

MARY FRANCES CALEGARI

An Empirical Investigation of the Consequences to CEOs of Reporting Losses
(Under the direction of JENNIFER J. GAVER)

This dissertation examines the consequences to CEOs of reporting losses, including reductions in pay, shifts in the composition of pay, and job termination. The first hypothesis relates current and prior year accounting performance to the level of CEO cash bonus and stock-based incentive compensation. Distinctions are made between current and prior period performance, and profit and loss years. The second hypothesis predicts a shift from cash-based to stock-based pay in loss periods. The third hypothesis proposes that the rate of CEO turnover in the year subsequent to a loss is greater than the turnover rate in the year prior to the loss.

The empirical results are generally consistent with the hypotheses. I find a significant positive association between current period CEO cash bonus and stock-based awards and current year profits. However, there is no relation between cash bonuses and earnings in loss years. This result is primarily due to CEOs not receiving cash bonuses when a loss is reported. Additionally, I find a significant increase in the stock-based proportion of incentive pay after a loss is reported. A significant negative association is found between cash bonus and prior year losses and a positive relation is found between stock-based awards and prior year profits. Finally, I find that CEO turnover subsequent to a loss is significantly higher than prior to the loss when the firm reports profits.

In sum, the evidence in this dissertation suggests that there are discernible consequences to a CEO who reports a loss.

INDEX WORDS: Executive Compensation, CEO, Losses, Turnover

AN EMPIRICAL INVESTIGATION OF THE CONSEQUENCES TO CEOS OF
REPORTING LOSSES

by

MARY FRANCES CALEGARI

B.B.A., University of Hawaii, 1983

M.Acc., University of Hawaii, 1985

A Dissertation Submitted to the Graduate Faculty of The University of Georgia in Partial
Fulfillment of the Requirements for the Degree

DOCTOR OF PHILOSOPHY

ATHENS, GEORGIA

2001

© 2001

Mary Frances Calegari

All Rights Reserved.

AN EMPIRICAL INVESTIGATION OF THE CONSEQUENCES TO CEOS OF
REPORTING LOSSES

by

MARY FRANCES CALEGARI

Approved:

Major Professor: Jennifer J. Gaver

Committee: Benjamin C. Ayers
Paul A. Copley
Kenneth M. Gaver
Silvia A. Madeo

Electronic Version Approved:

Gordhan L. Patel
Dean of the Graduate School
The University of Georgia
December 2001

ACKNOWLEDGMENTS

This dissertation represents the achievement of a lifelong goal to obtain a doctorate degree. The attainment of this goal would never have been possible without the support and guidance of my advisory committee, friends, family, and husband.

I will be forever grateful for the support and guidance of my advisory committee: Jennifer Gaver, Benjamin Ayers, Michael Bamber, Paul Copley, Kenneth Gaver, and Silvia Madeo. I especially want to distinguish Jenny Gaver, my dissertation chair, who taught me how to think clearly, to keep things simple, and to write like an academic. She spent numerous hours reviewing countless drafts of this document with extraordinary kindness and goodwill. She also provided much appreciated advice and encouragement in my personal struggles. She is truly a wonderful mentor and great friend. I also appreciate the encouragement of my fellow students Aamer, Betsy, Cheryl, Dahlia, Danny, Lillian, and Suzanne.

I am eternally indebted to my parents who have taught me the value of hard work, perseverance, and faith. I also could never have accomplished this without the love and support of my devoted husband, Michael. His continuous prodding and encouragement provided me the needed motivation to finish what I had started. Finally, I want to thank my Lord and Savior for giving me the ability and strength to achieve my lifelong goal.

TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS.....	iv
CHAPTER	
1 INTRODUCTION.....	1
1.1 Motivation.....	1
1.2 Research Hypotheses	4
1.3 Summary of Results	4
1.4 Contribution of the Study.....	5
1.5 Organization of the Study	6
2 LITERATURE REVIEW	8
2.1 The Characteristics of Executive Compensation Contracts	8
2.2 The Relation Between Executive Compensation and Firm Performance	14
2.3 The Impact of Accounting Losses on CEO Compensation.....	21
2.4 CEO Compensation in Financially Distressed Firms.....	28
2.5 Summary of Empirical Research on Executive Compensation and the Contribution of the Study.....	31
3 HYPOTHESIS DEVELOPMENT	33
3.1 Consequences of Reporting an Accounting Loss.....	33
3.2 The Relation Between CEO Incentive Compensation and Current and Prior Year Earnings.....	34

3.3	Change in the Structure of the CEO Pay Package Following a Loss.....	37
3.4	CEO Turnover Subsequent to a Reported Loss	38
4	DATA AND SAMPLE SELECTION.....	40
4.1	Sample Selection and Variable Definitions	40
4.2	Number of Losses Reported in the Sample Period	41
4.3	Distribution of Losses by Industry and Firm.....	42
4.4	Comparison Between the Loss Firms and Profit Firms	46
4.5	Comparison Between Firms with 1-2 Losses and 3 or More Losses	48
4.6	Conclusion	51
5	RESEARCH DESIGN AND RESULTS	52
5.1	Tests of the Relation Between CEO Incentive Compensation and Accounting Performance.....	52
5.2	Test for Changes in CEO Incentive Pay Structure Following a Loss	67
5.3	Test of CEO Turnover Subsequent to a Loss.....	70
5.4	Summary of Results	71
6	CONCLUSION	74
6.1	Summary	74
6.2	Contributions of the Study	76
6.3	Implications and Directions for Future Research.....	77
	REFERENCES.....	79

CHAPTER 1

INTRODUCTION

This chapter develops the motivation for the dissertation and discusses the research hypotheses. It also reviews the study's primary results and contributions to the literature. Finally, the chapter presents an overview of the structure of the paper.

1.1 Motivation

The association between executive pay and firm performance has long been of interest to both accounting researchers and practitioners. Criticism of the level of executive compensation and the degree to which it is justified by firm performance abounds in the popular press.¹ Despite this, numerous academic studies document a significantly positive association between pay and performance, defined both in terms of accounting earnings and stock price (Hirschey and Pappas 1981; Murphy 1985; Gibbons and Murphy 1990; Jensen and Murphy 1990; Hubbard and Palia 1995). An important caveat to these studies, however, is that they all utilize samples of large, predominantly profitable firms. Thus, the results may not be generalizable to smaller firms experiencing losses.

¹ *The New York Times* (1998) reports average annual return on investment for corporations during 1993-1997 was 19.2 percent but executives' pay increased an average of 38.1 percent per year during that time period. *Managed Healthcare* (1998) reports that despite declines posted by the managed care industry in 1997, top paid HMO industry executives saw compensation increase significantly that year.

Recent studies suggest that the relation between cash compensation (salary plus bonus) and earnings is not symmetrical in gains and losses. Dechow et al. (1994) indicate that, not only is chief executive officer (CEO) cash compensation shielded from restructuring charges, but executives actually earn a premium in restructuring years. Similarly, Gaver and Gaver (1998) find that gains flow through to compensation, but losses do not. In addition, Matsunaga and Park (2001) find that the CEO's cash bonus is not adversely affected by reported quarterly losses. This result is surprising since the earnings management literature suggests that managers manipulate earnings to avoid losses. For example, Hayn (1995) and Burgstahler and Dichev (1997) document that CEOs engage in earnings manipulation to help them cross the "positive earnings line" for the year. If losses do not negatively affect CEO cash pay, this behavior is only rational if executives anticipate decrements in non-cash forms of compensation or eventual termination.

Boschen and Smith (1995) provide a potential explanation for the finding that current period losses do not impact current CEO pay. They find a weak contemporaneous response of compensation to firm performance, followed by larger responses in subsequent periods. Thus executives might receive a raise in a year of poor performance because the prior year's performance was good. However, an important consideration in interpreting the results of Boschen and Smith, Dechow et al., Gaver and Gaver, and Matsunaga and Park is that the firms in these studies are large and generally profitable. The impact of persistent losses on CEO pay has not been examined.

The purpose of my study is to conduct a thorough examination of the consequences to CEOs of reporting losses. If pay is sensitive to performance, then there

should be discernible consequences to a CEO who reports a loss. This could be manifested as a reduction in pay, a shift in the composition of the compensation package, or termination of the executive. On the other hand, the CEO may not suffer any negative consequences if the loss is considered a temporary aberration or a necessary detour on a generally positive path. Prior research provides only limited insight into the implications of accounting losses for the CEO. One reason is that most previous studies limit the definition of compensation to cash awards (salary plus bonus), and therefore do not document shifts in the contract between cash compensation and stock-based awards. Another reason (as previously stated) is that most studies limit samples to large, generally profitable firms that only infrequently report losses.

I examine the effect of losses on the CEO using a sample of 588 firms in the ExecuComp database that report at least one loss during 1992 through 1997. I investigate how accounting losses can affect the level of the CEO's incentive compensation (cash bonus and stock-based awards), the structure of the CEO's pay package, and the likelihood of the CEO's dismissal. This study adds to the prior literature in several ways. First, my sample is a unique set of firms that has not been previously studied. Second, I use a more expansive definition of compensation which incorporates both cash-based and stock-based incentive awards. Third, I document the incidence of CEO turnover around the year of the loss. Finally, I examine the relation between current period CEO incentive compensation and current and *prior* year performance.

1.2 Research Hypotheses

Three research hypotheses are investigated in this dissertation. The first hypothesis relates accounting performance to the level of CEO cash bonus and stock-based incentive compensation. Distinctions are made between current and prior period performance, and profit and loss years. The second hypothesis investigates the structure of the CEO compensation package. It predicts shifts from cash-based to stock-based incentive pay in loss years. The third hypothesis examines the rate of CEO turnover subsequent to a reported loss, with a predicted increase in turnover for loss firms.

1.3 Summary of Results

This dissertation provides evidence that there are discernible consequences to a CEO who reports a loss. First, the relation between CEO incentive pay and accounting performance in loss years is significantly reduced when compared to profitable years. Second, there is a shift from cash-based to stock-based incentive awards. Third, there is a higher probability of CEO termination.

Current period CEO cash bonus and stock-based awards are found to be positively related to profits. However, contrary to the findings of Dechow et al. (1994) and Gaver and Gaver (1998), there is no relation between cash bonuses and earnings in loss years. This result is because the CEOs' bonuses are often cut when accounting earnings is negative.² The corollary to the decrease in bonus pay is an increase in the stock-based

² Similar findings have been reported in the popular press. *The New York Times* (2001) reports that Chrysler did not pay bonuses in fiscal year 2000 after suffering deep losses in that year. Also, The Ford Motor Company announced that it would not pay bonuses to its managers (including its CEO) in fiscal year 2001, after reporting a loss in the second quarter of 2001 of \$550 million.

proportion of incentive pay in loss years. This is consistent with the study's finding that the stock-based proportion of incentive pay increases substantially after a loss is reported.

The relation between current period CEO incentive pay and *prior* period performance is also found to be significantly dampened in loss years compared to profitable years. Current period cash bonus is not related to prior year profits. However, it is *negatively* related to prior year losses. In contrast, a positive association is found between stock-based awards and prior year profits, but no relation is found for prior year losses. An interpretation is that CEOs receive an increase in their cash bonuses in the year following a loss as a reward for changing the firm's financial status from unprofitable to profitable. This suggests a shift from stock-based awards to cash-based pay when there is a loss in the prior year. Finally, the study documents that CEO turnover is significantly higher following a loss. In sum, this dissertation presents evidence that there are negative consequences to reporting losses, both in the form of reduced cash bonuses and an increased likelihood of dismissal.

1.4 Contribution of the Study

The results of this study contribute to the accounting literature in several ways. First, my sample is distinct from the set of large, profitable firms that are the focus of most prior studies. Second, while most researchers have limited their attention to the cash compensation (salary plus bonus) of CEOs, my analysis expands the definition of executive pay to include both the cash-based and stock-based components of CEO incentive compensation. Gilson and Vetsuypens (1993) find that reductions in CEO cash remuneration prior to bankruptcy or debt restructuring are often made up with grants of

stock or stock options. This highlights the importance of considering both the cash-based and stock-based components of the incentive pay package, rather than limiting the focus to cash compensation.

As a third contribution, my paper documents the incidence of executive turnover around the year of the loss. Gilson and Vetsuypens (1993) find that approximately one-third of the CEOs in their sample of firms that file for bankruptcy or restructure their debt are replaced, with contracts differing significantly between new and incumbent managers. Therefore, turnover must be carefully controlled when investigating any changes in CEO pay packages around the time that losses are reported. Finally, my study examines the relation between current year CEO incentive pay and current and *prior* year accounting earnings. This differs from most prior work which investigates the contemporaneous effect of accounting performance on compensation.³

1.5 Organization of the Study

The remainder of the study is organized as follows. Chapter Two reviews the empirical research on executive compensation and details the contribution of this study to the literature. Chapter Three develops the three research hypotheses of the study. Chapter Four describes the database, sample selection process, and variables used in the study. The chapter also presents descriptive statistics for the database and sample firms used in the empirical analyses. Chapter Five describes the research design and presents

³ Boschen and Smith (1995) find that looking at the contemporaneous-only pay-performance relation is likely to underestimate the total sensitivity of pay to performance. Their findings suggest that compensation is affected by performance in the current and *prior* periods.

the results of the hypotheses tests. Finally, Chapter Six summarizes the results and discusses the implications of the research.

CHAPTER 2

LITERATURE REVIEW

This chapter reviews empirical research on executive compensation. I begin by describing the characteristics of executive compensation contracts. This is followed by a review of empirical findings on the relation between executive pay and firm performance. Next I discuss research on the impact of isolated accounting losses on executive compensation in large and predominantly profitable firms. Then I review the findings on executive compensation in financially distressed firms that are generally small, highly levered, and unprofitable. I conclude with a summary of the chapter and the contributions of my study.

2.1 The Characteristics of Executive Compensation Contracts

The conflict of interest between shareholders and managers is a classic example of a principal-agent problem. Managerial actions and investment opportunities are not observable by shareholders. Shareholders are not knowledgeable of what options are available to managers or which of these options will increase shareholder wealth. Agency theory predicts that companies will use executive compensation plans to align the incentives of the firm's managers with those of the shareholders (Smith and Watts 1982). An effective pay package minimizes the costs of the agency relationship between managers

and shareholders (Jensen and Meckling 1976; Smith and Watts 1982; Lambert and Larcker 1987). Compensation arrangements are diverse, encompassing such elements as salary, short-term incentive bonus plans, deferred compensation, stock options, stock appreciation rights, restricted stock, and long-term incentive performance plans. A major motivation for the creation of these components is the solution of different aspects of shareholder-manager conflicts of interest; such as differences in risk preferences and planning horizons. The risk aversion problem arises when the manager's pay is a fixed claim on the firm. This aligns the manager's preferences with bondholders, rather than shareholders. The most common component of executive compensation plans is a pre-specified salary. While managerial salaries vary with past performance (usually accounting profits), they are not formally tied at the beginning of a compensation period to the firm's performance in that period (Smith and Watts 1982). Because a salary is essentially a fixed claim on the firm's cash flows, a manager paid only a salary will tend to be more risk averse than is optimal in making investment decisions. To control the manager's risk aversion, compensation plans include provisions with positive incentives to increase risk, such as stock options. Stock options encourage managers to be more risk tolerant because the value of the option is an increasing function of the variability of the firm's underlying cash flows. However, since managerial actions are typically not observable by shareholders, these plans tie compensation to some observable measure of firm performance, such as stock price or accounting profits.

