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Executive Stock Options: The Effect on Discretionary Accruals and Earnings Manipulation

by

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A Thesis Submitted to the Faculty of

The College of Business

In Partial Fulfillment of the Requirements for the Degree of

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This dissertation was prepared under the guidance of the candidate's thesis advisor, Dr. William S. Hopwood, School of Accounting, and has been approved by the members of the candidate's supervisory committee. It was submitted to the faculty of The College of Business and was accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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Abstract

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My objective is to evaluate whether managers, when executive stock options (ESOs) are part of their compensation, manipulate earnings by using discretionary accruals (DAs).

Earnings manipulation requires managers to have some targets or expectations in mind. The target may be in the form of investors' expectations or the managers' own subjective expectations. Although meeting investors' expectations could result in income smoothing, executives might also manipulate earnings to achieve their own subjective expectations for private gains.

I develop and test three hypotheses using logistic regression to address the issue of earnings manipulation by executives. The first hypothesis

evaluates the likelihood of income smoothing when in-the-money ESOs (RVESO) are exercisable. RVESO represents the total value of exercisable ESOs in-the-money for the top five executives as disclosed in the proxy statement.

The second hypothesis addresses the likelihood of earnings manipulation when a substantial dollar value of in-the-money ESOs are exercisable. The third hypothesis uses prior-period DAs to consider the possible effect of the value realized from exercise of ESOs on earnings manipulation.

The empirical results of this study provide evidence that executives are not more likely to manipulate earnings when ESOs are part of the compensation package. Results indicate that an increase in the value of the RVESO does not increase the likelihood that management will use DAs to smooth income or manipulate earnings.

One explanation of these findings could be that managers have some restraints on their actions that includes, but are not limited to, the presence of audit committees, vigilance by external auditors, the existence of an efficient labor market, and financial institutions that hold a sizable percentage of equity. Dechow, Sloan, and Sweeney (1996) state that fear of exposure and consequent penalty by the stock market is another constraint on managerial actions.

To

My wife, and our parents and grandparents

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CHAPTER 1

INTRODUCTION

1.0 Objective

My objective is to evaluate whether managers, when executive stock options (ESOs) are part of their compensation, manipulate earnings by using discretionary accruals (DAs).

1.1 Contributions and Implications

The study contributes to the earnings manipulation literature: it investigates whether managers manipulate earnings when ESOs are part of their compensation. Earnings manipulation requires managers to have some targets or expectations in mind. The target may be in the form of investors' expectations or managers' own subjective expectations. Meeting the investors' expectations could result in income smoothing, which might be valued positively by the investors. However, executives might also manipulate earnings to achieve their own subjective expectations for private gains.

The study also contributes to the management compensation literature: it evaluates ESOs, a component of management compensation,

as a potential incentive for earnings manipulation.[1] The study finds that in-the-money exercisable executive stock options do not increase the likelihood of smoothing or manipulating earnings.[2]

My study is timely because of the continuing interest in the disclosure requirements for ESOs. It also exploits the wealth of new data made available due to recent Securities Exchange Commission (SEC) disclosure regulations. Over the years, executive compensation has experienced a significant shift from fixed and cash-based compensation to market-based compensation. In 1992, the SEC responded to this shift by mandating significant changes in the disclosure requirements for stock options. For example, the SEC expanded the proxy disclosure requirements for management compensation, including ESOs.

1.2 A Theoretical and Institutional Overview

An *executive stock option* plan gives managers the right to buy a specified number of shares for a specified period at a specified price (the *exercise price*). The value of this long-term contract varies with market measures of corporate performance. ESOs, which are usually granted for a maximum of ten years, can be exercised after one to four years, subject to

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[1] Healy (1985) identified bonus schemes as an incentive for managers to manipulate earnings during the 1970s.

[2] Options are said to be in-the-money if the market price of the underlying stock exceeds the exercise price of the share.

stipulations contained in the compensation contract. These stipulations are based on factors such as the performance of the firm, the time elapsed, and the market price of the company's stock. ESOs cannot be exercised if the stipulations are not met.[3]

Over the past decade, ESOs have been used to increase executive compensation without creating significant cash outflows. For example, as Banerjee (1993, 322) noted, "In 1990, more of the nation's top managers received raises in their compensation from ESOs. Further, long-term compensation of chief executives of large companies consisted mainly of stock options and has risen to one-third of the total pay" in relation to 1989. In 1991, about 60 companies gave so-called megagrants—ESOs that exceed three times the executive's annual pay—to their CEOs, compared with 45 such companies in 1990.[4] The highest megagrant to a CEO amounted to 16 times his annual pay (Banerjee 1993).[5]

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[3]An example from Citicorp explains one such stipulation. In 1995, John S. Reed, the CEO of Citicorp, granted 300 of his top managers performance-based stock options when the market value of a Citicorp share was at $63. The options were to become exercisable when the company's daily average stock price reached $100 for 20 out of 30 consecutive days ("As Options Windfall Nears, Citicorp's Brass Hold Breath, Analysts Raise Eyebrows", *Wall Street Journal*, November 20, 1996). On average, these stock options were valued at $323,000 per executive (based on the closing price for November 19, 1996) and were designed to align the interests of senior management more closely with those of the stockholders, as per the company's spokesperson.

[4] Judging the Value of Stock Options, *New York Times*, May 26, 1991.

[5] The average compensation of an American CEO is 109 times that of an average American worker if bonuses and stock options are included, as compared to 53 times when only cash compensation is considered (Regan 1991). Donald A. Pels, CEO of LIN

ESOs are granted with the implicit assumption that in the long run, increased ownership in the firm will motivate executives to maximize shareholders' wealth. Over the long term, stock option plans are intended to reduce the potential conflicts of interest between shareholders and executives. Aligning executives' interests with those of the shareholders is one of the most often cited reasons for seeking shareholders' approval for the executive stock option plan.

However, managers can and will act in their own best interests in their response to the economic incentives in compensation contracts (Baiman 1990). Amihud and Lev (1981) show that management is more risk-averse than are shareholders.

Higher earnings often imply higher accounting and stock returns, which leads to higher compensation for executives holding in-the-money ESOs.[5] Thus, I hypothesize that when ESOs are part of management

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Broadcasting, made $186.2 million through exercising stock options in 1991 (The Flapover Executive Pay, *Business Week* May 6, 1991). In 1991, Anthony O' Reilly, CEO of Heinz Co., gained $71.5 million through exercise of stock options. Five other CEOs gained over $10 million from exercising their stock options. The gains constituted over 80% of those six CEOs' compensation ("A Little Pain and a Lot of Gain", *Wall Street Journal*, April 22, 1992).

[6] The seminal work of Ball and Brown (1968), followed by other empirical research (Beaver, Lambert, and Morse 1980), indicates that unexpected accounting earnings can explain the changes in stock prices. The normal approach is to associate abnormal stock returns to unexpected earnings. In regressing abnormal returns over unexpected earnings, the regression slope coefficient is termed as an *earnings response coefficient*. Kormendi and Lipe (1987) hold that the impact of current earnings innovation (measured by earnings response coefficients) varies with the expectations of persistence in future earnings innovation.

compensation, executives can benefit by increasing earnings through DAs.[7]

1.3 Summary of Significant Results

The empirical results of this study provide evidence that executives are not more likely to manipulate earnings when in-the-money exercisable ESOs are a large part of their compensation package. Logistic regression results indicate that an increase in the value of in-the-money exercisable ESOs or value realized on exercise of ESOs does not increase the likelihood of earnings manipulation through the use of DAs.

Although managers have some flexibility in manipulating earnings, they cannot arbitrarily report just any number to enhance their compensation. The restraints on managers' actions include, but are not limited to, audit committees and vigilance by external auditors, an efficient labor market, and large financial institutions that hold a sizable percentage of equity. Managers may also fear exposure and subsequent stock market penalties if they manipulate earnings (Dechow, Sloan, and Sweeney 1996).

[7]Earnings can be decomposed into cash flows from operations and total accruals. Total accruals comprise discretionary and nondiscretionary components. It is assumed that discretionary accruals are subject to earnings management, due to the flexibility provided by the GAAP (Subramanyam 1996).

1.4 Outline of Dissertation

The dissertation is organized as follows. Chapter 2 identifies the various characteristics that distinguish an ESO from a traded call option, and discusses the rationale for issuing ESOs. The chapter also reviews the literature on ESOs, discretionary accruals, earnings manipulation, and income smoothing.

Chapter 3 provides the historical and institutional background on ESOs. The chapter discusses the roles that two regulatory institutions—the Financial Accounting Standards Board and the Securities and Exchange Commission— play in the development of reporting standards for ESOs.

Chapter 4 discusses research methodology. It develops three hypotheses in general terms and states them in terms of model parameters. It then describes the research model and provides a rationale for variables used.

Chapter 5 describes the final sample, and presents empirical results and analyses for the three hypotheses developed in chapter 4. The chapter discusses limitations of the study and makes suggestions for future research.

CHAPTER 2

REVIEW OF EXECUTIVE STOCK OPTIONS, DISCRETIONARY ACCRUALS, EARNINGS MANIPULATION, AND INCOME SMOOTHING

2.0 Introduction

This chapter reviews the literature on executive stock options, discretionary accruals, earnings manipulation, and income smoothing.

The discussions on these subjects are organized into seven sections. The chapter begins by defining the ESO plan and identifies the various characteristics that distinguish an ESO from a publicly traded call option. The second section discusses the rationale for issuing ESOs, and compares ESOs with traded call options. The third section discusses earnings manipulation. It defines discretionary accruals, measurement issues related to discretionary accruals, and the existing literature on the use of discretionary accruals for earnings manipulation. Section 4 discusses various incentives for earnings manipulation, including debt covenants, corporate governance, external financing, and compensation contracts. The fifth section reviews the literature on income smoothing. Section 6 presents some constraints to earnings manipulation. The final section provides a summary of the chapter.

2.1 Executive Stock Options and Traded Call Options

A traded call option gives the holder the right to purchase a certain number of shares of a particular common stock at a certain price (*exercise price*) and within a certain period (typically, three months to a year).

Under an ESO plan, a certain group of employees is granted the right to buy a specific number of shares of the employing company's common stock at the exercise price.[8] These options are issued for a maximum period of ten years and are usually granted at the current market price. When the exercise price is equal to the market price, the option is at-the-money. If the market price exceeds the exercise price, the option is said to be in-the-money. The option is said to be out-of-the-money if the market price is less than the exercise price.

ESOs are like call options. However, they are not traded publicly, and differ from publicly traded options in many ways. This section discusses the characteristics of ESOs that make them different from standard traded options: nontransferability, time to maturity, vesting period,

[8] Besides compensating executives through a stock option plan, an employer can compensate employees under other stock-based compensation contracts. The list includes stock appreciation rights (SARs), restricted stock, and stock purchase plans. SARs compensate an employee for an amount equivalent to the increase in the market price of the share over a given time. Restricted stock refers to stock whose sale is forbidden until some contractual obligations are performed by the employee. In the case of restricted stock, rights vest only when service or performance requirements are met by the employee who holds those rights. A stock purchase plan allows employees to purchase stock at a discount (normally less than 5%).

performance criteria, forfeiture clauses, dilution effects, and the repricing of options.

2.1.1 Nontransferability

Under traditional arbitrage-based option valuation models, early exercise of call options is generally not optimal (Merton 1973). This might hold true for a traditional call option, which can realize its maximum value over time, but not for ESOs, because of restrictions placed on selling or transferring them. ESOs are not transferable (once vested) and cannot be sold in the same manner as publicly traded options. If an executive leaves his or her employer, the ESOs must be exercised or they are lost. The presence of nontransferability affects the exercise policy of an employee. For example, departure from a firm can force the early exercise of options, which could reduce the value of the options to the executive.

Lambert, Larcker, and Verrechia (1991) and Huddart (1994) focus on executives' inability to freely trade either stock options or the underlying stock. Lambert et al. contend that a risk-averse executive will exercise options earlier than a risk-seeking executive and that the early exercise will lower the value of the option.

2.1.2 Time to Maturity

ESO maturity dates differ from those of traded stock options. ESOs usually have a longer maturity term than do publicly traded options. ESOs mature over a period of one to four years; publicly traded options normally mature within a year.

The longer maturity increases the uncertainty in valuating ESOs, because an estimate of the volatility in stock prices or dividend yield can be determined with more certainty for a call option that is due to mature in two months than it can for an ESO with a five-to-ten-year life. A very small change in parameter estimates can lead to a large change in the estimated value of options, and hence in the valuation of ESOs.

2.1.3 Vesting Period

Employers frequently impose conditions in an employee's compensation contract. When an ESO is granted, one of the conditions most often imposed is the vesting period. For example, an employee must remain with the employer for a minimum period of two years before the options vest, or before the employee can own the options. An executive who leaves the organization during the vesting period could forfeit his or

her ESOs.[9] There are no such restrictions on publicly traded options.

2.1.4 Performance Criteria

ESOs can be fixed or performance-based. According to FASB Standard 123, a fixed award is defined as an award of stock-based employee compensation that requires the employee to remain in the service of the employer for a specified time period. Performance-based ESOs have a specific requirement that must be met before the options can vest (or become exercisable). This requirement may or may not be market-based. For example, some ESOs will vest only if a certain market price is reached or the firm meets a stipulated growth rate in earnings or sales. ESOs will remain unexercisable (or will not vest) if the stipulated growth rate is not met.

2.1.5 Forfeiture Clause

Most compensation contracts have a forfeiture clause. An employee who leaves the organization is normally forced to forfeit ESOs that have not yet vested. In some cases, the organization may require the departing employee to exercise any vested ESOs within a certain time period or face

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[9] Below is an excerpt from the 1994 proxy statement of Service Merchandise Corporation that describes the vesting period.

"Options were granted on April 21, 1993 and vest 20% annually over five years. There are no criteria for vesting other than continued employment through the vesting dates and no other material terms of the contract except as disclosed under 'Change in Provisions under the Company's 1989 Employee Stock Incentive Plan'" (Service Merchandise Proxy Statement, 1994, 8).

the forfeiture. The early exercise of ESOs can lower the value of options (Huddart 1994). Publicly traded options do not have forfeiture clauses.

2.1.6 Dilution Effect

Publicly traded options are obligations between third parties (not the underlying firm) and are therefore not associated with any capital structure effects. ESOs are obligations of the firm that can entail issuing new shares when the ESOs are exercised. This dilutes existing shareholders' claims unless the firm has a buy-back agreement. Under such an agreement, the firm satisfies its obligation by buying shares in the open market, leaving the total number of outstanding shares unchanged. Buyback agreements are intended to prevent equity dilution.

2.1.7 Repricing Option

Many compensation contracts have a repricing and reissuance option. If the company's stock price falls below a certain minimum due to uncontrollable factors (a market crash, for example), the outstanding ESOs can be exchanged for new options with a lower exercise price. This lower price usually becomes the new prevailing market price. Saly (1994) shows that repricing of ESOs is very common after a market crash.

2.2 Rationale for Granting Executive Stock Options

Raviv (1985) discusses four hypotheses - incentive, screening, signaling, and the taxes - on why firms issue ESOs. This section also discusses some negative effects of granting ESOs.

