varies depending on the differences in the components of the CEO compensation package. As such, this study may be able to provide a clearer understanding of the relation between accounting conservatism and the structure of CEO compensation.

Fourth, policy requirement is an important factor in conducting this research. On the one hand, in order to provide a more precise and clearer reporting of the top executives' total compensation package to information users, the Securities and Exchange Commission (SEC) requires a firm to disclose more detailed information on executive compensation in their proxy statements, annual reports, and registration statements as of 1992. Firms must disclose information on the *total* compensation package and provide *more* disclosure on the various components of the compensation package, such as base salary, annual bonus, stock options, restricted option and long term incentive plan "payoff". The SEC's expansion of executive compensation disclosure requirements in the following years (SEC (1993a, 1993b and 2006)) greatly increased public information. On the other hand, conservatism has been an essential attribute in accounting for a long time. As a result, the demand for accounting conservatism has been advanced. Previous researchers identified a variety of motivations in support of accounting conservatism, including taxation incentives, regulation, debt covenants, litigation, and compensation contracts. In a contracting setting, compensation contracts perform two functions: one is that compensation contracts align the interests of a principal and an agent and encourage an agent to maximize the value of the firm. The other is that managers will take this opportunity to manipulate earnings for their own interests. The characteristics of compensation contracts give rise to a demand for conservative accounting.

Based on the findings above, I demonstrate a relation between accounting conservatism and the components of CEO compensation. The purpose of this paper is to examine the degree to which different components comprising the CEO compensation recognizes bad news in a timelier manner than good news.

1.2 Research Question

The relationship between shareholders and managers is well portrayed as a principal-agent problem. Managers have two characteristics: on the one hand, managers are rational, capable, and act to maximize the value of shareholders; on the other hand, managers are risk-averse, so they always share uncertainty with shareholders in order to protect their own interests. Shareholders may maximize their best benefits by aligning the interests of CEOs with the goals of the firm. Thus the well-designed compensation contract plays a key role in mitigating conflicts between agents and principals.

To defend managers' interests, earnings management is a strategy used by the management of a company to deliberately manipulate the company's earnings to match a pre-determined target. This practice is carried out for the purpose of managers' self-interests. An efficient compensation plan is considered to be an optimal mechanism for motivating managers to take action on options that result in creating more wealth both for firms and for themselves. It is very important to design an attractive compensation structure that supports the recruitment and retention of a top quality CEO. The executive compensation contract is made up of

various components. The compensation package can be separated into two parts: one part is standard pay consisting of basic remuneration such as base salary and annual bonus (hereafter called cash compensation); the other part is the incentive portion that includes medium-term incentive plan and long-term incentive plan, such as stock options and restricted stock. The compensation committee of the board of directors assigns a relative weighted value to individual components of the plan that are based on the level to which business objectives are achieved.

A basic pay program offers an executive a base salary to perform the required duties of his job. When setting the basic payment structure, the compensation committee of the board of directors not only sets up minimum and maximum levels of compensation with respect to executives' variations in experience and skill levels, but also considers the company's performance and its position within the whole industry in general. The cash compensation alone (basic salary and annual bonus), which is typically earnings based, is unlikely to provide the ample incentives for CEOs to undertake high-risk investment opportunities. In comparison, equity-based compensation tends to encourage CEOs to make use of investment opportunities with high risk, since a higher-than-expected market return results in a better compensation to CEOs. However, CEOs portrayed as being risk-averse will prefer the compensation structure that presents less personal risk (Harris and Raviv, 1979).

A manager will almost always choose the guarantee offered by a cash compensation plan over an equity-based compensation, if the income level is high enough. Cash compensation contracts, however, come at a significantly higher cost to company business owners because performance-driven compensation structures are the very structures that motivate most CEOs to manipulate earnings reports in order to achieve personally higher pay. For this very reason an increasing number of companies are leaning in the direction of incentive-based compensation plans that align the target objectives of CEOs with those of their shareholders.

Incentive-based compensation is becoming far more common and significant as a result of its role in being able to effectively motivate CEOs to perform well. This type of compensation structure helps to reduce agency conflicts. Equity-based compensation, the most popular type of long-term incentive compensation plan, encourages CEOs to perform well and to be rewarded accordingly (Certo et al., 2003). As a result, the equity-based incentive compensation links the interests of CEOs and the benefits of shareholders through shared performance goals.

In general, cash compensation is measured by accounting-based performance, while equity-based compensation is measured by market-based performance. It should be noted that market-based performance is outside of the CEO's span of control. Basic payment is based on reliable earnings measure while the benefits of current accounting-based performance are straightforward due to the fact that risks and uncertainties in the future will be reduced. However, equity-based compensation is based on market performance which is mostly reflected in stock prices. Stock return is a "noisy" measure of CEOs performance because it incorporates information concerning unrealized gains and unrealized losses and is also affected by random factors beyond the CEO's control. Risks and uncertainties of market-based performance also involve costs. Therefore, the rule of thumb is that CEOs prefer to use reliable accounting-based performance compensation for their own benefits while, in reality, equity-based compensation is more widely used so as to mitigate agency problems.

To summarize, available empirical evidence indicates that the both earnings performance and stock-price performance are important determinants of CEO compensation. Furthermore, the CEO compensation literature also suggests different roles for current cash salary, bonus compensation components, and equity-based components. On the matter of resolving agency problems, most firms use a combination of both cash compensation and equity-based compensation so as to align the interests of both managers and shareholders. This raises the question as to just how effective CEO compensation contracts really are as a mechanism for reducing the agency problem. When a board of directors meets to develop an efficient CEO contract, they must take into careful consideration not only the scale of the CEO's compensation but must also very carefully consider the structure of the plan. Lambert and Larcker (1987) test whether the weight placed on accountingbased performance and market-based performance is a determinant of executive compensation contracts. A variety of performance measures are taken into consideration when developing different CEO compensation structures that are designed to reflect one of the essential properties of a firm's accounting systems, namely accounting conservatism. Watts (2003a) summarizes four roles of accounting conservatism: litigation, taxation, regulation, and contracting. He emphasizes that conservatism is an efficient contract mechanism. Conservatism can mitigate conflicts between different contract parties. He only discusses the relation between earnings-based compensation and accounting conservatism and explains that conservative accounting can restrict the opportunistic behavior of management from the earnings-based compensation. There has been little empirical evidence on how conservative accounting varies with the components of CEO compensation.

I attempt to extend Watts' (2003a) explanation on accounting conservatism. In other words, will CEOs behave differently under accounting conservatism policy when they are compensated by different compensation components instead of earnings-based compensation? The research question of this study concerns how CEO compensation structures influence conservative accounting policy choices.

1.3 Research Methodology

In this study, I use conditional accounting conservatism to measure accounting conservatism. Following Basu (1997), Ball et al. (2000), Beaver et al. (2005) and Ball and Shivakumar (2005), I define accounting conservatism as earnings that reflect bad news more quickly than good news. Follow Leone et al. (2006), I classify CEO compensation into CEO cash compensation (basic salary and annual bonus) and CEO equity-based compensation (stock options and restricted stock).

I extend Basu (1997) model to examine the association between accounting conservatism and the structure of CEO compensation by incorporating three variables: CASH_{it}, EQUITY_{it} and BONUS_{it}. CASH_{it} indicates cash compensation

that includes basic salary and annual bonus. EQUITY_{it} indicates equity-based compensation that includes stock options and restricted stock. BONUS_{it} indicates earnings-based bonus compensation. These three variables CASH_{it} (EQUITY_{it} or BONUS_{it}) are then interacted with variables in the Basu's (1997) model (equation (1)) respectively as shown in equation (2), (3) & (4).

CEOs prefer more cash compensation and are more likely to bear less risks and uncertainties. Equity-based compensation is viewed as an effective tool for aligning incentives of agents (shareholders) and principals (managers). In reality, CEO equity-based compensation is a double-edged sword. On the one hand, the theoretical literature relating to equity-based compensation concludes that equitybased compensation mitigates the agency problem by aligning interests of shareholders and managers. On the other hand, CEO equity-based compensation induces CEOs to take up risky investment opportunities. Thus, the hypotheses are designed to test the reactions of accounting conservatism against the different components of CEO compensation. Two hypotheses are developed. The first hypothesis is to test whether CEO cash compensation (equity-based compensation) is positively (negatively) related to accounting conservatism which indicates that the higher the CEO cash compensation (equity-based compensation) is, the higher (lower) the degree of accounting conservatism is. Some researchers argue that CEO earnings-based bonus compensation also creates an incentive for managers to manipulate reported earnings. Therefore, the second hypothesis is whether CEO earnings-based bonus compensation is negatively related to accounting conservatism.

I investigate the relation between accounting conservatism and the structure of CEO compensation by using an earnings/returns model of accounting conservatism developed by Basu (1997). First, to test the hypotheses in this study, I use a simple model to regress accounting conservatism measures on cash compensation, equitybased compensation, and earnings-based bonus compensation respectively. Second, I run the regressions controlling for firm-specific, manager-specific and industryspecific factors influencing accounting conservatism and CEO compensation, such as firm size, firm leverage ratio, CEO tenure, CEO age etc.

1.4 Findings

Using a large sample of US firms during the period 1993-2005, I investigate the association between accounting conservatism and the structure of CEO compensation. This extends prior research by Basu (1997). Under accounting conservatism, timeliness is expected to be great in regards to the negative stock returns (bad news) sample. It is anticipated that the extent of accounting conservatism will differ between CEO compensation structures as a result of their respective investment opportunities. It is expected that firms with larger equitybased compensation will encourage a CEO to undertake risky projects and adopt less conservative reporting. As such, it is anticipated that firms who take on greater risk-taking investment actions will incorporate bad news into earnings in a less timely manner.

Overall, the results of this study are consistent with my predictions. In the earnings/returns relation model, I find that accounting conservatism is positively associated with CEO cash compensation. This result means that firms where CEOs are compensated with cash tend to be associated with a higher degree of accounting conservatism. Specifically, firms with a higher proportion of cash compensation are likely to recognize bad news in earnings in a timely manner. Also, using a similar model, I find that the degree of accounting conservatism is negatively associated with CEO equity-based compensation. We can argue that when CEOs are paid based on market-based performance they tend to decrease the degree of accounting conservatism. Third, the degree of accounting conservatism is negatively associated with CEO earnings-based bonus compensation. It implies that the short-term incentive compensation induces CEOs to select accounting procedure and managerial accruals that enable them to manipulate reported earnings. Overall, the findings show that accounting conservatism policy choices vary with CEO compensation structures and suggest that the structure of CEO compensation is an important factor in determining the quality of firms' reported earnings, proxied by accounting conservatism.

1.5 Contributions

This study contributes to the existing literature in several ways. First, this paper advances our understanding of the relation between accounting conservatism and the structure of CEO compensation and obtains the evidence that accounting conservatism varies with the structure of CEO compensation. Little research has been done on this issue.

Second, previous studies focused on an examination of CEO compensation and an organization's performance by documenting contemporaneous associations between an organization's performance and CEO compensation (levels or structures). In this paper I adopt a different approach which is based on Basu's model (1997) to test whether different structures of CEO compensation affect accounting conservatism. I extend Basu's model (1997) to another area.

Third, I extend the research area of Watts (2003a, b) and attempt to supplement the literature and evidence on the existing role of CEO compensation which affects conservative accounting policy choices. Therefore, the findings of this study have implications for standards-setters, regulators, auditors and researchers.

Last but not least, firms with more cash compensation in CEO compensation contracts are likely to be more conservative to news recognition in earnings. So, the detection of the relation between conservative accounting and CEO compensation structures has important implications for boards of directors in terms of selectively choosing the weight on market- and accounting–based performance measures that will serve as better indicators of managerial performance when deciding CEO compensation contracts. The study also provides some other useful and practical information for a company's directors when designing the CEO's compensation package and future policy.

The remainder of this thesis is organized as follows. Chapter II investigates the relation between accounting conservatism and CEO compensation structures by employing a simple model. Chapter III articulates issues relating to how accounting conservatism varies with the structure of CEO compensation by controlling for firm

and managerial characteristics. Chapter IV presents conclusions and discussions.

CHAPTER II ACCOUNTING CONSERVATISM AND THE STRUCTURE OF CEO COMPENSATION

2.1 Introduction

The purpose of this study is to examine whether there is a relation between accounting conservatism and the structure of CEO compensation. In this chapter, a thorough literature review on accounting conservatism and executive pay is presented. Chapter II is organized as follows: Section 2 is a literature review of accounting conservatism and executive compensation. Section 3 contains the research design, develops the hypotheses, describes the measurement of accounting conservatism and the structure of CEO compensation, and introduces empirical model. Section 4 introduces the sample selection criteria. Section 5 presents summary statistics and analyzes the results; the differences in conservatism across compensation structures. Section 6 draws conclusions.

2.2 Literature Review

2.2.1 Accounting Conservatism

2.2.1.1 The Definition of Accounting Conservatism

Prior research has documented a number of explanations for conservative accounting. The discussion of accounting conservatism was initiated by Bliss (1924): "anticipate no profits but anticipate all losses". Statement of Financial Accounting Concepts (SFAC) 2 (FASB, 1980, para. 95) states: "... if two estimates of amounts to be received or paid in the future are about equally likely, conservatism dictates using the less optimistic estimate" and "...a prudent reaction to uncertainty, to try to ensure that uncertainties and risks inherent in business situations are adequately considered". Gjesdal (1999) states that "accounting is conservative if it assigns investments a carrying value that yields an expected accounting rate of return greater than the internal rate of return on their cost" (cited in Penman and Zhang, 2002). Feltham and Ohlson (1995) interpret accounting conservatism as an expectation that reported net assets will be less than market value in the long run. Beaver and Ryan (2000) explain that accounting conservatism is a persistent difference between market value and book value that is distinct from temporary differences. Givoly and Hayn (2000) document accounting conservatism as an accounting principle selection which minimizes cumulated reported earnings and net assets. Beaver and Ryan (2005) define accounting conservatism as the average undervaluation of the book value of net assets relative to their market value. The

definitions of accounting conservatism mentioned above mean that firms have lower net assets value and book-to-market ratio. These definitions have similar characteristics and Beaver and Ryan (2005) thus define them as unconditional conservatism, meaning that aspects of the accounting process yield book value lower than market value.

The term accounting conservatism used in this study is defined from an asymmetric timeliness perspective, namely conditional conservatism. FASB (1975, para. 35) states that conservatism is "... the uncertainties that surround the preparation of financial statements is reflected in a general tendency toward early recognition of unfavorable events and minimization of the amount of net assets and net income". Basu (1997) defines accounting conservatism as resulting in earnings reflecting 'bad news' more quickly than 'good news'. The practice of reducing earnings (and writing down net assets) is a response to "bad news," while not increasing earnings (and writing up net assets) is a response to "good news." Beaver and Ryan (2005) interpret conditional conservatism as asymmetric treatment of economic gains and economic losses. Watts (2003a) defines conservatism as the differential verifiability required for recognition of profits versus losses. In their paper, Lara, Osma and Penalva (2005) also use the same concept of accounting conservatism which is a concept defined as one reflecting bad news in a timelier fashion than good news. In this paper, I follow the concept of Basu (1997).

2.2.1.2 The Demand for Accounting Conservatism

Conservatism plays an important role in accounting practice and has existed for several centuries. Basu (1997) states that conservatism has influenced accounting practice for more than 500 years. Sterling (1970) rates conservatism as the most influential principle in accounting. Prior researchers identify several roles of accounting conservatism:

- (1) Reduction of litigation costs;
- (2) Tax deferral;
- (3) Regulations;

(4) Contracting.

The first argument for using of conservatism is that it reduces litigation costs. Conservatism, by understating net assets in the current period, will result in the reduction of the firm's expected litigation costs. In other words, litigation costs are more likely to increase as a results of an overstatement of earnings and net assets than they will from an understatement which provides incentives for management and auditors to report conservative values for earnings and net assets (Watts, 2003a). Ball et al. (2000) examine accounting conservatism in different legal systems and find that the earnings of common law country firms are much more conservative than those of code law country firms, due to the information asymmetries among code law country parties resolved privately. These results are consistent with changes in the litigation environment that affect accounting conservatism.

The second argument for using conservatism in accounting is that taxable income and reported earnings could be relevant. Accounting methods used to calculate taxable income influence taxation and it is therefore natural that it would promote the use of conservatism in financial reporting. For example, by delaying tax payments, firms reduce the present value of taxes and increase the firm's value.

The third argument is that accounting standards-setters and regulators have their own incentives for introducing conservatism into financial reporting. As well, there is an asymmetry in regulators' costs. Conservatism reduces the political costs imposed on standards-setters and regulators. Standards-setters and regulators are more likely to be blamed if firms overstate net assets than if they understate net assets (Watts, 2003a).