The horizon problem occurs when the executive's anticipated tenure with the firm is shorter than the firm's optimal investment horizon (Smith and Watts 1982; Dechow and Sloan 1991; Ittner et al. 1997; Baber et al. 1998). Deferment provisions included in

compensation plans (such as deferred payments under bonus and performance plans, stock options, stock appreciation rights, and restricted stock) are used to control the horizon problem.

Incentive plans formally tie compensation ex ante to performance. Performance can either be defined in terms of accounting results or stock price. The most common type of accounting-based incentive plan is the bonus plan. Under a bonus plan the executive is rewarded at year end on the basis of accounting measures of performance for that year, such as operating income, income before taxes, net income, earning per share, return on assets, and return on equity (Ittner et al. 1997). The bonus plan specifies a schedule of allowable contributions to the bonus pool. The schedule normally indicates a minimum level of accounting profits which must be reached before anyone in the firm can receive a bonus award. The plan also determines the allowable fraction of the excess of earnings over the minimum which can be transferred to the bonus pool. Some plans may also specify a cap on bonus contributions as a function of dividend payments. The compensation committee determines the contribution to the pool, subject to the constraints of the plan. From the bonus pool, the compensation committee makes awards to individual managers (Smith and Watts 1982; Healy 1985).

Performance plans are another type of incentive plan tied to accounting results. These plans focus on longer-term, rather than annual accounting results. Performance plans award managers the value of performance units or shares in cash or stock if certain long-term (three to five years) earnings targets are attained. The earnings targets, which are established at the beginning of the award period, are typically stated in terms of earnings per share, return on total assets, or return on equity. In a performance unit plan,

each executive is allocated a given number of units of fixed dollar value at the start of the award period. At the end of the period, the executive's compensation is the number of units "earned out" times the fixed value per unit. The proportion of the number of allocated units which are "earned out" depends on the extent to which the performance goal is achieved over the award period. Performance shares are similar to performance units except instead of being allocated units of fixed value, the executive is allocated a number of performance shares at the beginning of the award period (Smith and Watts 1982).⁴ Compensation under bonus plans and performance plans depends on reported accounting profits. With performance share plans, compensation is a joint function of accounting earnings and stock price.

Alternatively, the firm can tie the executive's pay to stock price. Compensation arising from stock options, SARs, and restricted stock depends on the market value of the firm's shares. Stock options allow the executive to purchase a given number of the firm's shares at any time within a certain period (exercise period). Option plans restrict both the total number of options which can be granted in aggregate to executives and the total number that can be granted to any one individual over the life of the plan. The exercise price is typically equal to the stock price at the date the option is granted (at-the-money). Although the maximum exercise period of stock options is usually ten years, the actual time before exercise most often ranges from two to eight years, with exercise occurring, on average, sometime in the fifth year after grant (Austin et al. 1998). The option usually terminates if the executive leaves the company prior to exercise (Smith and Watts 1982;

⁴ The executive's compensation is the number of shares "earned out" times the market value of the shares at the end of the award period. Unlike performance units, performance shares cause compensation to also be affected by the change in stock price over the award period (Smith and Watts 1982).

Murphy 1998; Bryan et al. 1999). Stock appreciation rights (SARs) are usually offered by companies along with options. Under a SAR, executives may choose to give up their options and receive the difference between the stock price and the exercise price (the appreciation). Allowing managers to choose between options and rights enables them to reduce transactions costs associated with exercising options and selling shares if they want cash (Smith and Watts 1982). Under a restricted stock plan, a company awards a fixed quantity of shares to executives subject to restrictions on their resale or transfer. These restrictions are removed when the shares are “earned out” (eg., when the executive has worked for a specified period following the grant of the shares). Restricted stock awards generally have a forfeiture clause invalidating the award if the executive leaves the firm (voluntarily or involuntarily) before the restrictions lapse (Smith and Watts 1982; Krole 1997; Bryan et al. 1999).

Managers whose horizons are short because they are considering retiring or leaving the firm for other employment will be influenced by deferment provisions included in compensation plans. Stock option plans, SAR plans, and restricted stock plans carry the threat of forfeiture if the executive leaves the firm before the date of the exercise of the option or right, or the date of removal of the restrictions on the stock. Deferred payments under bonus plans and performance plans are forfeited if the manager leaves the firm or is fired. Deferral of compensation with the threat of forfeiture reduces the probability that the manager will cheat or steal from the firm and increases the incentive to be efficient (Smith and Watts 1982).

The value of a firm is traditionally measured as the present value of the firm’s expected cash distributions to its owners. When a risk-averse manager, compensated

with a fixed salary, faces a choice between two positive net present value projects, principal-agent theory predicts that she will select the project that reduces the volatility of the firm's cash flows (even if that project has a lower net present value) because this increases the value of her fixed claim. However, this is a suboptimal choice from the perspective of the shareholders. To control the manager's risk aversion, compensation plans include provisions with positive incentives to increase volatility. The expected payoff from a stock option increases with the volatility of the stock price. Thus, stock options or SARs provide the manager with incentives to invest in projects that increase the volatility of the firm's cash flows. By specifying minimum earnings targets, bonus and performance plans also have option-like characteristics that provide managers with incentives to increase the volatility of the cash flows. These incentives can offset the manager's natural risk aversion (Smith and Watts 1982). However, a manager who expects a stock option to finish "in-the-money"⁵ may act to reduce the variability of the stock price in an attempt to "bank" the value of the award (Campbell and Wasley 1999). In-the-money bonus and performance plans can have similar effects. Specifically, Larcker (1983) points out that risk-reducing strategies can occur following the adoption of an option-type plan if performance goals can be easily achieved. In essence, managers adopt cautious investment strategies to protect what they view as virtually certain payoffs from the performance plan (Gaver and Gaver 1993).

A disadvantage of pay packages based exclusively on stock price performance is that stock price variation is affected by factors outside of the executive's control, such as monetary policy, tax laws, or other political events. The more sensitive the firm's stock

⁵ The option is said to be "in-the-money" when the stock price exceeds the exercise price.

price to market-wide movements, the more serious the potential problem. A more efficient scheme combines stock-related compensation components with salary or other cash-based forms of compensation tied to performance that is more controllable by the manager, such as accounting profits (Coughlan and Schmidt 1985). Empirically, firms use both stock-price-based incentives and accounting-earnings-based incentives. Sloan (1993) finds that earnings are less sensitive to the market-wide noise in stock prices. As a result, earnings is incrementally useful in executive compensation contracts because it helps shield executive compensation from market-wide fluctuations in equity values.

In summary, executive compensation packages contain diverse components, including salary, bonus plans, stock options, SARs, restricted stock, and long-term performance plans. These plans are directly or indirectly affected by various measures of firm performance. Managerial salaries vary with past performance, incentive plans (such as bonus plans and performance plans) are formally tied ex ante to firm performance, and stock option plans are affected by stock price performance. Multiple compensation components are used to address shareholder-manager agency conflicts related to differential horizon and risk preferences. The fact that most payments are tied to firm performance suggests a positive relation between executive pay and firm performance. Empirical evidence on this relation is examined in Section 2.2.

2.2 The Relation Between Executive Compensation and Firm Performance

Managerial pay (more specifically, CEO pay) has come under increasing scrutiny in the popular press. CEO compensation is often criticized on the grounds that it is exorbitant and that pay increases in recent years have not been matched by firm

performance. Much of the evidence supporting these criticisms is anecdotal. For example, *The Washington Post* (1997) reports that the average salary and bonus for CEOs rose 39 percent in 1996, which is well above the 11 percent gain in corporate profits and the 23 percent rise in the Standard and Poor's 500-stock index for the same year. William M. Mercer Inc., in a study commissioned by the *Wall Street Journal*, finds that the 11.7 percent annual increase in the median CEO cash compensation package in 1997 outpaced the average corporate profit increase of 8.9 percent for the same year (*Sacramento Bee* 1998). *The New York Times* (1998) observes that the average annual return on investment for corporations during 1993-1997 was 19.2 percent while executives' pay increased an average of 38.1 percent per year during that time period. *Managed Healthcare* (1998) reports that despite declines posted by the managed care industry in 1997, top paid HMO industry executives saw compensation increase significantly that year.

Despite the above criticism, numerous academic studies document a significantly positive association between pay and performance, defined both in terms of stock price and accounting earnings (Hirschey and Pappas 1981; Murphy 1985; Gibbons and Murphy 1990; Jensen and Murphy 1990; Hubbard and Palia 1995). The most widely used measure of executive compensation in academic research is CEO cash compensation (salary plus bonus) because this data is relatively accessible from the *Forbes* annual CEO compensation surveys.⁶ Most firms reported executive salary and bonus pay as a lump

⁶ The *Forbes* annual CEO compensation survey reports salary and bonus data (obtained from the firm's proxy statements) for CEOs of firms in any of their top 500 listings (top 500 in terms of assets, sales, market value or net income).

sum amount until 1992, when the SEC required salary and bonus components to be disclosed separately.

Early pay-performance studies examine two alternative explanations for the level of executive pay. The sales maximization hypothesis (Baumol 1967) asserts that with increased separation of owners and managers, a manager is less constrained to act in the interest of owners, and acts more in her own self-interest. Managers accomplish this by maximizing the total sales revenues (a proxy for firm size) of a firm rather than the value of the firm (Pavlik et al. 1993). Alternatively, pay levels may be more strongly influenced by firm performance as measured by total corporate revenues or accounting profits. Lewellen and Huntsman (1970) collect data for fifty firms from *Fortune's* list of the 500 largest industrials, and examine the cross-sectional relation between CEO compensation (defined as salary plus bonus payments) and firm performance at three-year intervals from 1942 through 1963. They regress compensation on reported total after-tax profits and total sales revenues, and find that for each three-year interval, CEO cash pay is positively and significantly related to after-tax accounting profits, but not to sales.

Deckop (1988) extends the Lewellen and Huntsman study by investigating the ten largest firms (measured in volume of sales or revenue) in twelve industries over a period of five years (1977-1981).⁷ Using a pooled cross-section, time series estimation with fixed effects, he measures the effect of sales and accounting net income on CEO salary plus bonus. Similar to Lewellen and Huntsman (1970), Deckop finds that contemporaneous net income is highly significant and positively related to CEO cash

⁷ To be included in the sample, the firm had to have the same CEO in place throughout the five-year period. Therefore, Deckop's sample is biased toward larger firms and firms whose CEOs had a tenure of five years or more.

compensation, but sales is not. Culpan et al. (1992) add to these results by investigating the determinants of executive compensation in the service sector using a sample of 170 service industry firms listed in *Business Week Top 1000* (1989) and *Business Week: The Corporate Elite* (1989). They regress CEO salary plus bonus for 1989 on accounting profits for the total sample and for each of the two subgroups of banking and utilities firms. The results, both for the total sample and for each of the subgroups, indicate that accounting profits has a positive and significant effect on CEO cash pay. Thus, the empirical evidence generally indicates that accounting profits (either before-tax or after-tax) is positively and significantly associated with CEO cash remuneration, and this relation is consistent across industries.

The objective of shareholders is to maximize firm value. If executive compensation is used to align the interests of managers with shareholders, then stock-price-based incentives would appear to dominate earnings in providing for incentive alignment. However, firms use both stock-price-based incentives and accounting-earnings-based incentives. The most common reason advanced by executives and compensation consultants to explain the popularity of earnings in executive compensation contracts is that earnings reflect factors that are more under the control of the executive (Sloan 1993). Barro and Barro (1990) examine the relation between CEO compensation and performance for 83 large commercial banks over the period 1982-1987. They find that the growth rate of real compensation (CEO salary plus bonus) is positively related to contemporaneous and lagged real rate of return to shareholders and the change in accounting-based real rate of return. When all three measures of firm performance are included in the regression analysis, the accounting-based return achieves the highest level

of significance. Jensen and Murphy (1990) estimate pay-performance sensitivity by following all 2,213 CEOs listed in the *Forbes* compensation survey from 1974 to 1986. They find a significantly positive association between the change in CEO salary plus bonus and both the change in shareholder wealth and the change in accounting profits. Similar to Barro and Barro (1990), Jensen and Murphy find that when both performance measures are included in the analysis, the change in accounting profits has the highest level of significance. They also find that explanatory power increases when the accounting measure is added to the pay-performance equation (which includes only shareholder wealth) indicating that changes in accounting income is an important determinant of pay changes.

Although almost all firms use both accounting and stock-based performance measures in executive compensation contracts, the emphasis on each varies considerably across firms. Theory suggests that the relative weight assigned to a performance measure in a compensation contract is an increasing function of its “signal-to-noise” ratio with respect to the agent’s actions (Holmstrom 1979; Lambert and Larcker 1987). Lambert and Larcker (1987) empirically investigate whether the relative use of security market and accounting measures of performance in executive compensation is related to the level of “noise” inherent in the two performance measures and the “sensitivity” of these measures to managerial actions. Their sample consists of firms from the *Forbes* annual compensation survey for the period 1970-1984. Lambert and Larcker regress the change in executive cash compensation on the change in return on equity and the level of security market return. Consistent with other research, their results suggest that CEO cash remuneration is more highly associated with changes in accounting return than with levels

of security market return. They also find that firms place less importance on market returns (relative to return on equity) in the cash compensation contract when market return is of more importance in the other components of the CEO's wealth (such as stock ownership). This suggests that the overall structure of the CEO's wealth plays a role in the design of each component of the CEO's compensation. Non-cash components of compensation have an important influence on the level of salary and bonus paid to an executive. All components of the compensation package should therefore be considered in a thorough analysis of the pay-performance relation.

The above results are supplemented by Sloan (1993). He relates compensation data from the *Forbes* annual CEO compensation surveys for the years 1970 through 1988 to stock price and two different measures of accounting performance (change in earnings per share and change in return on assets). Sloan finds that earnings provide incremental explanatory power over stock price in compensation regressions and argues that earnings help shield executive pay from market-wide fluctuations in equity values. Further, CEO cash pay (salary plus bonus) is more sensitive to earnings performance relative to stock-price performance when stock returns are noisy relative to earnings, and when the correlation between the noise in stock returns and the noise in earnings is low. This suggests that the role of accounting earnings in compensation contracts is to shield executive pay from market-wide movements in equity values, while simultaneously providing CEOs with incentives to maximize firm value.