According to the incentive hypothesis, management compensation contracts are designed to align the interests of shareholders and managers. If part of a manager's compensation takes the form of stock options, the manager has an inherent incentive to increase the share price. As the stock price rises, the stock options become more valuable to the manager.

Jensen and Murphy (1990) use 73 manufacturing firms to evaluate the incentives generated by stock options. They establish a numeric relation between the increase in value of existing stock options and an increase in shareholders' wealth. They also present evidence that the value of options is more sensitive to increases in shareholders' wealth than are cash salaries and bonuses. For their sample of 73 firms, the value of options rises approximately $0.145 for every $1,000 increase in stockholders' wealth. This is far more than the $0.033 increase for cash salaries and bonuses.

A compensation plan with stock options is assumed to be inherently risky (Raviv 1985). According to the screening hypothesis, managers are

forced to self-select a compensation plan based on their risk tolerance. Thus, ESOs will attract managers with high risk tolerance and screen out those with less risk tolerance.

The signaling hypothesis suggests that when managers accept a major part of their compensation in the form of stock options, it conveys a positive signal to the market. The market perceives managers as being willing to take a risk based on the potential prospects of the firm.

DeFusco, Johnson, and Zorn (1990) show that investors react favorably when firms adopt executive stock option plans or other similar long-term incentive schemes. DeFusco et al. use a sample of 537 firms that adopted or renewed stock option plans between 1978 and 1992 and find a positive abnormal return for stockholders in the two days after firms adopt either a stock option plan or other long-term incentive schemes. The news of the ESOs is accompanied by a negative return for the bondholders. These results confirm the findings of Brickley, Bhagat, and Lease (1985) and Murphy (1985).

The tax hypothesis suggests that compensation plans are designed to minimize the total tax liability of the organization and the manager.

Holland and Lewellen (1962) and Lewellen (1968) document the effect of stock option awards on corporate performance. These papers

associate the spread of executive stock options to the federal income tax changes enacted by Congress from 1950 to 1970.

The negative effects of issuing ESOs have also been discussed in the literature (Murphy 1985). Some studies find that granting stock options does not necessarily lead to optimal decisions by managers. Murphy analyzes top managers' compensation in 73 manufacturing firms between 1964 and 1981 and finds a negative association between the firms' stock returns and the value of stock options granted in a given year. DeFusco, Johnson, and Zorn (1991) use a sample of 359 firms that adopted stock option plans between 1978 and 1982. They find a decline in research and development spending coupled with an abnormal increase in general, administrative, and selling expenses. They also find increasingly negative stock returns for five years in a row after the plans were adopted. Lambert, Lanen, and Larcker (1989) suggest that firms pay lower dividends after the stock option plans have been adopted.

A potential problem with megagrants of stock options is that members of management might accumulate a sufficient stake in the firm that enables them to become permanently entrenched in their present job by virtue of their voting power. However, the support for the entrenchment hypothesis is very limited (Johnson, Magee, Nagrajan, and Newman 1985).

Venkateswar (1992) reports on the dilution impact when a firm issues a large number of stock options, which can adversely affect the claims of existing shareholders. Venkateswar provides evidence that beyond a certain limit, the dilution can wipe out the incentive effect created by the original compensation contract. The dilution effect can be neutralized if the firm using a buy-back policy, under which the firm agrees to buy back from the market an amount of stock equal to the exercised options.

2.3 Earnings Manipulation

Earnings manipulation is used to influence earnings in such a way as to move them towards some target, such as analysts' forecasts or managements' expectations.

Income smoothing, which can be considered a type of earnings manipulation, is used to bring reported earnings as close as possible to expected earnings. The objective is to dampen earnings variability and improve investors' perception of the future predictability of earnings.

One way to achieve earnings manipulation or income smoothing involves the use of discretionary accruals (DAs). The flexibility provided by the Generally Accepted Accounting Principles (GAAP) in the treatment of certain transactions makes discretionary accruals a convenient tool for

earnings manipulation. My study uses DAs as a proxy for earnings manipulation.

2.3.1 Discretionary Accruals

This section defines discretionary accruals and reviews some prior studies considering earnings manipulation through accruals.[10]

Earnings can be decomposed into cash flows from operations and total accruals. Total accruals have both discretionary and nondiscretionary components. Typically, it is assumed in the accounting literature that discretionary accruals are subject to managerial manipulation. This assumption arises from the flexibility accorded under GAAP for recording certain transactions, which gives managers an opportunity to manipulate earnings for private gain.[11]

Managerial discretion associated with DAs has been examined from two different perspectives. One group of studies (e.g., Watts and Zimmerman 1986; and Holthausen 1990) suggests that managers have

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[10] Schipper (1989, 92) defines earnings manipulation as "...a purposeful intervention in the external financial reporting process for private gains."

[11] Managers can choose, within the purview of GAAP, from a set of manipulation methods comprising real decisions and pure accounting decisions. Real decisions include operating, financing, and investment decisions (Jiambalvo, 1996). Real decisions involve an actual delay in, or acceleration of, expense or revenue recognition. Delaying or accelerating advertising costs or research and development expenditures are examples of operating decision that has an impact on cash flows. Managers can also use pure accounting decisions to manipulate or influence earnings. For example, they can choose between accounting methods such as straight line or accelerated depreciation. Pure accounting decisions comprise most of the DAs.

private information, and that managerial discretion can be used to disclose this private information thereby enhancing earnings' informativeness. The extent to which a manager can smooth income reflects the manager's knowledge regarding the firm's future performance. In this scenario, we assume that the market is efficient, that the market values the discretionary component of earnings, enabling it to appropriately incorporate that value in the stock price (Subramanyam 1996).

A contrasting view suggests that an opportunistic use of discretion by managers can distort reported earnings (e.g., Healy and Palepu 1993; Sweeney 1994). "In this case, the pricing of discretionary accruals is evidence of mispricing" (Subramanyam 1996, 252), and the stock market is functionally fixated on earnings (Hand 1989; and Sloan 1995).

2.3.2 Measuring Discretionary Accruals

Since discretionary accruals are not observable, they need to be estimated. Researchers have made extensive use of the Jones model (1991) or its variations to estimate discretionary accruals. The modified Jones model (1995) is one such variation that segregates accruals into discretionary and nondiscretionary components (Dechow, Sloan, and Sweeney 1995).[12] The measure of discretionary accruals will therefore

[12] The modified version of Jones model (1991) was first considered by Dechow, Sloan, and Sweeney (1995).

depend on how accurately the Jones model (or its variations) segregate the accruals into discretionary and nondiscretionary components.

While the Jones model (1991) and its variations have been used extensively to detect earnings management, "... the ability of these models to partition accruals into discretionary and nondiscretionary components is ... however ... not without question" (Subramanyam 1996, 252). Perry and Williams (1994); Gaver, Gaver, and Austin (1995); and Jiambalvo (1996) suggest that the Jones model and its variations effectively and accurately segregate the accruals. Dechow, Sloan, and Sweeney (1995) conclude that these models are generally well specified, but generate low-power tests for detecting earnings management. Hansen (1996) and Guay, Kothari, and Watts (1996) question the ability of these models to accurately partition and measure accruals.

2.3.3 Existing Literature - Discretionary Accruals

The widespread use of earnings-based incentives has raised concerns that managers will adopt accounting procedures to maximize their earnings-based compensation. Accounting performance has become a prime factor in changing managers' compensation. As rational individuals, executives will adopt strategies to maximize their utility. This study evaluates whether executives manipulate reported earnings through DAs when ESOs are part of their compensation.

2.3.3.1 Discretionary Accruals and Manipulation in Bonus Schemes

Management compensation has been cited as a major motivation for earnings manipulation during the 1970s and early 1980s. Murphy and Zimmerman (1993) and Healy (1985) find evidence of manipulation of discretionary spending and accruals by CEOs who seek to maximize their compensation under existing bonus schemes.

McNichols, DeAngelo, and Wilson (1988), consistent with the bonus hypothesis of Healy (1985), observe that managers of firms with extreme earnings use negative accruals to maximize their compensation. Hagerman and Zmijewski (1979) find that bonus plans influence the choice of accounting procedure.

2.3.3.2 Discretionary Accruals and Estimation Models

Dechow, Sloan, and Sweeney (1995) compare five commonly used models for estimating discretionary accruals. They conclude that all models are generally well specified for a random sample of firms, although they also find that the models generate low-power tests of earnings management. However, the modified Jones model (1995) exhibits the greatest power in detecting earnings management.

To examine the effectiveness of five discretionary models in measuring manipulation, Guay, Kothari, and Watts (1996) regress stock returns on cash flows, discretionary, and nondiscretionary accruals. They

find that only the Jones (1991) and modified Jones (1995) models show some evidence that managers use DAs to manipulate earnings.

Jones (1997) extends Guay, Kothari, and Watts (1996) and examines short and long-term discretionary accruals separately. He finds that short-term discretionary accrual estimates are noisy measures of earnings manipulation, but long-term discretionary accruals are not.

Subramanayam (1996) regresses stock returns on cash flows and accruals. He finds that the market values estimates of discretionary accruals [estimated using the modified Jones model (1995)] are valued by the market. Subramanayam implies that managers either use their discretion to reflect the economic value of the firm or the "... market prices represent value-irrelevant opportunistic discretionary accruals."

2.3.3.3 Discretionary Accruals and Manipulation in Other Contexts

DeAngelo (1988) examines accruals and earnings around the period of a proxy fight. Dissident shareholders cited poor accounting numbers as evidence of poor management. She finds an upturn in income-increasing accruals prior to the proxy fight. The examination of unexpected accruals during the proxy fight indicates that managers faced with job security problems are likely to choose income-increasing accruals.

Matsunaga (1995) shows a positive relation between the use of ESOs and a firm's reliance on income-increasing accounting methods. He

shows a positive, although weak and inconsistent, relation between the use of ESOs and the firm's reliance on income-increasing accounting methods. Matsunaga suggests that ESOs are likely to be used when the board of directors believes that the firm can benefit from reporting higher income while it is increasing the level of executive compensation—a choice made further attractive by the ESO's positive effect on cash flows.

Freidlan (1994) finds that issuers of initial public offerings (IPOs) tend to adopt income-increasing accruals. In setting the offer price, investors and creditors rely on the information provided in the issuing firm's prospectus. He reports that managers are motivated to choose income-increasing accounting accruals when they report the accounting information in the prospectus. He concludes that managers use discretionary accruals to increase earnings in conjunction with IPOs, since an increase in earnings is generally accompanied by a significant increase in discretionary accruals.

Dechow and Sloan (1991, 51) "... investigate the hypothesis that CEOs in their final years of office manage discretionary investment expenditures to improve short-term earnings performance." Cahan (1992) provides evidence that companies record abnormal income-reducing accruals during antitrust investigations or prior to management buyout offers (Perry and Williams 1994).

2.4 Incentives for Earnings Manipulation

Earnings manipulation can have negative consequences for financial statement readers, and impair the statements' usefulness in helping prospective shareholders to make decisions (Warfield et al. 1995).[13] The business community in general concedes that earnings manipulation in financial reporting is pervasive (Bartov 1993). Explicit and implicit contracts (both existing and potential) create incentives for executives to manipulate earnings (Watts and Zimmerman 1990).

Four primary incentives for manipulating earnings are debt covenants (Dhaliwal 1980), weaknesses in corporate governance (Dechow, Sloan, and Sweeney 1996), the need for external financing (Dechow, Sloan, and Sweeney 1996), and compensation contracts (Healy 1985). This section discusses these studies.

2.4.1 Debt Covenants

Several studies show the use of audited financial statements to monitor debt contracts for both public debt and private debt (Smith and Warner 1979; and Leftwich 1983). Most debt contracts include covenants based on published audited financial statements. The purpose of these covenants is to restrain managerial actions. A breach of the debt covenants

[13]Examples of earnings manipulation include reports that inflate earnings to avoid a debt-covenant violation, and underreporting of earnings to negotiate a favorable management buyout.

in the debt contract gives the lender the right to take action based on the conditions stipulated in the covenants.

The restrictions in such a contract typically relate to distributing liquidating dividends, maintaining a minimum working capital level, restricting riskier merger activities, and issuing higher-priority debts. Often, the creditor requires the external auditors to certify that no breach of contract has been made. If a manager defaults or breaches a debt covenant in terms of accounting numbers, he or she is likely to incur substantial costs in renegotiations (Watts and Zimmerman 1986). Therefore managers are motivated to use discretion in the choice of accounting procedures provided by GAAP to minimize the probability of violating a debt covenant and consequently the contract.

If a firm is close to violating a debt contract, it is likely to manipulate earnings (Healy and Palepu 1990). Sweeney (1994) shows that managers change accounting procedures in response to tightening debt governance constraints. DeFond and Jiambalvo (1994) report significant working capital accruals in the year of debt covenant violation.

Researchers have used leverage ratios (total debt / total assets) as a proxy for closeness to governance violation (Duke and Hunt 1990). Watts and Zimmerman (1986, 216) predict: "Ceteris paribus, the larger a firm's debt-equity ratio, the more likely the firm's manager is to select accounting

procedures that shift reported earnings from the future period to the current period." Press and Weintrop (1990) also use total debt to total assets as a proxy for existence and tightness of debt covenant (Dechow, Sloan, and Sweeney 1996).[14] This study also uses total debt to total assets as a proxy measure for debt covenant violation.

2.4.2 Corporate Governance

Earnings manipulation also relates to weaknesses in the governance structure. The objective of an internal governance structure is to maintain the credibility of financial statements and provide a barrier to undesirable activities.[15] Indications of weak governance include the absence of an audit committee, low quality of auditors (Dechow, Sloan, and Sweeney 1996), and a CEO who serves as the board chair (Jensen 1993).[16] When the CEO

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[14] Two problems with the leverage ratio are that it is positively related to the demand for external equity financing and that it is a noisy measure of closeness to governance. When the demand for external equity financing is related to the leverage ratio, it is difficult to segregate and measure the impact of the two variables individually. "Thus, the leverage ratio may explain earnings manipulation even in the absence of binding debt governance" (Dechow, Sloan, and Sweeney 1996,14).

[15] It is not clear that all manipulations are undesirable. For example, DAs that avoid debt covenant violation could be in the shareholders' best interest. Income smoothing may also be desirable in some cases. For example, when shareholders are conservative and want to obtain a fixed return on their investments.

[16] The quality of auditors plays a role in establishing the credibility of financial statements. Palmrose (1988) links higher quality to the Big Six (then Big Eight) audit firms, showing empirically that the Big Six are sued less frequently than are other audit firms. Most Fortune 500 companies use one of the Big Six as their auditors, and therefore the quality of the audit is not a major issue for this study. Companies selected for this study are primarily large firms, and most are listed on the New York Stock Exchange (NYSE). One of the listing requirements for the NYSE is that the listed company must have an audit

serves as chairperson, the board is more likely to be dominated by insiders, which increases the probability of earnings manipulation. This study uses a zero-one dummy variable to control for whether the CEO and the chairperson of the board are the same.