Finally, the contracting argument is an important argument for accounting conservatism from a corporate governance point of view. There is a general agreement that conservative accounting reduces reported earnings. The role of accounting conservatism is to constrain management's opportunism and protect the interests of investors. It implies that the higher level of accounting conservatism, the more constraints there are on management against manipulating the reported earnings. Many contracts between contracting parties use accounting numbers to reduce agency costs associated with the firm. These contracts include debt contracts, management compensation contracts, and employment contracts. The contracting parties need timely information on performance and value of net assets, particularly for management compensation contracts, because timeliness reflects the effect of managers' actions in the company within a specific period and avoids the dysfunctional outcome associated with managers who have a limited tenure with the firm. The problem is that much information cannot be easily verified, such as earnings and net assets. For example, the expected increase in net cash flows is useful information for evaluating a manager's performance. However, those future net cash inflow estimates are not verifiable because they often depend on assumptions about the future that experts cannot agree upon. Therefore, the estimates are not used in contracts. Verification is necessary for contracting purposes and there is a higher degree of verification required for gains than there is for losses. The situation is that if there is no verification requirement on management compensation contracts, managers may increase their compensation by overstating profits and biasing estimates of future cash flow effects upwards. This risk is quite substantial since the manager has better information than do other parties to the firm, such as shareholders and debt-holders. It would be difficult to recover excess payments and prove fraud since estimates cannot easily be calculated. Hence, conservatism is naturally treated as an efficient mechanism in management 2003a). Watts explains that accounting compensation contracts (Watts, conservatism not only helps mitigate the conflicts between managers and shareholders, but also protects the interests of debt holders from excessive distributions to shareholders. In other words, conservatism limits managersshareholders wealth expropriations by restricting dividend payouts and managerial compensation. He argues that an important consequence of conservatism's asymmetric treatment of gains and losses is the persistent understatement of net asset values.

The effects of conservatism are very important in accounting practice. Watts (2003b) states: "...management seeks to overstate cumulative earnings, and net assets, to increase their compensation and to take advantage of the nonlinearity of the bonus formulas transferring earnings between years" (Watts, 2003b, p. 297), if there is no constraint on CEO opportunistic behavior. He also expects more general income-increasing effects to be prevalent without conservatism and other control mechanisms to be popular. For instance, net assets will be overstated, not understated. Kwon et al. (2001) argue that the principal designs the accounting system to be biased conservatively in order to efficiently motivate the agent. And the results of their paper also show that if the contracting available to the principal is sufficiently limited in terms of penalties, then the principal will design a conservative reporting mechanism. Hence, Watts (2003a) suggests that accounting conservatism is an efficient contracting mechanism in designing CEO compensation contracts because accounting conservatism constrains management's opportunism on earnings-based compensation and protects the benefits of investors. It implies that the higher the degree of accounting conservatism, the more the constraints on management to manipulate the reported earnings. In this section, I explain the demand for conservatism which understates earnings and book value of net asset.
2.2.2 Executive Pay

2.2.2.1 The Agency Problem

The separation of ownership and management creates the agency problem. The relationship that exists between owners and management is defined by Jensen and Meckling (1976) as"...a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent" (Jensen and Meckling, 1976, p. 308). The power granted to managers not only gives them discretion, but also induces them to opportunism. Because the effort of managers cannot be observed by the shareholders, managers may pursue objectives that benefit themselves but are not beneficial to the shareholders. One way for shareholders to motivate the managers to work hard is to offer an incentive contract to managers. The efficient contract can reduce agency costs that may incur as a result of moral hazard.

The question is whether the compensation committee of board of directors reasonably rewards managers. Notably, agency theory suggests that the solution to the agent-principal problem is linking management compensation and shareholders' wealth. Most of the previous economic research focused on the magnitude of CEO compensation. They argued that higher levels of CEO compensation will increase a firm's chance of success and will reflect the "best efforts" of CEOs. But high incentives in compensation contracts also lead to the manipulation of performance measures. There are several ways executives can influence the setting of compensation. For example, they can dominate the nomination of directors in the compensation committee. They can influence the compensation through interlocking boards. It is a fact that the level of CEO compensation has been increasing at an unprecedented rate for a few decades now because CEOs who generally preferred to be paid extraordinary multiples of the average employee's salary even they downplayed the role in their positions. Compared with other countries, the level of CEO compensation in US is the highest. More research studies focus on the level of CEO compensation such that the structure of CEO compensation seems to receive less attention.

2.2.2.2 The Components of CEO Compensation

CEOs' compensation contracts in the US consist of many components which are based on different incentives. A typical compensation contract contains a base salary, annual bonus, stock options and restricted stock (Murphy, 1999).

Base Salary: Salary is basic payment to CEOs and the salary paid on a monthly basis is influenced by the firm's performance, individual abilities, and length of service with the company etc. Murphy (1999) addresses the fact that base salary is a key component of executive compensation contracts and that risk-averse executives naturally prefer a cash increase in base salary instead of an increase in bonus or other variable portion of compensation.

Annual Bonus: Annual bonus is the variable portion of CEO compensation and is generally considered to be associated with short-term, immediate financial performance. The award is commonly paid in the form of cash when targets are achieved. Generally, the short-term incentive awards depend on both corporate performance and individual creativity and initiative.

I identify base salary and annual bonus as cash compensations of the CEO pay package. First, base salary and annual bonus are linked to short-term performance (commonly a single-year performance). Second, annual bonus is measured relative to base salary levels and is expressed as a percentage of base salary (Murphy, 1999). **Stock Options:** Stock options are rights to purchase a number of shares of the corporation's stock at a specified price (valued at the end of the fiscal year using the Black and Scholes (1973) model). Stock options are granted periodically by the compensation committee of the board of directors. DeFusco et al. (1990) state that these options are usually strictly nonmarketable and have a minimum holding period (typically ten years) requirement before the options can be exercised. Stock options are forfeited if the CEO leaves the firm before vesting (Murphy, 1999). Almost all stock options are rewarded at-the-money with ten year duration (Bryan et al., 2000).

Stock options granted to CEOs have long been treated as a means of solving agency problems since stock options can align CEO interests with those of shareholders. Stock options as a part of compensation package have obvious advantages which encourage CEOs to work hard to get high benefits when exercising stock options under high stock price. The stock options plan creates a link between CEO compensation and market performance which is out of the control of CEOs. This means stock options are more sensitive to stock price performance. However, CEOs who are granted stock options could manipulate firms' apparent financial results and accounting statements in order to increase reported earnings. The extraordinary level of CEO compensation will be achieved when CEOs of public companies have realized their substantial gains in stock market value. Some experts are concerned that extravagantly inflated pay packages along with stock options and other rewards have encouraged chief executive officers (CEOs) to be free agents who cash in quick, easy money rather than ensuring the welfare of their companies over the long-term (Grossman and Hoskisson, 1998).

Restricted Stock: Typically, restricted stock is stock that endows executives with a fixed quantity of shares that are acquired through a stock option plan. There are restrictions on resale and transfer. Restricted stock may be forfeited if any of the rules related to it are broken. In this respect, Ofek and Yermack (1997) conclude that since restricted stock has similar characteristics to stock options, it can be viewed as an option with a zero strike price and a strict restriction.

In this study, CEO total compensation is the sum of base salary, annual bonus, stock options, restricted stock and other long-term incentives. I classify them into two types according to characteristics of compensation items: one is a cash-based compensation (base salary and annual bonus) plan, and the other is an equity-based compensation (long-term incentive compensation) plan which consists of stock options and restricted stock. Cash compensation is awarded under the short-term incentives of the CEO compensation plan and will encourage CEOs to increase the firm's short-term financial and non-financial performance to meet the predetermined targets as well as maximize their own wealth (via cash compensation). The manipulative actions of CEOs will only serve to impair the interests of shareholders. It is difficult for shareholders to alleviate this information asymmetry without having access to particular information. Therefore, firms with high information asymmetry are likely to rely on equity-based compensation (Bryan et al., 2000).

Equity-based compensation, which is awarded under the long-term incentives of the CEO compensation plan, is designed to compensate and retain CEOs and link CEOs' interests to the interests of shareholders. Since the value of stock options and restricted stock depends on company share price, it likely provides CEOs with the more efficient incentive of pursuing value-creating opportunities for increasing the firm's share price.

Previous empirical literature addresses the advantages of equity-based compensation as follows: First, the use of equity-based compensation lowers monitoring costs by providing managers with incentives to maximize shareholder value. Second, firms with cash and financing constraints prefer to use equity-based compensation as a substitute for cash compensation since equity-based awards require no contemporaneous cash payout (Dechow et al., 1996) and since they are not expensed for financial reporting purposes (Matsunaga, 1995).

Third, from the shareholders' perspective, equity-based compensation is viewed as deferred compensation, which provides higher after-tax returns than cash compensation provides (Smith and Watts, 1982). Further, the tax deduction from equity-based compensation becomes more favorable compared to the immediate tax deduction from cash compensation when shareholders predict higher tax rates in the future (Core and Guay, 1999).

The above comparison on CEO cash compensation and equity-based compensation yields certain differences in my expectations of accounting conservatism.

2.2.2.3 The Determinants of CEO Compensation

The core issue here is that CEO compensation structure may not contain adequate incentives for managers to take optimal actions on behalf of the interests of shareholders. What determines the structure of CEO compensation is introduced in this section. A literature review on the determinants of CEO compensation is advanced by previous researchers. They identify a number of factors, such as firm performance including accounting performance and market performance, corporate size (firm size), firm growth rate, corporate governance, CEO duality, the compensation committee of the board of directors, the audit committee, share ownership (managerial ownership, directors' ownership and institutional ownership) etc.

First, the optimal compensation contract for a risk-averse CEO reflects a tradeoff between the goals of CEOs and those of its shareholders. It is typically determined by the boards of directors to ensure that CEOs maximize the value of the firm. One of the responsibilities of the boards of directors is to set and monitor executive compensation structure to act in the best short- and long-term interests of their firms. The board of directors takes into account their company's risk-reward profile when designing CEO compensation contracts to protect their reputation, avoid legal liability, and increase shareholder benefits.

The composition and characteristics of the board will influence the structure of CEO compensation. One of the most significant sources of the conflict may exist between a CEO and the corporate board when the CEO also serves as the chairman of the board (Buchholtz et al., 1998). Another conflict of interest may arise if some of the other members of the corporate board are also company insiders (Cordeiro and Veliyath, 2003). These factors compromise directors' independence. Mehran (1995) finds that firms with more outsiders on the board make greater use of equitybased compensation, while firms with a higher percentage of the shares held by insiders or outside block-holders use less equity-based compensation.

Second, prior research has indicated that financial and firm characteristic variables may be associated with the structure of CEO compensation. This suggests that the optimal type of CEO compensation may vary among different firms. Consistent with this premise, Kole (1997) documents significant variation in compensation structures and finds that these plans vary systematically according to the type of assets being managed. Ryan and Wiggins (2001) use the Tobit regression model to examine the influence of firm-specific (e.g. investment opportunities, firm size, monitoring mechanisms, CEO stock ownership and founding family membership, capital structure) and manager-specific characteristics (CEO age and tenure, duality) on the structure of CEO compensation and they find that the incentive compensation structure varies systematically according to specific attributes of the firms and their managers. They conclude a positive association between the use of stock options and the firm's investment opportunities. This relation suggests that firms with more long-term and risky investment opportunities use large equity-based compensation and attempt to encourage risk-averse managers to invest in risky projects that drive a larger portion of value from future investment. A negative relation between cash bonus, which depends on short-term results and the volatility of operating cash flows, and a positive relation between stock options and cash flow volatility suggests that firms with high cash flow volatility avoid compensating this "noisy" performance metric and instead use more options to overcome monitoring problems and offset a manager's risk aversion. The further finding of a negative relation between stock options and block-holder ownership supports the notion that there is a tradeoff between incentive alignment and external monitoring. These findings imply that CEOs who are more difficult to monitor should have their compensation more closely tied to shareholder value. Core et al. (1999) find that the optimal portfolio of incentives from stock options and restricted stock varies with firm characteristics, such as firm size, growth opportunities and monitoring costs.

Also, some research explores the role of firm or market performance in determining CEO compensation structure. Mehran (1995) examines the CEO compensation structures of 153 randomly-selected manufacturing firms over the period 1979-1980 and suggests that the form rather than the level of compensation is what motivates managers to increase firm value. Firm performance which is measured by Tobin's Q and return on assets (ROA) is positively related to the percentage of equity held by managers and to the percentage of their equity-based compensation. Moreover, firm performance as measured by Tobin' Q provides more in-depth information and explanation concerning variation in the firm performance versus return on assets (ROA), after controlling for the firm's growth opportunities, leverage ratio, business risk, and size.

Third, Perry and Zenner (2001) examine whether and how government regulations (i.e., the requirement of the new SEC Compensation Disclosure Rules and Section 162(m)) influence the structure of CEO compensation using 1991-1997 CEO compensation data. They find that while the regulations have not achieved the objective of reducing CEO compensation growth, they appear to have a statistically and economically significant impact on the compensation structures. In summary, the results suggest that compensation committees should take the regulatory environment into account since these regulations have a real economic impact on CEO compensation.

Finally, Watts (2003a) predicts that accounting conservatism is an efficient mechanism in CEO compensation contracts. CEO compensation contracts use conservative accounting numbers to reduce agency costs associated with the firm. The attributes of accounting measures are timeliness, verifiability and asymmetric verifiability. The contracting parties want timely information on earnings and value of net assets, but much information is not easily verified so it cannot be used in compensation contracts. Hence, verification is necessary for contracting because the relevant parties to the firm realize asymmetric payoffs from the contracts if the profits are overstated. The absence of the verification requirement not only produces large payments under earnings-based compensation, but can also lead to negative net present value investments by the firm. Therefore CEO compensation contracts need a higher degree of verification for gains than for losses to ensure the efficiency of compensation contracts. More specifically, timeliness of loss recognition is an important determinant of CEO compensation structure.

2.2.3 Empirical Literature

There are two purposes in this section of the literature review. The first is to summarize the relevant empirical research on the association between managerial incentive compensation and the investment opportunity set. The second is to summarize how a firm's investment opportunity set influences accounting policy choice, namely accounting conservatism.

There are a number of ways that CEOs can be encouraged to invest in risky projects. CEO equity-based compensation can be a major contribution to such risktaking. It will induce CEOs to invest in risky projects due to the characteristics of stock options and restricted stock. If the projects do not succeed the lowest the CEO's stock options can be worth is zero and there really is little penalty for a CEO. However, if the projects succeed, the CEO's stock options can become very valuable. Managers may also be motivated to increase risk, rather than reduce it. However, in the pursuit of maximizing one's compensation package, risk–averse CEOs may take on excessive firm risk. It may lead value-increasing activities into opportunistic actions which can, in turn, lead to the firm's downfall.

Smith and Watts (1992) firstly provide evidence on the relation between investment opportunity set and compensation policies. They document empirical relations among corporate policy decisions and various firm characteristics using industry-level data from 1965 to 1985. They employ the availability of growth options and firm size as measures of investment opportunity set, and they find that a firm's investment opportunity set is relative to its financing, dividend, and executive compensation policies. In particular, firms with more growth options have higher executive compensation and greater use of stock options plans. They explain that it is difficult for shareholders to monitor the investments chosen by managers. Hence, the more investment opportunities the firm faces, the more likely shareholder are to tie the compensation to the actions of managers.

Gaver and Gaver (1995) present additional evidence on the relation between the investment opportunity set and compensation policies by using a sample of 237 growth firms and 237 non-growth firms. This paper confirms the empirical findings of Smith and Watts (1992) that growth firms pay significantly higher levels of stock compensation and have a significantly higher incidence of stock option plans than do non-growth firms. This paper supplements the results of Smith and Watts in two aspects: (1) by using firm-level data rather than industry-level data and (2) by measuring the investment opportunity set via the frequency whereby firm are included in the holdings of growth-oriented mutual funds.

Baber et al. (1996) extend Smith and Watts' (1992) empirical work to examine the cross-sectional association between investment opportunities and the structure of executive compensation. First, they find positive relations between investment opportunities and the sensitivity of CEO compensation to firm performance. Second, they find investment opportunities have a greater sensitivity to market-based performance relative to accounting-based performance. In general, relative abundance of investment opportunities are associated with greater use of marketbased performance rather than accounting-based performance. Those results are consistent with prior studies.

Bizjak et al. (1993) examine how stock price motivates managers to use investment decisions to manipulate market performance data. Managers' myopic actions actually result in over-investment. The solution is for directors to design managerial compensation that will in turn induce optimal investment decisions. Their analysis suggests that firms with high informational asymmetries between managers and shareholders will tend to favor contracts that focus on long-run stock returns as opposed to contracts that focus on short-term stock returns.

Rajgopal and Shevlin (2002) find that executive stock options encouraged riskaverse managers to increase firm risk by using a sample of oil and gas firms over 1992-1997. Specifically, it motivates managers to undertake risky projects that are attractive to them. Skinner (1993) addresses the issue that firm's accounting choices vary according to their investment opportunities. The paper states the point that investment opportunities do have an impact on accounting choice.