More recent studies investigate the relation between different components of executive compensation (cash and non-cash pay) and accounting and stock performance. Baber et al. (1996) use a more comprehensive definition of executive compensation than

that used in most prior studies. The reporting requirements imposed by the SEC in 1992 expand executive compensation disclosures permitting Baber et al. (1996) to obtain reasonably accurate values for stock option and restricted stock grants, and long-term incentive payments. Baber et al. (1996) examine changes in compensation paid to CEOs of 1,249 publicly-traded U.S. firms for 1992 and 1993. Several measures of compensation are used: base salary, cash bonus, salary plus bonus, all other incentive pay components (non-cash pay such as stock options and restricted stock), and total compensation. The authors posit that the sensitivity of CEO compensation to performance measures varies with the firm's investment opportunity set. Consistent with prior research, Baber et al. (1996) find a significant and positive relation between cash compensation (cash bonus and salary plus cash bonus) and both accounting return and stock return. When the definition of compensation is expanded to include incentive payments (stock options, restricted stock, and long-term incentive plan payouts), compensation is found to be significantly and positively related to stock return and the interaction of stock return with investment opportunities, but not related to accounting return. In summary, cash-based pay (salary and cash bonus) is positively associated with both accounting-based and stock-based performance measures but not with investment opportunities. When compensation is defined as stock-based awards, a positive relation is found between compensation and stock return and this relation varies with the firm's investment opportunities. However, no association is found between stock-based compensation and accounting return.

In subsequent work, Baber et al. (1998) investigate whether the sensitivity of compensation to earnings varies directly with earnings persistence.⁸ The sample consists of the 1992 and 1993 compensation paid to CEOs of 713 firms. Contractual arrangements that base pay on the permanent component of earnings help mitigate the horizon problem by encouraging managers to look beyond the current-period earnings. Similar to Baber et al. (1996), they address four specifications of compensation: cash bonus; cash salary plus cash bonus; stock-based compensation (the value of stock options, stock appreciation rights, phantom stock, and restricted stock); and the sum of cash salary, cash bonus, and stock-based compensation. Consistent with the results of the prior study, they document a positive association between CEO cash compensation (salary plus bonus) and both accounting profits and stock performance. When earnings persistence is added to the analysis, Baber et al. (1998) find that the strength of pay-for-performance relations between CEO salary and bonuses and accounting performance increases with measures of earnings persistence. However, this finding does not apply to stock-based compensation such as stock options and restricted stock.

In summary, despite charges in the popular press that executive compensation is not associated with firm performance, decades of academic research provide strong empirical evidence that executive compensation (particularly CEO cash compensation) is positively related to firm performance, measured in terms of stock price and accounting profits. An important caveat to these studies, however, is that they all analyze samples of

⁸ Baber et al. (1998) adopt an IMA (1,1) time-series characterization of earnings which facilitates empirical specification of both earnings innovations and earnings persistence (Beaver 1970; Beaver et al. 1980; Ali and Zarowin 1992).

large, predominantly profitable firms. The results may not be generalizable to smaller firms experiencing losses.

2.3 The Impact of Accounting Losses on CEO Compensation

Initial evidence on the impact of accounting losses on compensation is provided by Dechow et al. (1994), who investigate a sample of 182 restructuring charges recorded by 91 *Fortune* 500 firms between 1982 and 1989. Restructuring charges typically have a material impact on reported income. In their sample, the mean ratio of restructuring charges to pre-restructuring earnings⁹ is 80 percent. Dechow et al. perform firm-specific regressions of CEO cash pay (salary plus bonus) on pre-restructuring charge income and restructuring charges. Consistent with prior research, they find the coefficient on pre-restructuring charge income to be positive and significant. Surprisingly, they also find the coefficient on restructuring charges (a negative item) to be negative and significant. This suggests that not only is executive cash compensation shielded from these large charges to income, executives actually are rewarded for recording restructuring charges. Dechow et al. posit that additional compensation is required to offset the CEO's reluctance to restructure their firms. While restructurings may increase shareholder value, they typically involve reducing firm size and laying off employees, and it is likely that these actions do not receive positive weights in most CEOs' utility functions.

Another study which examines the effect of losses on CEO compensation is Gaver and Gaver (1998). They regress CEO cash compensation (salary plus bonus) on above the line earnings (earnings before extraordinary items and discontinued operations),

below the line items that increase income (gains), and below the line items that decrease income (losses). The sample consists of 376 firms which are represented in the *Forbes* annual CEO compensation surveys from 1970 through 1996. Gaver and Gaver find that above the line profits and below the line gains are significantly positively related to cash compensation, but below the line losses are not. Importantly, they observe a significantly negative coefficient on above the line losses. This result echoes the puzzling finding of Dechow et al. that executives are rewarded for negative earnings items.

In a more recent study, Matsunaga and Park (2001) investigate the effect of reporting quarterly losses on the CEO's annual bonus. They regress the change in the CEO's annual cash bonus (scaled by prior year's salary) and dummy variables representing the frequency with which the firm missed quarterly earnings benchmarks (i.e., the quarterly analyst forecast, earnings in the same quarter of the prior year, and quarterly losses). Matsunaga and Park find a significant incremental adverse effect on CEO annual cash bonuses when the firm's quarterly earnings fall short of the analyst forecast or the earnings for the same quarter of the prior year. However, they find that the relation between the bonus and the number of loss quarters is not significant. This result parallels the findings of Dechow et al. and Gaver and Gaver that CEO cash compensation is not adversely affected by losses.

The results of Dechow et al., Gaver and Gaver, and Matsunaga and Park provide a perplexing counterpoint to the general conclusion in the accounting literature that executive compensation is sensitive to firm performance. They also run counter to evidence that managers manipulate earnings to avoid losses. The earnings management

⁹ Pre-restructuring earnings is net income before extraordinary items and discontinued operations excluding

literature posits that managers have incentives to manipulate reported accounting earnings when they face fixed contracts (such as compensation agreements) that use accounting numbers to allocate corporate cash flows to various claimants. Managers will try to make themselves better off by using their accounting discretion to influence reported accounting results (Schipper 1989). Hayn (1995) examines the distribution of the earnings-per-share to price ratio and finds a greater than expected number of observations just above zero, and a correspondingly lower than expected number of observations just below zero. The frequency of observations in both the region just above and that just below zero departs significantly from the expected frequency under the normal distribution. Burgstahler and Dichev (1997) find similar evidence in their examination of cross-sectional distributions of earnings changes and earnings. They find unusually low frequencies of small decreases in earnings and small losses, and unusually high frequencies of small increases in earnings and small positive income. An interpretation is that CEOs engage in earnings manipulation to help them cross the “positive earnings line” for the year. This behavior is not consistent with the apparent findings of Dechow et al. and Gaver and Gaver that compensation is shielded from accounting losses unless the loss results in decrements in noncash forms of compensation or eventual termination.

On the other hand, some research suggests that reported losses do not negatively impact stock price. Hayn (1995) examines the effect of losses on the return-earnings relation. She finds that when only profitable firm-years are included in the analysis, stock price movements are strongly linked to current-period earnings. In contrast, when the estimation sample consists only of loss firm-years, the magnitude of reported losses does

not appear to be correlated at all with contemporaneous price movements. In other words, when a loss is reported, stock price does not necessarily drop to zero nor decline proportionately to the change in earnings. She also finds that the higher the frequency of reported losses, the less informative the loss. If compensation committees incorporate the stock market's distinction between positive and negative earnings in determining executive pay, this finding is consistent with the concept that gains flow through to compensation but losses do not.

Another possible explanation for the results of Dechow et al. (1994) and Gaver and Gaver (1998) is provided by Boschen and Smith (1995). Based on a relatively small sample (16 firms) and a long time series (1948-1990) of CEO compensation data, Boschen and Smith estimate the dynamic response of executive compensation to an innovation in firm performance (measured as the real rate of return to shareholders). Consistent with much of the prior empirical literature, they find a significant but small contemporaneous response of compensation to firm performance. However, they also discover that compensation responses in subsequent periods are also significant, resulting in a cumulative response much larger than the contemporaneous component. This pattern of a weak contemporaneous response, followed by larger subsequent responses may explain the popular view that executives continue to be rewarded, even for poor performance. That is, executives could receive raises in a year of poor performance if the prior years' performance were good. The findings of Boschen and Smith suggest that the contemporaneous-only pay performance sensitivity used in many of the prior studies is an inadequate characterization and that the interaction of pay and firm performance over

several years needs to be considered in order to capture the complete pay-performance relation.

Another important consideration in interpreting the results of Gaver and Gaver and Dechow et al. is that the firms in both studies are generally profitable. For example, the sample firms in Dechow et al. report mean (median) income before extraordinary items and discontinued operations (which includes restructuring charges) of \$374 million (\$101 million).¹⁰ The sample firms in Gaver and Gaver report mean (median) earnings before extraordinary items and discontinued operations of \$259 million (\$133 million).¹¹ Thus, the findings could be attributable to the board's desire to reward the CEO for keeping the firm profitable even after reporting large negative items like restructuring charges. Second, cash remuneration (salary plus bonus) is the only element of executive pay analyzed. Other components of compensation, such as long-term incentive plan payouts or grants of restricted stock and stock options, are excluded. This narrow view of compensation precludes any strong conclusions that CEO pay is shielded from accounting losses, since the compensation committee could conceivably adjust noncash awards to reflect the consequences of the poor earnings performance. Thus, while CEOs may not experience a reduction in cash remuneration, they may encounter a decrease in total pay due to a negative adjustment in noncash compensation components.

Although loss firms have received relatively little attention in the compensation literature, Hayn (1995) documents an increase in the frequency of reported losses over time. She analyzes all 85,919 firm-years with available earnings data on Compustat's Primary, Supplementary and Tertiary active and research files over the period 1962-1990,

¹⁰ Stated in 1989 dollars.

and finds that the frequency of reported losses has increased from about 3 percent in the early 1960's to over 30 percent in the late 1980's. This increase is only partially due to the change in composition of firms covered by Compustat over the 29-year period.¹²

When a constant composition of firms is maintained, the loss frequency for these firms increases from an average of 4.2 percent in the first half of the period to an average of almost 12 percent in the last half of the period.

Hayn also finds that the incidence of losses is strongly linked to firm size. She analyzes ten equal-sized portfolios of firm-years ordered by the market value of equity and discovers a monotonic relation between firm size and the probability of a loss. The probability of incurring a loss in a given year is only 2.5 percent for the largest firms, compared with 50.8 percent for the smallest firms. Thus, loss firms tend to be smaller, have more volatile earnings streams, and are riskier than profitable firms.¹³

In summary, recent research suggests that the relation between executive cash compensation and earnings is not symmetrical in gains and losses. Specifically, Dechow et al. (1994) indicate that not only is CEO cash compensation shielded from losses in the form of restructuring charges, but executives actually earn a premium in restructuring years. Gaver and Gaver (1998) find that gains flow through to compensation, but losses do not. Additionally, Matsunaga and Park (2001) find that the CEO's annual cash bonus is not adversely affected by reported quarterly losses. These results suggest that

¹¹ Stated in 1982-1984 dollars.

¹² The change in composition of firms during the sample period covered by Compustat is due to mergers, firms going out of business, and the entry of new businesses.

¹³ Hayn (1995) also analyzes sample firms grouped into six portfolios according to their bond rating. She finds that loss frequency is a decreasing function of the bond rating of the firms in the portfolio. The frequency of losses is only 1 percent for firms with the highest bond rating, compared with 68 percent for firms with the lowest bond rating. This provides evidence that loss firms are riskier than profitable firms. However, the validity of this conclusion hinges on the quality of bond ratings as a proxy for risk.

executives are rewarded for negative earnings items. This is surprising since the earnings management literature suggests that managers manipulate earnings to avoid losses. Hayn (1995) and Burgstahler and Dichev (1997) document that CEOs engage in earnings manipulation to help them cross the “positive earnings line” for the year. This behavior is not consistent with the findings that compensation is shielded from accounting losses unless the loss results in decrements in non-cash forms of compensation or eventual termination. On the other hand, some research suggests that reported losses do not negatively impact stock price. If compensation committees incorporate the stock market’s distinction between positive and negative earnings in determining executive pay, this finding is consistent with the concept that gains flow through to compensation but losses do not. Another possible explanation for the results of Dechow et al. and Gaver and Gaver is provided by Boschen and Smith (1995), who find a weak contemporaneous response of compensation to firm performance, followed by larger responses in subsequent periods. This evidence suggests that executives could receive a raise in a year of poor performance if the prior year’s performance was good. However, an important consideration in interpreting the results of Dechow et al. and Gaver and Gaver is that the firms in both studies are generally profitable. Hayn (1995) documents an increase in the frequency of reported losses over time. She also finds that the incidence of losses is strongly linked to firm size. Hayn reports that loss firms tend to be smaller, have more volatile earnings streams, and are riskier than profitable firms. Therefore, the results documented in the prior empirical literature, that study large and predominantly profitable firms, are not necessarily generalizable to firms that report losses.

2.4 CEO Compensation in Financially Distressed Firms

The compensation choices of financially distressed firms have received relatively little attention in the accounting and finance literatures. An exception is Gilson and Vetsuypens (1993), who examine the executive compensation policies of 77 publicly traded firms that filed for bankruptcy or privately restructured their debt during 1981 to 1987. Their analysis covers the six years before and the six years after the firm filed for bankruptcy or began the debt restructure (as first reported in the *Wall Street Journal*). These firms are generally small, highly levered, and unprofitable. In the year prior to bankruptcy or debt restructuring, sample firms report mean and median annual losses of \$50.3 million and \$6.3 million, respectively. Over the six year period prior to bankruptcy or debt restructuring, the percentage of firms reporting losses increases monotonically from 3 percent in year -6 to 84 percent in the year of bankruptcy or debt restructuring.

Executive turnover tends to be high in financially distressed firms. Gilson and Vetsuypens find that mean annual CEO turnover increases from 8.5 percent to 30.7 percent then declines to 22.9 percent in the periods before, during, and after bankruptcy or debt restructuring, respectively. Newly appointed CEOs with ties to previous management are typically paid 35 percent less than the CEOs they replace. On the other hand, replacement CEOs recruited from outside the company are typically paid 36 percent more than their predecessors, and are often compensated with stock options.

For firms with no CEO turnover, there is evidence that CEO cash compensation monotonically decreases over the periods before, during, and after bankruptcy or debt restructuring. The mean (median) level of cash compensation is \$426,000 (\$349,000),

\$354,000 (\$273,000), and \$326,000 (\$225,000) for the periods before, during, and after bankruptcy or debt restructuring, respectively.¹⁴ Also, the percentage of firms that pay a bonus falls from 61.3 percent to 34.4 percent then rises to 45.8 percent in the periods before, during, and after bankruptcy or debt restructuring, respectively. The observed decrease in compensation suggests that CEO cash compensation is systematically (positively) related to the firm's earnings performance even when firms are unprofitable. On the other hand, Gilson and Vetsuypens also regress the change in CEO cash compensation on the change in net income and dummy variables for the periods during and after bankruptcy or debt restructuring, and whether the replacement CEO was an insider or outsider. The results indicate that CEO cash compensation and earnings are unrelated prior and during the bankruptcy or debt restructuring. However, the relation becomes reliably positive after the event. If firms tend to report losses in the period leading up to a bankruptcy or debt restructuring, but turn the corner thereafter, this finding is consistent with the notion that gains flow through to compensation but losses do not. Thus, the extent to which loss firms protect CEO pay from poor performance remains unclear.

