# INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

**The quality of this reproduction is dependent upon the quality of the copy submitted.** Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

**UMI**

A Bell & Howell Information Company
300 North Zeeb Road, Ann Arbor MI 48106-1346 USA
313/761-4700 800/521-0600

UNIVERSITY OF CALIFORNIA

Los Angeles

# The Incentive and Risk-Sharing Effects of Management Compensation

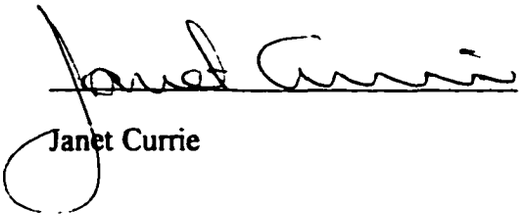
A dissertation submitted in partial satisfaction of the requirements for the degree Doctor of Philosophy in Management

by

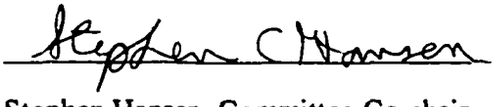
Chin Hang Wong

1996

The dissertation of Chin Hang Wong is approved.



Janet Currie



Stephen Hansen, Committee Co-chair

Bruce Miller, Committee Co-chair

University of California, Los Angeles

1996

TABLE OF CONTENTS


| | | Page |
|---|---|---|
| Chapter 1: | Introduction | 1 |
| Chapter 2: | Motivation | 7 |
| 2.1 | Model | 8 |
| 2.2 | The Testable Propositions | 12 |
| 2.3 | Components of Compensation Packages | 16 |
| 2.4 | Merger and Acquisition Theories | 19 |
| | 2.4.1 Recent Developments | 19 |
| | 2.4.2 Theories | 21 |
| Chapter 3: | Hypotheses: Incentive Effects | 24 |
| 3.1 | Hypotheses | 25 |
| 3.2 | Measuring Cash Flow Performance | 28 |
| 3.3 | Measuring Stock Price Performance | 31 |
| Chapter 4: | Empirical Results: Incentive Effects | 35 |
| 4.1 | Data | 35 |
| 4.2 | Results on Cash Flow Performance | 39 |
| 4.3 | Results on Stock Market Performance | 42 |
| Chapter 5: | Hypotheses: Risk-sharing Effects | 44 |
| 5.1 | Hypotheses | 44 |
| 5.2 | Estimation Methods | 50 |

TABLE OF CONTENTS

(Continued)


| | | Page |
|---|---|---|
| Chapter 6: | Results: Risk-sharing Effects | 52 |
| 6.1 | Data | 52 |
| 6.2 | Regression Results | 53 |
| Chapter 7: | Conclusion | 57 |
| References | | 78 |

## LIST OF TABLES


| Tables | | Page |
|---|---|---|
| 4.1 | Sample Selection | 59 |
| 4.2 | List of Acquiring Firms | 60 |
| 4.3 | List of Target Firms | 62 |
| 4.4 | Breakdown of Sample Firms by Industry | 64 |
| 4.5 | Composition of Conglomerate/Non-conglomerate Mergers in the Adopting and Non-adopting Samples | 65 |
| 4.6 | Size of Target Firms Relative to Their Acquirers | 66 |
| 4.7 | Comparison of Management Compensation Packages between Acquiring and Target Firms | 67 |
| 4.8 | Descriptive Statistics of Firm Size | 68 |
| 4.9 | Descriptive Statistics of Growth Opportunities | 69 |
| 4.10 | Estimated Values of Beta | 70 |
| 4.11 | Industry-adjusted Cash Flow Returns of Adopting and Non-adopting Firms in Years Surrounding Mergers | 71 |
| 4.12 | Abnormal Industry-adjusted Cash Flow Returns of Acquiring Firms in Three-year Periods After the Mergers | 73 |
| 4.13 | Post-merger Stock Market Performance of Firms | 74 |
| 6.1 | Descriptive Statistics of Compensation | 75 |
| 6.2 | Descriptive Statistics of Executive Characteristics | 76 |
| 6.3 | Factors Determining Management Compensation | 77 |

## ACKNOWLEDGMENTS

I am grateful to many faculty members and fellow students at the Anderson School of Management, University of California at Los Angeles, who have provided me with invaluable support. I am specially thankful to the following individuals for their generous help.