The five papers noted above summarize the relation between CEO compensation and investment opportunities. The investment decisions made by a CEO are conditional upon the existence of investment opportunities. Does large incentive compensation motivate CEOs to take on riskier investments when CEOs are exposed to a firm's abundant investment opportunities? The following paper reviews CEO compensation and risk-taking. Risk management theory provides rationales as to why shareholders may be concerned about the risk-taking actions of managers since the different incentives of CEO compensation induce a CEO to make riskier investment decisions.

Coles et al. (2006) provide empirical evidence of a relation between the structure of managerial compensation and investment policy. The results suggest that the higher sensitivity of CEO wealth to stock volatility gives a CEO an incentive to choose riskier policy, such as relatively more investment in R&D, higher leverage, and less investment in property, plant, and equipment. This evidence is consistent with Cohen et al. (2000) who find that executive stock options encourage risk-taking.

R&D expenditures are typically viewed as high-risk investments. Thus, Cheng (2004) examines whether there is a significantly positive relation between R&D expenditures and CEO compensation. The result shows that there is an association between changes in R&D spending and changes in the value of CEO annual option grants. It indicates that CEOs who are granted equity-based compensation have incentives to increase R&D expenditures when facing such situations as described below: (1) CEOs approach retirement, and (2) the firm faces a decline in earnings or loss.

Generally, adjusting the stock options exercise price can mitigate the risktaking incentives of executives (Garvey and Mawani, 2005). Parrino et al. (2005) indicate that stock options induce risk-taking behavior. Stock options issued in-themoney make managers more risk-averse as compared to stock options issued out-ofthe-money. Hjortshoj (2007) studies the relation between option-based compensation and managerial risk-taking behavior using the volatility restriction method. He finds that managers increase stock risk by increasing both asset risk and financial leverage. Overall, a thorough literature review covering CEO compensation, investment opportunity set, and accounting conservatism is presented in this section. First, various CEO compensation components and determinant factors were reviewed. Second, various aspects of accounting conservatism were reviewed. Finally, empirical work done on the area of accounting policy choice and CEO compensation was reviewed. In the next section, I develop the hypotheses by adopting the investment opportunity set to link accounting conservatism and the structure of CEO compensation.

2.3 Hypothesis Development

2.3.1 Hypotheses

The structure of CEO compensation plays an important role in aligning the interests of managers and shareholders. The CEO compensation structure helps to monitor and control the behavior of CEOs, thereby the actions of CEOs have influences on the accounting quality which is proxied by accounting conservatism.

In this paper, I test whether the influence of the structure of CEO compensation extends to conservative accounting. Specifically, I investigate whether the conservatism in reported earnings varies with the structure of CEO compensation. Based on the different characteristics of the components of CEO compensation structures and the role timeliness plays, I hypothesize that accounting conservatism varies according to the different incentives in CEO compensation. I develop the hypotheses respectively and my hypotheses are built on prior research relating to managerial incentive compensation. It is therefore quite natural to examine CEO compensation structures and the actions of CEOs that have the potential to increase risk to firms.

One important role of CEO compensation is to align the interests of managers and shareholders within the company. Since CEO compensation contracts represent the major interests of managers, they will be encouraged to make an increased effort to maximize the value of their compensation. As such, an efficient CEO compensation is important to the resolution of agency problems between managers and shareholders. Prior research has documented that a link exists between the structure of CEO compensation and different managerial incentives, and has provided evidence that effective CEO compensation structures play an important role in protecting investors' wealth.

CEO equity-based compensation may encourage CEOs to incorporate good news (positive stock returns) for opportunistic-based reasons to maximize the value of their compensation. The idea that executive compensation and investment opportunity sets are related is first advanced in Smith and Watts (1992). A series of studies argue that executive's equity-based compensation motivates a manager to take on riskier projects that increases the variance of the firm's stock price (Jensen and Meckling, 1976; Byran et al., 2000; Garvey and Mawani, 2005; Vasvari, 2006; Coles et al., 2006).

DeFusco et al. (1990) state that executive stock option plans have asymmetric payoff that can induce managers to take on more risk. Bryan et al. (2000) suggest that the use of stock-based compensation has increased for U.S. CEOs and give the reasons as to why shareholders are likely to reward CEOs via stock options more so than in the form of cash compensation. The first reason given is "noise" in performance measures which is the basis for cash compensation as well as the potential earnings management problem. The second is investment opportunities. In firms with abundant investment opportunities, only executives have full information about their investment decisions. As such, it is difficult for shareholders to alleviate this information asymmetry. For example, Basu (1997), Jensen and Meckling (1976) and Watts and Zimmerman (1990) document the finding that managers may have an incentive to bias information that affects their compensation

due to information asymmetry. Therefore, this incentive problem will lead shareholders to change managerial compensation. Accordingly, Ryan and Wiggins (2001) suggest that firms with high growth opportunities derive more of their value from future investment activities than from existing assets. Therefore the incentives of CEO equity-based compensation to monitor accounting quality are considerable weaker than those of cash compensation. Firms with larger equity-based compensation are anticipated to be less inclined towards conservatism: As a result, firms incorporate bad news (negative stock returns) into earnings in a less timely fashion. The major form of equity-based compensation is stock options. Stock options granted to managers have long been treated as a means of resolving agency problems in highly diversified companies because stock options are granted in an effort to align managers' interest with those of diversified shareholders. In principle, the higher the stock value is, the more benefit managers will be granted via their stock options and the more they are to be aligned with shareholders' objectives to maximize financial benefits.

Baber et al. (1996) find that investment opportunities are associated with great sensitivity to market-based performance as opposed to accounting-based, performance. CEO equity-based compensation provides a CEO with incentives to make decisions that are more likely to result in an increase in future stock price. This future potential for wealth accumulation provides the CEO with a strong incentive to take actions and make decisions that are consistent with long-term interests (Mehran, 1995). But the market performance bears the risks and uncertainties of the future and is based on its unverifiable gains and losses in the future.

Leone et al. (2006) state that *ex post* settling up costs are larger for cash-based compensation since equity-based compensation adjusts to unrealized gains (good news) that disappear. In other words, equity-based compensation is a less efficient tool as far as a substitute for cash goes in reducing *ex post* settling up costs. Bushman et al. (2004) find that directors' and executives' equity-based incentives increase firm complexity and vary with earnings timeliness (their measure of equity-based compensation packages including both a higher proportion of equity-based incentives relative to total incentives).

In light of these viewpoints, CEO equity-based compensation is predicted to have a negative relation with accounting conservatism. Hence, there is a natural tendency for managers to report available good news for their owner interests. Firms with a higher portion of equity-based compensation are expected to recognize good news more aggressively: Therefore, equity-based compensation is less sensitive to cash compensation in reflecting bad news.

If CEO cash compensation mitigates managers' behavior relative to earnings management in order to recognize good news, I expect that firms with a relatively larger proportion of cash compensation will incorporate bad news in a timelier fashion as compared to it will good news.

When granted cash compensation (basic salary plus a annual bonus), a CEO's cash compensation is typically tied to certain financial performance which theoretically motivates managers to engage in earnings management in an effort to maximize their cash compensation (Gaver et al., 1995). Previous studies indicate that earnings management is more likely to exist when managerial compensation is motivated by the firm's financial performance. Managers have powerful incentives for achieving high levels of financial performance because these results will ultimately also result in high levels of personal compensation to managers (Bass et al., 1997). As a means to avoid opportunistic behavior by managers, a demand for additional monitoring and control mechanisms should be made to serve as a constraining mechanism. While CEO cash compensation may be designed to

constrain opportunistic earnings management by CEOs, two conditions must be satisfied before cash compensation as an effective mechanism can be realized. Cash compensation, which is typically earnings based, is likely a sufficient driving incentive for CEOs. If most CEO compensation were in the form of cash, CEOs would be motivated to engage in risk-reducing projects. With respect to CEO equity-based compensation, I expect a negative association exists between CEO cash compensation and investment opportunities. Secondly, cash compensation relates to the asymmetric timeliness in earnings between bad news and good news. Accounting-based performance hold to the tenet that unrealized losses (bad news) are more likely to be recognized immediately under conservative accounting than are unrealized gains (good news). This has been examined by Leone et al. in 2006. Leone et al. (2006) argue that efficient cash compensation contracts should be conservative from the perspective of verifiability. In other words, cash compensation should be more sensitive to unrealized losses (bad news) than to unrealized gains (good news) due to the fact that CEO cash compensation is driven by accounting-based performance which includes most unrealized losses and excludes most unrealized gains.

In general, cash compensation is driven by accounting-based performance. As such, I conjecture that CEOs with higher cash compensation are more likely to be associated with accounting conservatism. This signal indicates that firms with a larger portion of cash compensation will protect their own interests *and* the interests of shareholders. Conservatism deters managers from overly optimistic behavior. Hence, there is an expectation that firms with a larger proportion of cash compensation will incorporate bad news more quickly than good news. In contrast, firms with a lesser proportion of cash compensation may be less inclined to monitor accounting conservatism, thereby delaying the recognition of bad news. Based on this, I test the following prediction:

Hypothesis 1: *Ceteris paribus*, the timeliness of bad news reflected in earnings is negatively (positively) related to CEO equity-based compensation (CEO cash compensation).

The annual bonus, which is generally based on accounting income, is one of several important components of management compensation. Some researchers suggest that a CEO bonus plan based on accounting earnings is an important incentive for managers to engage in earnings management. Watts and Zimmerman (1978) argue that earnings-based bonus plans influence management's attitudes on accounting standards. The short-term incentive compensation plan would induce managers to manipulate accounting income to increase the value of their bonus.

Healy's (1985) studies the effect of bonus schemes on accounting decisions by examining the association between managerial accrual and accounting procedure decisions. His paper not only examines bonus schemes giving managers an incentive to select income-decreasing procedures, but also explores bonus schemes that give managers an incentive to select income-increasing procedures. He provides a complete analysis of the association between bonus schemes and managers' accrual. The results are consistent with prior studies that indicate that the bonus plan creates an incentive for managers to select accounting procedure and managerial accrual that serve to maximize their own personal compensation.

Based on Healy's (1985) bonus-maximization hypothesis, we can safely infer that managers' incentives influence accounting policy choices. Holthausen et al. (1995) investigate the association between annual bonus schemes and earnings management. They reexamine the extent to which earnings are manipulated under short-term bonus plans. The evidence is consistent with Healy (1985) whose findings conclude that managers manipulate earnings downwards when their bonuses are at their maximum.

Guidry et al. (1999) test the bonus-maximization hypothesis that managers make discretionary accrual decisions to enhance their compensation. They extend previous investigations and bring conviction to the evidence that earnings-based bonus plans influence earnings management. Their paper differs from Healy (1985) by using business unit-level data which reduces the aggregation problem rather than using firm-level data which is likely to raise the aggregation problem.

Based on the arguments mentioned above, managers have incentives for accelerating good news in earnings in order to enhance the value of their own personal compensation. Thus I conjecture that the annual bonus indicates the same with respect to equity-based compensation, and that a corresponding hypothesis is:

Hypothesis 2: *Ceteris paribus*, the timeliness of bad news reflected in earnings is negatively related to CEO earnings-based bonus compensation.

2.3.2 The Measure of Accounting Conservatism

Previous researchers use a variety of measures to assess accounting conservatism including conditional and unconditional accounting conservatism (Beaver and Ryan, 2005). Here I use the measure developed by Basu (1997) which reflects differences with respect to timeliness pertaining to economic gains and losses. Under his definition of conservative accounting, earnings reflect bad news more quickly than good news as a result of existing systematic differences between bad news and good news relative to the timeliness and persistence of earnings. For instance, unrealized losses are typically recognized earlier than are unrealized gains. Basu uses firms' stock returns to measure economic news. Basu expects to find a higher association of earnings with negative returns (the bad news proxy) than with positive returns (the good news proxy). The Basu's regression is described as follows:

$$X_{it} / P_{i,t-1} = \alpha_0 + \alpha_1 D_{it} + \alpha_2 R_{it} + \alpha_3 D_{ti} R_{it} + \varepsilon$$
(1)

Where:

 \mathbf{X}_{it} is earnings per share before extraordinary items and discontinued operations;

 $\mathbf{P}_{i,t-1}$ is share price at the beginning of the period;

 \mathbf{R}_{it} is the stock return on firm i calculated from fiscal year-end t-1 to fiscal year-end t, this is the price at fiscal year-end t less the price at fiscal year-end t-1 divided by the price fiscal year-end t-1;

 \mathbf{D}_{it} is a dummy variable that equals 1 in the case of bad news (negative stock returns) and 0 otherwise.

Under the interpretations of Basu (1997), α_0 is the intercept of the regression and it should be significant and positive. D_{it} is a dummy variable that captures the intercept for the negative stock returns sample. The stock returns coefficient α_2 is predicted to be positive and significant. The coefficient α_3 measures the level of asymmetric timeliness (i.e. the level of conservatism), and it is expected to be positive and significant. Adjusted R square is the explanatory power of stock returns and adjusted R square of negative stock returns sample is expected to be greater than that of positive returns sample.

2.3.3 Measures of CEO Compensation

This paper attempts to measure compensation using base salary, annual bonus, stock options, and restricted stock (Murphy, 1999). I adopt the concept of cash compensation from Leone et al. (2006) which includes base salary and annual bonus

and adopt the definition of equity-based compensation consisting of stock options and restricted stock. Base salary and annual bonus consist of dollar amounts (cash and non-cash) for regular salary and bonuses earned annually during the 1993-2005 period. Stock options are measured by the value of options granted during the sample period using S&P's Black Scholes methodology (1973). Restricted stock is valued as the number of restricted shares granted times the stock price at the grant date. In other words, restricted stock options are the value of restricted stock granted during the year (determined as of the date of the grant).

CASH is cash compensation expressed as a percentage of total compensation while **EQUITY** is equity-based compensation expressed as a percentage of total compensation. **BONUS** is earning-based bonus compensation expressed as a percentage of cash compensation.

2.3.4. Research Methodology

The critical research question of this study is "How do different components of CEO compensation affect the timeliness of gain and loss recognition, namely accounting conservatism?" To answer this question, I describe the research methodology used in this section to test the relation between accounting conservatism and the structure of CEO compensation in this section. The methodology development of this study is based on several assumptions.

First, I assume that the market is efficient, which suggests that the market can capture all available information efficiently. The efficient market hypothesis (EMH) asserts that financial markets are efficient information-wise: this implies that they reflect all known information without bias. The efficient market hypothesis requires that agents have rational expectations about relevant information as well as having normal utility-maximizing agents. Agents update their expectations appropriately when new relevant information appears.

Second, I adopt Basu's model (1997) to measure accounting conservatism. The model represents the idea that it captures the accounting information systematically. The information system captures the attributes of accounting and converts all available information within a firm into a smaller dimensionality.

Third, many studies have documented that the structure of CEO compensation varies across different contexts such as, for instance, industry-level characteristics, country-level characteristics, and firm-specific characteristics. The empirical model of CEO compensation relies generally on the optimal contracting model. I assume that the variation in CEO compensation plans is consistent among efficient contracting by firms that have different firm- and manager-specific characteristics (Ryan and Wiggins, 2001).

In this paper, I document that the structure of CEO compensation does affect conditional accounting conservatism choices. This thesis does not directly address the issue of which specific accounting methods are used by firms engaged in conservative accounting reporting. I employ Basu's conditional accounting conservatism model and use stock returns response to bad news relative to good news as the means by which to measure the different degrees of conservatism under the various components of CEO compensation. I classify CEO compensation into two categories, i.e. cash compensation and equity-based compensation, due to the similarity of their attributes. And I also adopt CEO earnings-based bonus compensation as a variable to test the impact of the short-term incentive compensation plan on accounting conservatism. The models below, which are as simple as possible, are designed respectively to capture the link between Basu's model (1997) of accounting conservatism and the different components of CEO compensation.