Gilson and Vetsuypens find that 83 percent of their sample firms alter compensation contracts to tie executive wealth more closely to the value of the firm's common stock (through grants of new stock or stock options) in the period subsequent to bankruptcy or debt restructuring. They also document that more than 75 percent of their sample firms reduce executive cash compensation (through cuts in salary or bonus pay) in the four-year period ending with the first year of bankruptcy or debt restructuring

¹⁴ All amounts are in 1989 dollars.

(years -3 to 0). Gilson and Vetsuypens report that although CEOs who remain with their firms receive large reductions in their cash compensation during or after bankruptcy or debt restructuring, they are subsequently rewarded with substantial stock option grants. This suggests that struggling firms substitute stock awards for cash compensation and underscores the need to consider all elements of the compensation package.

2.5 Summary of Empirical Research on Executive Compensation and the Contributions of the Study

Despite criticism of the level of executive compensation and the degree to which it is justified by firm performance in the popular press, numerous academic studies document a significantly positive association between pay and performance, defined both in terms of accounting earnings and stock price. However, recent studies suggest that the strong positive link between CEO cash remuneration and earnings breaks down when losses are specifically investigated or when losses are distinguished from gains. An important aspect of these studies is that they focus on large, profitable firms. The compensation policies and pay-performance relation in loss firms is largely undocumented and not as well understood.

The objective of my dissertation is to examine all possible ramifications to the CEO of reported losses, including pay cuts, shifts in the composition of pay, and job termination. My investigation contributes to the accounting literature in several ways. First, I examine the effect of losses on the CEO using a sample of firms that reported at least one loss during the sample period, 1992-1997. Hayn (1995) finds that unprofitable firms tend to be small. Thus, my sample is distinct from the set of large, profitable firms

that are the focus of most prior studies. Second, while most researchers have limited their attention to the cash compensation (salary plus bonus) of CEOs, my analysis expands the definition of executive pay to include both the cash-based and stock-based components of CEO incentive compensation. Gilson and Vetsuypens (1993) find that reductions in CEO cash remuneration prior to bankruptcy or debt restructuring are often made up with grants of stock or stock options. This highlights the importance of considering both the cash-based and stock-based components of the incentive pay package, rather than limiting the focus to cash compensation.

As a third contribution, my paper documents the incidence of executive turnover around the year of the loss. Gilson and Vetsuypens (1993) find that approximately one-third of the CEOs in their sample of firms that file for bankruptcy or restructure their debt are replaced, with contracts differing significantly between new and incumbent managers. Therefore, turnover must be carefully controlled when investigating any changes in CEO pay packages around the time that losses are reported. Fourth, my study examines the relation between current year CEO incentive pay and current and *prior* year accounting earnings. This differs from most prior work which investigates the contemporaneous effect of accounting performance on compensation.¹⁵ Chapter Three builds upon this framework to develop the study's research hypotheses.

¹⁵ Boschen and Smith (1995) find that looking at the contemporaneous-only pay-performance relation is likely to underestimate the total sensitivity of pay to performance. Their findings suggest that compensation is affected by performance in the current and *prior* periods.

CHAPTER 3

HYPOTHESIS DEVELOPMENT

This chapter develops the research hypotheses of the study. I begin by specifying the potential consequences to the executive of reporting an accounting loss. This is followed by the development of three testable hypotheses. The first hypothesis relates accounting performance to the level of CEO incentive compensation. Distinctions are made between current and prior period performance, and profit and loss years. The second hypothesis concerns changes in the type of incentive compensation offered to the executive following a loss. In this hypothesis, I predict shifts from cash-based to stock-based incentive compensation by loss firms. The third hypothesis concerns the rate of CEO turnover subsequent to a reported loss, with a predicted increase in turnover for loss firms.

3.1 Consequences of Reporting an Accounting Loss

If pay is sensitive to performance, then there should be discernible consequences to a CEO who reports a loss. This could be manifested as a reduction in pay, a shift in the composition of the compensation package, or termination of the executive. On the other hand, the CEO may not suffer any negative consequences if the loss is considered a temporary aberration or a necessary detour on a generally positive path. Prior research

provides only limited insight into the implications of accounting losses for the CEO. One reason is that most previous studies limit the definition of compensation to cash awards (salary plus bonus), and therefore do not document shifts in the contract between cash compensation and stock awards. Another reason is that most studies limit samples to large, generally profitable firms that only infrequently report losses.

I examine the effect of losses on the CEO using a sample of small firms that reported at least one loss during the sample period, 1992-1997. This is a unique set of firms that has not been previously studied, and has the potential to provide powerful insights into the consequences of reported losses to the CEO. Using this sample of firms, I address how accounting losses can affect the level of the CEO's incentive compensation (cash bonus and stock-based awards), the structure of the CEO's pay package, and the likelihood of the CEO's dismissal. The sample selection process and sample characteristics are discussed in detail in Chapter Four.

3.2 The Relation Between CEO Incentive Compensation and Current and Prior Year Earnings

I first investigate the relation between the level of incentive compensation and accounting performance. I begin with a simple compensation function that relates current year CEO incentive compensation to current year earnings:

$$(1) \quad \text{Incentive Compensation}_t = f(\text{Earnings}_t)$$

Prior research suggests that the association will be positive (Lewellen and Huntsman 1970; Deckop 1988; Barro and Barro 1990; Jensen and Murphy 1990). I recognize, however, that this positive association may not hold in my study since I examine a

different population of firms than has been investigated before. Also, prior studies focus on the relation between cash pay and earnings but not between stock-based awards and earnings. Thus, the association between earnings and incentive compensation in my research setting is an empirical issue. This leads to the first version of hypothesis one, stated in alternative form:

H1a: Current year CEO incentive compensation is positively related to current year accounting earnings.

I define incentive compensation first as annual bonus, and then as stock-based awards. Variable definitions and data sources are provided in Chapter Four.

An important refinement of the general question of the relation between accounting performance and incentive pay is the extent to which incentive pay in loss years is differentially weighted when compared to profitable years. The results of Dechow et al. (1994) and Gaver and Gaver (1998) suggest that the relation between CEO cash compensation and earnings is not symmetrical in gains and losses. However, the firms studied in these papers were generally profitable firms, and little is known about the impact of losses on compensation for smaller, loss firms. I therefore expand the basic compensation model to include an indicator variable for loss years:

$$(2) \quad \text{Incentive Compensation}_t = f(\text{Earnings}_t, \text{Earnings}_t \times \text{Loss Dummy}_t)$$

In this specification, the coefficient on Earnings_t represents the weight on positive earnings, and the coefficient on the interaction term indicates the change in the weight when a loss is reported. Consistent with hypothesis H1a and prior research, the

coefficient on Earnings_t is predicted to be positive. However, Dechow et al. (1994) and Gaver and Gaver (1998) find that CEO pay is shielded from losses. This suggests that the coefficient on the interaction term will be negative. This leads to the second version of hypothesis one, also in alternative form:

H1b: Current year CEO incentive compensation is positively related to current year profits, but the relation is significantly dampened when current year earnings are negative.

The findings of Boschen and Smith (1995) suggest that the contemporaneous-only pay performance sensitivity used in most prior studies is an incomplete characterization of the pay-performance relation. Instead, they argue that compensation is affected by performance in the current and *prior* periods. Accordingly, equation three relates incentive compensation to current and lagged accounting earnings:

$$(3) \quad \text{Incentive Compensation}_t = f(\text{Earnings}_t, \text{Earnings}_{t-1})$$

This characterization of the compensation function leads to the third version of hypothesis one, stated in alternative form. I expect the coefficients on Earnings_t and Earnings_{t-1} to be positive.

H1c: Current year CEO incentive compensation is positively related to current and prior year accounting earnings.

A final question is the extent to which CEO incentive compensation is shielded from losses, and whether this effect extends to both current and lagged periods. I use the following model to investigate these influences:

$$(4) \quad \text{Incentive Compensation}_t = f(\text{Earnings}_t, \text{Earnings}_t \times \text{Loss Dummy}_t, \text{Earnings}_{t-1}, \text{Earnings}_{t-1} \times \text{Loss Dummy}_{t-1})$$

The coefficients in this model isolate the weights on positive earnings, the change in weight in loss years, and the relative effects of gains and losses from the current and the previous year. The coefficients on current earnings and lagged earnings are predicted to be positive and the coefficients on the two interaction terms are predicted to be negative. This leads to the fourth and final version of hypothesis one (in alternative form):

H1d: Current year CEO incentive compensation is positively related to current and prior year profits, but the relation is significantly dampened when earnings are negative.

3.3 Change in the Structure of the CEO Pay Package Following a Loss

The second research question that I address is how the structure of the CEO compensation package changes when a loss is reported. Gilson and Vetsuypens (1993) find evidence that firms systematically restructure their executive compensation contracts when they experience severe financial difficulty. They find that a majority of their sample firms respond to financial distress by basing more of the executives' compensation on long-term stock-based performance measures and by reducing the executives' cash compensation. They find that CEOs who take large cuts in their

compensation prior to bankruptcy or debt restructuring, and remain with the company, are rewarded with substantial stock option grants.

The evidence from Gilson and Vetsuypens (1993) suggests that a shift from cash bonus to stock-based incentive pay takes place in the year subsequent to the loss. With this in mind, I investigate whether the *proportion* of stock-based incentive pay to total incentive pay (cash bonus plus stock-based pay) increases in the year subsequent to the loss year. This is hypothesis two (in alternative form):

H2: The proportion of stock-based incentive pay to total incentive pay (cash bonus plus stock-based pay) in the year subsequent to a loss is greater than the proportion in the year prior to the loss.

3.4 CEO Turnover Subsequent to a Reported Loss

The third research question that I address is how the CEO turnover rate is affected when a loss is reported. Numerous studies document a significantly negative relation between firm performance and the likelihood of turnover. For example, Benston (1985) and Coughlan and Schmidt (1985) observe that stock price performance and subsequent executive turnover are negatively correlated. Similarly, Warner, Watts, and Wruck (1988) and Weisbach (1988) document an inverse relation between the likelihood of a top management change and prior stock price performance. Consistent with evidence from U.S. data, Kang and Shivdasani (1995) find a negative relation between nonroutine top executive turnover and firm performance in Japanese corporations. These results suggest that managers are more likely to leave after years of poor performance than after years of

good performance. Therefore, I expect a higher rate of CEO turnover in the year subsequent a reported loss than in the years prior to the loss where there are reported profits. This leads to the third and final testable hypothesis (in alternative form):

H4: The rate of CEO turnover in the year subsequent to a loss is greater than the turnover rate in the year prior to the loss.

The data, variable definitions and sample selection criteria used to test the hypotheses developed in this chapter are described in Chapter Four.

CHAPTER 4

DATA AND SAMPLE SELECTION

The sample for the study consists of all firms on the ExecuComp database that report at least one loss between 1992 and 1997. I begin this chapter with a description of this database, and then provide definitions of the compensation, earnings, and turnover variables. Next, I determine the number of losses reported by ExecuComp firms between 1992 and 1997, and report the distribution of losses by industry and firm. This is followed by a comparison of the sample firms to the complementary set of ExecuComp firms that were consistently profitable during the sample period. I conclude the chapter with an analysis of the sample firms by the number of reported losses.

4.1 Sample Selection and Variable Definitions

My sample is drawn from the ExecuComp database for the years 1992-1997. This database includes information on executives reported in the proxy statements of firms included in the S&P 500, mid-cap and small-cap indices. ExecuComp contains comparative information beginning in 1992, the year in which the SEC mandated the decomposition of executive pay into salary, bonus, long-term incentive payouts, and stock option and restricted stock grants. The latest year of data availability is 1997. I obtain all compensation, earnings, and turnover data from the ExecuComp database.

Relevant variables are defined as follows. Cash-based incentive pay is the cash bonus paid to the CEO. Stock-based incentive pay is the sum of the dollar value of restricted stock and the Black-Scholes value of stock options granted to the CEO during the fiscal year. Accounting performance is net income before extraordinary items and discontinued operations. Profits (losses) are defined as positive (negative) net income before extraordinary items and discontinued operations. CEO turnover is determined by comparing the firm's CEO in the current year to the CEO in the prior year. If the CEOs differ, the firm is identified as having a CEO turnover in the current year.

In order to be included in the analysis, a firm must report at least one loss between 1992 and 1997. I therefore begin by identifying the entire population of loss observations reported in the database. There are 588 firms that report at least one loss during the sample period and are therefore included in my sample. Tables 1 and 2 report the distribution of losses per year, and the breakdown of losses by industry and firm. I compare these 588 firms to the firms that report only profits during the entire sample period (1,315 firms) to ascertain whether there are any systematic differences between the two groups. Finally, I contrast firms that report 1-2 with firms that report 3 or more losses during the sample period.

4.2 Number of Losses Reported in the Sample Period

Table 1 shows the number of firms in the ExecuComp database reporting losses during each year of the sample period. The number of total firm-years and firm-loss-years is considerably smaller in 1992 compared to the later years because the enhanced compensation disclosure requirements by the SEC only became effective for proxy

statements filed after December 31, 1992. The incidence of losses during the sample period, 12.84 percent, is very similar to the average 12 percent reported by Hayn (1995) in her analysis of Compustat firms.¹⁶ This suggests that the firms in the ExecuComp database are representative of the broader population of firms covered by Compustat. There are a total of 995 firm-loss-year observations over the entire sample period.

4.3 Distribution of Losses by Industry and Firm

Table 2 presents the distribution of the losses by industry and the number of reported losses per firm. Panel A lists the number of losses during the 1992-1997 period in each 2-digit SIC code represented in the sample. There is some evidence of industry clustering, with the incidence of losses higher in the chemical industry (14.3 percent of total losses), the machinery and computer equipment industry (7.8 percent of total losses), and the business service industry (7.9 percent of total losses). Panel B presents the distribution of the number of losses per firm reported during the sample period. Of the 588 firms reporting losses in the test period, 60 percent report only one loss, 22 percent report two losses, and 18 percent report three or more losses.

¹⁶ The average 12 percent represents the percentage of loss-years to total firm-years (using a constant composition of firms) for the second half of her sample period (1982-1990) (Hayn 1995, Table 1, p. 130).

Table 1

The number of firm-loss-year observations and total firm-year observations for the 1992-1997 sample period

Year	Total number of firm-years (profit and loss)^a	Number of loss-years only^b	% of loss-years to total firm-years^c
1992	354	39	11.02
1993	1123	157	13.98
1994	1489	148	9.94
1995	1566	228	14.56
1996	1616	202	12.50
1997	1601	221	13.80
All years	7749	995	12.84

^a This represents all firm-year observations (profit and loss) in the ExecuComp database for the period 1992-1997.