2.4.3 External Financing

Practitioners have identified the need for external financing as the primary motive to manipulate earnings (Dechow, Sloan, and Sweeney 1996). Opler and Titman (1994) show that firms with high leverage ratios are more likely to issue equity. Because there is no market-determined price for IPOs before they are sold to investors, underwriters must use other information to set the offering price. Accounting information presented in the prospectus serves as the primary source of information.

Titman and Trueman (1986), and Hughes (1986) show that the financial statement information in the prospectus provides significant input in the pricing of an IPO. The apparent association between financial statement information and the offering price of an IPO suggests that issuers have incentives to use income-increasing accruals to increase the proceeds from the IPO.[17]

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committee. Thus, the companies selected are likely to have audit committees.

[17] Many IPOs are issued by new companies with no previous earnings. These companies, therefore, cannot influence reported earnings when issuing prospectus.

2.4.4 Compensation Contracts

Management's willingness to manipulate earnings to increase executive compensation has been the subject of numerous studies. Healy (1985) and other researchers show that the maximization of bonus payments is a major incentive for earnings manipulation. Healy (1985) and Holthausen, Larcker, and Sloan (1995) suggest that, especially when income nears the threshold limits for bonus payments, managers are motivated to adjust accruals to maximize their compensation.

Healy (1985) observes the existence of upper and lower bounds in earnings-based bonus schemes and suggests that managers of a firm with a bonus plan manipulate reported earnings to trigger their bonus payments. Healy suggests that incentives for accrual manipulation depend on whether the earnings that determine bonuses are below the lower bounds, above the upper bounds, or between the two bounds. He predicts that the firms whose earnings for bonus computations are between the upper and lower bounds tend to select income-increasing accruals. However, if the earnings before bonus are at extreme ranges (i.e., above the upper bound or below the lower bound), managers have no incentive to manipulate accruals.

Healy (1985) also predicts that when earnings are above the upper or below the lower bounds, managers tend to select negative or income-decreasing accruals to maximize their future bonus pools. Healy uses total accruals as a proxy for discretionary accruals and assumes that total

accruals are the same as discretionary accruals in the absence of accrual manipulation. His results indicate a high incidence of negative accruals for firms with earnings below the lower or above the upper bounds. Healy also shows that positive accruals occur when the earnings fell between the upper and lower bounds. In summary, he indicates that managers manipulate accruals to maximize their bonus pool over time.

However, Holthausen, Larcker, and Sloan (1995) find no evidence that managers manipulate earnings downwards when earnings are below the lower bound of the bonus plan. Gaver, Gaver, and Austin (1995) also reexamine Healy (1985) and find no evidence that managers manipulate downwards when earnings are below the lower bound of the bonus plan.

2.5 Income Smoothing

Firms use reported earnings internally and externally for variety of reasons. Internally, these reports serve as a basis for making future plans and budgets, capital acquisitions, and evaluation of past performance.

Investors use earnings reports to predict future returns and assess the risks associated with the firm. Creditors use the reports to monitor managerial actions and safeguard their investments. Regulatory authorities can use earnings reports to control and formulate future policy.

Earnings manipulation involves deliberate steps, within the constraints of generally accepted accounting principles, to bring earnings to

a desired level (Davidson, Stickney, and Weil 1987) for private gains (Schipper 1989). A specific example of earnings manipulation is income smoothing. The objective of income smoothing is to move reported earnings close to expected earnings. Corporate managers often engage in income smoothing to dampen fluctuations in their firm's publicly reported net income (Trueman and Titman 1988). This study hypothesizes that executives smooth income by using DAs when ESOs are part of compensation.

Gordan (1964) advocates smoothing as "... an appropriate objective for business firms." Smoothing can be viewed in terms of the reduction in earnings variability over a number of periods, or within a single period as the movement toward an expected level of reported earnings (Beattie, Brown, Ewers, John, Manson, Thomas, and Turner 1994). Thus, income smoothing represents an attempt on the part of a firm's management to minimize any abnormal variations in earnings and move earnings closer to what management considers as normal for the firm (Barnea, Ronen, and Sadan 1976; and Beidleman 1973).

Normal earnings for the year can be defined as the "... value of earnings that results after all systematically expected expenses are subtracted from their trend value of prospective revenue and can be

visualized as the expected values of their probability distributions" (Beidleman 1973, 655).

Executives sometimes use income smoothing to minimize the political costs attached to earnings fluctuations (Watts and Zimmerman 1978). For example, large upward movements in earnings might be perceived as an indication of monopolistic practices (Benston and Krasney 1978); large negative movements could signal a crisis and attract the attention of regulators (Ronen and Sadan 1981). Thus, large firms may have a greater incentive to smooth income by moving reported earnings toward expected earnings.

Benston and Krasney (1978) note that employee or union demands for wages are positively correlated with earnings, and executives prefer to smooth earnings when employee costs are of concern. Also, the need to keep earnings between the upper and lower bounds (as determined in the compensation contract) to maximize bonus payments is considered an incentive for income smoothing (Healy 1985).

2.6 Constraints on Earnings Manipulation

Although executives have some discretion in reporting accounting numbers, they are not free to report arbitrary numbers. They are restricted by the provisions of GAAP and are also monitored by outside parties,

including auditors and institutional investors. In addition, the labor market penalizes a manager with a bad reputation.

Since it is difficult for shareholders to personally monitor managers' incentives to manage earnings, auditors are hired to evaluate the fairness of the financial statements. Healy and Palepu (1993, 1033) note, "... compliance with GAAP is enforced by external auditors, who attempt to ensure that managers' estimates are reasonable. In this way, auditors reduce the likelihood of earnings management."

Auditors have significant incentives to restrict the earnings management process. Over a period of time, auditors build a reputation that is critical to their future growth. Auditors who perform substandard audits are likely to lose their market share (Wilson and Grimlund 1990) and also suffer economic loss through reduced audit fees (Davis and Simon 1992). Auditors, especially the Big Six, are more likely to be sued for overstated assets and earnings, and therefore have more incentive to control income-increasing accruals.[18]

2.7 Summary

ESOs are like publicly traded call options, yet they differ from traded stock options in a number of ways. The distinguishing features of ESOs

[18]Managers have other ways, besides income-increasing accruals to manage earnings with regard to GAAP.

include nontransferability, long maturity periods, vesting conditions, performance criteria, forfeiture clauses, dilution effects, and repricing of stock options. In practice, ESOs can create incentives for executives to manage earnings

Measuring the extent of earnings manipulation empirically is a difficult task. Earnings manipulation can be achieved in number of ways, including income smoothing. Since companies do not want to reveal their earnings management behavior, discretionary accruals can be used to smooth income. In measuring earnings manipulation, researchers have studied both GAAP and non-GAAP choices that are available to managers. Research on GAAP choices has focused on the choice of accounting method—for example, last in, first out (LIFO) or first in, first out (FIFO)—or on the analysis of accruals.

The primary incentives for earnings manipulation identified in the Literature are the avoidance of debt covenant violation, weak corporate governance, increased compensation, and the need for external financing.

One of the primary methods for achieving the goals of earnings manipulation is through the manipulation of accounting-based discretionary accruals. It has been shown empirically that managers use discretionary accruals to manipulate earnings.

Income smoothing represents one method of managing earnings. The income-smoothing literature argues that accounting choices are primarily used to reduce earnings fluctuations, rather than to maximize or minimize reported earnings (Moses 1987).

CHAPTER 3

HISTORICAL AND INSTITUTIONAL BACKGROUND ON EXECUTIVE STOCK OPTIONS

3.0 Introduction

This chapter provides an historical and institutional background on ESOs. The discussions are organized into four sections. The first section traces the historical development of ESOs in U.S. corporations. The second section discusses the tax treatment of ESOs, based on whether they are classified as qualified or nonqualified stock options. The third section examines the roles of two regulatory institutions—the Financial Accounting Standards Board and the Securities Exchange Commission—in the development of reporting standards for ESOs. The final section summarizes the chapter.

3.1 Historical Development of Executive Stock Options

The development of ESOs in the United States has been influenced by changes in various factors, such as the tax code, securities laws, accounting rules, and stock market performance. This section traces the development of ESOs from almost nonexistent to the prevalent method of compensation they are today.

In the early 1900s, most executives were compensated in cash salary alone. In a survey of 400 industrial firms, Taussig and Baker (1925) concluded

that from 1904 to 1923, at least 95% of the surveyed companies compensated their executives with cash salary only. Some form of bonus plan was available in the remaining 5% of the firms; however, no ESO plans existed.

In October 1913, the U.S. government instituted the personal income tax. By late 1918, the top marginal tax rate was 71%, motivating people to avoid or postpone taxes. Baker (1938) surveyed 100 industrial firms during a nine-year period from 1928 through 1936 and found that only 36% of them compensated executives exclusively by salary, primarily because they discovered that ESOs were helpful in postponing the taxes. The proceeds from ESOs were treated as ordinary income for tax purposes until 1939.

In 1939, the tax code changed. The gain on ESOs was not treated as ordinary income as long as the ESOs increased executives' ownership in the firm. This change triggered growth in the use of ESOs. The high income tax rate (as high as 94%) and wage and price controls imposed by the government perpetuated the growth in ESOs during the 1940s. Along with growth in the stock market, the wage controls, which put a freeze on what an executive could make in cash, encouraged establishment of ESO plans.

In 1950, the tax code changed to favor a particular class of ESOs; the restricted stock option. The Revenue Act of 1950 enacted provisions for restricted stock options, under which neither grant nor exercise of the option produced income for the employee. Income was only recognized when the executive exercised the option and sold firm's stock. Long (1992) reports that 39

of the largest 100 industrial firms on the 1956 *Fortune* 500 list used ESOs as a method for compensating executives.

In 1963, qualified ESOs were introduced. These options received preferential tax treatment. The exercise price of these qualified options was raised to the fair market value of the stock and the maturity period reduced to five years.

The Revenue Act of 1964 repealed the restricted stock options and introduced further provisions for qualified stock options. The qualified stock options were generally taxed as restricted stock options, but the holders were required to maintain the stock for three years after the options were exercised.

The Tax Reform Act of 1969 lowered the maximum earned income rate to 50%.

All these changes made ESOs a very attractive method for compensating executives. Lewellen (1969) reports that by the late 1960s, an executive earned over four times his salary, on average, in stock-based compensation.

In the 1970s, the stock market registered a marginal growth of 20% over the ten-year period. In 1976, Congress terminated the qualified stock option. The slow growth of the market and the termination of qualified stock options made ESOs unattractive, and the focus shifted to bonuses (Hite and Long 1982). Buyniski (1991) finds that by 1980, the amount of stock-based compensation had fallen to less than one-and-a-half times that of cash compensation.

The 1980s saw great growth in the stock market and a corresponding growth in ESOs. The decade also saw the expansion of stock options down to all employees. The incentive stock option (ISO) was introduced under the Economic Recovery Act of 1981. (A detailed discussion on ISO and nonqualified stock options is presented in the following section.) The Tax Reform Act of 1986 eliminated the preferential treatment of capital gain.[19] The individual tax rate was reduced from 50% to 28% and all capital gains were to be taxed at the individual rate.

This elimination of preferential treatment did not lead to a reduction in use of ESOs.[20] On the contrary, more firms issued stock options in the late 1980s and early 1990s (Saly 1994) because the income from ESOs was taxed the same as ordinary income.

The 1990s (through 1997) witnessed one of the highest stock market performances ever, including 69 record highs for the Dow Jones Industrial Average in 1995 alone. ESO growth reflected the market boom.

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[19] In addition, the Tax Reform Act of 1986 changed two other requirements related specifically to stock options. First, ISOs granted after December 31, 1986 could be exercised in any sequence. This represented a major change from the earlier requirement that ISOs be exercised only in the sequence issued. Second, the limit for granting ESOs was raised from $100,000 per year to $1 million, with a stipulation that only $100,000 of the ESOs granted could be exercisable in any given year.

[20] Traditionally, the advantage of tax-favored options lies in the difference between the tax rate on ordinary income and that on long-term capital gains income. The wider the gap, the more attractive a tax-favored option. Before 1964, the gap between maximum marginal ordinary income tax rate and the long-term capital gain was about 66 percentage points. The difference fell to near zero by 1990.

Also, during the 1990s the FASB and the SEC demonstrated a continued interest in designing reporting requirements for ESOs. The FASB issued Statement of Accounting Standard 123 (SFAS No. 123), which mandates a new set of rules for the valuation of ESOs. As trends changed from salary-based compensation to market-based compensation, in October 1992, the SEC responded by expanding the disclosure requirements for executive compensation to include ESOs.

3.2 Qualified and Nonqualified Stock Options

A stock option plan can be either qualified or nonqualified, depending on the tax treatment that the plan receives. A qualified stock option is also called an incentive stock option (ISO). In most circumstances, available tax incentives affect the choice of an ESO plan. The choice of a plan involves a trade-off between a tax deduction for the employer and tax deferment for the employee.

3.2.1 Incentive Stock Option Plans

From an executive's viewpoint, an ISO plan provides a greater tax advantage. In an ISO plan, an executive pays no tax on the difference between the exercise price and the market price at the time of exercise of options. When shares are sold, taxes are payable on the difference at the capital gains tax rate or at an ordinary income tax rate, based on the length of the holding period.

No tax deduction is available for the company under an ISO plan. This contrasts with treatment of ESOs, since the employee who sells ESOs within two

years of date of grant or within one year from the exercise date has to forgo the preferred tax disposition. On the other hand, the employer gains the tax deduction on the corresponding amount in the same year the employee is required to recognize ordinary income due to his or her early sale of ESOs.

An ISO plan must meet the following six requirements to gain preferential treatment as a qualified plan:

1. The options can be issued only to employees.
2. The shareholders must approve the plan.
3. The options must be granted within ten years of approval of the plan.
4. The options can be granted for a maximum period of ten years.
5. The exercise price must be at least equal to the market price of underlying stock on the grant date.
6. The options are nontransferable (except at death) and are exercisable only by the employee (or beneficiaries).

Most ESO plans also follow the six requirements described above.

3.2.2 Nonqualified Stock Option Plans

Under a nonqualified stock option (NSO) plan, if the value of the options can be determined on the date of grant, the employee is taxed at ordinary income tax rates on the fair value of options. If the market value cannot be determined at the date of grant, the employee pays tax at his or her ordinary income tax rate on the date of exercise.

Under an NSO plan, the company receives a deduction based on the difference between the exercise price and market price when the employee recognizes ordinary income.[21] The amount of ordinary income is the amount of fair market value of the option (if ascertainable) on the grant date. If the fair market value of the option is not ascertainable, then the employee is taxed at the ordinary income tax rate (on exercise date) for the difference between the market value of the share and its exercise price.[22]

3.3 Role of Regulatory Authorities - The FASB and the SEC

The FASB and the SEC are the two principal institutions that developed accounting treatment and disclosure requirements for ESOs.

The data for the hypothesized variables used in this study became available only after the new reporting requirements were instituted. The new disclosure requirements, which are intended to safeguard the interests of ordinary investors, have a controversial history of evolution.

This section discusses the controversy that surrounded the FASB's exposure draft on the accounting treatment and valuation of stock options and its resolution through SFAS No. 123. In addition, this section discusses changes in

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[21] Prior to the Tax Reform Act of 1986 (TRA 86), the employee's major advantage in an ISO was the tax deferral on the difference between the market price on the exercise date and the exercise price. Also, any appreciation realized on shares held for two years from the date of the grant was taxed at the capital gains tax rate. The TRA 86 discontinued the 60% net capital gains deduction and established an alternative minimum tax (AMT) potential liability.