Model:

Earnings/ returns relation measure of accounting conservatism

$$X_{ii} / P_{i,t-1} = \alpha_0 + \alpha_1 D_{ii} + \alpha_2 R_{ii} + \alpha_3 D_{ii} * R_{ii} + \alpha_4 CASH_{ii} + \alpha_5 D_{ii} * CASH_{ii} + \alpha_6 R_{ii} * CASH_{ii} + \alpha_7 D_{ii} * R_{ii} * CASH_{ii} + \varepsilon$$

$$(2)$$

$$X_{it} / P_{i,t-1} = \beta_0 + \beta_1 D_{it} + \beta_2 R_{it} + \beta_3 D_{it} * R_{it} + \beta_4 EQUITY_{it} + \beta_5 D_{it} * EQUITY_{it} + \beta_6 R_{it} * EQUITY_{it} + \beta_7 D_{it} * R_{it} * EQUITY_{it} + \varepsilon$$
(3)

$$X_{it} / P_{i,t-1} = \gamma_0 + \gamma_1 D_{it} + \lambda_2 R_{it} + \gamma_3 D_{it} * R_{it} + \gamma_4 BONUS_{it} + \gamma_5 D_{it} * BONUS_{it} + \gamma_6 R_{it} * BONUS_{it} + \gamma_7 D_{it} * R_{it} * BONUS_{it} + \varepsilon$$
(4)

Where:

 \mathbf{X}_{it} is earnings per share before extraordinary items and discontinued operations;

 $P_{i,t-1}$ is share price at the beginning of the period;

 \mathbf{R}_{it} is the stock return on firm i calculated from fiscal year-end t-1 to fiscal year-end t, this is the price at fiscal year-end t less the price at fiscal year-end t-1 divided by the price fiscal year-end t-1;

 \mathbf{D}_{it} is a dummy variable that equals 1 in the case of bad news (negative stock returns) and 0 otherwise;

CASH_{it} is CEO cash compensation deflated by total compensation comprised of base salary, annual bonus, other annual, total value of restricted stock granted, total

value of stock options granted (using Black-Scholes), long-term incentive payouts, and all other totals;

 $EQUITY_{it}$ is equity-based compensation deflated by total compensation comprised of base salary, annual bonus, other annual, total value of restricted stock granted, total value of stock options granted (using Black-Scholes), long-term incentive payouts, and all other totals;

BONUS_{it} is the dollar value of a bonus (cash and non-cash) earned by the named CEO during the fiscal year deflated by CEO cash compensation comprised of salary and bonus;

 $D_{it}*R_{it}$, $D_{it}*CASH_{it}$, $R_{it}*CASH_{it}$, $D_{it}*R_{it}*CASH_{it}$, $D_{it}*EQUITY_{it}$, $R_{it}*EQUITY_{it}$, $D_{it}*BONUS_{it}$, $R_{it}*BONUS_{it}$, and $D_{it}*R_{it}*BONUS_{it}$ are interaction terms;

 ϵ is the regression residual, and **i** and **t** are firm and time subscripts, respectively.

The executive compensation literature documents the point that different compensation components play different roles. The purpose of this paper is to examine the relation between accounting conservatism and the structure of CEO compensation. The motive for doing so is to evaluate whether various compensation components influence accounting conservatism policy choices from managers' incentive perspective. In other words, this study ascertains whether and how various compensation components interact with accounting conservatism.

The CEO compensation will vary according to the earnings earned by the company because earnings-based cash compensation is one of the vital elements in a CEO compensation contract. The asymmetric verifiability of economic gains and economic losses requires different realized properties of accounting numbers. Difficult-to-verify information (Watts, 2003a) (such as unrealized gains) will lead to lower earnings which is the basis of CEO cash compensation. Cash compensation will reflect these "bad news" quicker than equity-based compensation which is based on market-based performance. Accounting conservatism will defer the current benefits to the future because of the asymmetric verifiability of unrealized gains and unrealized losses. The interaction term of accounting conservatism proxy and different CEO compensation components in the above-mentioned model can be used to examine the relation between accounting conservatism and the structure of CEO compensation. With respect to my aforementioned expectations, I hypothesize that the coefficient α_7 is significant and positive in equation (2) and the coefficients of β_7 and γ_7 are significant and negative in equation (3) & (4).

Second, following Basu (1997), accounting earnings are defined as ordinary earnings per share deflated by the price at the beginning of the period as a control for heteroscedasticity. I use raw individual stock returns R_{it} as a proxy of news. The coefficient of R_{it} in equations (2), (3) & (4) are predicted to be positive. D_{it} is a dummy variable equal to one if R_{it} is less than zero, and zero otherwise. The dummy variable captures the intercept for the negative return sample. I have no prediction on the sign of D_{it} . The interaction on dummy variable and stock returns ($D_{it}*R_{it}$) reflects the incremental timeliness of bad news. Under accounting conservatism, earnings will reflect bad news more quickly as compared to good news. Hence, the coefficient of $D_{it}*R_{it}$ should be positive: This means that bad news is reflected more quickly than good news is.

Third, previous research addresses the point that firm size is positively correlated to CEO compensation. Cash compensation and equity-based compensation increase with the firm's increasing value. Dechow et al., (1996) argue that firms with financial constraints tend to use equity-based compensation to substitute cash compensation. Thus, we could argue that firms with greater net income are most likely to be associated with cash compensation. Therefore, the variable of CASH_{it} has a positive relation to net income, which indicates that the
expansion of earnings is correlated with CEO cash compensation. The coefficient of BONUS_{it} has the same sign as that of CASH_{it} because annual bonus compensation is based on accounting performance. However, compared to CEO cash compensation, CEO equity-based compensation is not so correlated with the accounting earnings since it is, according to its definition, more likely to be linked with market-based performance. While CEO equity-based compensation is a portion of total CEO compensation and cash compensation is popular when firms do not have financial constraint, CEO equity-based compensation has a less likely tendency to be adopted. Thus the coefficient of EQUITY_{it} should be significant and negative as opposed to the coefficient of CASH_{it}.

Fourth, as concerns the variables D_{it} *CASH_{it}, D_{it} *EQUITY_{it} and D_{it} *BONUS_{it}, which are not implied by the formal analysis, I have no predictions on these three variables as they need to be controlled even if there are no predictions. The variable of R_{it} *CASH_{it} examines the interaction of CEO cash compensation with stock returns. We expect that the estimate α_6 on R_{it} *CASH_{it} to be positive for two reasons: First, the existing evidence is that CEO compensation is positive with firm stock performance. Second, the stock returns are also positive with firm size. Accordingly, the coefficient of R_{it} *CASH_{it} should be anticipated positively. Fifth, to control for size-related factors, I specify $CASH_{it}$ and $EQUITY_{it}$ variables as percent of total compensation, and $BONUS_{it}$ as percent of cash compensation.

 Table 1 summarizes the construction of variables. As mentioned earlier, the

 earnings/returns relations measure of accounting conservatism developed from Basu

 (1997) is used in this study.

[INSERT TABLE 1 ABOUT HERE]

2.4 Data

CEO compensation data come from Compustat's ExecuComp which covers approximately 1500 firms, the dataset includes all the S&P 500, Mid-cap 400 and Small-Cap 600 companies. Accounting data are taken from COMPUSTAT for the period 1993 to 2005. I obtain stock price about firms from the CRSP database. I began with an initial sample of 20,289 CEO-year observations in ExecuComp from 1993 to 2005. First, following previous studies, I exclude CEO-year observations of financial companies and banks where four-digit SIC codes lie between 6000 and 6999. Second, I eliminate 385 CEO-year observations due to missing Compustat data. Third, I deleted observations falling in the top or bottom 1% of opening pricedeflated earnings ($X_{it}/P_{i,t-1}$), firm size, firm leverage and the components of CEO Compensation. The outliers of R_{it} are excluded to reduce the extreme variables on the regression results. The final sample consists of 9370 CEO-year observations. **Table 2** summaries the sample selection process.

[INSERT TABLE 2 ABOUT HERE]

2.5 Empirical Results

 Table 3 is a summary report of descriptive statistics on the measure of

 timeliness, performance and compensation variables.

[INSERT TABLE 3 ABOUT HERE]

Panel A contains accounting variables and stock returns. The mean of return is 0.11 and ranges from negative 0.49 to positive 0.96. The mean of operating pricedeflated earnings is 0.04 and ranges from a low of negative 0.78 to positive 0.23. Firm leverage averages 0.26 and ranges from zero to 0.80. Log firm size averages 14.32 and ranges from 10.80 to 17.72.

Compensation components are presented as dollar values in Panel B and as a percentage of total compensation in Panel C. Total compensation for my sample averages US\$4.21 million and ranges from US\$0.042 to US\$202.18 million. The mean value of base salary is US\$0.64 million. Bonus averages US\$0.64 million. CEOs in my sample receive an average of US\$2.11 million dollars in stock options and US\$0.44 million in restricted stock grants. Maximum equity-based grants are US\$193.53 million. In panel C, the percentage of cash compensation in total compensation averages 45% and ranges from 2% to 99%. The percentage of equity-based compensation in total compensation averages 47% and ranges from zero to 97%.

Panel D shows firm manager-specific characteristics including CEO age and CEO tenure. CEO age averages 58 years old in this sample. The oldest is 92, while the youngest one is 40. CEO tenure averages 132 months and ranges from 1 month to a maximum of 677 months.

To test the hypotheses, first, I repeat Basu model (1997) by using the sample from 1993 to 2005 which extends the sample period compared to Basu's work. I aim to see whether Basu's findings still hold using our time period. The empirical results of estimation of Equation (1) are reported in **Table 4**.

[INSERT TABLE 4 ABOUT HERE]

The results of **Table 4** are consistent with Basu model (1997) which examines the asymmetric timeliness between bad news and good news. The main coefficients, α_2 and α_3 , are statistically significant and have predicted signs. The slope coefficient α_3 is positive and significant (0.106/10.58***) which implies that earnings are much more sensitive to negative returns than they are to positive returns (0.106+0.022 compared to 0.022). The results in **Table 4** indicate that the sensitivity of earnings to bad news is 5.82 (=[0.022+0.106]/0.022) times greater than that of good news. In other words, earnings contain more timely information for "bad news" firms. It results in a higher adjusted R square for negative return firms than for positive return firms in which the explanatory power of bad news is greater than that of good news, just as Basu (1997) concluded.

Second, I estimate regressions of accounting conservatism based on the components of compensation. I divide compensation into cash compensation and

equity-based compensation. Cash compensation and equity-based compensation respectively are a percentage of total compensation.

 Table 5 presents the results on regression of earnings on stock returns and

 CEO compensation in the same period.

[INSERT TABLE 5 ABOUT HERE]

I ran the pooled regression from 1993 to 2005 and anticipated a positive coefficient on the interaction of stock returns and D_{it} *CASH_{it} which means that cash compensation incorporates bad news more quickly, while I expected a negative coefficient on the interaction of stock returns and D_{it} *EQUITY_{it}.

The results are consistent with my predictions. From **Table 5**, we can see that the coefficient of $D_{it} * R_{it}$ is positive and significant for model (3) which is consistent with Basu (1997) and implies that earnings are more sensitive to negative returns. In model (2), the coefficient of $D_{it} * R_{it}$ is also positive though not significant; the reasons for which we will examine later. **Table 5** shows that the coefficients for interaction of accounting conservatism and cash compensation in the pooled sample are positive and significant (0.14/2.59***), which means that earnings are more sensitive to bad news compared to good news and that firms with cash compensation contracts increase this difference. However, the coefficient of D_{it}*R_{it}*EQUITY_{it} is negative and significant (-0.144/-2.69***) in pooled regressions which indicates that the difference in sensitivity of earnings to negative and positive returns is mitigated in firms with equity compensation contracts. There are two possible explanations for the different results of these two models. First, the coefficients of CEO cash compensation and equity-based compensation are different due to conservatism's asymmetrical treatment of gains and losses which will affect the reported earnings and future stock price. The second reason is that it is not certain whether the long-term incentive compensation (equity-based compensation) is paid for certain "one time", which means that equity-based compensation does not rely on short-term performance, so the equity-based compensation of CEO is less sensitive than cash compensation is in reflecting bad news.

Table 5 shows that other variables $CASH_{it}$, $D_{it}*CASH_{it}$, and $R_{it}*CASH_{it}$ are positive and significant .The coefficients of R_{it} and $D_{it}*R_{it}$ are consistent with Basu (1997) but not significant. The t-statistics are 1.07 and 1.45 respectively. The interpretations of insignificant t-statistics might be examined from two perspectives: First, Guay and Verrecchia (2006) argue that the coefficient of return which is a proxy for good news sensitivity will, however, result in diminished timeliness when it is smaller. In **Table 3**, the coefficient of \mathbf{R}_{it} is very small in the model (2) and (3). There is no incremental sensitivity to the timeliness of good news and bad news. Second, the model of Basu has limitations. Ball and Shivakumar (2005) summarize the point that the Basu model cannot distinguish transitory gain or loss components and identify the contemporaneous relation between transitory earnings components and stock returns.

 Table 6 presents the results of regression of earnings on stock returns and CEO

 annual bonus compensation in the same period.

[INSERT TABLE 6 ABOUT HERE]

The results of **Table 6** are consistent with the predictions. The coefficients of R_{it} and $D_{it} * R_{it}$ are positive and significant for model (4) which is consistent with Basu (1997) and implies that earnings are more sensitive to negative returns. The coefficient of $D_{it}*R_{it}*BONUS_{it}$ is negative and significant (-0.149/-1.92*), which demonstrates the same sign observed with equity-based compensation. This finding implies that earnings-based bonus compensation induces managers to manipulate

earnings and that managers are likely to incorporate good news at an accelerated

pace.

CHAPTER III FIRM- AND MANAGER-SPECIFIC CHARACTERISTICS RELATED TO ACCOUNTING CONSERVATISM AND THE STRUCTURE OF CEO COMPENSATION

Conservatism concerns itself with asymmetric timeliness in earnings with respect to incorporating bad and good news. However, conservatism is not expected to be uniform across firms. It will vary as a result of different factors such as firm size, availability of firm investment and growth opportunities etc. Prior studies also suggest that conservatism has also been shown to differ across institutional legal regimes. I estimate regressions of accounting conservatism on cash compensation and equity-based compensation respectively in Chapter II, but I do not control other variables which might have some influences on the relation between accounting conservatism and the structure of CEO compensation. Firm-specific, industryspecific and manager-specific factors also affect the relation between accounting conservatism and the structure of CEO compensation. In Chapter III I discuss the influences of firm-specific, industry-specific, and manager-specific factors and examine whether the previous findings remain unchanged.

3.1 Firm Size

Most CEO compensation studies evaluate the relationship between firm size and CEO pay package. Based on the previous finding, firm size is a significant explanatory variable in determining the level of CEO remuneration. Most of the research conducted reports that there is a positive relationship between firm size and CEO pay. In his study, Murphy (1985) finds a strong positive relation exists between executive compensation and corporate performance, as measured by shareholder return and growth in firm sales. Tsoi et al. (2000) have shown that firm size accounts for more than 40% of the variance in total CEO pay by employing 16 proxies. Bebchuk and Grinstein (2005) suggest that the compensation of CEOs is positively correlated with the net amount of share issued earlier after controlling for past performance in terms of stock returns as well as growth in per-share earnings and sales. It is suggested that expanding firm size might benefit managers by enabling them to obtain larger executive pay.

DeFusco et al. (1990) suggest that the level of CEO compensation is positively associated with firm growth opportunities and firm size. The average level of stockbased compensation will be higher when total compensation is higher if firms compensate CEOs through equity compensation. More systematically, empirical studies have found firm size to be strongly correlated with accounting conservatism. So it is necessary to control for firm size. In general, large firms are inclined to use more conservative accounting. I expect that firm size and accounting conservatism are positively associated. I use the natural logarithm of a firm's total assets to proxy for the firm size, since size is highly skewed.

3.2 Leverage Ratio

Firm leverage is an important factor influencing CEO compensation and accounting conservatism. John and John (1993) claim that the optimal topmanagement compensation will be determined by external claims and equity. In other words, the optimal managerial compensation contracts depend not only on the conflicts between shareholders and managers, but also on the conflicts of interest of other contracts, such as a conflict that may exist between shareholder and creditor. The level of debt in the capital structure is an important determinant of the optimal managerial compensation contract.

Incentive compensation plans that align the interests of managers and shareholders induce managers towards risk-taking behavior. Increased managerial risk-taking may benefit shareholders at the expense of debt holders. Therefore shareholders have the incentive to engage in high-risk activities at the expense of debt holders (DeFusco et al., 1990). Debt holders then will demand a premium to compensate for the potential increase in risk. Heavily leveraged firms will have incentive to decrease CEO compensation. Furthermore, it is likely that cash compensation provides appropriate incentives to avoid earnings-related debt covenant violations (Bryan et al., 2000).

The debt holders require higher accounting conservatism to increase its firm's abilities to cover the loan when exercising higher leverage ratio. In other words, the higher the ratio of debt or leverage of a firm, the higher the degree of conservative accounting that is required. Hence, I predict that the sign of firm leverage is negative in the regression model.

3.3 Industry Dummies

CEO compensation varies systematically across industries. To control for industry specific effects, we include ten dummy industry variables to control for cross-industry differences in depend variable (X_{it}/P_{it-1}) .

I use four-digit SIC codes to assign firms to 10 industries. The industries are shown in appendix A.

3.4 CEO Age

Optimal CEO compensation contracts consist of incentive provisions that encourage CEOs to align the interests of shareholders with their own personal interests. These short- and long-term incentives link CEO efforts to firm performance. The short-term and long-term incentives each play different roles in the CEO compensation contracts. Generally speaking, short-term incentives are measured by earnings-based performance. As CEOs approach retirement, they may be inclined to forgo positive net-present-value projects in favor of manipulating earnings-based performance initiatives and pursing high personal interests prior to their departure. To mitigate this "horizon problem", firms with CEOs nearing retirement are likely to increase the equity-based compensation portion of their compensation plan.