^b This represents the number of loss observations (negative income before extraordinary items and discontinued operations) reported in the ExecuComp database for the period 1992-1997.

^c This represents the number of loss-year observations divided by the total number of firm-year observations.

Table 2

Distribution of losses by industry and by firm for the 1992-1997 sample period^a**Panel A: Distribution of losses across two digit SIC codes**

Industry	SIC code	No. of observations	% of total
Agriculture production-crops	01	3	0.3
Agriculture-livestock, animal spec.	02	2	0.2
Metal mining	10	30	3.0
Oil and gas extraction	13	32	3.2
Mining, quarry nonmetal minerals	14	1	0.1
Building construction	15	5	0.5
Heavy construction-not building construction	16	2	0.2
Construction-special trade	17	3	0.3
Food and kindred products	20	19	1.9
Textile mill products	22	13	1.3
Apparel and other finished products	23	5	0.5
Lumber and wood products	24	7	0.7
Furniture and fixtures	25	3	0.3
Paper and allied products	26	21	2.1
Printing, publishing, and allied products	27	23	2.3
Chemicals and allied products	28	142	14.3
Petroleum refining and related industries	29	12	1.2
Rubber and miscellaneous plastics products	30	7	0.7
Leather and leather products	31	4	0.4
Stone, clay, glass, concrete products	32	4	0.4
Primary metal industries	33	23	2.3
Fabricated metal, excluding machinery	34	11	1.1
Industrial, commercial machinery, computer equipment	35	77	7.8
Electronics and electrical supplies	36	55	5.6
Transportation equipment	37	21	2.1
Measuring and photographic goods	38	44	4.4
Miscellaneous manufacturing industries	39	17	1.7
Railroad transportation	40	1	0.1
Motor freight transportation, warehousing	42	7	0.7
Water transportation	44	2	0.2
Transportation by air	45	9	0.9
Transportation services	47	1	0.1
Communications	48	44	4.4
Electric, gas, sanitary services	49	35	3.6

Table 2 (Contd.)

Durable goods-wholesale	50	16	1.6
Nondurable goods-wholesale	51	8	0.8
Building material, hardware, garden-retail	52	8	0.8
General merchandise stores	53	15	1.5
Food stores	54	5	0.5
Auto dealers, gas stations	55	2	0.2
Apparel and accessory stores	56	18	1.8
Home furniture and equipment store	57	9	0.9
Eating and drinking places	58	28	2.8
Miscellaneous retail	59	20	2.0
Depository institutions	60	8	0.8
Security and commodity brokers	62	2	0.2
Insurance carriers	63	15	1.5
Insurance agents, brokers and service	64	6	0.6
Holding and other investment offices	67	4	0.4
Hotels, other lodging places	70	2	0.2
Personal services	72	1	0.1
Business services	73	78	7.9
Auto repair, services, parking	75	1	0.1
Motion pictures	78	4	0.4
Amusements, recreation	79	18	1.8
Health services	80	19	1.9
Educational services	82	2	0.2
Engineering, accounting and related services	87	21	2.1
Total		995	100.0

Panel B: Number of losses reported per firm

No. of losses	1	2	3	4	5	6	Total
No. of firms	354	128	53	39	12	2	588
(percentage of total)	(60%)	(22%)	(9%)	(7%)	(2%)	(0%)	(100%)

^a The sample consists of 588 firms that report at least one loss during the period 1992-1997.

4.4 Comparison Between the Loss Firms and Profit Firms

Table 3 reports descriptive statistics comparing the 588 firms that report at least one loss during the sample period (loss firms) with the 1,315 firms that report only profits during the same period (profit firms). All monetary amounts are adjusted to 1997 dollars using the consumer price index. Comparison of mean and median values indicates that the distribution of many of the variables is skewed. I therefore perform tests for differences in medians to identify any disparities between the two groups. The median tests indicate that CEO incentive compensation (cash-based plus stock-based) is significantly lower for the loss firms. Median total incentive pay for the loss firms is \$703,000 compared to \$865,000 for the profit firms. The difference is significant at the 0.0001 level. This difference is primarily due to the cash-based component. The median cash-based incentive awards for the firms reporting losses of \$155,000 is significantly lower than the \$362,000 for the firms reporting profits (significantly different at the 0.0001 level). Further, the median cash-based proportion of incentive pay for the loss firms (27.30 percent) is also significantly lower than that of the profit firms (45.50 percent). This indicates that CEO incentive pay in loss firms is primarily stock-based whereas it is approximately evenly distributed between cash and stock for profit firms.

Table 3 also indicates that firms reporting losses tend to be small. This is consistent with Hayn (1995) who also finds that smaller firms tend to report losses. Median assets for the loss firms is \$827,067,000, compared to \$1,553,857,000 for the profit firms. This difference is significant at the 0.0001 level. Studies of CEO turnover (e.g., Warner, Watts, and Wruck 1988; Weisbach 1988; Murphy and Zimmerman 1993) show that only about 10 percent of firms change CEOs in a given year. A similar

percentage is observed for the profit firms. However, turnover for the loss firms is approximately one and a half times this amount (14.04 percent).

Table 3

Descriptive statistics comparing the loss firms to the profit firms for the 1992-1997 sample period^a

Variable	Loss firms (588 firms) ^b			Profit firms (1,315 firms) ^c			Median test ^d
	N ^e	Mean	Median	N ^e	Mean	Median	z-stat (p-value)
Cash-based incentive pay ^f	2,525	372	155	5,242	636	362	-16.9237 (0.0001)
Stock-based incentive pay ^g	2,525	1,298	428	5,242	1,382	386	1.3886 (0.1650)
Total incentive pay ^h	2,525	1,670	703	5,242	2,018	865	-4.3764 (0.0001)
Cash-based proportion of incentive pay ⁱ	2,221	36.33%	27.30%	4,935	50.86%	45.50%	-14.7933 (0.0001)
Stock-based proportion of incentive pay ^j	2,221	63.67%	72.70%	4,935	49.14%	54.50%	14.7933 (0.0001)
NI before ext. items and disc. Oper. ^k	2,525	57,772	9,917	5,242	286,940	80,790	-27.2909 (0.0001)
Total assets ^l	2,525	4,849,134	827,067	5,242	9,803,917	1,553,857	-12.2729 (0.0001)
Turnover ^m	1,973	14.04%	-----	4,015	9.19%	-----	5.6845 (0.0001)

^a All amounts are adjusted to 1997 constant dollars using the consumer price index. Amounts are in thousands.

^b This represents the total number of firms that report at least one loss (negative income before extraordinary items and discontinued operations) during the sample period, 1992-1997.

^c This represents the total number of firms that report only profits during the sample period, 1992-1997.

^d Due to the skewness of the data, a median test is performed between the two groups. The z-statistic is reported and the p-value is in parentheses.

^e The number of firm-year observations used to compute the summary statistics.

^f The cash bonus paid to the CEO.

^g The sum of the dollar value of restricted stock and the Black-Scholes value of stock options granted to the CEO during the fiscal year.

^h Cash-based incentive pay plus stock-based incentive pay (as defined above).

ⁱ Cash-based incentive pay divided by total incentive pay (as defined above).

^j Stock-based incentive pay divided by total incentive pay (as defined above).

^k Net income before extraordinary items and discontinued operations.

^l Total assets at the end of the year.

^m The percentage of CEO turnover during the fiscal year.

4.5 Comparison Between Firms with 1-2 Losses and 3 or More Losses

The consequences to a CEO who reports a loss may differ based on whether the loss is considered a temporary or persistent condition. I therefore further analyze the loss firms based on the number of reported losses. I partition the 588 firms into two groups: firms that report 1-2 losses (482 firms) and firms that report 3 or more losses (106 firms) during the sample period. Table 4 reports descriptive statistics comparing the two subsamples. Firms that report 3 or more losses are substantially smaller and (not surprisingly) exhibit poorer performance than firms with 1-2 losses. Median total assets during the sample period for firms with three or more losses (\$314,948,000) is approximately one-third the asset size of the firms with two or fewer losses (\$1,010,669,000). Further, the firms with three or more losses report a median *net loss* of \$16,395,000 compared to a median *net income* of \$19,711,000 for the 1-2 loss firms.

Differences are significant at the 0.0001 level. Although the firms with only one or two losses are larger and better performers than firms which report three or more losses, the 1-2 loss firms are still smaller and not as profitable as the profitable firms reported in Table 3.

Table 4

Descriptive statistics comparing firms with 1-2 losses to firms with 3 or more losses during the 1992-1997 sample period^a

Variable	Firms with 1-2 losses (482 firms) ^b			Firms with 3+ losses (106 firms) ^c			Median test ^d
	N ^e	Mean	Median	N ^e	Mean	Median	z-stat (p-value)
Cash-based incentive pay ^f	2,035	409	200	490	217	53	-10.3543 (0.0001)
Stock-based incentive pay ^g	2,035	1,365	465	490	1,018	304	-3.4114 (0.0006)
Total incentive pay ^h	2,035	1,774	776	490	1,235	451	-5.3232 (0.0001)
Cash-based proportion of incentive pay ⁱ	1,811	38.23%	29.80%	410	27.95%	11.81%	-7.4263 (0.0001)
Stock-based proportion of incentive pay ^j	1,811	61.77%	70.20%	410	72.05%	88.19%	7.4465 (0.0001)
NI before ext. items and disc. Oper. ^k	2,035	80,879	19,711	490	-38,191	-16,395	-17.4985 (0.0001)
Total assets ^l	2,035	5,601,652	1,010,669	490	1,723,878	314,948	-10.9581 (0.0001)
Turnover ^m	1,586	13.11%	-----	387	17.83%	-----	2.3930 (0.0167)

^a All amounts are adjusted to 1997 constant dollars using the consumer price index. Amounts are in thousands.

^b This represents the total number of firms that report 1-2 losses (negative income before extraordinary items and discontinued operations) during the sample period, 1992-1997.

^c This represents the total number of firms that report 3 or more losses during the sample period, 1992-1997.

^d Due to the skewness of the data, a median test is performed between the two groups. The z-statistic is reported and the p-value is in parentheses.

^e The number of firm-year observations used to compute the summary statistics.

^f The cash bonus paid to the CEO.

^g The sum of the dollar value of restricted stock and the Black-Scholes value of stock options granted to the CEO during the fiscal year.

^h Cash-based incentive pay plus stock-based incentive pay (as defined above).

ⁱ Cash-based incentive pay divided by total incentive pay (as defined above).

^j Stock-based incentive pay divided by total incentive pay (as defined above).

^k Net income before extraordinary items and discontinued operations.

^l Total assets at the end of the year.

^m The percentage of CEO turnover during the fiscal year.

Table 4 indicates that firms that report 3 or more losses pay their CEOs significantly lower incentive compensation than the firms with 1-2 losses. Median cash-based and stock-based awards are \$53,000 and \$304,000, respectively, compared to \$200,000 and \$465,000 for firms with 1-2 losses. The differences are significant at the 0.0001 and 0.006 levels, respectively. CEO incentive pay of firms with 3 or more losses is almost 90 percent stock-based, which is significantly higher than the 70 percent for firms with 1-2 losses. CEO turnover is also significantly higher for the firms with 3 or more losses. These firms have a turnover rate of 17.83 percent, compared to 13.11 percent for the firms with only one or two losses.

4.6 Conclusion

My sample consists of the 588 firms in the ExecuComp database that report at least one loss during 1992-1997. I find that the CEOs of these firms receive significantly lower cash bonuses than firms that report only profits and approximately three-fourths of their incentive package is stock-based. These loss firms also have a higher CEO turnover rate than the profit firms. Further analysis of the 588 firms shows that as the number of reported losses increase, CEOs receive significantly lower levels of incentive compensation, either in the form of cash bonuses or stock-based awards. Of the incentive pay that is received, most is in the form of stock-based awards. For example, CEOs of firms that report three or more losses receive approximately 90 percent of their incentive compensation from stock-based plans. There is also a correlation between the number of losses reported by the firm and the probability of CEO turnover.

In sum, the evidence suggests that there are negative consequences to reporting losses, both in the form of reduced incentive compensation and an increased likelihood of termination. The 588 loss firms described in this chapter constitute the base sample on which I test the three hypotheses developed in Chapter Three. Chapter Five describes the research design and reviews the results of the hypothesis tests.

CHAPTER 5

RESEARCH DESIGN AND RESULTS

This chapter describes the research design for the study and presents the results of the hypothesis tests. First, Section 5.1 describes the four regression models used to investigate the relation between the level of CEO incentive compensation and accounting performance. Next, Section 5.2 focuses on the relation between the structure of the compensation contract and accounting performance. After that, Section 5.3 considers the effect of losses on the CEO turnover rate. Finally, Section 5.4 summarizes the study's empirical results.

5.1 Tests of the Relation Between CEO Incentive Compensation and Accounting Performance

To investigate the relation between the level of CEO incentive compensation and accounting performance, I begin with the following regression model:

$$(5) \quad \text{LOGCOMP}_{it} = \beta_0 + \beta_1 \text{LOGINC}_{it} + \beta_2 \text{LOGASSETS}_{it} + \varepsilon_{it}$$

where:

LOGCOMP_{it} = the natural logarithm of cash-based or stock-based incentive compensation of the CEO for firm i in year t ;¹⁷

¹⁷ To make the logarithmic transformation possible, I assume that the CEO receives at least one dollar of cash-based or stock-based incentive compensation. This is similar to the method used by Murphy (1985).

LOGINC_{it} = the natural logarithm of earnings before extraordinary items and discontinued operations (EBED) for firm i in year t ,^{18,19}

LOGASSETS_{it} = the natural logarithm of total assets at the end of the year for firm i in year t .

I analyze cash-based and stock-based incentive compensation separately. Cash-based incentive pay is the cash bonus paid to the CEO. Stock-based incentive pay is the sum of the dollar value of restricted stock and the Black-Scholes value of stock options granted to the CEO during the fiscal year. All amounts are adjusted to 1997 dollars using the consumer price index. I use the log of the compensation and other financial variables because of the skewness of the raw data. The use of log transformations is consistent with prior work (Cosh 1975; Abdel-Khalik 1985; Murphy 1985; Abowd 1990; Barro and Barro 1990; Riahi-Belkaoui 1992).

Previous research suggests that the association between CEO incentive compensation and current year earnings will be positive (Lewellen and Huntsman 1970; Deckop 1988; Barro and Barro 1990; Jensen and Murphy 1990). Therefore, I expect the coefficient on LOGINC_{it} (β_1) to be positive (hypothesis H1a). Many studies also find a positive association between cash compensation and firm size (Cosh 1975; Hogan and McPheters 1980; Hirschey and Pappas 1981). In fact, Murphy (1985) finds that cross-

Experiments indicate that the qualitative results are robust and are not sensitive to the one-dollar assumption (Murphy 1985).