Dr. Janet Currie, who serves as an outside member of my dissertation committee, has shown me expertise in econometrics and labor market studies. I deeply appreciate her insightful comments on the drafts of this dissertation.

I am specially indebted to Dr. Stephen Hansen and Dr. Bruce Miller, the co-chairs of my dissertation committee, from whom I have benefited beyond expression. In the process of directing this dissertation, they showed me not only their admirable knowledge in accounting research, but also their great care for students. They always have time to provide me with advice when needed. They even gave me comments to improve my writing style, which I deeply appreciate.

Last but not least, this dissertation could not have been completed without the support of my beloved family members: my late father, my mother, my brothers and my sister.

VITA

| | |
|---|---|
| 1966 | Born, Hong Kong |
| 1988 | Honors Diploma, Finance<br>Hong Kong Baptist College<br>Hong Kong |
| 1990 | M.B.A., Accounting<br>State University of New York<br>Buffalo, New York |
| 1990 - 1995 | Research Assistant<br>Anderson Graduate School of Management<br>University of California<br>Los Angeles, California |
| 1990 - 1995 | Teaching Assistant<br>Anderson Graduate School of Management<br>University of California<br>Los Angeles, California |
| 1995 -1996 | Assistant Professor<br>Accounting & Information Systems Department<br>Faculty of Management<br>Rutgers - The State University of New Jersey<br>Newark, New Jersey |

ABSTRACT OF THE DISSERTATION

The Incentive and Risk-Sharing Effects of

Management Compensation

by

Chin Hang Wong
Doctor of Philosophy in Management
University of California, Los Angeles, 1996
Professor Stephen Hansen, Co-Chair
Professor Bruce Miller, Co-Chair

This thesis investigates the following research questions: Does providing incentives in managers' compensation packages improve their subsequent major corporate decisions? Does the imposition of risk on managers affect their compensation?

The compensation feature examined is the presence of long-term performance plans. The corporate decision studied is the acquisition of other firms. If the adoption of a long term performance plan can reduce the moral hazard problem, then the shareholders' long term gain from an adopting firm's acquisition decisions should be larger than those of a non-adopting firm. The first two studies in this thesis develop and test this hypothesis. The first study measures the shareholders' gain using accounting data; the second study measures the shareholders' gain using stock market data. The results provide weak evidence that managers in adopting firms make better investment decisions than their counterparts in non-adopting firms.

If a long term performance plan imposes more risk on the executives, then executives in adopting firms should be paid a risk premium. There should exist a positive

relationship between the compensation received by an executive and the presence of a long term performance plan in his compensation package. This hypothesis is discussed and tested in the third study in this thesis. The empirical results are inconsistent with the hypotheses. Controlling for company performance, manager talent, manager share holding and other factors, this study finds that firms with long term performance plans do not pay their executives more than firms without long term performance plans. Possible reasons for these results are: (1) Evaluating managers based on their long term performance may reduce, instead of increase, the susceptibility of their outputs to short term fluctuations and therefore reduce the managers' uncertainties. (2) Firms with a long term performance plan do pay their managers a risk premium, but this study fail to document the risk premium because of measurement errors.

# Chapter 1

# Introduction

The effectiveness of compensation contracts in motivating executives in publicly held corporations has been an ongoing and unresolved debate for years. Especially after the rapid growth of executive pay in the decade of the 1980s, headlines in the press, as well as academic journals, often voice concern about this issue.

Criticisms about the excessiveness of executive compensation were so widespread that they prompted the SEC and FASB to impose new rules. The SEC stipulated that, effective from 1993, the proxy statements of all filing companies must contain a detailed rationale for their executive compensation packages, which should be signed by the compensation committee of the board of directors. By holding the compensation committee publicly accountable for their executives' compensation, the SEC attempted to alleviate the alleged problem of executive overpay. Moreover, executives' large amounts of gains from exercising employee stock options induced the FASB to review the current accounting practice on employee stock options. The FASB issued Pronouncement Number 123: "Accounting for Stock Based Compensation" in October 1995.