Smith and Watts (1982) define this issue as a "horizon problem" which leads to investment expenditures abnormally drawn down for accounting purposes, prior to a CEO's departure. Theory and evidence in Gibbons and Murphy (1992) also suggest that the horizon problem exists when managers move closer to retirement and lean towards riskier projects that may improve their short-term earnings performance. Dechow and Sloan (1991) find that the CEOs who, in their final year incur less R&D expenditures, do so as a means by which to maximize bonus payments tied to accounting earnings. In addition, they argue that the more stock and options CEOs own, the less likely they are to reduce R&D expenditures prior to their departure. Cheng (2004) uses two proxies, CEO cash compensation and CEO option compensation, to test the relation between changes in R&D expenditures and changes in CEO option compensation in the presence of the horizon problem and provides evidence that compensation committees assign more option compensation to CEOs to prevent opportunistic reduction in R&D spending.

Following Ryan and Wiggins (2001), I hypothesize that the horizon problem is more obvious in the case of oldest CEOs. They manipulate accounting information to achieve short-term performance. The oldest CEOs want to be paid more remuneration before their retirement. To mitigate the horizon problem, Ryan and Wiggins (2001) suggest that firms should offer more equity-based compensation to the oldest CEOs instead of cash compensation. The CEO's age is employed as a proxy for the CEO horizon problem. In my thesis, The Standard and Poor's ExecutiveComp's data on CEO age are missing for almost half of the firm-year observations. To test this hypothesis, I separated the sample into two groups: CEOs whose age is lower than the average CEO age is group 1 indicated by lower age, while CEOs whose age is higher than the average CEO age is group 2 indicated by higher age. I predict that the results for group 1 are more convincing than for group 2.

3.5 CEO Tenure

CEO tenure is defined as the number of months that the named executive officer has been CEO. CEO age and tenure are measured as of the date the CEO leaves office or has held the position until the end of the sample period. Previous research documents that CEOs with long tenures have large cash and equity-based compensation because they create more value for shareholders. CEO who holds a longer tenure will reduce manipulation on accounting earnings. I also separated the sample into two groups: shorter tenure and longer tenure. As well, I predict that the results in the longer tenure group are more satisfactory than in the shorter tenure group. I divide the full sample into the high tenure group and the low tenure group according to the median variable of CEO tenure. The group of CEOs with longer

tenure exhibits more significance than the group of CEOs with shorter tenure.

Model:

The models used in Chapter III are presented as follows:

$$X_{ii} / P_{i,t-1} = \alpha_0 + \alpha_1 D_{ii} + \alpha_2 R_{ii} + \alpha_3 D_{ii} * R_{ii} + \alpha_4 CASH_{ii} + \alpha_5 D_{ii} * CASH_{ii} + \alpha_6 R_{ii} * CASH_{ii} + \alpha_7 D_{ii} * R_{ii} * CASH_{ii} + \varepsilon$$

$$(2)$$

$$X_{it} / P_{i,t-1} = \beta_0 + \beta_1 D_{it} + \beta_2 R_{it} + \beta_3 D_{it} * R_{it} + \beta_4 EQUITY_{it} + \beta_5 D_{it} * EQUITY_{it} + \beta_6 R_{it} * EQUITY_{it} + \beta_7 D_{it} * R_{it} * EQUITY_{it} + \varepsilon$$
(3)

$$X_{it} / P_{i,t-1} = \gamma_0 + \gamma_1 D_{it} + \lambda_2 R_{it} + \gamma_3 D_{it} * R_{it} + \gamma_4 BONUS_{it} + \gamma_5 D_{it} * BONUS_{it} + \gamma_6 R_{it} * BONUS_{it} + \gamma_7 D_{it} * R_{it} * BONUS_{it} + \varepsilon$$
(4)

$$X_{ii} / P_{i,t-1} = \alpha_{0} + \alpha_{1}D_{ii} + \alpha_{2}R_{ii} + \alpha_{3}D_{ii} * R_{ii} + \alpha_{4}CASH_{ii} + \alpha_{5}D_{ii} * CASH_{ii} + \alpha_{6}R_{ii} * CASH_{ii} + \alpha_{7}D_{ii} * R_{ii} * CASH_{ii} + \alpha_{8}SIZE_{ii} + \alpha_{9}D_{ii} * SIZE_{ii} + \alpha_{10}R_{ii} * SIZE_{ii} + \alpha_{11}D_{ii} * R_{ii} * SIZE_{ii} + \alpha_{12}\sum_{i=1}^{9}IND_{-}DUM_{i} + \varepsilon$$
(5)

$$X_{ii} / P_{i,t-1} = \beta_0 + \beta_1 D_{ii} + \beta_2 R_{ii} + \beta_3 D_{ii} * R_{ii} + \beta_4 EQUITY_{ii} + \beta_5 D_{ii} * EQUITY_{ii} + \beta_6 R_{ii} * EQUITY_{ii} + \beta_7 D_{ii} * R_{ii} * EQUITY_{ii} + \beta_8 SIZE_{ii} + \beta_9 D_{ii} * SIZE_{ii} + \beta_1 D_{ii} * R_{ii} * SIZE_{ii} + \beta_{12} \sum_{i=1}^{9} IND_{-} DUM_{i} + \varepsilon$$
(6)

$$X_{ii} / P_{i,t-1} = \gamma_0 + \gamma_1 D_{ii} + \gamma_2 R_{ii} + \gamma_3 D_{ii} * R_{ii} + \gamma_4 BONUS_{ii} + \gamma_5 D_{ii} * BONUS_{ii} + \gamma_5 D_{ii} * BONUS_{ii} + \gamma_6 R_{ii} * BONUS_{ii} + \gamma_7 D_{ii} * R_{ii} * BONUS_{ii} + \gamma_8 SIZE_{ii} + \gamma_9 D_{ii} * SIZE_{ii} + \gamma_{10} R_{ii} * SIZE_{ii} + \gamma_{11} D_{ii} * R_{ii} * SIZE_{ii} + \gamma_{12} \sum_{i=1}^{9} IND_{-} DUM_{i} + \varepsilon$$

$$(7)$$

$$X_{ii} / P_{i,t-1} = \alpha_{0} + \alpha_{1}D_{ii} + \alpha_{2}R_{ii} + \alpha_{3}D_{ii} * R_{ii} + \alpha_{4}CASH_{ii} + \alpha_{5}D_{ii} * CASH_{ii} + \alpha_{6}R_{ii} * CASH_{ii} + \alpha_{7}D_{ii} * R_{ii} * CASH_{ii} + \alpha_{8}LEV_{ii} + \alpha_{9}D_{ii} * LEV_{ii} + \alpha_{10}R_{ii} * LEV_{ii} + \alpha_{11}D_{ii} * R_{ii} * LEV_{ii} + \alpha_{12}\sum_{i=1}^{9}IND_{-}DUM_{i} + \varepsilon$$
(8)

$$X_{ii} / P_{i,i-1} = \beta_0 + \beta_1 D_{ii} + \beta_2 R_{ii} + \beta_3 D_{ii} * R_{ii} + \beta_4 EQUITY_{ii} + \beta_5 D_{ii} * EQUITY_{ii} + \beta_6 R_{ii} * EQUITY_{ii} + \beta_7 D_{ii} * R_{ii} * EQUITY_{ii} + \beta_8 LEV_{ii} + \beta_9 D_{ii} * LEV_{ii} + \beta_{10} R_{ii} * LEV_{ii} + \beta_{11} D_{ii} * R_{ii} * LEV_{ii} + \beta_{12} \sum_{i=1}^{9} IND_{-} DUM_{i} + \varepsilon$$
(9)

$$X_{ii} / P_{i,t-1} = \gamma_0 + \gamma_1 D_{it} + \gamma_2 R_{it} + \gamma_3 D_{it} * R_{it} + \gamma_4 BONUS_{it} + \gamma_5 D_{it} * BONUS_{it} + \gamma_6 R_{it} * BONUS_{it} + \gamma_7 D_{it} * R_{it} * BONUS_{it} + \gamma_8 LEV_{it} + \gamma_9 D_{it} * LEV_{it} + \gamma_{10} R_{it} * LEV_{it} + \gamma_{11} D_{it} * R_{it} * LEV_{it} + \gamma_{12} \sum_{i=1}^{9} IND_{-} DUM_{i} + \varepsilon$$

$$(10)$$

Where:

SIZE_{it} is the natural log of firm i's total assets in year t;

LEV_{it} is the firm i's leverage ratio, defined as the total debt divided by total assets

in year t;

AGE is the age of the named CEO;

TENURE is the number of months the named executive officer has been CEO;

IND_DUM is industry dummies;

Other variables are defined as above.

3.6 Empirical Results

Table 7, 8, 9 and 10 provides results after controlling for the factors of firm

size, firm leverage, and industries.

[INSERT TABLE 7 ABOUT HERE]

&

[INSERT TABLE 8 ABOUT HERE]

&

[INSERT TABLE 9 ABOUT HERE]

&

[INSERT TABLE 10 ABOUT HERE]

Note that the major coefficients in **Table 7, 8, 9** and **10** are consistent with the predictions mentioned in Chapter II after controlling for factors such as firm size, firm leverage, and industries, which will have influences the relation. In **Table 7 & 8**, the signs of SIZE_{it} are positive and significant, the signs of other variables, such as CASH_{it}, D_{it} *CASH_{it}, R_{it} *CASH_{it} and D_{it} * R_{it} *CASH_{it} are the same as **Table 5 & 6**, and t statistics are significant. The results of equity-based are similar. The coefficient of D_{it} * R_{it} *BONUS_{it} (-0.119/-1.24) in **Table 8** is negative but insignificant. Even the coefficient is insignificant in that it has the same sign as

 $D_{it}*R_{it}*EQUITY_{it}(-0.132/-2.46^{***})$ in **Table 7**. **Table 9 & 10** show the results after controlling for firm leverage. The variable LEV_{it} has negative association with earnings; the coefficients of LEV_{it} in Equation (8), (9) & (10) have the same sign. Even after controlling for firm leverage and industries, the estimations are similar to prior models. The results of regression strongly support my hypotheses: They imply that the level or the degree of asymmetric conservatism degree in firms with different compensation contracts does hold after controlling the effects of firmspecific variables, such as firm size, leverage and industry.

 Table 11 and 12 provides results of regression after controlling for CEO age

 and CEO tenure.

[INSERT TABLE 11 ABOUT HERE]

&

[INSERT TABLE 12 ABOUT HERE]

In **Table 11**, I find the results to be obvious and consistent relative to predictions for lower age CEOs than for higher age ones. In other words, in a sample where CEOs are relatively young, the degree of conservatism will be affected by the components of CEO compensation. In comparison, there is no such significant result for the older CEOs group, which is consistent with our expectations.

While in **Table 12**, the results of CEOs who have longer tenure are more significant and convincing than those with shorter tenure, which is also consistent with our prior predictions. **Table 11 & 12** just reports the basic model results.

3.7 Sensitivity Analysis

3.7.1 The Piece-wise Linear Relation between Bonus and Earnings

This study examines the relation between cash compensation and accounting conservatism, assuming that there is a symmetric relation between cash pay and accounting earnings. However, Leone et al. (2006) argue that most bonus plans use accounting earnings in a piece-wise way which consequently leads to an asymmetric relation between cash pay and accounting earnings. Murphy (1999)'s findings support this view and suggest that the sensitivity of cash pay to earnings tend to be decreased when earnings are either very high or very low.

Before this paper estimates regressions, the outliers of independent and dependent variables have been deleted to avoid the bias caused by extreme values. However, since prior literature suggests that the sensitivity to cash pay will be reduced where extremely high or low accounting earnings exist, it is expected that the degree of conservatism will be lowered if we include the outliers of accounting earnings related variables into our sample for regressions. In other words, the paper achieves the result that the coefficient α_7 of interaction term in equation (2) is significantly positive using sample without outliers. If outliers for earnings-related variables are included in the sample, we expect the result to be weaker because the asymmetric relation between bonus pay and accounting earnings results in reduced accounting conservatism.

[INSERT TABLE 13 ABOUT HERE]

 Table 13 provides results of regression using the sample without removing

 outliers of earnings-related variables.

Table 13 shows that the coefficient of α_7 is positive but insignificant (0.38 with t-value of 1.34). This result shows that the previously discovered positive relation between accounting conservatism and cash compensation no longer exists. Therefore, we can conclude that when the very high and very low accounting earnings are included in the sample, cash compensation is less sensitive to earnings

and consequently decreases the degree of accounting conservatism, which supports the previous literature.

3.7.2 Level of CEO Cash Compensation

To further examine the relation, I reran the regressions based on level of CEO cash compensation. I ran the regression for each quintile of the ranked cash compensation distribution: Q1 represents the lower ranking of cash compensation, and Q5 represents the higher ranking of cash compensation. I find that the lower the ranking cash compensation is, the lower the degree of conservative accounting.

3.7.3 Potential Endogeneity Issue

The OLS regression results above demonstrate that CEO cash compensation is positively related with the degree of accounting conservatism while CEO equitybased compensation is negatively related to the degree of accounting conservatism. However, if the percentage of cash compensation or the equity-based compensation in the whole compensation plan is exogenously determined, the regression models could be erroneously specified. To address this potential endogeneity problem, I adopt the two stage least square regressions in accordance with information contained in prior literature. In the first stage, I take the proportion of cash compensation and the proportion of equity-based compensation as dependent variables in addition to other independent variables which, as demonstrated by previous studies, are known to effect CEO compensation contracts. These independent variables include firm size (denoted as SIZE), firm leverage (denoted as LEV), firm profitability (denoted as EP) and CEO tenure (denoted as TENURE). In the second stage, I use the residual value of the first stage as the proxy for cash compensation and equity-based compensation respectively and re-examine the relation using Model (2) and Model (3) since they are the most important models in this paper. The first stage models are described below.

CASH
$$_{it} = \alpha_0 + \alpha_1 * SIZE_{it} + \alpha_2 * LEV_{it} + \alpha_3 EP_{it} + \alpha_4 TENURE_{it} + \varepsilon$$

EQUITY $_{it} = \beta_0 + \beta_1 * SIZE_{it} + \beta_2 * LEV_{it} + \beta_3 EP_{it} + \beta_4 TENURE_{it} + \varepsilon$

The results of first stage and second stage regressions are reported in Table 14.

[INSERT TABLE 14 ABOUT HERE]

From **Table 14**, the coefficient for the interaction term $D_{it}*R_{it}*CASH_{it}$ is positive and significant which suggests that my results about the relationship between CEO cash compensation and the degree of accounting conservatism is robust. Moreover, the coefficient for the interaction term $D_{it}*R_{it}*EQUITY_{it}$ is negative and significant which suggests that my results about the relationship between CEO equity-based compensation and the accounting conservatism degree are also robust.

CHAPTER IV CONCLUSIONS, IMPLICATIONS AND LIMITATIONS

4.1 Conclusions

This study adopts a new approach to assess the relation between accounting conservatism and CEO compensation structures. A broad cross-section of US firms is examined to see whether there are influences of CEO compensation structures on accounting conservatism. I employ the Basu's proxy for conditional accounting conservatism to measure accounting conservatism and separate the CEO compensation into two types. Results from pooled time-series and cross-sectional regressions of variables of USA firms over the period 1993-2005 indicate a strong relation between the structure of CEO compensation and accounting conservatism. Furthermore, I find that conditional accounting conservatism varies with the structure of CEO compensation. The results are the same after controls for firmspecific, manager-specific and industry-specific characteristics. Overall, most of the evidence from this study supports the notion that different CEO incentives compensation affects the choice of conservative accounting.

In summary, the results show that the different incentives of CEO compensation have effects on accounting conservatism policy choice. Firms with

executive cash compensation are more likely to recognize economic losses in a timely fashion than those with equity-based compensation. Firms with more investment opportunities will induce a CEO to take riskier actions and prefer to compensate a CEO with equity-based compensation.

4.2 Discussion

The investigation of the relation between accounting conservatism and CEO compensation is also consistent with the findings of previous research (Watts, 2003a, Leone et al., 2006 and Bushman and Piotroski, 2006). Watts (2003a) summarizes four roles of conservatism, namely litigation, regulation, taxation and contracting and three attributes of accounting conservatism, namely incremental timeliness, verifiability and asymmetric verifiability.

First, Basu (1997) argues that conservatism plays an *ex ante* efficient role in contracting. Conservatism restricts CEO discretionary actions and protects the contracting parties' interests. He develops the famous Basu Model to test the incremental timeliness attribute on accounting conservatism and concludes that the timely recognition of bad news is more efficient than is the timeliness in recognizing good news. He further explains that the quick timeliness of earnings for

bad news implies that earnings are contemporaneously more sensitive to negative unexpected returns than to positive unexpected returns. The paper of Basu provides strong evidence to support the timeliness attributes of conservatism.