¹⁸ Since it is not possible to calculate the logarithm of a negative number, I take the log of the absolute value of EBED. If earnings is negative, I multiply the log by -1. This results in a positive number for firms with profits and a negative number for firms with losses. This specification makes the interpretation of the coefficient on earnings more straightforward.

¹⁹ I examine whether the primary results hold for alternative specifications of earnings. I consider two other specifications. The first is the log of the absolute value of EBED without multiplying the log by -1 when earnings is negative. The second is the log of EBED when earnings is positive, and the inverse of the log of

sectional regressions are seriously misspecified when firm size is omitted. Therefore, the log of assets is included in the regression equation as a control for firm size (Cosh 1975; Barro and Barro 1990; Hubbard and Palia 1995). The coefficient on LOGASSETS_{it} is also expected to be positive.

To examine whether incentive pay in loss years is differentially weighted when compared to profitable years (hypothesis H1b), equation (5) is expanded to include an indicator variable and interaction term for loss years:

$$(6) \quad \text{LOGCOMP}_{it} = \beta_0 + \beta_1 \text{LOGINC}_{it} + \beta_2 \text{LOGASSETS}_{it} + \beta_3 \text{LOSSDUM}_{it} + \beta_4 \text{LOGINC}_{it} \times \text{LOSSDUM}_{it} + \varepsilon_{it}$$

where LOSSDUM_{it} is a dummy variable that equals one if EBED for firm i in year t is negative, and zero otherwise, and all other variables are defined as in equation (5).

In equation (6), the coefficient on LOGINC_{it} (β_1) represents the weight on positive earnings, and the coefficient on the interaction term $\text{LOGINC}_{it} \times \text{LOSSDUM}_{it}$ (β_4) indicates the change in the weight on earnings when a loss is reported. The sum of these two coefficients yields the weight on earnings when it is negative. Hypothesis H1b proposes that CEO incentive pay is positively related to current year profits and that the relation is significantly reduced when earnings is negative. Therefore, I predict that $\beta_1 > 0$ and $\beta_4 < 0$. As in equation (5), the coefficient on LOGASSETS_{it} (β_2) is expected to be positive. The coefficient on LOSSDUM_{it} (β_3) represents the change in the intercept when earnings is negative. Interpretation of the intercept in the regression equation is not straightforward, therefore, I offer no expectation about the sign of the estimate of β_3 .

the absolute value of EBED when earnings is negative. I obtain qualitatively similar regression results for both alternative specifications.

Boschen and Smith (1995) argue that compensation is affected by performance in both current and *prior* periods. This leads to hypothesis H1c, which predicts that current period pay is positively related to both current and prior year earnings. To test this hypothesis, prior year earnings is added to equation (5):

$$(7) \quad \text{LOGCOMP}_{it} = \beta_0 + \beta_1 \text{LOGINC}_{it} + \beta_2 \text{LOGINC}_{it-1} + \beta_3 \text{LOGASSETS}_{it} + \varepsilon_{it}$$

where LOGINC_{it-1} is the log of EBED for firm i in year $t-1$, and all other variables are defined as in equation (5). Based on the findings of Boschen and Smith (1995) and the prediction of H1c, I expect the coefficients on both current and prior year earnings (β_1 and β_2) to be positive.

Finally, indicator variables for negative earnings for the current and prior years, and related interaction terms, are added to equation (7) to determine whether there is any differential weighting between current and prior year profits and losses (hypothesis H1d).

$$(8) \quad \text{LOGCOMP}_{it} = \beta_0 + \beta_1 \text{LOGINC}_{it} + \beta_2 \text{LOGINC}_{it-1} + \beta_3 \text{LOGASSETS}_{it} + \beta_4 \text{LOSSDUM}_{it} + \beta_5 \text{LOGINC}_{it} \times \text{LOSSDUM}_{it} + \beta_6 \text{LOSSDUM}_{it-1} + \beta_7 \text{LOGINC}_{it-1} \times \text{LOSSDUM}_{it-1} + \varepsilon_{it}$$

where LOSSDUM_{it-1} is a dummy variable that equals one if EBED for firm i in year $t-1$ is negative, and zero otherwise, and all other variables are defined as in equations (6) and (7).

The coefficients in equation (8) isolate the weights on current and prior year profits (β_1 and β_2), the change in weight in loss years (β_5 and β_7), and the weight on current and prior year earnings when it is negative (β_1 plus β_5 and β_2 plus β_7).

Hypothesis H1d proposes that current period CEO pay is positively associated with current and prior year profits and that this association is dampened when earnings is

negative. Therefore, I predict that β_1 and β_2 will be positive and β_5 and β_7 will be negative, offsetting the positive relation between compensation and profits.²⁰

To estimate the above regression models I begin with the 588 loss firms described in Chapter Four. To remain in the sample, the firm must have the same CEO throughout the sample period and must have at least two consecutive years of earnings data during the 1992-97 period. Firms with CEO turnover are excluded to control for any compensation changes that are related to the change in CEO rather than performance. Two consecutive years of earnings data are required since I investigate the relation between compensation and current and prior year earnings. The resulting sample consists of 326 firms. Of these firms, 269 report one or two losses and 57 report three or more losses during the sample period. I perform separate analyses of the full sample and these two subsamples in order to assess whether the results differ depending on whether the loss is viewed as temporary (1-2 losses) or persistent (3+ losses). The regression results obtained from the two subsamples are qualitatively similar to the results obtained using the full sample. Therefore, only the results for the full sample are reported.

Table 5 summarizes the pooled time-series, cross-sectional regression results for equations (5) and (6). The table is divided into two panels. In Panel A, the dependent variable is cash-based incentive compensation. In Panel B, the dependent variable is stock-based incentive pay.

²⁰ The coefficients on $LOSSDUM_{it}$ (β_4) and $LOSSDUM_{it-1}$ (β_6) represent the change in intercept when earnings is negative in the current and prior years, respectively. As previously discussed, the interpretation of the intercept is not straightforward, therefore, no expectations regarding the sign of the estimates of β_4 and β_6 are offered.

Table 5

Tests of the Relation Between CEO Incentive Compensation and Current Year Earnings^a

Equation (5): $LOGCOMP_{it} = \beta_0 + \beta_1 LOGINC_{it} + \beta_2 LOGASSETS_{it} + \varepsilon_{it}^b$

Equation (6): $LOGCOMP_{it} = \beta_0 + \beta_1 LOGINC_{it} + \beta_2 LOGASSETS_{it} + \beta_3 LOSSDUM_{it} + \beta_4 LOGINC_{it} \times LOSSDUM_{it} + \varepsilon_{it}^c$

Panel A: Dependent variable = LOGBONUS_{it}^d

Variable	Equation (5)		Equation (6)	
	Parameter estimate	t-statistic	Parameter estimate	t-statistic
β_0 INTERCEPT	-0.4503	-0.647	-1.6757	-2.136 ^h
β_1 LOGINC _{it}	0.1066	13.725 ^g	0.5320	6.838 ^g
β_2 LOGASSETS _{it}	0.3002	5.903 ^g	0.0633	0.935
β_3 LOSSDUM _{it}			2.5512	2.447 ^h
β_4 LOGINC _{it} x LOSSDUM _{it}			-0.6077	-4.633 ^g
Adj. R ²	0.2102		0.2305	
N ^e	1088		1088	
$\beta_1 + \beta_4$ (F-statistic)			-0.0757 (0.7567)	

Table 5 (Contd.)

Panel B: Dependent variable = LOGSTOCK_{it}^f

Variable	Equation (5)		Equation (6)	
	Parameter estimate	t-statistic	Parameter estimate	t-statistic
β_0 INTERCEPT	0.1665	0.196	-0.8071	-0.839
β_1 LOGINC _{it}	0.0012	0.122	0.4344	4.554 ^g
β_2 LOGASSETS _{it}	0.3429	5.519 ^g	0.0825	0.994
β_3 LOSSDUM _{it}			1.7423	1.363
β_4 LOGINC _{it} x LOSSDUM _{it}			-0.7002	-4.354 ^g
Adj. R ²	0.0281		0.0462	
N	1088		1088	
$\beta_1 + \beta_4$ (F-statistic)			-0.2658 (6.2074) ^h	

^a The sample consists of 326 firms that report at least one loss and have no CEO turnover during the period 1992-1997, and have at least two consecutive years of earnings data.

^b Variables used in this model are defined as follows:

LOGCOMP_{it} = the logarithm of the cash-based or the stock-based incentive compensation of the CEO for firm *i* in year *t*, in inflation-adjusted dollars.

LOGINC_{it} = the logarithm of earnings before extraordinary items and discontinued operations for firm *i* in year *t*, in inflation-adjusted dollars.

LOGASSETS_{it} = the logarithm of total assets at the end of the year for firm *i* in year *t*, in inflation-adjusted dollars.

^c Variables used in this model are defined as follows:

LOSSDUM_{it} = dummy variable that equals one if earnings before extraordinary items and discontinued operations for firm *i* in year *t* is negative, and zero otherwise.

All other variables are defined as in equation (5).

^d The dependent variable is the logarithm of the cash bonus paid to the CEO for firm *i* in year *t*, in inflation-adjusted dollars.

^e The number of firm-year observations used in the regression analysis.

^f The dependent variable is the logarithm of the stock-based incentive pay of the CEO for firm *i* in year *t*, in inflation-adjusted dollars. Stock-based incentive pay is the sum of the dollar value of restricted stock and the Black-Scholes value of stock options granted to the CEO during the fiscal year.

^g Statistically significant at the 0.01 level.

^h Statistically significant at the 0.05 level.

The results for equation (5) are reported in the first two columns of Table 5 and the results for equation (6) are presented in the last two columns of the table. Focusing first on Panel A of Table 5, the coefficient for LOGINC_{it} (0.1066) in equation (5) is positive and significant at the 0.01 level. This indicates that, consistent with prior research and hypothesis H1a, CEO cash bonuses are positively associated with current year earnings. Since LOGINC_{it} in equation (5) includes both positive and negative earnings, this suggests that CEOs are penalized for reporting losses. This is consistent with the evidence in Table 3 (in Chapter Four) which reports that the CEOs of the loss firms received significantly lower cash bonuses than the CEOs of the profitable firms.

When positive earnings is differentiated from negative earnings in equation (6), β_1 (0.5320) is positive and significant (at the 0.01 level) and β_4 (-0.6077) is significantly negative at the 0.01 level. This is consistent with the prediction of hypothesis H1b. Thus, CEO cash bonuses are positively associated with current year accounting performance when earnings is positive, but this association is significantly reduced in loss years. At first blush, this seems to suggest that CEO compensation is shielded from losses. However, an alternative explanation is that poorly performing firms simply do not pay their CEOs a cash bonus in loss years, which eliminates the association between cash bonuses and earnings. Further analysis of the loss firms and profit firms in Table 3 indicates that 87 percent of the profitable firms paid their CEOs a cash bonus, compared to only 69 percent for the loss sample (not tabulated). This evidence supports the alternative explanation that firms that report losses are less likely to pay a bonus than profitable firms. Further support is provided by examining the sum of the estimated β_1

and β_4 coefficients. The sum of β_1 and β_4 (-0.0757) in equation (6) represents the weight on earnings in loss years. It is not significantly different from zero. While 73 percent of the firms in the 1-2 losses subsample paid their CEOs a cash bonus, the percentage declines to 48 percent for the 3+ losses subsample (not reported in Table 5). This suggests that the reason that the relation between cash bonus and current year earnings is flat in loss years is that bonuses are suspended when accounting performance is negative.

Panel B reports the results for stock-based awards. Contrary to the findings in Panel A, the coefficient on LOGINC_{it} in equation (5) is not significant. This suggests that there is no association between stock-based incentive compensation and current year accounting performance when profits and losses are not differentiated. This finding is consistent with Baber et al. (1996) and Baber et al. (1998) who also find no relation between stock-based compensation and earnings. However, a different picture emerges in equation (6), where profits are distinguished from losses. In this formulation, β_1 (0.4344) is significantly positive at the 0.01 level and β_4 (-0.7002) is negative and significant (at the 0.01 level). This result is consistent with the cash-based results reported in Panel A. That is, there is a positive relation between stock-based awards and current year profits, but this relation is significantly dampened when earnings is negative.

In Panel A of Table 5, the sum of β_1 and β_4 (-0.0757) is insignificantly different from zero, indicating that there is no association between cash bonuses and earnings in loss years. However, in Panel B, the sum of the estimated β_1 and β_4 coefficients (-0.2658) is negative and significantly different from zero at the 0.05 level. The evidence implies that stock-based pay actually *increases* when a firm reports a loss. This result is consistent with the evidence from Gilson and Vetsuypens (1993) that firms respond to

financial distress by shifting executive compensation out of cash-based and into stock-based incentive awards. The fact that stock-based incentive awards tend to increase in loss years echoes the finding in Table 3 that stock-based proportion of incentive compensation for loss firm CEOs is 73 percent, compared to a proportion of 54 percent for the profit firm CEOs.

The results for stock-based compensation reported in Panel B indicates that incentive pay becomes more stock-based and less cash-based when the firm reports a loss. These findings echo the evidence reported in Table 4 which indicates that CEO incentive pay for firms with 3 or more losses is approximately 90 percent stock-based, compared to 70 percent for firms with only one or two losses. This apparent shift from cash-based pay to stock-based awards when losses are reported is investigated further in Section 5.2.

Prior research indicates that CEO compensation is related to firm size, which is typically measured as the natural log of total assets (Cosh 1975; Barro and Barro 1990; Hubbard and Palia 1995). Hayn (1995) finds that the incidence of losses is strongly linked to firm size with firms that report losses being smaller than profitable firms. When profits and losses are not distinguished, the log of total assets appears to be a successful control for size, as evidenced by the significantly positive coefficient on $LOGASSETS_{it}$ in equation (5). However, when profits and losses are separated in equation (6), $LOGASSETS_{it}$ loses its incremental explanatory power. This is probably due to firm size proxying for the likelihood that earnings is negative or positive (i.e., smaller firms tend to report losses).

Overall, Table 5 provides evidence that CEO incentive compensation is positively related to current year earnings (particularly in profitable years) and this relation is

significantly dampened when earnings is negative. In fact, the relation is eliminated for cash bonuses in loss years. This is mainly due to CEOs not receiving cash bonuses when accounting performance is negative. In contrast, there is an increase in stock-based pay in loss years. The evidence suggests a shift from cash-based to stock-based incentive awards when earnings is negative. I return to this point in Section 5.2 which investigates structural changes in the CEO compensation package when a loss is reported.

Table 6 reports the results for equations (7) and (8) which incorporate the effects of both current and prior year accounting performance on CEO incentive compensation. Estimation results for equation (7) are presented in the first two columns of Table 6 and the results for equation (8) are reported in the last two columns of the table. Table 6 is also divided into two panels. Similar to Table 5, the dependent variable is cash-based incentive pay in Panel A and stock-based incentive compensation in Panel B.