[22] Pullo, Crawford, and Franz (1995) provide a comprehensive review of tax consequences of executive stock options.

the SEC's reporting requirements over the last two decades, including the expanded regulations implemented by the SEC in 1992.

3.3.1 Role of the FASB

The FASB's proposed stock option rules, which attempted to create a consistent accounting treatment of all stock-based compensation, have been a topic of debate for over a decade. Perhaps no other issue has stirred so much accounting controversy inside and outside the corporate community. Below, the section discusses the debate on the treatment of ESOs, historical treatment under APB 25, the FASB's proposed treatment, the controversy surrounding the proposed treatment, including the valuation issue, and resolution of the controversy by SFAS No. 123.

3.3.1.1 Accounting Background

Historically, APB 25, "Accounting for Stock Issued to Employees," (1972), specified the accounting treatment for stock options. Under APB 25, the compensation expense for an ESO was computed as the difference between the market price and the exercise price on the measurement date, typically the date of the grant. No compensation was recorded if the market price did not exceed the exercise price. Since these options were awarded at the market price, most firms did not record any expense, even though they were giving executives

intrinsic value.[23]

This accounting treatment of stock options contrasted with the treatment of stock appreciation rights (SAR), which are economically similar to stock options. Stock appreciation rights compensate the employee in cash, stock, or a combination of two, for a payment equal to the increase in the firm's stock price over a specified period.

SFAS No. 28 indicates that the difference between the market value of stock and the stated value (similar to exercise price) of the SAR should be accrued as a compensation liability on a quarterly basis. This economic gain to the employee is not materially different from the gain under an ESO. Wallace (1984) observes that accounting treatment of stock appreciation rights deterred small firms with ESOs from adopting compensation based on SAR.

The inconsistent treatment of stock-based compensation plans rendered two otherwise similar firms not comparable, because their financial statements failed to reflect a component of compensation (Huddart and Lang 1996). This incomplete picture violated one of the FASB's key objectives of representational faithfulness and prompted a reexamination of stock option accounting.

[23] This is because it was not clear how the value of the option should be measured. It should be noted that APB 25 antedates the seminal research by Black and Scholes (1973). It also precedes options research by Merton (1973) and Cox et al. (1979).

3.3.1.2 The FASB's Exposure Draft: Accounting for Stock-Based Compensation

In response to the apparent inconsistency in the treatment of stock options and stock appreciation rights and a resulting concern over the lack of representational faithfulness of financial statements, the FASB researched the stock compensation issue from 1984 to 1988. In June 1993, the FASB issued an exposure draft, entitled "Proposed Statement of Financial Accounting Standards: Accounting for Stock-Based Compensation."

The FASB noted that during the last 20 years, mathematical models had been developed that could estimate the fair value of options so as to meet the needs of investors. Therefore, the FASB proposed rules requiring companies to determine the value of fixed or time-based stock options at the time the options were granted. These values would then be deducted by firms as compensation from earnings as a business expense, because the services were rendered during the vesting period.[24]

The proposal proved to be very controversial. The exposure draft was criticized by the industry, the SEC, the American Institute of Certified Public Accountants (AICPA), and the U.S. Congress. Congress debated over five bills

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[24] The rationale behind the decision to recognize the value of options as an expense follows:
1) Employee stock options have value.
2) The value of stock options issued to employees is compensation.
3) The value of stock options can be estimated using mathematical models within tolerable limits for recognition in the financial statements.

to stop the proposal. In all, the FASB received over 1,700 comment letters regarding the proposed recognition rules. The objections to the proposed approach were numerous. Some of the major ones are noted below.

1. The issuance of stock options is primarily an equity transaction and does not involve any cash flow. Therefore, no cost needs to be recognized in the financial statements. This argument found almost no support with the FASB.

2. The differences between ESOs and publicly traded options make the use of existing models inappropriate. In the absence of an appropriate valuation model for the ESOs, the estimates of options would be unreliable and would render financial statements noncomparable. The FASB realized that some differences would exist, but expected them to fall within the tolerable limits for purposes of reporting.

3. Opponents of the draft argued that this change would have a negative impact on the net income of corporations and would therefore affect the competitiveness of U.S. firms in the global market.

3.3.1.3 Statement of Financial Accounting Standard No. 123

Because of such widespread criticism, the implementation of the exposure draft was postponed. At a December 1994 meeting, the FASB voted to require the disclosure of option value but did not mandate the recognition of expense in

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4) The cost of options must be recognized to produce financial statements that are credible and representationally faithful.

the income statement. The FASB finally resolved the issue in October 1995 by issuing a SFAS No. 123, which supersedes APB Opinion No. 25.

Under SFAS No. 123, the FASB encourages, but does not mandate, the recognition of an expense equal to the value of options on the grant date. The FASB also expanded the disclosure requirements for stock-based compensation for employees. The FASB also allows companies to report under APB 25. If a firm elects to do so, it is required to disclose pro forma net income and pro forma earnings per share, as if the firm had expensed the value of options at the grant date (see Table 1).

Although the current position of the FASB is not consistent with its exposure draft, the decision reflects the difficulty of assigning a value to the ESO based on the existing valuation models (Huddart and Lang 1996).

3.3.1.4 Valuation Issues Related to ESO Valuation Models

The major issue related to the valuation of ESOs is that the valuation model recommended by the FASB applies to publicly traded options. However, as discussed earlier, traded options differ from ESOs because of the vesting period, nontransferability, repricing, time to exercise, and dilution. Thus, valuation-based models used for publicly traded options might not accurately value ESOs.

SFAS No. 123 encourages business entities to apply a fair-value-based accounting method of valuation for an ESO. The fair value of an option is the

Table 1

FASB Pro Forma Net Income and EPS Disclosure When Reporting Under APB 25

	Current year	Prior year
Net Income.....	.....	.....
Primary Earnings per share	.....	.....
Fully diluted earnings per share.....	.....	.....

price that a willing buyer will pay and that a willing seller would accept for that option. The FASB requires the fair value of options to be computed on the grant date, which is the date on which the compensation contract on ESOs is agreed on by the employer and the employee.[25] The quoted market value provides a good indication of fair value. However, if the market price is not available, the value can be computed by using a valuation model that meets the criteria of the standard.

According to SFAS No.123, the fair value of an option can be computed by using a model that considers stock price, exercise price or option strike price, risk-free interest rate, variance of returns on the underlying stock, expected dividend yield during the life of the stock, and time to mature. Although the FASB did not specify the use of the Black-Scholes model (1973), it implicitly endorsed it.[26]

The Black-Scholes model (1973) is also a function of underlying stock price, exercise price or option strike price, risk-free interest rate, variance of returns on the underlying stock, and time to mature. Modified versions of the

[25] The measurement date is the date on which the fair value of the option is determined. Normally, the measurement date is also the grant date for the option. Other alternatives to the grant date for renegotiations of fair value of the option are the vesting date, the exercise date, and the maturity date for the option. The vesting date is the date on which the receipt of options is no longer contingent. On the vesting date, all rights to retain shares of stock or cash vest with the holder. The primary advantage with the exercise date is that the payoff is known with certainty and valuation is no longer a problem.

[26] Even though in some cases the Black-Scholes model (1973) might overstate the value of options, it is by far the most acceptable model for valuation.

Black-Scholes model, which was originally created for European-traded options, have been used for American-traded options.[27]

As noted earlier, ESOs are a kind of call option that is not traded publicly; however, as the FASB's recommendation, an ESO's fair value can be computed using the Black Scholes (1973) model. The Black Scholes model's derivatives, such as the binomial model adjusted for the differences between ESOs and publicly traded options, can also be used to compute the fair value.

In addition to the fair-value method, the FASB also allows private firms to compute the option value with the minimum-value method. The minimum-value method is the current market value of the stock adjusted for dividends to be paid over the life of the option, less the present value of the option at the risk-free rate.

In summary, although the FASB has issued a standard on the valuation of stock options, the issue is expected to remain controversial for some time to come. Three questions lie at the heart of this controversy:

First, should the disclosure provide the same information to investors as does the recognition of an expense? This issue takes on critical importance, because the FASB's Concept Statement No. 5, "Recognition and Measurement

[27] The Black Scholes (1973) model was originally developed for European traded options that do not pay dividends and which cannot be exercised before the maturity period. To account for the payment of dividends, Merton (1973) modified the Black Scholes model to factor in dividends.

in Financial Statements for Business Enterprises, " states that disclosure is not a substitute for recognition in financial statements.

Second, can the fair value of option be truly computed, and if so, does it provide a reasonable measure of compensation to be recognized in the financial statement?

Third, given the various acceptable dates on which the fair value can be computed, which is the most logical date?

3.3.2 SEC Disclosure Requirements

The SEC also expanded the disclosure requirements for executive compensation, including ESOs. The new rules announced in October 1992 required, among other changes, that companies report the value of options granted to the CEO and other highly paid executives. At present, the stock options must be reported to the SEC in proxy statements.[28]

3.3.2.1 Historical Perspective on SEC Regulations

Prior to 1980, the SEC required companies to report the following information: (1) for options granted, the number of securities and average exercise price; (2) for options exercised, the number of securities, exercise price, market value, number of options generated, and aggregate sales value received;

[28] Item 402(b)(4) of part 229—Standard Instructions for Filing Forms Under Securities Act of 1933, Securities Exchange Act of 1934, and Energy Policy and Conservation Act of 1975 - Regulation S-K.

and (3) for outstanding options, the number of securities and average selling price.

In 1980, the SEC disclosure requirements changed. The two disclosure requirements for outstanding stock options were (1) the title and aggregate amount of securities, and (2) the aggregate unrealized potential value of such options. For stock options exercised, the SEC required that the net value realized and proceeds from sales of option-generated securities were disclosed in a separate table.

In 1983, the SEC made far-reaching recommendations to discontinue all disclosures on options exercised and outstanding options, except for the disclosure of the realized value for options exercised. In June 1992, the SEC invited comments on a set of revised disclosure rules for executive compensation. The disclosures were intended to provide clearer and more useful information to shareholders (see Table 2). The proposed rules required that performance of the firms' stock relative to an appropriate market index was to be disclosed for the last five years. To maintain consistency and ease comparison, the SEC prescribed tabular formats to be used for the purpose of disclosure. The SEC noted that these revisions were motivated by a change in compensation trends, from fixed salaries and bonuses to long-term, market-based compensation plans.

In October 1992, the SEC formulated the revised disclosure rules for executive compensation. Under these rules, firms are required to provide a five-

Table 2

1992 SEC Compensation Disclosure Rule

Panel A: Three - Year Summary Compensation Table

1. Annual compensation
    - Salary ($)
    - Bonus ($)
    - Other annual compensation ($)
2. Long-term compensation awards
    - Restricted stock awards
    - Options/stock appreciation rights
3. Payouts
    - Long-term incentive plan payouts ($)
4. All other compensation

Panel B: Annual Option Grants Table

1. Number of stock options granted
2. Percentage the grant represents of the total options granted to employees during the fiscal year
3. Expiration date of the options
4. Exercise price of the options
5. Potential realizable value of each grant of options assuming annual rates of stock price appreciation of 0% (if exercise price of the option is less than the market price) and 5% and 10% for option term OR
6. Present value of the grant at the date of the grant, under any option pricing model

Panel C: Aggregated Option Exercises and Fiscal Year- End Option Values Table

1. Number of shares received on exercise
2. Aggregate dollar value realized on exercise
3. Total number of unexercised options held (separately for exercisable and unexercisable)
4. Aggregate dollar value of in-the-money, unexercised options (separately for exercisable and unexercisable options)

Panel D: Ten-Year Option Repricings

1. Date of each repricing
2. Number of replacement or amended options
3. Market price at the time of repricing or amendment
4. New exercise price of the replacement options
5. Length of original term remaining at the date of repricing or amendment

Source: Banerjee, 1993.

year trend graph of their stock performance relative to an appropriate index for the market, industry, or line of business. The revised rules also require firms to provide details of how the CEO's compensation is linked to qualitative or quantitative measures of performance. In 1992, the SEC also discontinued the requirement for reporting the compensation of the executive officer group, either in the aggregate or in its components (Banerjee 1993). However, it requires detailed compensation disclosure for firms' CEOs and the other four most highly compensated officers over the prior three years. Besides disclosing salaries, bonuses, perquisites, and payoffs from long-term performance plans, firms must also disclose the realized value, number, and value of exercisable and unexercisable options (see Table 3).

3.3.2.2 Executive Stock Options - Valuation Issues

The SEC allows firms to report either the grant-date value of options granted during the year using the Black Scholes (1973) model (or any other option-pricing model based on the criteria suggested by the FASB) or potential realizable values, assuming 5% or 10% annual appreciation throughout the term of the option (see Table 2). Although the SEC does not specify a particular valuation method, it does require companies to report the description,

Table 3

Aggregated Options/SAR Exercises and Fiscal Year-End Option/SAR Value Table

(a)	(b)	(c)	(d) Number of Securities Underlying Unexercised Options/SARs at FYE ($)	(e) Value of Unexercised In-the-Money Options/SARs at FYE ($)
Name	Shares Acquired on Exercise (#)	Value Realized ($)	Exercisable/ Unexercisable	Exercisable/ Unexercisable
CEO.....	.....	.....	.....	.....
A.....	.....	.....	.....	.....
B.....	.....	.....	.....	.....
C.....	.....	.....	.....	.....
D.....	.....	.....	.....	.....

The table shall include:

(1) The name of the executive officer (column a);

(2) The number of shares received on exercise, or, if no shares were received, the number of securities with respect to which the options or SARs were exercised (column b);

(3) The aggregate dollar value realized on exercise (column c);

(4) The total number of securities underlying unexercised options and SARs held at the end of the last completed fiscal year, separately identifying the exercisable and unexercisable options and SARs (column d); (Amended by Sec Act Rel No. 7032, effective 11/29/93)and

(5) The aggregate dollar value of in-the-money, unexercised options and SARs held at the end of the fiscal year, separately identifying the exercisable and unexercisable options and SARs (column e).

Source: 1997 SEC Rules and Regulations Guidelines, Regulation S-K 38.

parameters, and assumptions of any valuation model other than the Black Scholes model. Thus, companies using the Black Scholes model are not required to disclose parameters (such as the risk-free interest rate, expected volatility, and dividend yield) used in the computation of their option value.

Murphy (1994) shows that the option values computed using the Black Scholes (1973) model or its derivatives are generally lower than potentially realizable value, assuming a constant annual appreciation of 5% to 10%. This observation is important, because managers would favor an evaluation method that would generate a lower compensation value.

3.4 Summary

A brief history of stock option plans in the United States shows that executive compensation schemes are designed in response to, and in consideration of, various factors, such as the growth of the stock market and changes in tax codes. The choice of one plan over the other involves a trade-off between a deduction for the employer and tax deferment for the employee. The chapter also discusses in detail the role of two regulatory institutions, the FASB and the SEC, in arriving at the current treatment and disclosure requirements for the stock options.