As a result of this heated controversy, many accounting researchers have investigated the relationship between firm performance and executive compensation. Murphy (1985), Antle and Smith (1986), Lambert and Larcker (1987), Clinch (1991), and Ely (1991), among others, regress the amount of compensation on stock or accounting returns of the firms. They find positive association between the two. They conclude that the existing executive compensation contracts do align the interests of managers and shareholders. On the other hand, Jensen and Murphy (1990) document an increase of only $3.25 in CEO wealth for every one thousand dollar increase in shareholders' wealth. They argue that the link between performance and compensation is too weak. Their opinion is shared by Crystal (1993). The question of whether current executive compensation contracts are providing sufficient incentives is still an ongoing debate. Instead of looking at the association between contemporary firm performance and executive pay, I turn to a direct examination of the fundamental issue: Do executive incentives actually work? Does providing incentives to executives improve their subsequent major corporate decisions?

Executive compensation contracts underwent major structural changes in the past two decades. One of the most noticeable changes is the adoption of long term performance plans in many corporations. These plans usually offer to pay the executives stock or cash bonuses based on the firm's performance over a specified three to six year period. They are claimed by the adopting corporations to be a device to align management interest with that of shareholders. Using the long term performance plans as a tool, this paper is the first attempt that looks into both the motivation effects and the risk-sharing effects of management compensation.

The sample consists of NYSE or AMEX firms which acquired other listed firms. This study focuses on acquiring firms because of the following reason: The objective of this study is to examine how compensation contracts affect the quality of corporate decisions. The acquisitions of other listed firms are important investment decisions by the acquirers. While the effects of other corporate decisions are not observable, the effects of acquisition decisions are measurable using stock market as well as accounting data.

The remainder of this thesis is organized as follows. Chapter two motivates the hypotheses. First of all, a model is used to explicitly demonstrate (1) the association between incentive effects of management compensation packages and corporate investment decisions, as well as (2) the relationship between the risk born by a manager and his total compensation. Then the common components of executive compensation contracts are described. Finally, recent developments and theories of mergers and acquisitions are reviewed.

The hypotheses and research design regarding the incentive effects of long term performance plans are discussed in Chapter Three. The incentive effect of compensation contracts was first investigated by Larcker (1983). Using a sample of 25 matched-pairs of firms, Larcker (1983) documents that firms adopting a long-term performance plan experience significant positive abnormal stock return around the announcement date of the plan's adoption. Since then other studies such as Lambert and Larcker (1985), Tehranian and Waegelein (1985), Brickley, Bhagat and Lease (1985), Gordon and Pound (1990), Gaver, Gaver and Battistel (1992), and Kumar and Sopariwala (1992) have examined the market reaction to the adoption of a golden

parachute, short-term incentive plan, employee stock ownership plan (ESOP), and long-term incentive plans. But the results are inconclusive.

Unlike those studies, which examine the market reaction to certain announcements of changes in compensation contracts, this paper provides a direct investigation on how such changes in the structure of compensation contracts affect subsequent executive actions. Specifically, I identify firms which have adopted a long term performance plan and engage in acquisition activities. If the long term performance plans reduce the moral hazard problem and lengthen executives' planning horizon, then the shareholders' long term gain from these investments should be larger than acquiring firms without these plans. Two measures of executive performance (stock market returns and accounting returns) are used in the empirical tests.

The findings of the tests are presented in Chapter Four. The results show that (1) firms adopting long term performance plans have non-negative abnormal returns from their acquisition activities, (2) non-adopting firms have significantly negative abnormal returns from their acquisition activities, (3) adopting firms obtain higher abnormal returns from acquisitions than non-adopting firms. These results are consistent with the notion that managers in adopting firms make better investment decisions than their counterparts in non-adopting firms.

Having documented the motivating effects of long term performance plans, Chapters Five and Six deal with the risk-sharing aspects of these plans. According to agency theories, motivating managers consists of an incentive problem and a risk-sharing problem. To provide adequate incentives for the managers to look after shareholders' interests, the managers' compensation should be made sensitive to firm performance. However, making their pay contingent on firm performance will impose

uncertainty on the managers. This is an inefficiency since risk is transferred from the risk neutral shareholders to the risk averse managers. A well designed compensation contract should provide an optimal tradeoff between the incentive and risk-sharing aspects of the agency problem.