Beginning with Panel A of Table 6, the coefficient for $LOGINC_{it}$ (current year earnings) in equation (7) is positive and significant. However, contrary to the prediction of hypothesis H1c, the coefficient for $LOGINC_{it-1}$ (prior year earnings) in equation (7) is not significant. The evidence implies that current period cash bonuses are associated with performance in the current year but not with the prior period. Since the coefficients on $LOGINC_{it}$ and $LOGINC_{it-1}$ in equation (7) include both positive and negative earnings, this suggests that CEOs are penalized for reporting negative earnings in the current year, but there is no lagged effect from the prior year.

Table 6

Tests of the Relation Between CEO Incentive Compensation and Current and Prior Year Earnings^a

Equation (7): $LOGCOMP_{it} = \beta_0 + \beta_1 LOGINC_{it} + \beta_2 LOGINC_{it-1} + \beta_3 LOGASSETS_{it} + \varepsilon_{it}^b$

Equation (8): $LOGCOMP_{it} = \beta_0 + \beta_1 LOGINC_{it} + \beta_2 LOGINC_{it-1} + \beta_3 LOGASSETS_{it} + \beta_4 LOSSDUM_{it} + \beta_5 LOGINC_{it} \times LOSSDUM_{it} + \beta_6 LOSSDUM_{it-1} + \beta_7 LOGINC_{it-1} \times LOSSDUM_{it-1} + \varepsilon_{it}^c$

Panel A: Dependent variable = LOGBONUS_{it}^d

Variable	Equation (7)		Equation (8)	
	Parameter estimate	t-statistic	Parameter estimate	t-statistic
β_0 INTERCEPT	-0.3964	-0.564	-1.4831	-1.708
β_1 LOGINC _{it}	0.1062	13.590 ^g	0.4781	5.676 ^g
β_2 LOGINC _{it-1}	0.0044	0.562	0.1323	1.502
β_3 LOGASSETS _{it}	0.2955	5.729 ^g	-0.0087	-0.116
β_4 LOSSDUM _{it}			2.4083	2.279 ^h
β_5 LOGINC _{it} x LOSSDUM _{it}			-0.5129	-3.659 ^g
β_6 LOSSDUM _{it-1}			-0.8390	-0.761
β_7 LOGINC _{it-1} x LOSSDUM _{it-1}			-0.3446	-2.334 ^h
Adj. R ²	0.2097		0.2325	
N ^e	1088		1088	
$\beta_1 + \beta_5$ (F-statistic)			-0.0348 (0.1536)	
$\beta_2 + \beta_7$ (F-statistic)			-0.2123 (5.0952) ^h	

Table 6 (Contd.)

Panel B: Dependent variable = LOGSTOCK_{it}^f

Variable	Equation (7)		Equation (8)	
	Parameter estimate	t-statistic	Parameter estimate	t-statistic
β_0 INTERCEPT	0.2006	0.234	-1.6107	-1.512
β_1 LOGINC _{it}	0.0009	0.091	0.3568	3.454 ^g
β_2 LOGINC _{it-1}	0.0028	0.290	0.2253	2.085 ^h
β_3 LOGASSETS _{it}	0.3399	5.394 ^g	0.0273	0.298
β_4 LOSSDUM _{it}			1.3200	1.018
β_5 LOGINC _{it} x LOSSDUM _{it}			-0.5861	-3.409 ^g
β_6 LOSSDUM _{it-1}			2.2996	1.700
β_7 LOGINC _{it-1} x LOSSDUM _{it-1}			-0.2322	-1.282
Adj. R ²	0.0273		0.0478	
N ^e	1088		1088	
$\beta_1 + \beta_5$ (F-statistic)			-0.2293 (4.4208) ^h	
$\beta_2 + \beta_7$ (F-statistic)			-0.0069 (0.0036)	

^a The sample consists of 326 firms that report at least one loss and have no CEO turnover during the period 1992-1997, and have at least two consecutive years of earnings data.

^b Variables used in this model are defined as follows:

LOGCOMP_{it} = the logarithm of the cash-based or the stock-based incentive compensation of the CEO for firm *i* in year *t*, in inflation-adjusted dollars.

LOGINC_{it} = the logarithm of earnings before extraordinary items and discontinued operations for firm *i* in year *t*, in inflation-adjusted dollars.

LOGINC_{it-1} = the logarithm of earnings before extraordinary items and discontinued operations for firm *i* in year *t-1*, in inflation-adjusted dollars.

LOGASSETS_{it} = the logarithm of total assets at the end of the year for firm *i* in year *t*, in inflation-adjusted dollars.

^c Variables used in this model are defined as follows:

LOSSDUM_{it} = dummy variable that equals one if earnings before extraordinary items and discontinued operations for firm *i* in year *t* is negative, and zero otherwise.

LOSSDUM_{it-1} = dummy variable that equal one if earnings before extraordinary items and discontinued operations for firm *i* in year *t-1* is negative, and zero otherwise.

All other variables are defined as in equation (7).

^d The dependent variable is the logarithm of the cash bonus paid to the CEO for firm *i* in year *t*, in inflation-adjusted dollars.

^e The number of firm-year observations used in the regression analysis.

^f The dependent variable is the logarithm of the stock-based incentive pay of the CEO for firm *i* in year *t*, in inflation-adjusted dollars. Stock-based incentive pay is the sum of the dollar value of restricted stock and the Black-Scholes value of stock options granted to the CEO during the fiscal year.

^g Statistically significant at the 0.01 level.

^h Statistically significant at the 0.05 level.

Moving to equation (8) where losses and gains are differentiated, the coefficient on current year profits (β_1) is positive and significant (at the 0.01 level) and the coefficient on the current year loss interaction term (β_5) of -0.5129 is significantly negative at the 0.01 level. In addition, the sum of β_1 and β_5 (-0.0348) is not significantly different from zero. Consistent with the findings for equation (6) in Table 5, Panel A, these results indicate that current period CEO cash bonus is positively related to current year profits and this relation is significantly lessened when earnings is negative, thus eliminating the association in loss years.

Now I turn my attention to the impact of *prior* year results on the current year cash bonus. In contrast to the findings for current earnings, the coefficient on prior year profits (β_2) in equation (8) is not significant. However, the coefficient on the prior year loss interaction term (β_7) is negative and significantly different from zero at the 0.05 level.

Moreover, the sum of β_2 and β_7 (-0.2123) is significantly negative at the 0.05 level. This evidence implies that, while current year bonus is not associated with prior year profits, it is negatively related to prior year losses. This could occur if the CEO receives a bonus in the year following a loss as a reward for turning the company around and reporting a profit.

Panel B presents the results for stock-based incentive compensation. The coefficients on both LOGINC_{it} (β_1) and LOGINC_{it-1} (β_2) in equation (7) are insignificant. This suggests that there is no association between stock-based awards and current and prior year accounting performance when profits and losses are not differentiated. However, in equation (8), where profits are distinguished from losses, β_1 (0.3568) is positive and significant (at the 0.01 level), and the coefficient on the current year loss interaction term, β_5 (-0.5861), is negative and significantly different from zero at the 0.01 level. Moreover, the sum of β_1 and β_5 (-0.2293) is significantly negative at the 0.05 level. This is consistent with the evidence reported for equation (6) in Table 5, Panel B. That is, there is a positive association between stock-based awards and current year profits, but a negative association between stock-based pay and current year losses implying that stock-based awards increase when the firm reports losses. The coefficient on *prior* year profits (β_2) from Panel B, equation (8), is 0.2253 which is positive and significant at the 0.05 level. However, the sum of the estimated β_2 and β_7 coefficients (-0.0069) is not significantly different from zero. This result suggests that stock-based incentive compensation is significantly positively related to prior year profits, but not related to prior year losses.

In summary, Table 6 provides evidence consistent with the findings reported in Table 5 that CEO incentive pay (cash-based and stock-based) is positively associated with current year earnings (particularly in profitable years) and that this association is significantly reduced when earnings is negative. In addition, Table 6 reports that the current period cash bonus is not related to prior year profits, but is negatively related to prior year losses. An interpretation is that CEOs receive an increase in their cash bonus in the year following a loss as a reward for changing the firm's financial status from unprofitable to profitable. A similar effect is not observed for stock awards. Although a positive relation is found between stock-based pay and prior year profits, the association between stock awards and prior year losses is insignificant.

5.2 Test for Changes in CEO Incentive Pay Structure Following a Loss

To examine how the structure of the CEO compensation package changes when a loss is reported, I compare the cash-based and stock-based proportions of incentive pay before and after the firm's first loss. I limit my analysis to before and after the firm's first loss in order to ascertain whether the reporting of a loss triggers a recontracting that results in a shift in the composition of the CEO's compensation package. Hayn (1995) and Burgstahler and Dichev (1997) provide evidence that CEOs engage in earnings manipulation to help them cross the "positive earnings line" for the year. This suggests that CEOs make a concerted effort to report a profit rather than a loss, implying that there may be consequences to reporting a loss. Therefore, focusing on the first loss during the sample period enables me to capture the effect of going from positive to negative earnings.

To calculate the cash-based and stock-based proportions I begin with the 588 loss firms described in Chapter Four. I then apply the following screens. First, the firm must experience no CEO turnover during the period. Second, the firm needs to report a profit in the year prior to its first loss during the sample period.²¹ Third, the firm is required to pay some form of incentive compensation in the years prior and subsequent to the loss. Firms with CEO turnover are excluded for reasons described in Section 5.1. The second criterion ensures that the firm has gone from positive to negative earnings for the first time during the sample period. This is necessary in order to capture any structural changes in compensation due to the loss. The last criterion is required since it is not possible to divide by zero. This results in a sample of 111 firms.

Table 7 presents the results of the analysis. As predicted by hypothesis H2, the stock-based proportion of incentive compensation following the loss is significantly greater than the proportion prior to the loss (difference significant at the 0.05 level). The CEO's stock-based incentive pay increases from 55.81 percent (prior to the loss) to 63.05 percent (following the loss). This shift is primarily caused by the decrease in cash-based awards in loss years, as reported in the results of Tables 5 and 6. The evidence is consistent with the descriptive statistics reported in Table 3 (in Chapter Four) which shows that the mean (median) stock-based proportion of incentive pay for the profit firm sample is 49 (55) percent, compared to 64 (73) percent for the loss firms. Also, Table 4 (in Chapter Four) indicates that the mean (median) proportion of stock-based awards is 62 (70) percent for CEOs of firms that report only one or two losses and this proportion increases to 72 (88) percent for firms that report 3 or more losses. Therefore, as losses

²¹ This criterion eliminates firms that report a loss in the first year of the sample period. This is necessary in

become more persistent, CEO incentive pay becomes more stock-based. This is because firms do not pay cash bonuses in loss years, especially when the losses are persistent.

In summary, the results of Table 7 provide further support for the findings in Section 5.1 that suggests there is a shift from cash-based pay to stock-based awards when losses are reported. Also, Table 7 investigates CEO compensation over a three year period centered on the firm's first loss year during the sample period. This enables me to examine the structure of the pay package before and after a reported loss. This differs from the descriptive statistics reported in Chapter Four which analyze all firms reporting at least one loss over the entire sample period.

Table 7

Test for Changes in CEO Incentive Compensation Structure Following a Loss^a

Variable	N	Before 1st loss^d (mean)	After 1st loss^e (mean)	Difference^f (t-statistic)
Cash-based proportion of incentive pay ^b	111	44.19%	36.95%	-7.24% (-1.96) ^g
Stock-based proportion of incentive pay ^c	111	55.81%	63.05%	7.24% (1.96) ^g

^a The sample consists of 111 firms that have no CEO turnover, report a profit in the year prior to its first loss during the sample period (1992-1997), and pay some type of incentive compensation in the years prior and subsequent to the loss.

^b Cash-based incentive pay divided by total incentive pay (cash-based plus stock-based). Cash-based incentive pay is the cash bonus paid to the CEO.

^c Stock-based incentive pay divided by total incentive pay. Stock-based incentive pay is the sum of the dollar value of restricted stock and the Black-Scholes value of the stock options granted to the CEO during the fiscal year.

^d The year prior to the firm's first loss during the sample period.

^e The year following the firm's first loss during the sample period.

order to capture the first time the firm goes from positive to negative earnings during the sample period.

^f The difference between the before and after proportions. The t-statistic is reported in parentheses.

^g Significant at the 0.05 level.

5.3 Test of CEO Turnover Subsequent to a Loss

Another possible consequence to a CEO who reports a loss is job termination. As discussed in Section 5.2, CEOs appear to go to great lengths in order to report positive rather than negative earnings. Therefore, similar to Section 5.2, I focus on the first loss during the sample period to determine whether the reporting of a loss is associated with the termination of the CEO. To analyze how CEO turnover is affected when a loss is reported, I compare the turnover rate before and after the firm's first loss during the sample period.

I calculate the turnover rates using the 588 loss firms, excluding firms that do not report at least two years of profit prior to its first loss during the sample period. This is required to calculate the CEO turnover rate prior to the loss year. Turnover is determined by comparing the firm's CEO in the current year to the CEO in the prior year. If the CEOs differ, the firm is identified as having a CEO turnover in the current year. Therefore, two years of profits are needed to calculate the turnover rate in the year prior to the firm's first loss.

Table 8 shows the results of the comparison. Consistent with the prediction of hypothesis H3, CEO turnover increases significantly following a loss. The turnover rate in the year prior to the loss is 3.76 percent compared to 14.29 percent in the year after the loss (p-value < 0.01). This is consistent with the evidence reported in Table 3 (in Chapter

Four) which shows a turnover rate for the profit sample of 9 percent, compared to 14 percent for the loss sample. Also, Table 4 (in Chapter Four) documents a correlation between the number of losses reported by the firm and the probability of CEO turnover. The turnover rate increases from 13 percent for firms with only one or two losses to 18 percent for firms that report three or more losses. Therefore, the probability of a CEO leaving a firm is higher when a loss is reported.

Table 8
Test of CEO Turnover Following a Loss^a

Variable	N	Before 1st loss^c (mean)	After 1st loss^d (mean)	Difference^e (t-statistic)
Turnover ^b	133	3.76%	14.29%	10.53% (3.24) ^f

^a The sample consists of 133 firms that have at least two years of profit prior to its first loss during the sample period, 1992-1997.

^b Turnover is determined by comparing the firm's CEO in the current year to the CEO in the prior year. If the CEOs differ, the firm is identified as having a CEO turnover in the current year.

^c The year prior to the firm's first loss during the sample period.

^d The year following the firm's first loss during the sample period.

^e The difference between the before and after turnover rates. The t-statistic is reported in parentheses.

^f Significant at the 0.01 level.