CHAPTER 4

RESEARCH METHODOLOGY

4.0 *Introduction*

The discussion in this chapter is organized into four sections. The first section describes the research design and presents the hypotheses in general terms. Implications of rejecting or not rejecting the hypotheses are also discussed. The second section describes the research model and states the hypotheses in terms of model parameters. The third section discusses variables used in the study and provides a rationale for using them. The final section presents a summary of the chapter.

4.1 Research Design and Development of Hypotheses

Executives can use DAs to smooth income to meet investors' expectations, or to meet their own unobservable expectations for personal gains. The three hypotheses developed in this section address the issue of earnings manipulation by executives, who use positive DAs when ESOs are part of the executives' compensation packages.

The first hypothesis makes predictions about the likelihood of income smoothing. The second hypothesis posits the likelihood of manipulation when

substantial dollar value of in-the-money ESOs are exercisable. The third hypothesis concerns the possible effect of exercise of ESOs on earnings manipulation by using prior-period DAs.

4.1.1 Hypothesis 1: Income Smoothing

The value of options increases if the value of a firm's stock goes up, which will happen if investors feel positive about the potential of the stock.

Literature on income smoothing shows that investors pay a premium for a firm with a smooth income stream (Ronen and Sadan 1981). Baumol (1956) and Monsen and Downs (1965) argue that income smoothing exists for two reasons: First, that an unusual positive performance should be avoided, because it will raise expectations that cannot be duplicated in the future. Failing to meet investors' expectations may lead to a fall in the value of the firm's stock. Second, an unusually good performance may not bring rewards to the executive, but a very poor performance can cause disappointment among shareholders. Thus, executives are motivated to report a consistent performance by using DAs. To evaluate the likelihood that firms smooth income when the value of ESOs increases, the following hypothesis applies:

Hypothesis 1 (H1): As the value of in-the-money exercisable executive stock options increases, so does the likelihood that management will use positive discretionary accruals to smooth income.

Rejection of H1 implies that an increase in the value of exercisable ESOs is not likely to influence manager's decision to smooth income. One of the

reasons for rejecting the hypothesis may be unusually good stock market growth, such as that experienced during 1994-96, which provided no incentive for executives to intervene in the earnings reporting process.

Support of H1 on the other hand provides evidence of income smoothing.

4.1.2 Hypothesis 2: Impact of RVESO

The dollar value of RVESO is likely to increase with passage of time, because the exercisability of options in majority of ESO plans is based on the passage of time and not on a certain market price.[29] Under most plans, the options become exercisable over a period of three to five years. Generally, plans provide that a certain percentage of the options will become exercisable every year (for example, 25% each year).

An executive will exercise options when they are exercisable and in-the-money, and the larger the value is, the greater the benefit to the executive. The executive is therefore more likely to manipulate earnings upwards as the value of in-the-money exercisable options increases. We therefore expect to see a direct relation between likelihood of earnings manipulation and value of in-the-money exercisable options. The following hypothesis applies:

Hypothesis 2 (H2): As the value of in-the-money exercisable executive stock options increases, so does the likelihood that management will use positive discretionary accruals to manipulate earnings.

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[29]Only 20 major US companies implemented plans that grant directors stock or stock options, or both, when certain performance goals are met. "The Board's Turn," *Wall Street Journal*, April 9, 1998, R6.

4.1.3 Hypothesis 3: Impact of Value Realized

When ESOs are part of an executive's compensation, the executive is likely to have some expectations of returns from those ESOs. To realize those unobservable expectations, the executive may manipulate earnings upwards before exercising the options. Once the perceived expectations have been achieved, the manager is more likely to exercise the options. Because the earnings manipulation is likely to precede the actual exercise, the impact of prior-period manipulation through DAs may be positively related with the value realized on exercise of ESOs in the current period. The following hypothesis applies:

Hypothesis 3: As the value realized from the exercise of executive stock options increases, so does the likelihood that management will use prior-period positive discretionary accruals to manipulate earnings.

If H2 and H3 are not rejected, there is a possible case for earnings manipulation by executives. However, if these hypotheses are rejected, there is a possibility that other forces, such as labor market experts, external auditors, and institutional investors, will exert sufficient restraints on managerial actions. For example, if a manager earns a reputation for earnings manipulation, the labor market may penalize the manager by reducing future compensation. Therefore, the manager will strive to gain a favorable reputation by achieving a constant growth in the company's results.

4.2 Research Model

4.2.1 Likelihood of Income Smoothing and In-The-Money Exercisable ESOs

Logit analysis tests the first hypothesis by using 150 firms with three years of data for each firm for a total of 450 observations. The dependent variable in the logistic regression is a dichotomous response variable categorized by when DAs are used to smooth income and when DAs are not used to smooth income. Equation 1 tests the following null hypothesis:

$H1_0: \beta_1 = 0$

$H1_a: \beta_1 > 0$

$$SM_{i,t} = \alpha_1 + \beta_1 RVESO_{i,t} + \gamma_1 RVUSO_{i,t} + \gamma_2 BONUS_{i,t} + \gamma_3 LEVERAGE_{i,t} + \\ + \gamma_4 CEOCM_{i,t} + \gamma_5 SIZE_{i,t} + \varepsilon_{i,t} \quad (1)$$

where

i = 1 through 150 in the reduced sample from the 1994 Fortune 500 list of companies

t = 1 to 3 (representing the time period from 1994 to 1996)

α_1 = intercept term

β_1 = the coefficient for the hypothesized variable

$\gamma_{1...5}$ = the coefficient for each control variable

$SM_{i,t}$ = 1 if DAs are used to smooth income and

= 0 if DAs are not used to smooth income

(Refer to Appendix B for method to segregate SM)

$RVESO_{i,t}$ = total value of exercisable ESOs in-the-money for the top five executives (as disclosed in the proxy statement) scaled by total assets at $t_{i,t-1}$

$RVUSO_{i,t}$ = total value of unexercisable ESOs in-the-money for the top five executives (as disclosed in the proxy statement) scaled by total assets at $t_{i,t-1}$

$BONUS_{i,t}$ = total value of annual bonus payments to the top five executives (as disclosed in the compensation summary table of proxy statement) scaled by total assets (Compustat item no. 6) at $t_{i,t-1}$

$LEVERAGE_{i,t}$ = long-term debt (Compustat item no. 9) divided by total assets (Compustat item no. 6)

$CEOCM_{i,t}$ = dummy variable coded as 1 if CEO also chairs the board of directors; otherwise coded as 0

$SIZE_{i,t}$ = natural logarithm of total assets (Compustat item no. 6)

$\varepsilon_{i,t}$ = error term

4.2.2 Likelihood of Manipulation and In-The-Money Exercisable ESOs

Logit analysis tests the second hypothesis. Since the dollar value of in-the-money exercisable ESOs (RVESO) can change from year to year, even for the same firm, I segregate the impact of RVESO on a yearly basis. H2 is tested by using 150 observations for a given year, and the results are analyzed over three years. The dependent variable in the logistic regression is a dichotomous

response variable delineated as a greater likelihood of earnings manipulation [represented by higher than average (for the sample) value of DAs] and a smaller likelihood of earnings.

Equation 2 tests the following null hypothesis:

$H2_0: \beta_2 = 0$

$H2_a: \beta_2 > 0$

$$DA_{i,t} = \alpha_2 + \beta_2 RVESO_{i,t} + \gamma_6 RVUSO_{i,t} + \gamma_7 BONUS_{i,t} + \gamma_8 LEVERAGE_{i,t} + \gamma_9 CEOCM_{i,t} - \gamma_{10} SIZE_{i,t} + \gamma_{11} VAL\_RLZD_{i,t} + \varepsilon_{i,t} \quad (2)$$

where

α_2 = intercept term

β_2 = the coefficient for the hypothesized variable

$\gamma_{6...11}$ = the coefficient for each control variable

$DAs_{i,t}$ = 1 if there is a greater likelihood of earnings manipulation (represented by higher than average (for the sample) value of DAs)

= 0 if there is a smaller likelihood of earnings manipulation (represented by lower than average value of (for the sample) DAs)

(For computation of DAs, refer to Appendix A)

$VAL\_RLZD_{i,t}$ = value realized on exercise of ESOs scaled by total assets (Compustat item no. 6) at $t_{i,t-1}$

All other variables are as defined earlier for equation 1.

4.2.3 Likelihood of Manipulation and Value Realized on Exercise of ESOs

Logit analysis tests the third hypothesis. Since the VAL_RLZD can change from one year to another, even for the same firm, I choose to segregate the impact of value realized on a yearly basis. H3 is also tested by using 150 observations for a given year, the results are analyzed over three years. The dependent variable in the logistic regression is a dichotomous response variable categorized as a greater likelihood of earnings manipulation [represented by higher than average value of DAs (for the sample) for the year t-1] and a smaller likelihood of earnings manipulation [represented by lower than average value of DAs (for the sample) for the year t-1]. Equation 3 tests the following null hypothesis:

$H3_0: \beta_3 = 0$

$H3_a: \beta_3 > 0$

$$DA_{i,t-1} = \alpha_3 + \beta_3 VAL\_RLZD + \gamma_{12} RVESO_{i,t} + \gamma_{13} RVUSO_{i,t} + \gamma_{14} BONUS_{i,t} + \gamma_{15} LEVERAGE_{i,t} + \gamma_{16} CEOCM_{i,t} - \gamma_{17} SIZE_{i,t} + \varepsilon_{i,t} \quad (3)$$

where

α_3 = intercept term

β_3 = the coefficient for each hypothesized variable

$\gamma_{12...17}$ = the coefficient for the control variable

$DAs_{i,t-1}$ = 1 if there is a greater likelihood of earnings manipulation (represented by higher than average (for the sample) value of DAs)

= 0 if there is a smaller likelihood of earnings manipulation (represented by lower than average value of (for the sample) DAs)

All other variables are as defined in equations 1 and 2.

4.3 Rationale for Independent Variables

This section describes the independent variables selected for the logistic models and the rationale for their selection. Sources for various independent variables and their measurements (if applicable) are also discussed. The data used for this study are cross-sectional over time. Table 4 provides the sources of data used for variables in the study. The details on variables relating to the modified Jones model (1995) are discussed in Appendix A.

The value of in-the-money exercisable options (RVESO) and value realized (VAL_RLZD) are hypothesized variables for testing the three hypotheses. The value of in-the-money unexercisable executive stock options (RVUSO) is used as an exploratory indicator of future accumulated compensation that could motivate managers' behavior. The earnings-based bonus compensation (BONUS) is used as a control variable for the bonus hypothesis. A leverage (LEVERAGE) ratio is used to control for external financing and debt-covenant violation. Size (SIZE) is used to segregate the impact of income smoothing due to size only. CEOCM, a categorical variable representing whether or not CEO is also the chairman of the board, controls for corporate governance.

Table 4

Hypothesized Signs for Coefficients and Data Sources for Variables

	Sign	Data Source
Value of exercisable ESOs in the proxy (RVESO).....	+	Proxy statement
Value of unexercisable ESOs in the proxy (RVUSO).....	?	Proxy statement
Annual bonus payment to top five executives as reported in the proxy statement (BONUS).....	+	Proxy statement
Long-term debt / total assets (LEVERAGE)	+	Compustat database
Dummy variable to check whether CEO and chairman of the board are the same (CEOCM)	+	Proxy statement
Natural logarithm of total assets at year t (SIZE)	-	Compustat database
Value realized for the top five executives as reported in the proxy scaled by total assets at year t-1 (VAL_RLZD)	+	Proxy statement
Smoothing variable (SM) - dependent variable.....		Appendix B
Discretionary accruals (DAs) - dependent variable.....		Appendix A

4.3.1 Value of Exercisable and Unexercisable ESOs

Regulations issued by the SEC in late 1992 require public corporations in the United States to disclose a wide range of previously undisclosed data about executive compensation. The new rules require detailed information for the top five executives. Companies must report the expiration date of new options, the price of the underlying stock on the date of each award, information about repricing of stock options, the value realized on exercised options during the year, and the number and in-the-money value of top managers' stock option holdings. The requirement for reporting the estimated value of stock options in-the-money using the Black Scholes (1973) model is one of the most significant changes.

The value of ESOs in-the-money [both exercisable (RVESO) and unexercisable (RVUSO)] is obtained from proxy statements available on EDGAR (Electronic Data Gathering and Retrieval) SEC filings from 1994 through 1996. Data is collected for the value of ESOs held by the top five executives because they are most likely to share the authority necessary to influence disclosures in financial statements.

4.3.2 Value Realized (VAL_RLZD)

The incentive to manipulate earnings will vary across executives even within the same firm, since various factors affect options, including whether or not the options are in-the-money, exercisable, or near expiration. Exercisability of

an ESO is important, because the options can generate incentives only if they are in-the-money and exercisable.

Even when the options are in-the-money and exercisable, all executives will not have the same motivations to realize them. The incentive to exercise options and the economic benefit from their realization depends on factors such as the manager's risk aversion, the earnings potential of the company, the executive's future with the firm, and the value of an executive's stock options as a proportion of his or her total wealth.

This study uses value realized to capture the impact of earnings manipulation. The value realized is used because it is a definite indication that stock options were exercisable and were in-the-money, and because it seems likely that executives will maximize the value realized from exercise of stock options. Therefore, the incentive to manipulate earnings may increase as the value realized increases. Thus, I hypothesize a positive relation between the value realized and the likelihood of manipulation.

4.3.3 Bonus (BONUS)

Healy (1985) suggests that managers use income-increasing accruals when earnings are near the predetermined level required for the payment of bonuses. Holthausen, Larcker, and Sloan (1995) document evidence in partial support of Healy's results on the bonus hypothesis: To maximize the bonus, the executive will try to maximize earnings between the lower limit of income

required for bonus payment and the upper limit at which the bonus is maximized. The information on bonus payments for the top five executives is collected from the proxy statements and comprises the independent variable BONUS.

4.3.4 Leverage (LEVERAGE)

Practitioners have identified the need for external financing as one of the primary motives for earnings manipulation (Dechow, Sloan, and Sweeney, 1996). Opler and Titman (1994) show that firms with a high leverage ratio are more likely to issue equity. A leverage ratio, defined as total debts scaled by total assets (LEVERAGE), is a surrogate for the demand for external financing. Since the need for external financing has been identified as a motive for manipulating earnings, this study uses LEVERAGE as a control variable.

According to Watts and Zimmerman (1986), all else equal, the higher the debt-equity ratio, the higher the probability of debt covenant violation. The larger a firm's debt/equity ratio, the more likely a firm's executives are to make accounting choices that shift reported income from future periods to the current period. Because an accounting-based debt covenant can motivate earnings management, a proxy for closeness to debt covenant violation (LEVERAGE) is included as a control variable. Press and Weintrop (1990) and Duke and Hunt (1990) document that leverage is a reasonable proxy for the existence and tightness of debt covenant restrictions.

4.3.5 Corporate Governance (CEOCM)

Jensen (1993) suggests that directors may not be effective monitors if the CEO chairs the board of directors. Dechow, Sloan, and Sweeney (1996) agree that the monitoring role is weakened when the power of the CEO and board chairperson rests in the same individual. Proxy statements disclose whether one individual holds both positions (CEOCM). A dummy variable of one or zero is used to capture the effect of the CEOCM variable. The information on CEOCM is coded one if the CEO is also the chairperson and zero otherwise.