Although accounting researcher have well documented the incentive effects of compensation contracts, they are only beginning to explore the risk-sharing aspect of compensation packages. Lambert, Larcker and Verrecchia (1991) find a positive relationship between the mean and the variance of the compensation distributions of their sample firms. Gaver and Gaver (1993) document a higher level of management compensation in growth firms than that in non-growth firms.

This study extends their analyses by focusing on the risk-sharing effects of long term performance plans. Long term performance plans make executive payoffs contingent on the firm's future three to six year's performance. Since a longer horizon is less predictable than a shorter one, long term performance plans probably impose more risk on the executives. All other things being equal, executives in adopting firms should be paid a premium to compensate them for bearing the additional risk associated with the long term performance plans. Therefore there should exist a positive relationship between the compensation received by an executive and the presence of a long term performance plan in his compensation package. The hypotheses and research design are elaborated in Chapter Five.

The empirical results, presented in Chapter Six, are inconsistent with the hypotheses. Controlling for company performance, manager talent, manager share holding and other factors, this study finds that firms with long term performance plans do not pay their executives more than firms without long term performance plans.

Possible reasons for these results are: (1) Evaluating managers based on their long term performance may reduce, instead of increase, the susceptibility of their outputs to short term fluctuations and therefore reduce the managers' uncertainties (2) Firms with a long term performance plan do pay their managers a risk premium, but this study fail to document the risk premium because of measurement errors. Finally, Chapter Seven provides summary and conclusions of this study.

# Chapter 2

# Motivation

Executives of large publicly held corporations have long been criticized for behaving myopically, pursuing short-term profits at the expense of long-term benefits to shareholders. Numerous researchers have documented such suboptimal behavior. For example, Narayanan (1985) and Stein (1989) model non-cooperative games between the firm's executives and its shareholders. In the equilibrium, shareholders infer the firm's value from current corporate returns. Given the shareholders' behavior, the executives try to increase shareholders' assessment of firm value by boosting current returns and sacrificing long-term benefits. For example, they may turn down a project with low initial profit but high net present value in favor of another project which provides high initial profit but generates low net present value. The executives' focus on short-term performance is a Nash equilibrium outcome.

Shareholders can provide incentives to induce the managers to make optimal investment choices. For example, they can structure management compensation in such a way that the amount of compensation depends on future as well as current firm performance. This will lengthen the managers' planning horizon and align the managers' interest with that of the shareholders. Long-term performance plans

typically base executives compensation on the firm's performance over a 3-year to 6-year performance period. They are widely claimed by the adopting firms as a wage system to lengthen executives' planning horizon, aligning the executives' and the shareholders' interest. Using a model by Bizjak, Brickley and Coles (1993), this intuition is explained in more detail in the next section.

## 2.1 Model

Bizjak, Brickley and Coles describes the relationship between management compensation and corporate investment decisions in a two-period model. In the first period, the manager is endowed with one of two possible projects. Good projects occur with a probability of q% and bad projects occur with a probability of (1-q)%. The manger decides whether or not to invest in the project. If he decides to invest, the initial cash outflow in period one is $E_1$. The cash inflow of a good project in period two is $R_H > E_1$. The second period cash flow of a bad project is $R_L < E_1$. The discount rate is assumed to be zero. Therefore the good project has a positive net present value and the bad project has a negative net present value. If the manager decides not to invest, no cash flow is incurred in period 1 or period 2. The average project has positive net present value. ($R_A - E_1 > 0$ where $R_A = q \cdot R_H + (1-q) \cdot R_L$). The manager and the shareholders are assumed to be risk neutral and possess asymmetric information. When the manager makes the investment decision, he knows which type of project he is endowed with. But the shareholders only know the prior likelihood of a good project and whether an investment takes place in period 1.

The manager's first and second period compensation, denoted by $\phi_1$ and $\phi_2$ respectively, are linear in stock returns. It can be written as

$$\phi_1(\Delta V_1) = a_1 + b_1 \Delta V_1,$$

$$\phi_2(\Delta V_1, \Delta V_2) = a_2 + b_2 \Delta V_2 + c_2 \Delta V_1,$$

where $\Delta V_1$ is stock returns in period 1,

$\Delta V_2$ is stock returns in period 2, and

$b_1, b_2, c_2 \geq 0$.