Second, Leone et al. (2006) test the verifiability attributes of accounting conservatism by using American data. They find that cash compensation is twice as sensitive to negative stock returns as compared to positive stock returns. They argue that efficient cash compensation contracts should be conservative due to the different requirements of unrealized losses and unrealized gains. As well, they document the finding that the problem of *ex post* settling-up costs is the reason or explanation for realized properties of accounting numbers. Bushman and Piotroski (2006) analyze the relation between compensation contracts and asymmetric recognition of economic gains and losses into earnings. The results of their paper are consistent with Leone et al. (2006). The components of manager compensation which are based in earnings-based performance result in more conservatism.

Vasvari (2006) explores the effect of manager-shareholder incentive alignment on the pricing of syndicated loan contracts. Equity-based compensation plays an important role in aligning the interests of shareholders and managers. Empirical research documents the understanding that greater CEO equity-based compensation results in more aggressive investment actions. This increased risk-taking behavior of the CEOs may transfer wealth from the bondholders to stockholders. He finds that *ex ante* conservatism decreases loan spreads and increases the number of financial covenants in the loan contract. He concludes that *ex ante* conservatism serves as an instrument for reducing the monitoring value of financial covenants when managers exhibit risk-taking behavior as a result of large equity-based compensation.

The paper mentioned in the previous paragraph addresses the role of accounting conservatism from the perspective of *ex ante* conservatism in contract setting. Accounting conservatism is a mechanism for mitigating conflicts in a principal-agent setting. These conflicts include conflicts between shareholders and manager as well the conflicts between debt holders and managers. The reports used for contracting are controlled by the principal who conservatively, liberally, or neutrally design the contracts. To protect the interests of contracting parties, shareholders and debt holders prefer conservatism in contracts. Where my thesis distinguishes itself from other papers is in the fact that its focus is on ex post accounting conservatism. It is based on the assumption that CEO compensation contracts are efficient. The incentives of CEO compensation will induce a CEO to take actions on either underinvestment or overinvestment projects. When granted more cash compensation, risk-averse CEOs prefer underinvestment projects or safe, positive NPV projects that may reduce the future value of the firm. Compared to cash compensation, when granted more equity-based compensation, CEOs will shift their actions to overinvestment projects or riskier, negative NPV projects that have the potential to increase risk to the firm.

4.3 Limitations and Future Research

Some problems remain unresolved in my study. First, one of the determinants on the design of CEO compensation is based on the agency problem involving conflicting interesting of shareholders and managers. Another important theoretical perspective is the conflicts between shareholders and debt holders. In this study, I just test the issues from the perspective of mitigating the conflicts between shareholders and managers. The incentives of aligning the interests between managers and debt holders should be considered in the future.

Second, because the measure of accounting conservatism in this article is singular, I should extend the measures of accounting conservatism. Previous literature has introduced a variety of measures. Different from Basu (1997)'s work, Feltham and Ohlson (1995), Beaver and Ryan (2000) and Penman and Zhang (2002) focus on balance sheet conservatism and view conservative accounting as a biased application of historical cost accounting. This paper leaves room for further research to discuss these issues.

Third, the optimal design of executive compensation structure is subjected to other mechanisms, such as corporate governance and the audit committee. Those governance dimensions that are related to accounting quality may be correlated with the structure of CEO compensation. I do not discuss those factors here even though they also restrict the risk-taking behavior of a CEO. It is necessary to conduct further research to examine the relation between conservative accounting and the structure of CEO compensation after controlling for other governance variables. Furthermore, I consider the CEO risk-taking actions related to accounting conservatism. In the future, I should test whether CEOs with large equity-based compensation are associated with firm variances (risk of the firm) in order to further support my view.

Finally, I should extend the explanations and conclusions from a broader perspective, such as R&D expenditure, exercising and expensing stock options, and separate intangible assets etc. Therefore, for those interested in arriving at a more thorough and clearer understanding about the relation between accounting conservatism and the structure of CEO compensation, this area of study remains rich and requires that further research be conducted.

REFERENCES

- Baber, W.R., S. N. Janakiraman and S. Kang, 1996. Investment opportunities and the structure of executive compensiton. *Journal of Accounting and Economics* 21, 297-318.
- Ball, R., and S. P. Kothari, and A. Robin, 2000. The effect of international institutional factors on properties of accounting earnings. *Journal of Accounting and Economics* 29, 1-51.
- Ball, R., and L. Shivakumar, 2005. Earnings quality in UK private firms: comparative loss recognition timeliness. *Journal of Accounting and Economics* 39, 83-128.
- Ball, R., and L. Shivakumar, 2006a. The role of accruals in asymmetrically timely gain and loss recognition. *Journal of Accounting Research* 44, 207-242.
- Ball, R., A. Robin, and J. S. Wu, 2003. Incentives versus standards: properties of accounting income in four East Asian countries. *Journal of Accounting and Economics* 36, 235-270.
- Basu, S., 1997. The conservatism principle and the asymmetric timeliness of earnings. *Journal of Accounting and Economics* 24, 237-333.

- Bass, K. E., R. L. Simerly, and M. Li, 1997. The effects of CEO compensation on corporate economic performance and corporate social performance. Academy of Management Proceedings. Boston. MA.
- Beaver, W. H., and S. G. Ryan, 2000. Biases and lags in book value and their effects on the ability of the book to market ratio to predict book return on equity. *Journal of Accounting Research* 38 (Spring), 127-148.
- Beaver, W. H., and S. G. Ryan, 2005. Conditional and unconditional conservatism: concepts and modeling. *Review of Accounting Studies* 10, 269-309.
- Bebchuk, L., and Y. Grinstein, 2005. Executive pay and firm size. Working Paper, Harvard Law School.
- Bizjak, J. M., J. A. Brickley, and J. L. Coles, 1993. Stock-based incentive compensation and investment behavior. *Journal of Accounting and Economics* 16, 349-372.
- Black, F. and M. Scholes, 1973. The pricing of options and corporate liabilities. *The Journal of Political Economy* 81, 637-654.

Bliss, J. H., 1924. Management through accounts. The Ronald Press Co., New York.

- Buchholtz, A. K., M. N. Young, and G. N. Powell, 1998. Are board members pawns or watchdogs? The link between CEO pay and firm performance. *Group & Organization Management* 23(1), 6-26.
- Bushman, R., Q. Chen, E. Engel, and A. Smith, 2004. Financial accounting information, organizational complexity and corporate governance systems. *Journal of Accounting and Economics* 37, 167-201.
- Bushman, R. M., and J. D. Piotroski, 2006. Financial reporting incentives for conservative accounting: The influence of legal and political institutions. *Journal of Accounting and Economics* 42, 107-148.
- Bryan, S, L. Hwang and S. Lilien, 2000. CEO stock-based compensation: an empirical analysis of incentive mix, and economic determinants. *Journal of Business* 73, 661-693.
- Certo, S. T., C. M. Daily, A. A. Cannella, and D. R. Dalton, 2003. Giving Money to get Money: how CEO stock options and CEO equity enhance IPO evaluations. *Academy of Management Journal* 46(5), 643-653.
- Cheng, S., 2004. R&D expenditures and CEO compensation. *The Accounting Review* 79, 305-328.

- Cohen, R. B., B. J. Hall, and L. M. Viceira, 2000. Do executive stock options encourage risk-taking? Working Paper. Harvard Business School.
- Coles, J. L., N. D. Daniel, and L. Naveen, 2006. Managerial incentives and risk taking. *Journal of Financial Economics* 79, 431-468.
- Cordeiro, J. J., and R. Veliyath, 2003. Beyond pay for performance: a panel study of the determinants of CEO compensation. *American Business Review* 21(1), 56-66.
- Core, J. E, and W. Guay, 1999. The use of equity grants to manage optimal equity incentive levels. *Journal of Accounting and Economics* 28, 151-184.
- Core, J. E, Robert W. Holthausen, and David F. Larcker, 1999. Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics* 51, 371-406.
- Dechow, P. M., A. Hutton, and R. G. Sloan, 1996. Economic consequences of accounting for stock-based compensation. *Journal of Accounting Research* 34, 1-20.
- Dechow, P. M., and R. G. Sloan, 1991. Executive incentives and the horizon problem: An empirical investigation. *Journal of Accounting and Economics* 14, 51-89.
- DeFusco, R. A., R. R. Johnson and T. S. Zorn, 1990. The effect of executive stock options plans on stockholders and bondholders. *The Journal of Finance* 45, 617-627.
- Ekanayake, S., 2004. Agency theory, national culture and management control systems. *Journal of American Academy of Business* 4(1/2), 49-54.
- Feltham, G., and J. A. Ohlson, 1995. Valuation and clean surplus accounting for operating and financial activities. *Contemporary Accounting Research* 11 (2): 689-731.
- Financial Accounting Standards Board (FASB), 1975. Accounting for contingencies, Statement of Financial Accounting Standards No. 5.
- Financial Accounting Standards Board (FASB), 1980. Statement of Financial Accounting Concepts No. 2, Qualitative characteristics of accounting information, Norwalk, CT.
- Gao, P., and R. E. Shrieves, 2002. Earnings management and executive compensation: A case of overdose of option and underdose of salary.Working Paper, Northwestern University.
- Garvey, G. T., and A. Mawani, 2005. Risk-taking incentives of executive stock options and the asset substitution problem. *Accounting and Finance* 45, 3-23.

- Gaver, J. J., K. M. Gaver, and J. Austin, 1995. Additional evidence on bonus plan and income management by business-unit managers. *Journal of Accounting and Economics*18, 3-28.
- Gaver, J. J., and K. M. Gaver, 1995. Additional evidence on the association between the investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Accounting and Economics* 16, 125-160.
- Gibbons, R., and K. J., Murphy, 1992. Optimal incentive contracts in the process of career concerns: Theory and evidence. *Journal of Political Economy*100, 468-505.
- Givoly, D., and C. Hayn, 2000. The changing time-series properties of earnings, cash flows and accruals: has financial reporting become more conservative. *Journal of Accounting Economics* 29, 287-320.
- Gjesdal, F., 1999. A steady state growth valuation model: A note on accounting and valuation. Working Paper, Norwegian School of Economics, Bergen, Norway.
- Grossman, W., and R. E. Hoskisson, 1998. CEO pay at the crossroads of Wall Street and main: toward the strategic design of executive compensation. *Academy of Management Executive* 12, 43-57.

- Guay, W., and R. Verrecchia, 2006. Discussion of an economic framework for conservative accounting and Bushman and Piotroski (2006). *Journal of Accounting and Economics* 42, 149-165.
- Guidry, F., A. J. Leone, and S. Rock, 1999. Earnings-based bonus plans and earnings management by business-unit managers. Journal of Accounting and Economics 26, 113-142.
- Harris, M., and A. Raviv, 1979. Optimal incentive contracts with imperfect information. *Journal of Economic Theory* 20, 231-259.
- Healy, P., 1985. The effect of bonus schemes on accounting decisions. *Journal of* Accounting and Economics 7, 85-107.
- Hjortshoj, T. L., 2007. Managerial risk-shifting incentives of option-based compensation: firm risk, leverage, and moneyness. Working Paper. University of Aarhus, Denmark.
- Holthausen, R., D. Larcker, and R. Sloan, 1995. Annual bonus schemes and the manipulation of earnings. *Journal of Accounting and Economics* 19, 29 75.
- Jensen, M. C., and W. H. Meckling, 1976. Theory of the firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics* 3, 305-360.

- John T. A., and K. John, 1993. Top-management compensation and capital structure. *The Journal of Finance* 93, 949-974.
- Kole, S., 1997. The complexity of compensation contracts. *Journal of Financial Economics* 43, 79–104.
- Kwon, Y. K., D. P. Newman and Y. S. Suh, 2001. The demand for accounting conservatism for management control. *Review of Accounting Studies* 6, 29-51.
- Lambert, R., and D. Larcker, 1987. An analysis of the use of accounting and market measures of performance in executive compensation contracts. *Journal of Accounting Research* 25, 85-125.
- Lara, J. M. G., B. G. Osma, and F. Penalva, 2005. Accounting conservatism and corporate governance. Working Paper, IESE Business School, University of Navarra.
- Leone, A. J., J. S. Wu, and J. L. Zimmerman, 2006. Asymmetric sensitivity of CEO cash compensation to stock returns. *Journal of Accounting and Economics* 42, 167-192.
- Matsunaga, S., 1995. The effects of financial reporting costs on the use of employee stock options. *The Accounting Review* 70, 1-26.

- Mehran, H., 1995. Executive compensation structure, ownership, and firm performance. *Journal of Financial Economics* 38, 163-184.
- Murphy, K. J., 1985, Corporate performance and managerial remuneration: An empirical analysis, Journal of Accounting and Finance 7, 11-42.
- Murphy, K., 1999. Executive compensation. Handbook of Labor Economics, Vol.3, Amsterdam: North Holland.
- Ofek, E., and D. Yermack, 1997. Taking stock: does equity-based compensation increase managers' ownership? Working Paper. New York University.
- Parrino, R., A. M. Poteshman, and M. S. Weisbach, 2005. Measuring investment distortions when risk-averse managers decide whether to undertake risky projects. *Financial Management* 34, 21-60.
- Penman, S. H., and X. J. Zhang, 2002. Accounting conservatism, the quality of earnings, and stock returns. *The Accounting Review* 77, 237-264.
- Perry, T., and M. Zenner, 2001. Pay for performance? Government regulation and the structure of compensation contracts. *Journal of Financial Economics* 62, 453-488.

- Rajgopal, S. and T. Shevlin, 2002. Empirical evidence on the relation between stock option compensation and risk taking. *Journal of Accounting and Economics* 33, 145-171.
- Ryan, H. E., and R. A. Wiggins, 2001. The influence of firm- and manager-specific characteristics on the structure of executive compensation. *Journal of Corporate Finance* 7, 101-123.
- Scott, W. R., 2006. Financial Accounting Theory. Fourth edition, Canada, Prentice-Hall International, Inc.
- Skinner, D. J., 1993. The investment opportunity set and accounting procedure choice: preliminary evidence. *Journal of Accounting and Economics* 16, 407-445.
- Smith, C, and R. L. Watts, 1982. Incentive and tax effects of executive compensation plans. *Australian Journal of Management* 7, 139-157.
- Smith, C, and R. L. Watts, 1992. The investment opportunity set and corporate financing, dividends, and compensation policies. *Journal of Financial Economics* 32, 263-292.
- Sterling, R. R., 1970. The theory of the measurement of enterprise income. Lawrence, KS: University of Kansas Press.

- Tsoi, H. L., S. Werner, J. P. Katz, and L.R. Gomez-Mejia, 2000. How much does performance matter? A meta-analysis of CEO pay studies. *Journal of Management* 26(2), 301-339.
- U.S. Securities and Exchange Commission, 1992. Executive compensation disclosure, Release No. 33-6966 (November 9).
- U.S. Securities and Exchange Commission, 1993a. Executive compensation disclosure, Release No. 33-7009 (August 6).
- U.S. Securities and Exchange Commission, 1993b. Executive compensation disclosure, Release No. 33-7032 (November 22).
- U.S. Securities and Exchange Commission, 2006. Executive Compensation and Related Party Disclosure, Release No. 33-8655 (January 27).
- Vasvari, F. L., 2006. Managerial incentive structures, conservatism and the pricing of syndicated loans. Working Paper, University of Toronto.
- Watts, R. L., 2003a. Conservatism in accounting part I: explanation and implications. *Accounting Horizons* 17 (3), 207-221.
- Watts, R. L., 2003b. Conservatism in accounting part II: Evidence and research opportunities. *Accounting Horizons* 17 (4), 287-301.

- Watts, R. L., and J. L. Zimmerman, 1978. Towards a positive theory of the determination of accounting standards. *The Accounting Review* 53, 112-134.
- Watts, R. L. and J.L. Zimmerman, 1990. Positive Accounting theory: A Ten Year Perspective. *The Accounting Review* 65, 131-156.