4.3.6 Size (SIZE)

Size is included as a control for the political cost hypothesis proposed by Watts and Zimmerman (1986). They argue that larger firms have an incentive to smooth income to avoid being branded as a monopoly.

Watts and Zimmerman (1986) posit that large firms tend to support income-decreasing regulations, but smaller firms tend to support income increasing regulations. Since the sample used for the study consists of large firms, I expect that an incentive to manipulate earnings will be negatively related to the size.

4.4 Summary

The chapter develops three research hypotheses and the logistic models to test them. In addition, the chapter presents the rationales and measurements for the variables used.

CHAPTER 5

RESULTS AND ANALYSIS

5.0 Introduction

This chapter presents empirical results for the three hypotheses developed in Chapter 4. The chapter is organized into five sections. The first describes the original sample and how I derived the reduced final sample. The second section presents the empirical results and an interpretation of the findings. An analysis of results is followed by a discussion of the limitations of the study. Section 4 makes some suggestions for future research and the final section concludes with a summary of significant results.

5.1 Data Collection

5.1.1 Original Sample Selection

This study uses the 1994 list of Fortune 500 companies, and collects data for the years 1994 to1996 for the companies on the 1994 list.

One of the requirements for firms in this study's sample is that ESOs are a component of executive compensation. SEC disclosure rules for stock options greatly changed in October 1992, and 1993 was a year of in which those changes were implemented. Therefore, 1994 is the appropriate year for

constructing the sample. In addition, requirements between 1983 and 1992 did not provide for sufficient disclosure about ESOs in the proxy statements. Only after 1992 did a wealth of data on ESOs become available. I obtained data on the value of exercisable and unexercisable options and on the value realized on exercise from the proxy statement filed by each company as required by the SEC's new compensation disclosure rules. Table 3 (Chapter 2) describes details of new disclosure requirements.

5.1.2 Sample Reduction

The original sample consisted of the 1994 Fortune 500 companies. I eliminated a total of 180 companies because one or more data items for computing the estimates of the firms' specific parameters were not available. I computed the estimates of firm-specific parameters by using the modified Jones model (1995) for the estimation period between 1982 and 1992 (see Equation A1.3 in Appendix A). The sample was further reduced by 42 companies when I found that one or more of the data items for one or more relevant variables were missing on the Compustat tapes for the period 1993 to 1996. This process reduced the sample size to 278 companies.

I also dropped 31 companies because they either did not have an ESO plan or did not report the required information. A total of 39 companies with an ESO plan did not report the required data for 1994 or 1996. I also eliminated companies without bonus plans or insufficient information on bonus payments.

Finally, I did not include 35 firms with negative discretionary accruals.[30] The final sample consists of 150 firms with a total of 450 observations for three years. Table 5 summarizes the data reduction process.

5.1.3 Sample Description

The final sample consists of 150 companies with a mean value of approximately $9 million for in-the-money exercisable options and a mean value of about $7 million for unexercisable ESOs. The average value realized on exercise of options for the top five executives equals $2.6 million a year. The average value of discretionary accruals as a proportion of total assets is 0.0021.[31] Table 6 presents detailed information on the nature of firms analyzed.

Spearman's correlation coefficients of the independent variables are presented in Table 7. The results do not indicate high correlation among variables.

[30]As discussed in Chapter 4, the evidence is inconsistent for downward manipulation through negative accruals.

[31] Cahan (1992) estimates mean DAs of 0.002 for 48 firms over a period of 15 years. Subramanayam (1996) reports mean DAs of -0.004 for 2,808 firms from 1973 to 1993.

Table 5

Sample Reduction

	Reduced by	
Original Sample		**500**
Data not found on Compustat for estimating the coefficients for firm-specific parameters (1983-1992)	180	
Data not found on Compustat for estimating the NDAs for the event period (1993-1996)	42	
No ESO plan reported	31	
Companies that did not report 1996 or 1994 data for ESOs	39	
Data not available for bonuses	23	
Companies with negative discretionary accruals	35	
Original sample reduced by	**350**	
Final sample		**150**

Table 6

Summary Descriptive Statistics for the Final Sample of 150 Firms

	Mean	Min.	Max.	Median
Value of exercisable ESOs (in $ millions).....	9.000	0.001	173.000	3.700
Value of unexercisable ESOs (in $ millions)..	7.000	0.000	147.000	1.800
Value realized (in $ millions).....	2.600	0.000	9.800	0.700
Bonus (in $ millions)	2.000	0.002	19.000	1.660
Earnings per share (in $).....	2.560	-10.300	10.600	2.300
Total assets (in $ billions)	8.980	0.726	46.408	5.545
Revenue (in $ billions)	9.072	1.375	71.129	5.884
Discretionary accruals (DAs)	0.002	0.000	0.011	0.002
RVESO*.....	0.001	0.000	0.003	0.001
RVUSO*.....	0.001	0.000	0.002	0.000
BONUS *.....	0.000	0.000	0.016	0.000
LEVERAGE*.....	0.200	0.001	0.725	0.194
SIZE	8.620	6.360	10.650	8.530
VAL_RLZD*.....	0.000	0.000	0.000	0.000

* *Numbers approach zero due to the scaling factor.*

RVESO = total value of exercisable ESOs in-the-money for the top 5 executives as disclosed in the proxy statement scaled by total assets

RVUSO = total value of unexercisable ESOs in-the-money for the top 5 executives as disclosed in the proxy statement scaled by total assets

BONUS = total value of annual bonus payments to the top 5 executives as disclosed in the compensation summary table of proxy statement scaled by total assets

LEVERAGE = long-term debt (Compustat item no. 9) divided by total assets

CEOCM = dummy variable coded as 1 if CEO also chairs the board of directors; otherwise 0

SIZE = natural logarithm of total assets (Compustat item no. 6)

VAL_RLZD = value realized on exercise of ESOs scaled by total assets

Table 7

Spearman's Correlation Coefficients

	RVESO	RVUSO	LEVER-AGE	CEOCM	SIZE	BONUS	VAL_RLZD
RVESO.....	1.00 (0.00)	0.36 (0.16)	-0.06 (0.00)	-0.17 (0.00)	-0.27 (0.00)	0.09 (0.51)	0.21 (0.00)
RVUSO.....	.....	1.00 (0.00)	-0.08 (0.08)	-0.17 (0.00)	-0.25 (0.00)	-0.10 (0.02)	0.34 (0.00)
LEVERAGE..	.....	.....	1.00 (0.00)	-0.08 (0.06)	0.05 (0.26)	-0.12 (0.01)	-0.09 (0.05)
CEOCM.....	.....	.....	.....	1.00 (0.06)	0.17 (0.00)	-0.02 (0.63)	-0.12 (0.07)
SIZE.....	.....	.....	.....	.....	1.00 (0.00)	-0.36 (0.00)	-0.26 (0.00)
BONUS.....	.....	.....	.....	.....	.....	1.00 (0.00)	0.29 (0.00)
VAL_RLZD...	.....	.....	.....	.....	.....	.....	1.00 (0.00)

Note: Figure in the ( ) represent the p-value.

RVESO = total value of exercisable ESOs in-the-money for the top 5 executives as disclosed in the proxy statement scaled by total assets

RVUSO = total value of unexercisable ESOs in-the-money for the top 5 executives as disclosed in the proxy statement scaled by total assets

BONUS = total value of annual bonus payments to the top 5 executives as disclosed in the compensation summary table of proxy statement scaled by total assets

LEVERAGE = long-term debt (Compustat item no. 9) divided by total assets

CEOCM = dummy variable coded as 1 if CEO also chairs the board of directors; otherwise 0

SIZE = natural logarithm of total assets (Compustat item no. 6)

VAL_RLZD = value realized on exercise of ESOs scaled by total assets

5.2 Empirical Results

The three hypotheses developed in Chapter 4 address how, when ESOs are part of the compensation package, executives use DAs to manipulate earnings. This section presents the empirical results of logistic regressions used to test the hypotheses.

5.2.1 Results for Hypothesis 1: Income Smoothing

Hypothesis 1 (H1): As the value of in-the-money exercisable executive stock options increases, so does the likelihood that management will use positive discretionary accruals to smooth income.

Table 8 contains the logistic cross-sectional regression results for the income-smoothing hypothesis (H1). Coefficients for control variables, RVUSO, LEVERAGE, CEOCM, BONUS, and SIZE are not significantly different from zero. The coefficient (β_1) for the hypothesized variable (RVESO) is also not significantly different from zero, suggesting that an increase in value of RVESO does not affect the likelihood of smoothing income. It implies that an increase in the value of exercisable ESOs is not likely to influence a manager's decision to smooth income.

The non-significant coefficient for RVUSO may be due to the fact that options are not exercisable in the current period and therefore do not provide any benefit in the short run. Thus, an executive's decision to smooth earnings in the current period is not influenced by in-the-money unexercisable ESOs.

Table 8

Logistic Regression Results for 1994 through 1996 - Likelihood of Management's Use of Positive Discretionary Accruals to Smooth Income

$$SM_{i,t} = \alpha_1 + \beta_1 RVESO_{i,t} + \gamma_1 RVUSO_{i,t} + \gamma_2 BONUS_{i,t} + \gamma_3 LEVERAGE_{i,t} + \gamma_4 CEOCM_{i,t} + \gamma_5 SIZE_{i,t} + \varepsilon_{i,t}$$

	Beta	Significance	Exp. (β or γ)
CONSTANT(α_1)	0.9749	0.4162	.....
RVESO(β_1)	0.0005	0.2003	1.0000
RVUSO(γ_1)	0.0003	0.5569	1.0000
BONUS(γ_2)	-0.0050	0.6340	0.9999
LEVERAGE(γ_3)	0.5917	0.5246	1.8071
CEOCM(γ_4)	-0.0654	0.5642	0.9367
SIZE(γ_5)	-0.0348	0.7922	0.9658

Chi-square test of model's fit = 5.216 Degrees of freedom = 6 Significance = 0.5164

$SM_{i,t}$ = 1 if DAs are used to smooth income and

= 0 if DAs are not used to smooth income (Appendix B for valuation of SM)

$RVESO_{i,t}$ = total value of exercisable ESOs in-the-money for the top 5 executives as disclosed in the proxy statement scaled by total assets at $t_{i,t-1}$

$RVUSO_{i,t}$ = total value of unexercisable ESOs in-the-money for the top 5 executives as disclosed in the proxy statement scaled by total assets at $t_{i,t-1}$

$BONUS_{i,t}$ = total value of annual bonus payments to the top 5 executives as disclosed in the compensation summary table of proxy statement scaled by total assets (Compustat item no. 6) at $t_{i,t-1}$

$LEVERAGE_{i,t}$ = long-term debt (Compustat item no. 9) divided by total assets at $t_{i,t-1}$

$CEOCM_{i,t}$ = coded as 1 if CEO also chairs the board of directors; otherwise 0

$SIZE_{i,t}$ = natural logarithm of total assets (Compustat item no. 6)

$\varepsilon_{i,t}$ = error term

A reason for a non-significant coefficient estimate for CEOCM (when the CEO is also the chair of the board) could be the sample of Fortune 500 companies used. Most of these companies have an audit committee to fulfill one of the requirements for being listed at the New York Stock Exchange. These committees might impose some restraints on managerial actions. Also, most of these companies use one of the Big Six auditing firms, which are associated with a higher quality audit (Palmrose 1988). Big Six firms have more incentive to control income-increasing accruals because they are more likely to be sued for failing to detect overstatement of assets and income than they are for underreporting. Thus, auditors, by evaluating the fairness of financial statements, can constrain their clients' ability to manage reported earnings (Healy and Palepu 1993).

The coefficient for the SIZE variable is not significant, implying that the likelihood of income smoothing is not influenced by the firm size. The greater flexibility of a large firm could result in naturally smooth earnings, thus eliminating need of any intervention by the management.

The logit regression results are thus inconsistent with H1, the income-smoothing hypothesis. One of the explanations for this inconsistency may be the unusually good stock market growth during 1994-96, during which executives had no incentive to intervene in the earnings reporting process.

5.2.2 Results for Hypothesis 2: Impact of RVESO

Hypothesis 2 (H2): As the value of in-the-money exercisable executive stock options increases, so does the likelihood that management will use positive discretionary accruals to manipulate earnings.

To test the prediction in H2, I estimate a logit regression model for years 1994 through 1996 and present the results in Tables 9 through 11.

There are 150 observations (cases) for each year. The coefficient (β_2) for the hypothesized variable (RVESO) for all three years is not significantly different from zero. This implies that the likelihood of manipulation is not affected by an increase in the value of RVESO.

Coefficients for CEOCM, BONUS, and the exploratory variable RVUSO are also not significant for all three years (1994 through 1996). The explanation for non-significant coefficients of RVUSO and CEOCM is similar to the one presented for H1. Note that the coefficient for VAL_RLZD is significant and positive for 1994. It implies that an increase in VAL_RLZD is associated with an increase in the likelihood that managers may use income-increasing accruals.

For the year 1994, results (see Table 9) show that coefficients for LEVERAGE and VAL_RLZD are significant. I compute fitted values for

LEVERAGE for its median value of 0.19 and maximum value of 0.75.[32] The likelihood of manipulating income increases from about 4% for the median value to 51% for maximum value of LEVERAGE. This result indicates that proximity to debt-covenant violation levels increases the likelihood of earnings management, confirming the findings of Dhaliwal (1980) and Dechow, Sloan, and Sweeney (1996).

The fitted values of VAL_RLZD at different levels are not significantly different from each other, indicating that the likelihood of manipulation does not increase in any economically significant manner with an increase in VAL_RLZD.

SIZE is positive and significant for 1995 (see Table 10). Fitted values for SIZE are computed at two levels - the minimum value of 6.36 and the median value of 8.53. The probability of earnings manipulation increases from 15% for the minimum value to 49% for the median value, implying that as the SIZE increases, so does the probability of earnings manipulation through DAs.[33] Coefficients for all other variables are not significantly different from zero.

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[32] The fitted logistic response function and fitted values (πi) are expressed as $1/ [1 + \exp(-\beta X)]$ and $1/ [1 + \exp (- \beta Xi)]$, where β denotes the vector of the maximum likelihood estimates (Neter et al. 1996). For illustration, to compute point estimates for LEVERAGE in Table 9, I use the following logistic response function: (πi) = 1/ [1+ exp (3.8220 + 0.0006 RVESOi,t + 0.0003 RVUSO i,t + 0.0009 BONUS i,t - 3.8102 LEVERAGE i,t + 0.2398 CEOCM i,t - 0.4312SIZE i,t - 0.0002 VAL_RLZD i,t). To find the probability estimate for the maximum value of LEVERAGE, it is substituted in the function, holding others predictor variables constant. Thus, the fitted value gives the probability that the firms would manipulate earnings for a given value of LEVERAGE.

[33]The likelihood of earnings manipulation increases to 84% for the maximum value of 10.65 for SIZE.