Facing this compensation scheme, the manager makes investment decision to maximize the expected compensation $E(\phi)$:

$$E(\phi) = E [ a_1 + b_1 \Delta V_1 + [ \pi (a_2 + b_2 \Delta V_2 + c_2 \Delta V_1) + (1-\pi) \phi^* ] ] , \qquad (1)$$

where $\pi$ is the probability that the manager stays with the firm in period 2, and $\phi^*$ is the expected pay of the manager if he goes elsewhere.

Suboptimal Equilibrium

Since on average the investment projects have positive net present value, (that is, $R_A - E_1 > 0$), the shareholders' response to investment will be favorable in both a pooling and a separating equilibrium[1]. Managers with good projects (that is, high-type managers) will always invest. Managers with a bad project (low-type managers) will invest if the benefits from posing as high-type in period 1 is greater than the cost of being revealed as low-type in period 2.

Mathematically, the shareholders' response to investment in period 1, $\Delta V_1$, will be $(R_A - E_1) / (1 + b_1 + c_2)$. Their reaction to the revelation of a low-type manager in

[1] A pooling equilibrium is an equilibrium in which both types of firms will take the same action (that is, invest or not invest). In a separating equilibrium, only firms with good projects will invest.

period 2, $\Delta V_2$, will be $(R_L - R_H) / (1 + b_2)$. Therefore low-type managers will invest if

$$(b_1 + \pi c_2)(R_A - E_1) / (1 + b_1 + c_2) > \pi b_2 (R_A - R_L) / (1 + b_2) \quad . \quad (2)$$

$(b_1 + \pi c_2)(R_A - E_1) / (1 + b_1 + c_2) > \pi b_2 (R_A - R_L) / (1 + b_2)$

Equation (2) can be rewritten as

$$S(b_1,b_2,c_2,\pi) < \gamma_1, \quad (3)$$

where $S(\cdot) = (1 + b_1 + c_2) \pi b_2 (1 + b_2) / (b_1 + \pi c_2)$, and

$\gamma_1 = (R_A - E_1) / (R_A - R_L)$.

$S(\cdot)$ reflects the relative sensitivity of expected compensation to period 2 versus period 1 stock returns. If the compensation depends largely on the first period stock return, ($b_1$ and $c_2$ are large relative to $b_2$), then the low-type managers will invest in negative net present value projects, although doing so is to the detriment of the shareholders' interest.

Optimal Equilibrium

On the other hand, the low type managers will have no incentive to pose as high-type managers if the cost of being revealed as low-type in the second period is greater than the benefit from posing as high-type in the first period:

$$(b_1 + \pi c_2)(R_H - E_1) / (1 + b_1 + c_2) > \pi b_2 (R_H - R_L) / (1 + b_2) \quad (4)$$

Equation (4) can be rewritten as

$$S(b_1,b_2,c_2,\pi) > \gamma_2, \quad (5)$$

where $\gamma_2 = (R_H - R_L) / (R_H - E_1)$.

Thus, optimal investment decisions can be obtained by designing the compensation contract in such a way that sufficient emphasis is placed on future stock returns.[2]

If the weight on future stock returns is not sufficiently large, then the managers will sometimes, but not always, act in the interests of the shareholders. That is, for $S(\cdot)$ between $\gamma_1$ and $\gamma_2$, a mixed strategy equilibrium will be reached.

Mean-preserving Spread

The above analysis assumes managers are risk neutral. If a manager is risk averse, then he will respond to a change in the variance of the payoff distribution, even if the expected payoff remains the same. This issue of mean-preserving spread was considered by Rothschild and Stiglitz (1971).

Suppose the manager has a concave utility function v(c), c being his monetary payoff. If the probability distribution function of the payoffs changes from F(c) to H(c), where F and H have the same mean and F exhibits second-order stochastic dominance over H, then F is strictly preferred. That is, if

$$\int_{-\infty}^{c} F(r)dr \leq \int_{-\infty}^{c} H(r)dr \tag{6}$$

for all c, with the equality strictly holding over some part of the range, then

$$\underset{F}{E}\{v(c)\} > \underset{H}{E}\{v(c)\} . \tag{7}$$

In other words, if the distribution of the manager's payoffs becomes more risky, then the manager's expected utility will decrease. A premium p needs to be paid to the

---

[2] One exception is: if $\pi$ is so small that equation (3) is satisfied for all $b_1$, $b_2$ and $c_2$, then the low-type manager will always invest. The shareholders have no particular reason to emphasize future stock returns in the compensation contract.

manager so that his/her expected utility remains the same, or

$$\underset{F}{E}\{v(c)\} = \underset{H}{E}\{v(c + p)\} . \qquad (8)$$

## 2.2 The Testable Propositions

Equations (3), (5) and (8) constitute the focus of this study. Equations (3) and (5) indicate that an over-emphasis on current firm performance will lead to suboptimal investment decisions. Management compensation contracts need to place sufficient emphasis on both current and future performance so as to reduce the investment horizon difference between manager and shareholders.