5.4 Summary of Results

Tables 5 and 6 provide evidence that cash-based and stock-based CEO incentive compensation is positively associated with current year earnings (particularly when

earnings is positive), but this positive association is substantially reduced when earnings is negative (as predicted by hypotheses H1a and H1b). In fact, there is no relation between cash bonuses and earnings in loss years. This is primarily due to CEOs not receiving cash bonuses when accounting earnings is negative. The corollary to the decrease in bonus pay is an increase in the stock-based proportion of incentive pay in loss years, indicating a shift from cash-based to stock-based incentive awards when earnings is negative.

In addition, Table 6 reports that current period cash bonus is not related to prior year profits, but is negatively related to prior year losses. In contrast, a positive association is found between stock-based awards and prior year profits, but no relation is found for prior year losses. This evidence provides weak support for hypotheses H1c and H1d which predict a positive relation between current year CEO incentive pay and current and *prior* year earnings (H1c) and that the relation is significantly dampened when earnings is negative (H1d).

Table 7 indicates that the stock-based proportion of incentive pay substantially increases after a loss is reported, as predicted by hypothesis H2. This finding, combined with the evidence in Tables 5 and 6 that stock-based incentive compensation increases in loss years, suggests a shift from cash-based to stock-based pay in loss years. This shift appears to be mainly due to the suspension of cash bonuses in loss years. Lastly, consistent with hypothesis H3, Table 8 shows that more CEOs tend to leave after a loss.

In sum, the evidence suggests that there are discernible consequences to a CEO who reports a loss. First, the relation between CEO incentive pay and accounting performance in loss years is differentially weighted when compared to profitable years.

Second, there is a shift from cash-based to stock-based incentive awards. Third, there is a higher probability of CEO termination. Chapter Six summarizes the findings and contributions of this dissertation, and discusses implications for future research.

CHAPTER 6

CONCLUSION

This chapter summarizes the major results and contributions of the dissertation. The chapter concludes with a discussion of the implications of this study for future research.

6.1 Summary

Prior research consistently documents a significantly positive relation between CEO cash compensation and reported accounting earnings. However, the findings in recent studies suggest that the relation between cash compensation (salary plus bonus) and earnings is not symmetrical in gains and losses. Specifically, the results of Dechow et al. (1994) and Gaver and Gaver (1998) suggest that CEOs are rewarded for negative earnings items, such as restructuring charges and losses. Additionally, Matsunaga and Park (2001) find that CEO cash bonuses are not adversely affected by losses. An important consideration in interpreting the results of Dechow et al., Gaver and Gaver, Matsunaga and Park, and other prior research is that these studies limit samples to large, generally profitable firms and limit the definition of compensation to cash awards (salary plus bonus). Therefore, prior research provides only limited insight into the implications of accounting losses for the CEO.

This dissertation examines the consequences to CEOs of reporting losses, including reductions in pay, shifts in the composition of pay, and job termination. Three research hypotheses are investigated. The first hypothesis relates current and prior year accounting performance to the level of CEO cash bonus and stock-based incentive compensation. Distinctions are made between current and prior period performance, and profit and loss years. The second hypothesis posits a shift from cash-based to stock-based pay in loss periods. The third hypothesis proposes that the rate of CEO turnover in the year subsequent to a loss is greater than the turnover rate in the year prior to the loss.

The empirical investigation is based on a sample of 588 firms in the ExecuComp database that report at least one loss during 1992 through 1997. Analysis of the sample firms indicates that the CEOs of these firms receive significantly lower cash bonuses than firms that report only profits during the same period. These loss firms also have a higher CEO turnover rate and are smaller than the profit firms. In addition, as the number of reported losses increase (losses become more persistent), CEOs receive significantly lower levels of incentive compensation, either in the form of cash bonuses or stock-based awards. There is also a positive correlation between the number of losses reported by the firm and the probability of CEO turnover.

The empirical results are generally consistent with the hypotheses. Specifically, the study documents a significant positive association between current period CEO cash bonus and stock-based awards and current year profits. However, contrary to the findings of Dechow et al. (1994) and Gaver and Gaver (1998), there is no relation between cash bonuses and earnings in loss years. This result is primarily due to CEOs not receiving cash bonuses when a loss is reported. The corollary to the decrease in bonus pay is an

increase in the stock-based proportion of incentive pay in loss years, indicating a shift from cash-based to stock-based incentive awards when earnings is negative. Consistent with this, the paper reports a significant increase in the stock-based proportion of incentive pay after a loss is reported.

Although there is no apparent relation between current period cash bonus and prior year profits, a significant negative association is found between cash bonus and prior year losses. Contrary to this, a positive relation is found between stock-based awards and prior year profits, but no relation is found for prior year losses. An interpretation is that CEOs receive an increase in their cash bonus in the year subsequent to a loss as a reward for changing the firm's financial status from unprofitable to profitable. Consequently, this results in a shift from stock-based to cash-based incentive pay when there is a loss in the prior period. Finally, the paper documents that CEO turnover subsequent to a loss is significantly higher than prior to the loss when the firm reports profits.

In sum, the evidence in this dissertation suggests that there are discernible consequences to a CEO who reports a loss. First, the relation between CEO incentive pay and accounting performance in loss years is differentially weighted when compared to profitable years. Second, there is a shift from cash-based to stock-based incentive awards. Third, there is a higher probability of CEO termination.

6.2 Contributions of the Study

The results of this study are important in several aspects. First, since I focus on firms that report at least one loss, my sample is distinct from the set of large, profitable

firms that are the focus of most prior studies. Second, while most researchers have limited their attention to the cash compensation (salary plus bonus) of CEOs, my analysis expands the definition of executive pay to include both the cash-based and stock-based components of CEO incentive compensation. This expanded analysis enables me to document the apparent shift from cash-based to stock-based awards in loss years.

As a third contribution, my paper documents that there is a higher incidence of executive turnover around the year of the loss. If compensation contracts differ significantly between new and incumbent managers, then turnover must be carefully controlled when investigating any changes in CEO pay packages around the time that losses are reported. Finally, my study documents that the relation between current year CEO incentive pay and current and *prior* year earnings in loss years is differentially weighted when compared to profitable years. This differs from most prior work which investigates only the contemporaneous effect of accounting performance on compensation.

6.3 Implications and Directions for Future Research

The evidence in this dissertation suggests that CEO compensation becomes more stock-based when losses are reported. One problem with stock options is that they can become “out-of-the-money” prior to being exercised. An option is said to be “out-of-the-money” when the exercise price exceeds the stock price making the options worthless. The current study could be extended by examining whether these loss firms reprice “out-of-the-money” options or replace them with new options. This is of particular interest since the Financial Accounting Standards Board (FASB) recently issued proposed rules

stating that, if a company reprices its options, it must record as compensation cost the difference between the new lower grant price and any subsequent increase in the market price of the underlying shares.

This paper also documents higher CEO turnover in loss years. Comparison of the compensation contracts of the terminated CEO and new CEO can provide further insights on the effect of losses on CEO pay. For example, is the new CEO paid more or less than the old CEO and is the new CEO's pay more stock-based? This is important because firms may terminate an overpaid CEO and hire a new CEO for a lower level of compensation. Thus, losses may be one mechanism used to better align executive pay with shareholder expectations.

REFERENCES

- Abdel-Khalik, A. R. 1985. The effect of LIFO-switching and firm ownership on executives' pay. *Journal of Accounting Research* 23 (Autumn): 427-447.
- Abowd, J. M. 1990. Does performance-based managerial compensation affect corporate performance? *Industrial and Labor Relations Review* 43 (February): 52-73.
- Ali, A. and P. Zarowin. 1992. The role of earnings levels in annual earnings-returns studies. *Journal of Accounting Research* 30: 286-296.
- Austin, J. R., J. J. Gaver, and K. M. Gaver. 1998. The choice of incentive stock options vs. nonqualified options: a marginal tax rate perspective. *The Journal of the American Taxation Association* 20 (Fall): 1-21.
- Baber, W. R., S. Kang, and K. R. Kumar. 1998. Accounting earnings and executive compensation: the role of earnings persistence. *Journal of Accounting and Economics* 25: 169-193.
- Baber, W. R., S. N. Janakiraman, and S. Kang. 1996. Investment opportunities and the structure of executive compensation. *Journal of Accounting and Economics* 21: 297-318.
- Barro, J. R. and R. J. Barro. 1990. Pay, performance, and turnover of bank CEOs. *Journal of Labor Economics* 8 (October): 448-481.
- Baumol, W. J. 1967. *Business behavior, value and growth*. New York: Harcourt, Brace and World.
- Beaver, W. 1970. The time series behavior of earnings variables. *Journal of Accounting Research* 8 (Supplement): 62-99.
- Beaver, W., R. Lambert, and D. Morse. 1980. The information content of security prices. *Journal of Accounting and Economics* 2: 3-28.
- Benston, G. J. 1985. The self-serving management hypothesis. *Journal of Accounting and Economics* 7: 67-84.

- Boschen, J. F. and K. J. Smith. 1995. You can pay me now *and* you can pay me later: the dynamic response of executive compensation to firm performance. *Journal of Business* 68: 577-608.
- Bryan, S., L. Hwang, and S. Lilien. 1999. CEO stock-based compensation: an empirical analysis of incentive-intensity, relative mix, and economic determinants. Working paper. Wake Forest University and Baruch College.
- Burgstahler, D. and I. Dichev. 1997. Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics* 24: 99-126.
- Campbell, C. J. and C. E. Wasley. 1999. Stock-based incentive contracts and managerial performance: the case of Ralston Purina Company. *Journal of Financial Economics* 51: 195-217.
- Cosh, A. 1975. The remuneration of chief executives in the United Kingdom. *Economics Journal* 85 (March): 75-94.
- Coughlan, A. T. and R. M. Schmidt. 1985. Executive compensation, management turnover, and firm performance. *Journal of Accounting and Economics* 7: 43-66.
- Culpan, R., V. N. Murti, and O. Culpan. 1992. Determinants of CEO pay in service industry firms. *Group & Organization Management* 17 (June): 210-217.
- Dechow, P. M., M. R. Huson, and R. G. Sloan. 1994. The effect of restructuring charges on executives' cash compensation. *The Accounting Review* 69 (January): 138-156.
- Dechow, P. M. and R. G. Sloan. 1991. Executive incentives and the horizon problem. *Journal of Accounting and Economics* 14: 51-89.
- Deckop, J. R. 1988. Determinants of chief executive officer compensation. *Industrial and Labor Relations Review* 41 (January): 215-226.
- Gaver, J. J. and K. M. Gaver. 1993. The association between performance plan adoption and corporate capital investment: a note. *Journal of Management Accounting Research* 5 (Fall): 145-158.
- Gaver, J. J. and K. M. Gaver. 1998. The relation between nonrecurring accounting transactions and CEO cash compensation. *The Accounting Review* 73 (April): 235-253.
- Gibbons, R. and K. J. Murphy. 1990. Relative performance evaluation for chief executive officers. *Industrial and Labor Relations Review* 43 (February): 30S-51S.

- Gilson, S. C. and M. R. Vetsuypens. 1993. CEO compensation in financially distressed firms: an empirical analysis. *The Journal of Finance* 48 (June): 425-458.
- Hayn, C. 1995. The information content of losses. *Journal of Accounting and Economics* 20: 125-153.
- Healy, P. M. 1985. The effect of bonus schemes on accounting decisions. *Journal of Accounting and Economics* 7: 85-107.
- Hirschey, M. and J. L. Pappas. 1981. Regulatory and life cycle influences on managerial incentives. *Southern Economic Journal* 46 (October): 327-332.
- Hogan, T. and L. McPheters. 1980. Executive compensation: performance versus personal characteristics. *Southern Economic Journal* 46 (April): 1060-1068.
- Holmstrom, B. 1979. Moral hazard and observability. *Bell Journal of Economics* (Spring): 74-91.
- Hubbard, R. G. and D. Palia. 1995. Executive pay and performance: evidence from the U. S. banking industry. *Journal of Financial Economics* 39: 105-130.
- Ittner, C. D., D. F. Larcker, and M. V. Rajan. 1997. The choice of performance measures in annual bonus contracts. *The Accounting Review* 72 (April): 231-255.
- 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.
- Jensen, M. C. and K. J. Murphy. 1990. Performance pay and top-management incentives. *Journal of Political Economy* 98 (April): 225-264.
- Kang, J. and A. Shivdasani. 1995. Firm performance, corporate governance, and top executive turnover in Japan. *Journal of Financial Economics* 38: 29-58.
- Kole, S. R. 1997. The complexity of compensation contracts. *Journal of Financial Economics* 43: 79-104.
- Lambert, R. A. and D. F. Larcker. 1987. An analysis of the use of accounting and market measures of performance in executive compensation contracts. *Journal of Accounting Research* 25 (Supplement): 85-125.
- Larcker, D. F. 1983. The association between performance plan adoption and corporate capital investment. *Journal of Accounting and Economics* 5: 3-30.

- Lewellen, W. G. and B. Huntsman. 1970. Managerial pay and corporate performance. *American Economic Review* 60 (September): 710-720.
- Managed Healthcare*. 1998. Report says HMO execs made millions while the industry posted huge losses. October: 14.
- Matsunaga, S. R. and C. W. Park. 2001. The effect of missing a quarterly earnings benchmark on the CEO's annual bonus. *The Accounting Review* 76 (July): 313-332.
- Murphy, K. J. 1985. Corporate performance and managerial remuneration: an empirical analysis. *Journal of Accounting and Economics* 7 (April): 11-42.
- Murphy, K. J. 1998. Executive compensation. In O. Ashenfelter and D. Card (eds.) *Handbook of Labor Economics*. Amsterdam: North-Holland.
- Murphy, K. J. and J. L. Zimmerman. 1993. Financial performance surrounding CEO turnover. *Journal of Accounting and Economics* 16 (January/April/July): 273-315.
- The New York Times*. 1998. Executive cash machine; how a pliable system inflates pay levels. November 8.
- The New York Times*. 2001. Ford Motor will not pay annual bonus to managers. August 30.
- Pavlik, E. L., T. W. Scott, and P. Tiessen. 1993. Executive compensation: issues and research. *Journal of Accounting Literature* 12: 131-189.
- Riahi-Belkaoui, A. 1992. Executive compensation, organizational effectiveness, social performance and firm performance: an empirical investigation. *Journal of Business Finance and Accounting* 19 (January): 25-38.
- Sacramento Bee*. 1998. CEO pay outpaces corporate profits. May 17.
- Schipper, K. 1989. Commentary on earnings management. *Accounting Horizons* (December): 91-102.
- Sloan, R. G. 1993. Accounting earnings and top executive compensation. *Journal of Accounting and Economics* 16 (January/April/July): 55-100.
- Smith, C. and R. Watts. 1982. Incentive and tax effects of executive compensation plans. *Australian Journal of Management* (December): 139-157.

Warner, J., R. Watts, and K. Wruck. 1988. Stock prices and top management changes. *Journal of Financial Economics* 20: 461-492.

The Washington Post. 1997. It pays to be a top executive; compensation not always tied to performance. June 16.

Weisbach, M. 1988. Outside directors and CEO turnover. *Journal of Financial Economics* 20: 431-460.