Table 9

Logistic Regression Results for 1994 - Likelihood of Management's Use of Positive Discretionary Accruals to Manipulate Earnings

$$DA_{i,t} = \alpha_2 + \beta_2 RVESO_{i,t} + \gamma_6 RVUSO_{i,t} + \gamma_7 BONUS_{i,t} + \gamma_8 LEVERAGE_{i,t} + \gamma_9 CEOCM_{i,t} - \gamma_{10} SIZE_{i,t} + \gamma_{11} VAL\_RLZD_{i,t} + \varepsilon_{i,t}$$

	Beta	Significance	Exp. (β or γ)
CONSTANT(α_2)	-3.8220	0.1415	.....
RVESO(β_2)	-0.0006	0.6138	0.9999
RVUSO(γ_6)	-0.0003	0.1126	0.9997
BONUS(γ_7)	-0.0009	0.1233	0.9991
LEVERAGE(γ_8)	3.8102	0.0200*	45.1595
CEOCM(γ_9)	-0.2398	0.2371	0.7868
SIZE(γ_{10})	0.4321	0.1163	1.5391
VAL_RLZD(γ_{11})	0.0002	0.0544*	1.0002

Chi-square test of model's fit = 39.18 Degrees of freedom = 7 significance = 0.00

* Test statistically significant at 5% level

$DAs_{i,t}$ = 1 if there is more likelihood of earnings manipulation (for the sample, represented by higher than average value of DAs) and 0 if there less likelihood of earnings manipulation (for the sample, represented by lower than average value of DAs)

$RVESO_{i,t}$ = total value of exercisable ESOs in-the-money for the top 5 executives as disclosed in the proxy statement scaled by total assets at $t_{i,t-1}$

$RVUSO_{i,t}$ = total value of unexercisable ESOs in-the-money for the top 5 executives as disclosed in the proxy statement scaled by total assets at $t_{i,t-1}$

$BONUS_{i,t}$ = total value of annual bonus payments to the top 5 executives as disclosed in the compensation summary table of proxy statement scaled by total assets (Compustat item no. 6) at $t_{i,t-1}$

$LEVERAGE_{i,t}$ = long-term debt (Compustat item no. 9) divided by total assets at $t_{i,t-1}$

$CEOCM_{i,t}$ = coded as 1 if CEO also chairs the board of directors; otherwise 0

$SIZE_{i,t}$ = natural logarithm of total assets (Compustat item no. 6)

$VAL\_RLZD_{i,t}$ = value realized on exercise of ESOs scaled by total assets at $t_{i,t-1}$

$\varepsilon_{i,t}$ = error term

Table 10

Logistic Regression Results for 1995 - Likelihood of Management's Use of Positive Discretionary Accruals to Manipulate Earnings

$$DA_{i,t} = \alpha_2 + \beta_2 RVESO_{i,t} + \gamma_6 RVUSO_{i,t} + \gamma_7 BONUS_{i,t} + \gamma_8 LEVERAGE_{i,t} + \gamma_9 CEOCM_{i,t} - \gamma_{10} SIZE_{i,t} + \gamma_{11} VAL\_RLZD_{i,t} + \varepsilon_{i,t}$$

	Beta	Significance	Exp. (β or γ)
CONSTANT(α_2)	-6.7236	0.0026	.....
RVESO(β_2)	-0.0009	0.3560	0.9999
RVUSO(γ_6)	0.0001	0.6876	1.0000
BONUS(γ_7)	-0.0002	0.5236	0.9998
LEVERAGE(γ_8)	1.3408	0.3477	3.8223
CEOCM(γ_9)	-0.0533	0.7770	0.9481
SIZE(γ_{10})	0.7387	0.0024*	2.0932
VAL_RLZD(γ_{11})	0.0002	0.2425	1.0002

Chi-square test of model's fit = 20.21 Degrees of freedom = 7 Significance = 0.005

* Test statistically significant at 5% level

$DAs_{i,t}$ = 1 if there is more likelihood of earnings manipulation (for the sample, represented by higher than average value of DAs) and 0 if there less likelihood of earnings manipulation (for the sample, represented by lower than average value of DAs)

$RVESO_{i,t}$ = total value of exercisable ESOs in-the-money for the top 5 executives as disclosed in the proxy statement scaled by total assets at $t_{i,t-1}$

$RVUSO_{i,t}$ = total value of unexercisable ESOs in-the-money for the top 5 executives as disclosed in the proxy statement scaled by total assets at $t_{i,t-1}$

$BONUS_{i,t}$ = total value of annual bonus payments to the top 5 executives as disclosed in the compensation summary table of proxy statement scaled by total assets (Compustat item no. 6) at $t_{i,t-1}$

$LEVERAGE_{i,t}$ = long-term debt (Compustat item no. 9) divided by total assets at $t_{i,t-1}$

$CEOCM_{i,t}$ = coded as 1 if CEO also chairs the board of directors; otherwise 0

$SIZE_{i,t}$ = natural logarithm of total assets (Compustat item no. 6)

$VAL\_RLZD_{i,t}$ = value realized on exercise of ESOs scaled by total assets at $t_{i,t-1}$

$\varepsilon_{i,t}$ = error term

Table 11

Logistic Regression Results for 1996 - Likelihood of Management's Use of Positive Discretionary Accruals to Manipulate Earnings

$$DA_{i,t} = \alpha_2 + \beta_2 RVESO_{i,t} + \gamma_6 RVUSO_{i,t} + \gamma_7 BONUS_{i,t} + \gamma_8 LEVERAGE_{i,t} + \gamma_9 CEOCM_{i,t} - \gamma_{10} SIZE_{i,t} + \gamma_{11} VAL\_RLZD_{i,t} + \varepsilon_{i,t}$$

	Beta	Significance	Exp. (β or γ)
CONSTANT(α_2)	-6.4011	0.0090	.....
RVESO(β_2)	-0.0001	0.2220	0.9999
RVUSO(γ_6)	0.0000	0.7844	1.0000
BONUS(γ_7)	0.0004	0.4353	1.0004
LEVERAGE(γ_8)	3.0599	0.0419*	21.3253
CEOCM(γ_9)	-0.3315	0.0946	0.7178
SIZE(γ_{10})	0.6423	0.0117*	1.9008
VAL_RLZD(γ_{11})	-0.0004	0.1616	0.9996

Chi-square test of model's fit = 25.242 Degrees of freedom = 7 Significance = 0.00

* Test statistically significant at 5% level

$DAs_{i,t}$ = 1 if there is more likelihood of earnings manipulation (for the sample, represented by higher than average value of DAs) and 0 if there less likelihood of earnings manipulation (for the sample, represented by lower than average value of DAs)

$RVESO_{i,t}$ = total value of exercisable ESOs in-the-money for the top 5 executives as disclosed in the proxy statement scaled by total assets at $t_{i,t-1}$

$RVUSO_{i,t}$ = total value of unexercisable ESOs in-the-money for the top 5 executives as disclosed in the proxy statement scaled by total assets at $t_{i,t-1}$

$BONUS_{i,t}$ = total value of annual bonus payments to the top 5 executives as disclosed in the compensation summary table of proxy statement scaled by total assets (Compustat item no. 6) at $t_{i,t-1}$

$LEVERAGE_{i,t}$ = long-term debt (Compustat item no. 9) divided by total assets at $t_{i,t-1}$

$CEOCM_{i,t}$ = coded as 1 if CEO also chairs the board of directors; otherwise 0

$SIZE_{i,t}$ = natural logarithm of total assets (Compustat item no. 6)

$VAL\_RLZD_{i,t}$ = value realized on exercise of ESOs scaled by total assets at $t_{i,t-1}$

$\varepsilon_{i,t}$ = error term

Table 11 presents the results for 1996. Coefficients for LEVERAGE and SIZE are the only two control variables that are significantly different from zero. Computation of fitted value for LEVERAGE shows that the likelihood of manipulation increased from under 1% at the mean value of 0.2 to 2% for the maximum value at 0.75.

I compute fitted values for SIZE at the minimum value of 6.365 and median value of 8.530. The likelihood of using income-increasing accruals due to SIZE increases from 9% to 29%. This change indicates that the likelihood of earnings manipulation increases as SIZE increase.

The model is significant, with a chi-square value of 24.87. The change in the fitted value of LEVERAGE implies that the likelihood of earnings manipulation increases as LEVERAGE increases.

One of the explanations for the non-significant relationship between RVESO and earnings management could be that despite the incentive provided by ESOs and the flexibility provided by GAAP, executives are not free to report any numbers they please. There are certain constraints on managerial actions, such as the presence of external auditors and institutional ownership.

Although all auditors must meet the minimum standards set by the AICPA, it is possible that the greater resources of large audit firms enable them to provide higher quality audits. Large audit firms have more resources available for personnel training and development, which increases the likelihood of higher quality audits.

Because of their relatively large holdings, institutional investors have significant economic incentives to monitor any opportunistic behavior by managers (Agrawal and Mandelker 1990). These institutions can hire sophisticated financial analysts who are more likely to notice unusual accruals or other accounting choices used to manage reported earnings.

Black (1990) describes how pension funds, which hold nearly half of all the U.S. equity securities, have changed from being passive investors to active monitors of corporate managers.

5.2.3 Results for Hypothesis 3: Impact of Value Realized

Hypothesis 3: As the value realized from the exercise of executive stock options increases, so does the likelihood that management will use prior-period positive discretionary accruals to manipulate earnings.

To test H3, I estimate a logistic regression model for years 1994 through 1996, using 150 observations (or cases) for each year. The results are presented in Tables 12 through 14.

The coefficient (β_3) for the hypothesized variable VAL_RLZD is significant only for 1995. Coefficients for RVESO, RVUSO, BONUS, and CHM_CEO are not significantly different from zero for the years 1994 through 1996. The chi-square value indicates that the overall model is significant for all three years.

In 1994, LEVERAGE significantly affects the likelihood of earnings manipulation (see Table 12). Coefficients for all other control variables are not significant.

Table 12

Logistic Regression Results for 1994 - Likelihood of Management's Use of Prior-Period Positive Discretionary Accruals to Manipulate Earnings

$$DA_{i,t-1} = \alpha_3 + \beta_3 VAL\_RLZD_{i,t} + \gamma_{12} RVESO_{i,t} + \gamma_{13} RVUSO_{i,t} + \gamma_{14} BONUS_{i,t} + \gamma_{15} LEVERAGE_{i,t} + \gamma_{16} CEOCM_{i,t} - \gamma_{17} SIZE_{i,t} + \varepsilon_{i,t}$$

	Beta	Significance	Exp. (β or γ)
CONSTANT(α_3)	-3.1743	0.2073	.....
VAL_RLZD(β_3)	-0.0008	0.1492	0.9992
RVESO(γ_{12})	-0.00001	0.9054	1.0000
RVUSO(γ_{13})	-0.0002	0.3338	0.9998
BONUS(γ_{14})	-0.0005	0.2833	0.9995
LEVERAGE(γ_{15})	4.3671	0.0074*	78.8128
CEOCM(γ_{16})	-0.2886	0.1544	0.7493
SIZE(γ_{17})	0.3181	0.2310	1.3745

Chi-square test of model's fit = 36.012 Degrees of freedom = 7 Significance = 0.00

* Test statistically significant at 5% level

$DAs_{i,t-1}$ = 1 if there is more likelihood of earnings manipulation (for the sample, represented by higher than average value of DAs) and 0 if there less likelihood of earnings manipulation (for the sample, represented by lower than average value of DAs)

$RVESO_{i,t}$ = total value of exercisable ESOs in-the-money for the top 5 executives as disclosed in the proxy statement scaled by total assets at $t_{i,t-1}$

$RVUSO_{i,t}$ = total value of unexercisable ESOs in-the-money for the top 5 executives as disclosed in the proxy statement scaled by total assets at $t_{i,t-1}$

$BONUS_{i,t}$ = total value of annual bonus payments to the top 5 executives as disclosed in the compensation summary table of proxy statement scaled by total assets (Compustat item no. 6) at $t_{i,t-1}$

$LEVERAGE_{i,t}$ = long-term debt (Compustat item no. 9) divided by total assets at $t_{i,t-1}$

$CEOCM_{i,t}$ = coded as 1 if CEO also chairs the board of directors; otherwise 0

$SIZE_{i,t}$ = natural logarithm of total assets (Compustat item no. 6)

$VAL\_RLZD_{i,t}$ = value realized on exercise of ESOs scaled by total assets at $t_{i,t-1}$

$\varepsilon_{i,t}$ = error term

Table 13

Logistic Regression Results for 1995 - Likelihood of Management's Use of Prior-Period Positive Discretionary Accruals to Manipulate Earnings

$$DA_{i,t-1} = \alpha_3 + \beta_3 VAL\_RLZD_{i,t} + \gamma_{12} RVESO_{i,t} + \gamma_{13} RVUSO_{i,t} + \gamma_{14} BONUS_{i,t} + \gamma_{15} LEVERAGE_{i,t} + \gamma_{16} CEOCM_{i,t} - \gamma_{17} SIZE_{i,t} + \varepsilon_{i,t}$$

	Beta	Significance	Exp. (β or γ)
CONSTANT(α_3)	-4.6091	0.0679	.....
VAL_RLZD(β_3)	0.0002	0.0482*	1.0002
RVESO(γ_{12})	-0.0002	0.1741	0.9998
RVUSO(γ_{13})	-0.00009	0.3205	1.0000
BONUS(γ_{14})	-0.0008	0.1573	0.9992
LEVERAGE(γ_{15})	1.4633	0.3257	4.3202
CEOCM(γ_{16})	-0.1944	0.3108	0.8233
SIZE(γ_{17})	0.5292	0.0466*	1.6975

Chi-square test of model's fit = 25.927 Degrees of freedom = 7 Significance = 0.00

* Test statistically significant at 5% level

$DAs_{i,t-1}$ = 1 if there is more likelihood of earnings manipulation (for the sample, represented by higher than average value of DAs) and 0 if there less likelihood of earnings manipulation (for the sample, represented by lower than average value of DAs)

$RVESO_{i,t}$ = total value of exercisable ESOs in-the-money for the top 5 executives as disclosed in the proxy statement scaled by total assets at $t_{i,t-1}$

$RVUSO_{i,t}$ = total value of unexercisable ESOs in-the-money for the top 5 executives as disclosed in the proxy statement scaled by total assets at $t_{i,t-1}$

$BONUS_{i,t}$ = total value of annual bonus payments to the top 5 executives as disclosed in the compensation summary table of proxy statement scaled by total assets (Compustat item no. 6) at $t_{i,t-1}$

$LEVERAGE_{i,t}$ = long-term debt (Compustat item no. 9) divided by total assets at $t_{i,t-1}$

$CEOCM_{i,t}$ = coded as 1 if CEO also chairs the board of directors; otherwise 0

$SIZE_{i,t}$ = natural logarithm of total assets (Compustat item no. 6)

$VAL\_RLZD_{i,t}$ = value realized on exercise of ESOs scaled by total assets at $t_{i,t-1}$