If such a task is achievable by adopting a long term performance plan, then the expected firm performance will be improved after adoption of the mechanism. An efficient market will react immediately to reflect the higher expected firm performance. There should be a positive market reaction to adoption of an effective compensation scheme.

This hypothesis has been examined in several studies. Larcker (1983) examines twenty one companies which adopted a long term performance plan between 1971 and 1978. He shows a positive market reaction in the ten day period surrounding the SEC Stamp date.

In contrast, when Brickley, Bhagat and Lease (1985) study a larger sample of 175 firms adopting long term compensation plans between 1979 and 1982, including long term performance plans, stock option plans and restricted stock plans, they find no significant stock price reaction around the SEC Stamp day or other potential announcement days. They do find, nevertheless, positive abnormal returns in the

period from the board of directors meeting date to two days after the SEC Stamp date. They conclude that the plan adoption information may have been revealed in this time interval.

Gaver, Gaver and Battistel (1992) try to replicate the Larcker (1983) and Brickley, Bhagat and Lease (1985) results with a larger sample of 209 long term performance plan adoptions in 1979 and 1980. They use three different event dates (the board meeting date, proxy statement date, and SEC Stamp date) and two event windows (two days around the event dates and time intervals between the event dates). But they find no significant abnormal returns to the plan adoptions.

Kumar and Sopariwala (1992) investigate a matched-pairs sample of 62 Fortune 500 companies that adopted long term performance plans between 1978 and 1982. Contrary to Gaver, Gaver and Battistel (1992), they document a significant positive stock market reaction for the two day window around the proxy statement date.

Lewellen, Loderer and Rosenfeld (1985) test the effect of management's stock ownership on their acquiring decisions. Literature on the market for corporate control generally agrees that shareholders of acquiring firms, on average, do not have any wealth increase as a result of the acquisition. Lewellen, Loderer and Rosenfeld examine whether acquiring firms with small management ownership of the firms' stock are more likely to experience negative stock market reactions to the merger announcements. Their sample consists of 191 firms which acquired other companies from 1963 to 1981. They separate their sample into two groups according to the sign of daily abnormal return around their merger announcements. Then they compare the

management's stock ownership between the two groups. Results are weak and inconsistent across their different measures of management stock ownership.

Tehranian, Travlos and Waegelein (1987) examine the incentive effect of long term performance plans. They document the stock price reaction for the 30 days surrounding 164 merger announcements from 1972 to 1981. Acquiring firms with long term performance plans are found to experience higher abnormal stock returns at acquisition announcements.

Tehranian, Travlos and Waegelein assume that the abnormal returns for 30 days surrounding acquisition announcements fully capture expected changes in shareholders' wealth. However, numerous studies in the corporate control literature consistently show that changes in stock prices during mergers overestimate the future benefits from mergers. For example, Langetieg (1978), Jensen and Ruback (1983), Asquith (1983), Magenheim and Mueller (1988), and Agrawal, Jaffe and Mandelker (1992) conclude that acquiring firms have significantly negative abnormal returns over one to five years after the merger. They call into question the validity of the results in Tehranian, Travlos and Waegelein. This study aims at resolving this issue by measuring the long term benefit to the shareholders of the acquiring firms.

Moreover, Tehranian, Travlos and Waegelein use pre-acquisition data to estimate beta in the market model and used this estimated beta to calculate abnormal returns in the post-acquisition period. If the firms' beta changes due to the acquisition, then the results of Tehranian, Travlos and Waegelein are not reliable. There is a strong possibility of beta changes since an acquisition changes the composition of the acquiring firm's assets and debt-equity structure, and thus its risk-return

characteristics. My investigation will take into account the potential problem of beta shift by using post-acquisition data to estimate beta.