Table 1

Variable Definitions

| Variables | Definitions |
|------------------------------|---|
| X _{it} | The earnings per share for firm i in fiscal year t. |
| P _{i,t-1} | The price per share for firm i at the beginning of fiscal year. |
| R _{it} | The return on firm i calculated from fiscal year-end t-1 to fiscal year-end t, this is |
| | the price at fiscal year-end t less the price at fiscal year-end t-1 divided by the price |
| | fiscal year-end t-1. |
| D _{it} | A dummy variable that equals 1 if $R_{it} < 0$ and 0 otherwise. |
| LEV _{it} | The firm i's leverage ratio in year t, defined as the total debt divided by total assets. |
| SIZE _{it} | The natural log of firm i's total assets in year t. |
| SALARY _{it} | The dollar value of the base salary (cash and non-cash) earned by the named CEO |
| | during the fiscal year deflated by total compensation comprised of salary, bonus, |
| | other annual, total value of restricted stock granted, total value of stock options |
| | granted (using Black-Scholes), long-term incentive payouts, and all other total. |
| BON _{it} | The dollar value of a bonus (cash and non-cash) earned by the named CEO during |
| | the fiscal year deflated by total compensation. |
| OPTIONS _{it} | Stock options are measured by the value of options granted during the sample period |
| | using S&P's Black Scholes methodology deflated by total compensation. |
| RS _{it} | The value of restricted stock granted during the year (determined as of the date of |
| | the grants) deflated by total compensation. |
| CASH _{it} | The compensation is CEO cash compensation comprised of salary and bonus |
| | deflated by total compensation. |
| EQUITY _{it} | The compensation is CEO equity-based compensation comprised of stock options |
| | and restricted stock deflated by total compensation. |
| BONUS _{it} | The dollar value of a bonus (cash and non-cash) earned by the named CEO during |
| | the fiscal year deflated by CEO cash compensation comprised of salary and bonus. |
| AGE | The age of the named CEO. |
| TENURE | The number of months the named executive officer has been CEO. |
| IND_DUM | Industry dummies. |

Table 2 summarizes sample selection process

| Total CEO-year observations in ExecuComp from 1993-2005 | 20,289 |
|--|--------|
| Less: | |
| CEO-year observations where four-digit SIC code between 6000 | 2732 |
| and 6999. | |
| Observations with insufficient Compustat data | 385 |
| Extreme variables | 7802 |
| | |
| Total usable observations (1993-2005) | 9370 |

Table3

Descriptive statistics of the structure of CEO compensation, accounting variables and stock returns from 1993-2005.

| Variables | Ν | Mean | Median | Maximum | Minimum | Std. Dev | | | | |
|-------------------------------------|---|--------------|--------------|---------------|-----------|----------|--|--|--|--|
| Panel A: Accounting v | Panel A: Accounting variables and stock returns | | | | | | | | | |
| X _{it} /P _{i,t-1} | 9370 | 0.04 | 0.05 | 0.23 | -0.78 | 0.07 | | | | |
| R _{it} | 9370 | 0.11 | 0.09 | 0.96 | -0.49 | 0.31 | | | | |
| LEV _{it} | 9370 | 0.26 | 0.26 | 0.80 | 0.00 | 0.15 | | | | |
| SIZE _{it} | 9370 | 14.32 | 14.22 | 17.72 | 10.80 | 1.43 | | | | |
| Panel B: Dollar Value | of the compo | onents of CE | O compensat | ion (Units: T | housands) | | | | | |
| Salary | 9370 | 640.74 | 599.93 | 3961.16 | 0.00 | 299.28 | | | | |
| Bon | 9370 | 639.93 | 399.60 | 30402.45 | 0.00 | 972.52 | | | | |
| Cash compensation | 9370 | 1280.67 | 985.30 | 31702.45 | 2.41 | 1139.03 | | | | |
| Stock options | 9370 | 2108.06 | 852.04 | 193531.62 | 0.00 | 4662.70 | | | | |
| Restricted stock | 9370 | 441.02 | 0.00 | 48850.00 | -4.53 | 1733.93 | | | | |
| Equity compensation | 9370 | 2549.08 | 1062.05 | 193531.62 | 1.16 | 5321.89 | | | | |
| Total compensation | 9370 | 4208.80 | 2430.80 | 202185.14 | 42.61 | 6255.13 | | | | |
| Panel C: Components | of CEO com | pensation as | a percentage | of total comp | pensation | | | | | |
| Salary | 9370 | 28% | 24% | 98% | 0% | 0.17 | | | | |
| Bon | 9370 | 17% | 16% | 91% | 0% | 0.13 | | | | |
| Cash compensation | 9370 | 45% | 44% | 99% | 2% | 0.21 | | | | |
| Stock options | 9370 | 40% | 38% | 97% | 0% | 0.25 | | | | |
| Restricted stock | 9370 | 7% | 0% | 93% | 0% | 0.15 | | | | |
| Equity compensation | 9370 | 47% | 47% | 97% | 0% | 0.23 | | | | |
| Panel D: CEO age and | tenure | | | | | | | | | |
| CEO age | 2002 | 58.52 | 59.00 | 92.00 | 40.00 | 7.14 | | | | |
| Tenure (months) | 8961 | 131.91 | 112.00 | 677.00 | 1.00 | 87.23 | | | | |

 X_{it} is earnings per share before extraordinary items and discontinued operations (Compustat #58); $P_{i,t-1}$ is share price at the beginning of the period (Compustat #199); R_{it} is the stock return of firm i calculated from fiscal year-end t-1 to fiscal year-end t, this is the price at fiscal year-end t less the price at fiscal year-end t-1 divided by the price fiscal year-end t-1; SIZE_{it} is the natural log of firm i's total assets in year t; LEV_{it} is the firm i's leverage ratio, defined as the total debt divided by total assets in year t.

Compensation is categorized as based salary, annual bonus, restricted stock and stock options. Based salary and annual bonus are classified as cash compensation of CEO, while restricted stock and stock options are classified as equity-based CEO compensation which indicated long-term incentive compensation. Total compensation equals sum of based salary, annual bonus, restricted stock, stock options and other compensation.

Table 4 presents results of Basu's model from pooled cross-sectional regression from year 1993-2005.

Model:

$$X_{it} / P_{i,t-1} = \alpha_0 + \alpha_1 D_{it} + \alpha_2 R_{it} + \alpha_3 D_{ti} R_{it} + \varepsilon$$
(1)

| α | α1 | a_2 | a3 | $\operatorname{Adj.R}^2(\%)$ |
|-----------------------------|--------|------------------|------------------|------------------------------|
| 0.046 | 0.002 | 0.022 | 0.106 | 5.87 |
| (30.42)*** | (0.98) | (5.58)*** | (10.58)*** | |
| | | Positive returns | Negative returns | |
| | | sample | sample | |
| Adjusted R ² (%) | | 0.63 | 4.12 | |
| No. of | | 5815 | 3555 | |
| observations | | | | |

Significant at 10%, 5%, and 1% levels is indicated by*, **, and ***, respectively.

 X_{it} is earnings per share before extraordinary items and discontinued operations (Compustat #58); $P_{i,t-1}$ is share price at the beginning of the period (Compustat #199); R_{it} is the stock return of firm i calculated from fiscal year-end t-1 to fiscal year-end t, this is the price at fiscal year-end t less the price at fiscal year-end t-1 divided by the price fiscal year-end t-1; D_{it} is a dummy variable that equals 1 in the case of bad news (negative stock returns) and 0 otherwise.

Table 5 (Time period: 1993-2005) presents results of an asymmetric relation between earnings and returns that differs between cash compensation and equity-based compensation.

Model:

$$X_{ii} / P_{i,t-1} = \alpha_0 + \alpha_1 D_{ii} + \alpha_2 R_{ii} + \alpha_3 D_{ii} * R_{ii} + \alpha_4 CASH_{ii} + \alpha_5 D_{ii} * CASH_{ii} + \alpha_6 R_{ii} * CASH_{ii} + \alpha_7 D_{ii} * R_{ii} * CASH_{ii} + \varepsilon$$

$$(2)$$

$$X_{it} / P_{i,t-1} = \beta_0 + \beta_1 D_{it} + \beta_2 R_{it} + \beta_3 D_{it} * R_{it} + \beta_4 EQUITY_{it} + \beta_5 D_{it} * EQUITY_{it} + \beta_6 R_{it} * EQUITY_{it} + \beta_7 D_{it} * R_{it} * EQUITY_{it} + \varepsilon$$
(3)

| | Pooled regress | ions | Pooled regress | ions |
|--|----------------|---------|----------------|----------|
| | Coeff | t-stat | Coeff | t-stat |
| Intercept | 0.030 | 8.73*** | 0.064 | 20.78*** |
| D _{it} | -0.011 | -1.87* | 0.010 | 1.79* |
| R _{it} | 0.009 | 1.07 | 0.038 | 4.05*** |
| D _{it} *R _{it} | 0.036 | 1.45 | 0.169 | 5.18*** |
| CASH _{it} | 0.033 | 4.79*** | | |
| D _{it} *CASH _{it} | 0.031 | 2.82*** | | |
| R _{it} *CASH _{it} | 0.039 | 1.99** | | |
| D _{it} *R _{it} *CASH _{it} | 0.140 | 2.59*** | | |
| EQUITY _{it} | | | -0.041 | -6.87*** |
| D _{it} *EQUITY _{it} | | | -0.012 | -1.18 |
| R _{it} *EQUITY _{it} | | | -0.022 | -1.35 |
| D _{it} *R _{it} *EQUITY _{it} | | | -0.144 | -2.69*** |
| | | | | |
| Adj-R2 (%) | 7.35 | | 7.55 | |

Significant at 10%, 5%, and 1% levels is indicated by*, **, and ***, respectively.

 X_{it} is earnings per share before extraordinary items and discontinued operations (Compustat #58); $P_{i,t-1}$ is share price at the beginning of the period (Compustat #199); R_{it} is the stock return of firm i calculated from fiscal year-end t-1 to fiscal year-end t, this is the price at fiscal year-end t less the price at fiscal year-end t-1 divided by the price fiscal year-end t-1; D_{it} is a dummy variable that equals 1 in the case of bad news (negative stock returns) and 0 otherwise;

 $CASH_{it}$ is CEO cash compensation deflated by total compensation comprised of salary, bonus, other annual, total value of restricted stock granted, total value of stock options granted (using Black-Scholes), long-term incentive payouts, and all other totals;

 $EQUITY_{it}$ is equity-based compensation deflated by total compensation comprised of salary, bonus, other annual, total value of restricted stock granted, total value of stock options granted (using Black-Scholes), long-term incentive payouts, and all other totals.

Table 6 (Time period: 1993-2005) presents results of an asymmetric relation between earnings and returns by incorporating the variable of annual bonus compensation.

Model:

$$X_{it} / P_{i,t-1} = \gamma_0 + \gamma_1 D_{it} + \gamma_2 R_{it} + \gamma_3 D_{it} * R_{it} + \gamma_4 BONUS_{it} + \gamma_5 D_{it} * BONUS_{it} + \gamma_6 R_{it} * BONUS_{it} + \gamma_7 D_{it} * R_{it} * BONUS_{it} + \varepsilon$$
(4)

| | Pooled regression | ons |
|---|-------------------|----------|
| | Coeff | t-stat |
| Intercept | 0.025 | 10.03*** |
| D _{it} | 0.002 | 0.62 |
| R _{it} | 0.012 | 1.83* |
| D _{it} *R _{it} | 0.106 | 7.28*** |
| BONUS _{it} | 0.109 | 9.83*** |
| D _{it} *BONUS _{it} | 0.005 | 0.27 |
| R _{it} *BONUS _{it} | 0.046 | 1.66* |
| D _{it} *R _{it} *BONUS _{it} | -0.149 | -1.92* |
| | | |
| Adj-R2 (%) | 11.07 | |

Significant at 10%, 5%, and 1% levels is indicated by*, **, and ***, respectively.

 X_{it} is earnings per share before extraordinary items and discontinued operations (Compustat #58); $P_{i,t-1}$ is share price at the beginning of the period (Compustat #199); R_{it} is the stock return of firm i calculated from fiscal year-end t-1 to fiscal year-end t, this is the price at fiscal year-end t less the price at fiscal year-end t-1 divided by the price fiscal year-end t-1; D_{it} is a dummy variable that equals 1 in the case of bad news (negative stock returns) and 0 otherwise;

BONUS_{it} is the dollar value of a bonus (cash and non-cash) earned by the named CEO during the fiscal year deflated by CEO cash compensation comprised of salary and bonus.

Table 7 presents results of an asymmetric relation between earnings and returns that differs between cash compensation and equity-based compensation after controlling for firm size and industry.

Model:

$$X_{ii} / P_{i,i-1} = \alpha_{0} + \alpha_{1} D_{ii} + \alpha_{2} R_{ii} + \alpha_{3} D_{ii} * R_{ii} + \alpha_{4} CASH_{ii} + \alpha_{5} D_{ii} * CASH_{ii} + \alpha_{6} R_{ii} * CASH_{ii} + \alpha_{7} D_{ii} * R_{ii} * CASH_{ii} + \alpha_{8} SIZE_{ii} + \alpha_{9} D_{ii} * SIZE_{ii} + \alpha_{10} R_{ii} * SIZE_{ii} + \alpha_{11} D_{ii} * R_{ii} * SIZE_{ii} + \alpha_{12} \sum_{i=1}^{9} IND_{-} DUM_{i} + \varepsilon$$
(5)

$$X_{ii} / P_{i,t-1} = \beta_0 + \beta_1 D_{ii} + \beta_2 R_{ii} + \beta_3 D_{ii} * R_{ii} + \beta_4 EQUITY_{ii} + \beta_5 D_{ii} * EQUITY_{ii} + \beta_6 R_{ii} * EQUITY_{ii} + \beta_7 D_{ii} * R_{ii} * EQUITY_{ii} + \beta_8 SIZE_{ii} + \beta_9 D_{ii} * SIZE_{ii} + \beta_{10} R_{ii} * SIZE_{ii} + \beta_{11} D_{ii} * R_{ii} * SIZE_{ii} + \beta_{12} \sum_{i=1}^{9} IND_{-} DUM_{i} + \varepsilon$$
(6)

| | Pooled regr | essions | Pooled regr | essions |
|--|-------------|----------|-------------|----------|
| | Coeff | t-stat | Coeff | t-stat |
| Intercept | -0.039 | -1.83* | 0.004 | 0.22 |
| D _{it} | 0.022 | 0.75 | 0.052 | 1.88* |
| R _{it} | 0.007 | 0.17 | 0.054 | 1.29 |
| $\mathbf{D}_{it}^{*}\mathbf{R}_{it}$ | 0.330 | 2.55*** | 0.463 | 3.74*** |
| CASH _{it} | 0.036 | 5.01*** | | |
| D _{it} *CASH _{it} | 0.029 | 2.57*** | | |
| R _{it} *CASH _{it} | 0.041 | 2.09** | | |
| D _{it} *R _{it} *CASH _{it} | 0.114 | 2.09** | | |
| EQUITY _{it} | | | -0.041 | -6.74*** |
| D _{it} *EQUITY _{it} | | | -0.011 | -1.03 |
| R _{it} *EQUITY _{it} | | | -0.021 | -1.32 |
| D _{it} *R _{it} *EQUITY _{it} | | | -0.132 | -2.46*** |
| SIZE _{it} | 0.004 | 3.45*** | 0.003 | 3.20*** |
| D _{it} *SIZE _{it} | -0.002 | -1.18 | -0.003 | -1.58 |
| R _{it} *SIZE _{it} | 0.000 | 0.14 | -0.001 | -0.32 |
| D _{it} *R _{it} *SIZE _{it} | -0.021 | -2.49*** | -0.022 | -2.61*** |
| | | | | |
| Adj-R2 (%) | 8.89 | | 8.88 | |

Table 8 presents results of an asymmetric relation between earnings and returns by incorporating the variable of annual bonus compensation after controlling for firm size and industry.

Model:

$$X_{ii} / P_{i,t-1} = \gamma_0 + \gamma_1 D_{ii} + \gamma_2 R_{ii} + \gamma_3 D_{ii} * R_{ii} + \gamma_4 BONUS_{ii} + \gamma_5 D_{ii} * BONUS_{ii} + \gamma_6 R_{ii} * BONUS_{ii} + \gamma_7 D_{ii} * R_{ii} * BONUS_{ii} + \gamma_8 SIZE_{ii} + \gamma_9 D_{ii} * SIZE_{ii} + \gamma_{10} R_{ii} * SIZE_{ii} + \gamma_{11} D_{ii} * R_{ii} * SIZE_{iii} + \gamma_{12} \sum_{i=1}^{9} IND_{-} DUM_{i} + \varepsilon$$

$$(7)$$

| | Pooled regressio | ns |
|---|------------------|----------|
| | Coeff | t-stat |
| Intercept | -0.014 | -0.73 |
| D _{it} | 0.053 | 1.92* |
| R _{it} | 0.030 | 0.73 |
| D _{it} *R _{it} | 0.435 | 3.62*** |
| BONUS _{it} | 0.107 | 9.40*** |
| D _{it} *BONUS _{it} | 0.009 | 0.43 |
| R _{it} *BONUS _{it} | 0.047 | 1.65* |
| D _{it} *R _{it} *BONUS _{it} | -0.119 | -1.24 |
| SIZE _{it} | 0.002 | 1.93* |
| D _{it} *SIZE _{it} | -0.003 | -1.92* |
| R _{it} *SIZE _{it} | -0.001 | -0.39 |
| $\mathbf{D}_{it} \mathbf{R}_{it} \mathbf{SIZE}_{it}$ | -0.024 | -2.96*** |
| | | |
| Adj-R2 (%) | 12.27 | |

Table 9 presents results of an asymmetric relation between earnings and returns that differs between cash compensation and equity-based compensation after controlling for firm leverage ratio and industry.