$\varepsilon_{i,t}$ = error term

Table 14

Logistic Regression Results for 1996 - Likelihood of Management's Use of Prior-Period Positive Discretionary Accruals to Manipulate Earnings

$$DA_{i,t-1} = \alpha_3 + \beta_3 VAL\_RLZD_{i,t} + \gamma_{12} RVESO_{i,t} + \gamma_{13} RVUSO_{i,t} + \gamma_{14} BONUS_{i,t} + \gamma_{15} LEVERAGE_{i,t} + \gamma_{16} CEOCM_{i,t} - \gamma_{17} SIZE_{i,t} + \varepsilon_{i,t}$$

	Beta	Significance	Exp. (β or γ)
CONSTANT(α_3)	-8.2562	0.0006	.....
VAL_RLZD(β_3)	-0.0001	0.5996	0.9999
RVESO(γ_{12})	-0.00002	0.7243	1.0000
RVUSO(γ_{13})	-0.00006	0.6228	1.0000
BONUS(γ_{14})	0.0040	0.4840	1.0004
LEVERAGE(γ_{15})	2.5720	0.1302	13.0915
CEOCM(γ_{16})	0.0021	0.9913	1.0021
SIZE(γ_{17})	0.8711	0.0005*	2.3895

Chi-square test of model's fit = 21.748 Degrees of freedom = 7 Significance = 0.002

* Test statistically significant at 5% level

$DAs_{i,t-1}$ = 1 if there is more likelihood of earnings manipulation (for the sample, represented by higher than average value of DAs) and 0 if there less likelihood of earnings manipulation (for the sample, represented by lower than average value of DAs)

$RVESO_{i,t}$ = total value of exercisable ESOs in-the-money for the top 5 executives as disclosed in the proxy statement scaled by total assets at $t_{i,t-1}$

$RVUSO_{i,t}$ = total value of unexercisable ESOs in-the-money for the top 5 executives as disclosed in the proxy statement scaled by total assets at $t_{i,t-1}$

$BONUS_{i,t}$ = total value of annual bonus payments to the top 5 executives as disclosed in the compensation summary table of proxy statement scaled by total assets (*Compustat item no.* 6) at $t_{i,t-1}$

$LEVERAGE_{i,t}$ = long-term debt (Compustat item no. 9) divided by total assets at $t_{i,t-1}$

$CEOCM_{i,t}$ = coded as 1 if CEO also chairs the board of directors; otherwise 0

$SIZE_{i,t}$ = natural logarithm of total assets (Compustat item no. 6)

$VAL\_RLZD_{i,t}$ = value realized on exercise of ESOs scaled by total assets at $t_{i,t-1}$

$\varepsilon_{i,t}$ = error term

For 1995 (see Table 13), the coefficient for the hypothesized variable (VAL_RLZD) is positive and significant at less than 5%. However, a comparison of the fitted values at minimum and maximum level of VAL_RLZD indicates that there is no economically significant increase in the likelihood of manipulation when VAL_RLZD increases. For 1995 (see Table 13), the coefficient for SIZE is also positive and significant at less than 5% level of significance. Coefficients for all other control variables are not significant.

The coefficient of VAL_RLZD is not significant for 1996. SIZE is the only significant variable in 1996 (see Table 14). Although companies used in the sample are part of the Fortune 500 list, they still vary significantly in size in terms of assets and organization structure. Also, the large size and decentralized operations of some of these companies might facilitate earnings management. Thus, overall results provide no evidence for earnings manipulation by using DAs when ESOs are part of an executive's compensation package.

5.3 Limitations of the Study

This study does not consider the tax implications of ESOs, although available tax incentives affect the choice of an ESO plan. The reasons for not considering tax effects are twofold: (1) the Tax Reform Act 86 (TRA 86) reduced the tax incentive associated with ESOs moreover, (2) the tax effect has been previously analyzed by several authors. Haugen and Senbet (1981), Hagerty, Ofer, and Siegal (1990), and Lambert, Larcker, and Verrechia (1991) all analyze the tax effects of incentive stock option plans.

The study also does not control for the presence of an efficient labor market. Also, since this study targets only large companies, its results might not apply to smaller companies.

I compute DAs using the modified Jones model (1995). Although the model is accepted in accounting research, nevertheless, the accuracy of measurement of DAs will depend on how accurately the model can segregate discretionary accruals from total accruals.

Any results that are inconsistent with the hypotheses could result from misspecification of the model itself.

5.4 Future Research

This dissertation opens up many possibilities for future research on ESOs. While the results reported here confirm some influence by value realized, there is little knowledge on the processes of actual exercise decisions used by executives. Insight into these processes could confirm earnings manipulation by executives.

Although my results do not show a relation between earnings manipulation and RVESO, there could still be differences across industries. Therefore, researchers could focus on individual industries and evaluate whether various industries exhibit differences in the likelihood of earnings manipulation when ESOs are part of executives' compensation. Similarly, the impact of value realized on earnings manipulation for individual industries could show interesting

results. The role of ESOs prior to mergers and buyouts represent another interesting area of study.

5.5 Summary

The empirical results of this study provide evidence that executives are not more likely to manipulate earnings when ESOs are part of their compensation package. Logistic regression results indicate that increasing the value of RVESO does not increase the likelihood of income smoothing or earnings manipulation through the use of DAs.

The overall results do not provide support for the three hypotheses. An explanation could be that managers have some flexibility to manipulate earnings, but they cannot arbitrarily report any number they wish. The restraints on managers' actions include, but are not limited to, the presence of audit committee, vigilance by external auditors, the existence of an efficient labor market, and large financial institutions that hold a sizable percentage of equity.

Also, there could be a fear of exposure and subsequent penalty by the stock market if the manipulative practices are discovered (Dechow, Sloan, and Sweeney 1996).

APPENDIX A

Computation of Discretionary Accruals using the Modified Jones Model (1995)

For each firm, total accruals (TAs) are estimated using the Equation A1.1. Non-discretionary accruals (NDAs) are computed for each firm using the modified Jones model (1995) (see Equation A1.2). NDAs are computed for the estimation period (1983–1992) using Equation A1.3. Compustat data for ten years (1983–1992) are used to estimate the coefficients of Equation A1.3. These coefficients are used as the firm-specific parameters for Equation A1.2 to compute NDAs for the period (1993–1996). DAs are computed by subtracting NDAs from TAs.

$$TA = DAs + NDAs \quad (A1)$$

where

TA = total accruals computed as per Healy (1985) and Jones (1991)

$$TA_{i,t} = (\Delta CA_{i,t} - \Delta CL_{i,t} - \Delta CASH_{i,t} + \Delta STD_{i,t} - \Delta DEP_t) / A_{i,t-1} \quad (A1.1)$$

where

$\Delta CA_{i,t}$ = change in current assets (Compustat item 4)

$\Delta CL_{i,t}$ = change in current liabilities (Compustat item 5)

$\Delta CASH_{i,t}$ = change in cash and cash equivalents (Compustat item 1)

$\Delta STD_{i,t}$ = change in debt included in current liabilities (Compustat item 34)

$DEP_{i,t}$ = change in depreciation and amortization expense (Compustat item 14)

$A_{i,t-1}$ = total assets (Compustat item 6)

The modified Jones model (1995) for computing NDAs in the event period is as follows:

$$NDAs_{i,t} = a_1(1/A_{i,t-1}) + a_2(\Delta Rev_{i,t} - \Delta Rec_{i,t}) + a_3(PPE), \quad \text{(A1.2)}$$

$$NDAs_{i,t} = 0.18621\ (1/A_{i,t-1}) + 0.166756\ (\Delta Rev_{i,t} - \Delta\ Rec_{i,t}) - 0.289464(PPE),$$

where

$A_{i,t-1}$ = total assets at t-1

PPE = property, plant, and equipment scaled by $A_{i,t-1}$

$\Delta Rev_{i,t}$ = $(Revenue_{i,t} - Revenue_{i,t-1})$ scaled by $A_{i,t-1}$

$\Delta Rec_{i,t}$ = $(Receivables_{i,t} - Receivables_{i,t-1})$ scaled by $A_{i,t-1}$

a_1, a_2, a_3 = firm-specific parameters

Estimates of firm-specific parameters are generated using the following OLS model in the estimation period from 1983 to 1992:

$$NDAs_{i,t} = a_1(1/A_{i,\tau-1}) + a_2(\Delta Rev_{i,\tau} - \Delta Rec_{i,\tau}) + a_3(PPE_{i,\tau}) + \varepsilon_{i,\tau}\ ; \quad \text{(A1.3)}$$

$$NDAs_{i,t} = 0.18621(1/A_{i,\tau-1}) + 0.166756(\Delta Rev_{i,\tau} - \Delta Rec_{i,\tau}) - 0.289464\,(PPE_{i,\tau}) + \varepsilon_{i,\tau}\ ;$$

Where

τ = 1 to 10 is the estimation period and 1 corresponds to year 1983

Other variables are as defined earlier.

APPENDIX B

Classification for the Smoothing Variable (SM)

To categorize the sample into two components, the difference between earnings with accruals (actual reported earnings) and forecasted earnings is compared with the difference between the earnings without DAs and forecasted earnings. If the prior difference is less than the later, there is evidence that DAs have been used to bring actual earnings closer to the expected earnings, i.e., the use of DAs has resulted in income smoothing.

$SM_{i,t}$ = 1 if DAs are used to smooth income, when

$$|VAL\_EPS_{i,t}| < |VAL\_DEPS_{i,t}| \quad \text{(B1)}$$

= 0 if DAs are not used to smooth income, when

$$|VAL\_EPS_{i,t}| > |VAL\_DEPS_{i,t}| \quad \text{(B2)}$$

where

$$|VAL\_EPS_{i,t}| = |VAL\_LINE_{i,t} - EPS_{i,t}| \quad \text{(B1.1)}$$

$$|VAL\_DEPS_{i,t}| = |VAL\_LINE_{i,t} - (EPS_{i,t} - DA\_PS_{i,t})| \quad \text{(B1.2)}$$

Where

i = i^{th} firm in the sample from the 1994 Fortune 500 list of companies

t = time period of 3 years, starting from 1994

$VAL\_LINE_{i,t}$ = Value Line's EPS forecast, for the year, at end of the third quarter for the fiscal year.[34]

$EPS_{i,t}$ = actual earnings per share (EPS) reported for the year from the Compustat tape (Compustat item no. 58)

$DA\_PS_{i,t}$ = discretionary accruals computed using the modified Jones model (1995) (see Appendix A for computation) scaled by common shares used to calculate primary common shares (Compustat item no. 54) adjusted for stock-splits using adjustment factor (Compustat item no. 27)

[34] As per Crichfield, Dyckman, and Lakonishok (1978), analysts' forecasts become more accurate towards the end of the reporting period or fiscal year. Thus, the analysts' forecast was selected more towards the end of the fiscal year. The earnings forecast is taken from Value Line Investment Survey, which is one of the commonly used source for earnings forecasts.

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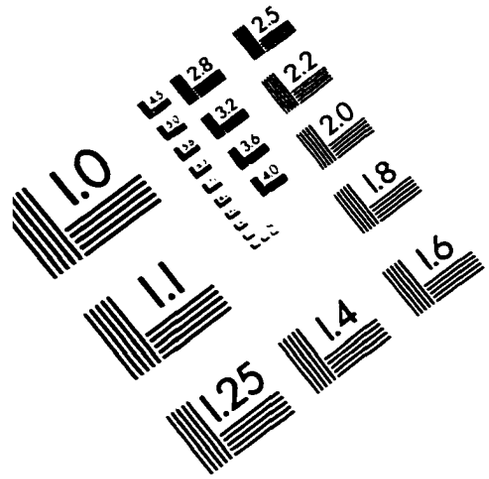
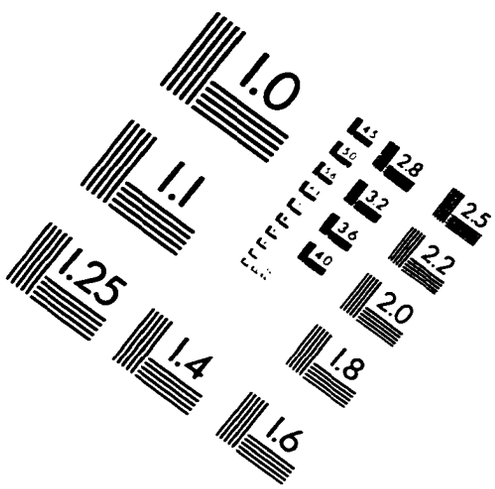
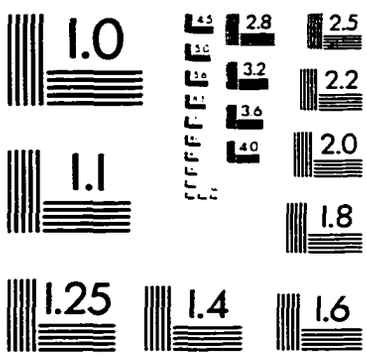
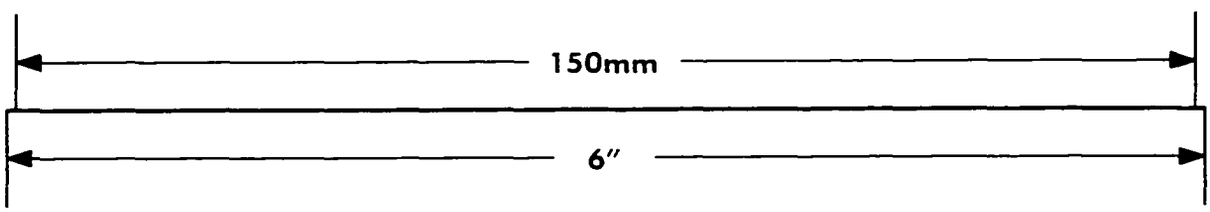
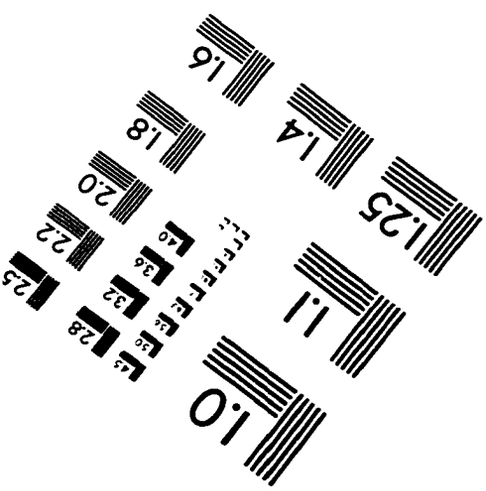
IMAGE EVALUATION
TEST TARGET (QA-3)

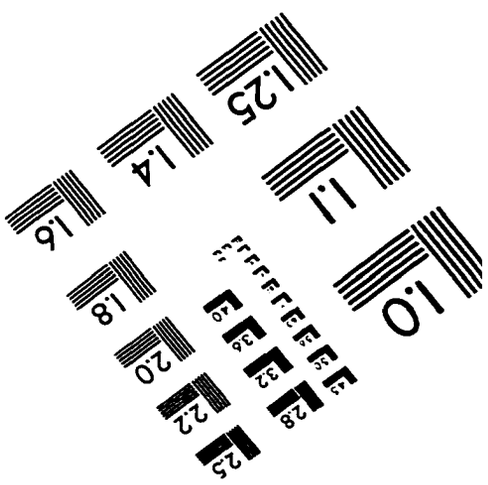












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