Equation (8) implies that firms which expose their executives to higher levels of risk, as measured by the variance of their compensation distribution, should set higher levels of compensation for their executives. This issue has been explored by only a few accounting researchers, including Lambert, Larcker and Verrecchia (1991) and Gaver and Gaver (1993).

Lambert, Larcker and Verrecchia (1991) examine whether executives are paid a risk premium. Using a sample of 370 firms over the period 1970 to 1984, they compute for each firm the average level and the variance of cash compensation to the CEO. Then they regress the compensation level on the compensation variance. They find the coefficient to be significantly positive. They conclude that there is a positive relationship between the mean and the variance of CEO compensation. However, they do not control for other factors which may affect the amount of CEO compensation.

Gaver and Gaver (1993) compare manager compensation of growth firms and non-growth firms. Their results show that growth firm managers are paid at a higher level than their counterparts in non growth firms. They believe that growth firms are riskier than well-established, non growth firms. Thus the difference in management compensation can be attributed to the different risk levels of the firms.

This thesis extend these studies by applying the risk-effect argument to long term performance plans. The common components of current executive compensation contracts, including long term performance plans, are described in the following section.

## 2.3 Components of Compensation Packages

Compensation packages are determined by the Compensation Committee of the Board of Directors in each firm. They differ not only among firms, but also among executives. While many researchers define compensation as salary plus short term cash bonus,[3] others use broader definitions that include other forms of compensation.[4] The common components of management contracts are described in the following discussion.

Base salary constituted 33% of total executive compensation in 1991.[5] In recent years, in response to shareholders criticism that executives are paid regardless of their performance, a few executives virtually forego base salary in exchange for other forms of compensation which are considered more performance sensitive. For example, in 1993 the executives of Triarc Corporation, whose business includes Arby's chain stores, agreed to receive stock options instead of a base salary. Their salary was set at $1 per year.

Short term bonuses are determined based on the annual performance of the firm and the individual executives. Common performance measures used are earnings, return on shareholders' equity, or return on assets. Payments are made in cash or stock. Short term cash bonuses are criticized as the cause of management myopic behavior. They made up about 18% of executive compensation in 1991.[6]

---

[3] See, for example, Agrawal (1981), Coughlin and Schmidt (1985), Deektop (1988) and Abowd (1990).

[4] See, for example, Clinch (1991), Jensen and Murphy (1990), Gibbons and Murphy (1990), and Antle and Smith (1986).

[5] Journal of Accountancy, May 1992.

[6] Journal of Accountancy, May 1992.

Deferred compensation plans allow executives to choose between (1) receiving all of their compensation immediately and being taxed on all the compensation in the current year, or (2) deferring the receipt of, and the corresponding tax on, part of their compensation. Managers usually defer receiving some of their incomes until after their retirement, when their marginal tax rate will typically be lower than the current year.

Employee stock option plans (ESOP) can be classified according to their tax treatment into incentive stock option (ISO) plans and non-qualified stock option plans. Under a non-qualified stock option plan, an employee's gain from exercising the stock option is tax deductible by the firm. Most stock option plans are ISO and do not provide tax benefits to the firm.

The accounting treatments for ESOPs are based on the APB Opinion No. 25. The Opinion specifies that if the exercise price is lower than the market price of the stock at the grant date, then the firm must recognize the stock option as a business expense. Thus most, if not all, firms set the exercise price of their ESO at the market stock price at the grant date.

The tremendous gains of executives from exercising their stock options in the 1980s induced the FASB to look into the effectiveness of the APB Opinion No. 25. An exposure draft was issued in 1993. The FASB concluded that employee's gain from stock options are part of their compensation, which should be recognized as expense in the income statement. Faced with widespread opposition from companies and accounting firms, the FASB modified its proposal to allow firms to choose between recognizing the option values in the income statement and disclosing them in the footnotes.

Stock appreciation rights (SARs) are issued in tandem with stock options. A manager can choose to exercise either the SAR or the ESO. If he exercises the ESO, he tenders the exercise price and receives the common shares. If he exercises the SAR, he simply receives cash in the amount of the difference between the market price of the common shares and the exercise price of the option.