Model:

.

$$X_{ii} / P_{i,t-1} = \alpha_{0} + \alpha_{1} D_{ii} + \alpha_{2} R_{ii} + \alpha_{3} D_{ii} * R_{ii} + \alpha_{4} CASH_{ii} + \alpha_{5} D_{ii} * CASH_{ii} + \alpha_{6} R_{ii} * CASH_{ii} + \alpha_{7} D_{ii} * R_{ii} * CASH_{ii} + \alpha_{8} LEV_{ii} + \alpha_{9} D_{ii} * LEV_{ii} + \alpha_{10} R_{ii} * LEV_{ii} + \alpha_{11} D_{ii} * R_{ii} * LEV_{ii} + \alpha_{12} \sum_{i=1}^{9} IND_{-} DUM_{i} + \varepsilon$$
(8)

$$X_{ii} / P_{i,i-1} = \beta_0 + \beta_1 D_{ii} + \beta_2 R_{ii} + \beta_3 D_{ii} * R_{ii} + \beta_4 EQUITY_{ii} + \beta_5 D_{ii} * EQUITY_{ii} + \beta_6 R_{ii} * EQUITY_{ii} + \beta_7 D_{ii} * R_{ii} * EQUITY_{ii} + \beta_8 LEV_{ii} + \beta_9 D_{ii} * LEV_{ii} + \beta_{10} R_{ii} * LEV_{ii} + \beta_{11} D_{ii} * R_{ii} * LEV_{ii} + \beta_{12} \sum_{i=1}^{9} IND_{-} DUM_{ii} + \varepsilon$$
(9)

| | Pooled regressi | ons | Pooled regressions | | |
|--|-----------------|----------|--------------------|----------|--|
| | Coeff | t-stat | Coeff | t-stat | |
| Intercept | 0.033 | 2.70*** | 0.063 | 5.05*** | |
| D _{it} | -0.013 | -1.88* | 0.004 | 0.61 | |
| R _{it} | -0.005 | -0.48 | 0.027 | 2.26** | |
| $\mathbf{D}_{it}^* \mathbf{R}_{it}$ | 0.022 | 0.77 | 0.126 | 3.48*** | |
| CASH _{it} | 0.027 | 4.00*** | | | |
| D _{it} *CASH _{it} | 0.028 | 2.56*** | | | |
| R _{it} *CASH _{it} | 0.043 | 2.23** | | | |
| D _{it} *R _{it} *CASH _{it} | 0.103 | 1.92* | | | |
| EQUITY _{it} | | | -0.036 | -6.09*** | |
| D _{it} *EQUITY _{it} | | | -0.009 | -0.89 | |
| R _{it} *EQUITY _{it} | | | -0.024 | -1.45 | |
| D _{it} *R _{it} *EQUITY _{it} | | | -0.112 | -2.15** | |
| LEV _{it} | -0.039 | -2.87*** | -0.040 | -2.94*** | |
| D _{it} *LEV _{it} | 0.014 | 0.69 | 0.013 | 0.64 | |
| R _{it} *LEV _{it} | 0.058 | 1.99** | 0.054 | 1.84* | |
| D _{it} *R _{it} *LEV _{it} | 0.076 | 0.83 | 0.069 | 0.77 | |
| | | | | | |
| Adj-R2 (%) | 8.66 | | 8.81 | | |

Table 10 presents results of an asymmetric relation between earnings and returns by incorporating the variable of annual bonus compensation after controlling for firm leverage ratio and industry.

Model:

$$X_{ii} / P_{i,t-1} = \gamma_{0} + \gamma_{1} D_{ii} + \gamma_{2} R_{ii} + \gamma_{3} D_{ii} * R_{ii} + \gamma_{4} BONUS_{ii} + \gamma_{5} D_{ii} * BONUS_{ii} + \gamma_{6} R_{ii} * BONUS_{ii} + \gamma_{7} D_{ii} * R_{ii} * BONUS_{ii} + \gamma_{8} LEV_{ii} + \gamma_{9} D_{ii} * LEV_{ii} + \gamma_{10} R_{ii} * LEV_{ii} + \gamma_{11} D_{ii} * R_{ii} * LEV_{ii} + \gamma_{12} \sum_{i=1}^{9} IND_{-} DUM_{i} + \varepsilon$$
(10)

| | Pooled regression | ons |
|---|-------------------|----------|
| | Coeff | t-stat |
| Intercept | 0.011 | 2.07** |
| D _{it} | 0.006 | -0.02 |
| R _{it} | 0.009 | 0.25 |
| D _{it} *R _{it} | 0.025 | 2.82*** |
| BONUS _{it} | 0.011 | 8.99*** |
| D _{it} *BONUS _{it} | 0.021 | 0.27 |
| R _{it} *BONUS _{it} | 0.029 | 1.72* |
| D _{it} *R _{it} *BONUS _{it} | 0.097 | -1.71* |
| LEV _{it} | 0.013 | -2.37*** |
| D _{it} *LEV _{it} | 0.021 | 0.42 |
| R _{it} *LEV _{it} | 0.028 | 1.60 |
| D _{it} *R _{it} *LEV _{it} | 0.090 | 1.12 |
| | | |
| Adj-R2 (%) | 12.49 | |

Table 11 (Time period: 1993-2005) presents results of an asymmetric relation between earnings and returns that differs between cash compensation and equity-based compensation by separating total samples into two groups.

Model:

$$X_{ii} / P_{i,t-1} = \alpha_0 + \alpha_1 D_{ii} + \alpha_2 R_{ii} + \alpha_3 D_{ii} * R_{ii} + \alpha_4 CASH_{ii} + \alpha_5 D_{ii} * CASH_{ii} + \alpha_6 R_{ii} * CASH_{ii} + \alpha_7 D_{ii} * R_{ii} * CASH_{ii} + \varepsilon$$

$$(2)$$

$$X_{it} / P_{i,t-1} = \beta_0 + \beta_1 D_{it} + \beta_2 R_{it} + \beta_3 D_{it} * R_{it} + \beta_4 EQUITY_{it} + \beta_5 D_{it} * EQUITY_{it} + \beta_6 R_{it} * EQUITY_{it} + \beta_7 D_{it} * R_{it} * EQUITY_{it} + \varepsilon$$
(3)

| | Lower age | | | | Higher age | | | |
|--|-----------|------------|-------------|-------------------|--|---------|-------------|---------|
| | De | pendent va | ariable:X | $_{it}/P_{i,t-1}$ | Dependent variable:X _{it} /P _{i,t-1} | | | |
| | Pooled | | Pooled | | Pooled | | Pooled | |
| | regress | ions | regressions | | regressions | | regressions | |
| | Coeff | t-stat | Coeff | t-stat | Coeff | t-stat | Coeff | t-stat |
| Intercept | 0.028 | 7.70*** | 0.064 | 19.20*** | 0.041 | 5.50*** | 0.064 | 9.70*** |
| D _{it} | -0.011 | -1.74* | 0.007 | 1.18 | -0.010 | -0.87 | 0.046 | 2.26** |
| R _{it} | 0.011 | 1.21 | 0.036 | 3.63*** | -0.007 | -0.38 | 0.053 | 1.94* |
| D _{it} *R _{it} | 0.030 | 1.12 | 0.161 | 4.84*** | 0.083 | 1.41 | 0.268 | 1.79* |
| CASH _{it} | 0.034 | 4.52*** | | | 0.025 | 1.91* | | |
| D _{it} *CASH _{it} | 0.029 | 2.44*** | | | 0.053 | 2.13** | | |
| R _{it} *CASH _{it} | 0.034 | 1.64 | | | 0.071 | 1.60 | | |
| D _{it} *R _{it} *CASH _{it} | 0.145 | 2.52*** | | | 0.101 | 0.73 | | |
| EQUITY _{it} | | | -0.043 | -6.70*** | | | -0.022 | -1.64 |
| D _{it} *EQUITY _{it} | | | -0.008 | -0.72 | | | -0.064 | -2.22** |
| R _{it} *EQUITY _{it} | | | -0.017 | -0.98 | | | -0.064 | -1.38 |
| D _{it} *R _{it} *EQUITY _{it} | | | -0.138 | -2.45*** | | | -0.257 | -1.26 |
| | | | | | | | | |
| Adj-R ² (%) | 7.08 | | 7.33 | | 11.13 | | 10.67 | |

Table 12 (Time period: 1993-2005) presents results of an asymmetric relation between earnings and returns that differs between cash compensation and equity-based compensation by separating total samples into two groups.

Model:

$$X_{ii} / P_{i,t-1} = \alpha_0 + \alpha_1 D_{ii} + \alpha_2 R_{ii} + \alpha_3 D_{ii} * R_{ii} + \alpha_4 CASH_{ii} + \alpha_5 D_{ii} * CASH_{ii} + \alpha_6 R_{ii} * CASH_{ii} + \alpha_7 D_{ii} * R_{ii} * CASH_{ii} + \varepsilon$$

$$(2)$$

$$X_{it} / P_{i,t-1} = \beta_0 + \beta_1 D_{it} + \beta_2 R_{it} + \beta_3 D_{it} * R_{it} + \beta_4 EQUITY_{it} + \beta_5 D_{it} * EQUITY_{it} + \beta_6 R_{it} * EQUITY_{it} + \beta_7 D_{it} * R_{it} * EQUITY_{it} + \varepsilon$$
(3)

| | Lower tenure | | | | Higher tenure | | | | |
|--|--------------|------------|-----------|----------------------------|--|-----------------------|--------|-----------------------|--|
| | De | pendent va | ariable:X | $_{it}/\mathbf{P}_{i,t-1}$ | Dependent variable:X _{it} /P _{i,t-1} | | | | |
| | Pooled | | Pooled | Pooled regressions | | Pooled regressions | | Pooled regressions | |
| | regress | ions | regress | | | | | | |
| | Coeff | t-stat | Coeff | t-stat | Coeff | t-stat | Coeff | t-stat | |
| Intercept | 0.029 | 5.69*** | 0.061 | 11.97*** | 0.032 | 7.21*** | 0.066 | 17.45*** | |
| D _{it} | -0.010 | -1.19 | -0.001 | -0.09 | -0.012 | -1.56 | 0.020 | 3.27*** | |
| R _{it} | 0.001 | 0.06 | 0.042 | 2.71*** | 0.016 | 1.50 | 0.035 | 3.01*** | |
| D _{it} *R _{it} | 0043 | 1.19 | 0.129 | 2.66*** | 0.035 | 1.05 | 0.205 | 4.71*** | |
| CASH _{it} | 0.313 | 2.87*** | | | 0.032 | 3.74*** | | | |
| D _{it} *CASH _{it} | 0.027 | 1.59 | | | 0.036 | 2.52*** | | | |
| R _{it} *CASH _{it} | 0.053 | 1.63 | | | 0.029 | 1.23 | | | |
| D _{it} *R _{it} *CASH _{it} | 0.127 | 1.54 | | | 0.141 | 2.08** | | | |
| EQUITY _{it} | | | -0.038 | -4.06*** | | | -0.041 | -5.43*** | |
| D _{it} *EQUITY _{it} | | | 0.006 | 0.37 | | | -0.033 | -2.56*** | |
| R _{it} *EQUITY _{it} | | | -0.036 | -1.33 | | | -0.011 | -0.55 | |
| D _{it} *R _{it} *EQUITY _{it} | | | -0.063 | -0.81 | | | -0.222 | -3.03*** | |
| | | | | | | | | | |
| $\mathbf{Adj} \cdot \mathbf{R}^2(\%)$ | 5.92 | | 6.01 | | 9.35 | | 9.91 | | |

Table 13 (Time period: 1993-2005) presents results of an asymmetric relation between earnings and returns in cash compensation after including outlier observations.

Model:

$$X_{ii} / P_{i,t-1} = \alpha_0 + \alpha_1 D_{ii} + \alpha_2 R_{ii} + \alpha_3 D_{ii} * R_{ii} + \alpha_4 CASH_{ii} + \alpha_5 D_{ii} * CASH_{ii} + \alpha_6 R_{ii} * CASH_{ii} + \alpha_7 D_{ii} * R_{ii} * CASH_{ii} + \varepsilon$$

$$(2)$$

| | Pooled regressions | Pooled regressions | | |
|--|--------------------|--------------------|--|--|
| | Coeff | t-stat | | |
| Intercept | -0.006 | -0.23 | | |
| D _{it} | 0.0297 | 0.60 | | |
| R _{it} | 0.102 | 1.42 | | |
| D _{it} *R _{it} | -0.024 | -0.14 | | |
| CASH _{it} | 0.046 | 0.96 | | |
| D _{it} *CASH _{it} | 0.001 | 0.02 | | |
| R _{it} *CASH _{it} | -0.092 | -0.77 | | |
| D _{it} *R _{it} *CASH _{it} | 0.381 | 1.34 | | |
| | | | | |
| Adj-R2 (%) | 0.10 | | | |

Table 14 (Time period: 1993-2005) reports the results of two stage regressions which are adopted to address the potential endogeneity problem.

Models:

$$CASH_{ii} = \alpha_{0} + \alpha_{1} * SIZE_{ii} + \alpha_{2} * LEV_{ii} + \alpha_{3}EP_{ii} + \alpha_{4}TENURE_{ii} + \varepsilon$$

$$EQUITY_{ii} = \beta_{0} + \beta_{1} * SIZE_{ii} + \beta_{2} * LEV_{ii} + \beta_{3}EP_{ii} + \beta_{4}TENURE_{ii} + \varepsilon$$

$$X_{ii} / P_{i,i-1} = \alpha_{0} + \alpha_{1}D_{ii} + \alpha_{2}R_{ii} + \alpha_{3}D_{ii} * R_{ii} + \alpha_{4}CASH_{ii} + \alpha_{5}D_{ii} * CASH_{ii}$$

$$+ \alpha_{6}R_{ii} * CASH_{ii} + \alpha_{7}D_{ii} * R_{ii} * CASH_{ii} + \varepsilon$$
(2)

$$X_{it} / P_{i,t-1} = \beta_0 + \beta_1 D_{it} + \beta_2 R_{it} + \beta_3 D_{it} * R_{it} + \beta_4 EQUITY_{it} + \beta_5 D_{it} * EQUITY_{it} + \beta_6 R_{it} * EQUITY_{it} + \beta_7 D_{it} * R_{it} * EQUITY_{it} + \varepsilon$$
(3)

| | The first stage regressions | | | | The second stage regressions | | | |
|--|--|-----------|--|-----------|--|----------|--|----------|
| | Dependent variable:CASH _{it} | | Dependent variable:EQUITY _{it} | | Dependent variable:CASH _{it} | | Dependent variable:EQUITY _{it} | |
| | | | | | | | | |
| | Coeff | t-stat | Coeff | t-stat | Coeff | t-stat | Coeff | t-stat |
| Intercept | 0.895 | 39.59*** | 0.251 | 10.02*** | 0.046 | 29.68*** | 0.046 | 29.64*** |
| SIZE _{it} | -0.037 | -23.31*** | 0.022 | 12.54*** | | | | |
| LEV _{it} | 0.174 | 11.54*** | -0.199 | -11.92*** | | | | |
| EP _{it} | 0.426 | 14.44*** | -0.046 | -14.08*** | | | | |
| TENURE _{it} | 0.0001 | 5.54*** | -0.0002 | -5.55*** | | | | |
| D _{it} | | | | | 0.003 | 1.03 | 0.003 | 1.29 |
| R _{it} | | | | | 0.023 | 5.45*** | 0.023 | 5.52*** |
| D _{it} *R _{it} | | | | | 0.112 | 10.90*** | 0.116 | 11.28*** |
| CASH _{it} | | | | | 0.006 | 0.75 | | |
| D _{it} *CASH _{it} | | | | | 0.033 | 2.53*** | | |
| R _{it} *CASH _{it} | | | | | 0.012 | 0.60 | | |
| D _{it} *R _{it} *CASH _{it} | | | | | 0.286 | 5.85*** | | |
| EQUITY _{it} | | | | | | | -0.013 | -1.92* |
| D _{it} *EQUITY _{it} | | | | | | | -0.016 | -1.32 |
| R _{it} *EQUITY _{it} | | | | | | | -0.001 | -0.04 |
| D _{it} *R _{it} *EQUITY _{it} | | | | | | | -0.295 | -6.66*** |
| | | | | | | | | |
| Adj-R²(%) | 8.02 | | 4.66 | | 6.45 | | 6.79 | |

APPENDIX

Items of Industry

| Name | SIC code |
|-----------------------------|-----------|
| Agriculture | 0100-0999 |
| Mining and Construction | 1000-1999 |
| Food | 2000-2111 |
| Textiles / Publishing | 2200-2799 |
| Chemicals / Pharmaceuticals | 2800-2999 |
| Manufactures | 3000-3999 |
| Transportation / Utilities | 4000-4999 |
| Retail | 5000-5999 |
| Services | 7000-8999 |
| Others | |