Long term performance plans evaluate managers for their performance over a three to six year period. At the beginning of the evaluation period, each executive is allocated a fixed number of performance units. At the end of the period, the value of each performance unit is determined based on accounting measures such as earning per share, return on equity, and return on assets. The executives are paid according to their number of units multiplied by the value per unit. Payments may be in the form of cash or stock. To avoid the motivation problem in the last year of the evaluation period, firms usually have several long term performance plans covering different, yet overlapping, time periods. These plans are widely claimed to be an effective mechanism to prevent myopic behavior by the managers. Since the objective of this thesis is examining the motivating effects of compensation contracts, long term performance plans is a logical starting point.

Other components of compensation packages include restricted stocks, pension plans, life insurance plans, and other perquisites.

## 2.4 Merger and Acquisition Theories

### 2.4.1 Recent Developments

Merger activities follows a cyclical pattern. The most recent merger wave in the United States occurred in the 1980s. In the period from 1976 to 1990, 35,000 mergers and acquisitions took place. The shareholders' equity of listed corporations more than doubled from $1.4 trillion to $3 trillion. A third of the companies in the Fortune 500 Industrials were acquired by other companies or went private. Weston and Chen (1994) characterized this period as the "MAD" (merger, acquisition and debt) period, while Jensen (1993) calls it a "decade of greed and excess".

According to MergerStat Reviews, the total value paid in mergers decreased steadily from its peak of $115.6 billion (in 1982 dollars) in 1968 to $19.9 billion in 1976. Then it increased gradually to $70.4 billion in 1983. It jumped to $114 billion, about the same level as the previous peak, in 1984. After that, it further increased to its peak of $204 billion in 1988 and $171 billion in 1989. After 1989, it followed a downward trend.

The phenomenal increase of merger and acquisition activities in the 1980s can be attributed to a number of factors. First of all, since the 1970s, the government terminated its regulation of several industries. Examples include airlines, banking, savings and loans, broadcasting, cable, communications, transportation, and natural resources industries. This deregulation process resulted in the large number of firms and increased competition among firms in these industries. The subsequent need for within-industry consolidations led to takeovers of less competitive firms. These

industries accounted for almost half of all merger and acquisition transactions in the 1980s.

Secondly, the innovation of high yield debts (junk bonds) enabled companies to raise tremendous amounts of cash to buy other firms. A unique feature of the 1980 merger wave is that many of the acquired firms are large firms. According to Mergerstat Review, in 1968, only 46 acquired firms were paid over $100 million. In the 1980s an average of 227 mergers per year involved $100 million or more. An average of 23 firms per year involved $1000 million or more. All firms, no matter how large they are, are subject to takeover threats. Not only did potential acquirers incur huge amounts of high interest debts to finance their takeover attempts, potential takeover targets also took on high leverage levels as a defense. [7]

Thirdly, although consumer discretionary income increased rapidly in the 1980s, firms faced a highly unstable economic environment: (1) Exchange rates fluctuated widely. (2) Stock prices soared. (3) Tax policies changed almost from year to year. (4) There were stiff competition from domestic and foreign competitors. Firms needed to adapt to changes and new markets. Mergers and acquisitions were one of their means to increase their efficiencies or enter new markets. For instance, once interstate banking was completely allowed, smaller banks found themselves facing competition from large interstate banks. In order to survive, they merged together to obtain economies of scale in data processing, bank office operations, and lending and financing operations.

---

[7] In typical defense attempt, a target firm would use newly borrowed funds to finance a large cash dividend payment. As a consequence, its leverage level will become "abnormally high" and this would diminish potential bidder's ability to borrow money against the target's assets. This defense tactic was first developed by Goldman Sachs for Multimedia in 1985.

### 2.4.2 Theories

The literature has advanced many theories to explain takeovers of other firms They can be grouped into five categories: efficiency, synergy, signaling, agency and Hubris theories. The first three groups suggest that mergers and acquisitions create social gains and gains to shareholders of both the acquiring and target firms. The division of the gain between the acquiring and target shareholders depends on the competitiveness among bidders, government regulation, and fraction of target shares purchased. The last two groups of theories suggest that mergers and acquisitions do not result in social gains. They only lead to a transfer of wealth between the two involved firms. These theories are discussed in this section.

Efficiency and synergy theories assume that a combination of the assets of the acquiring and target firms create synergistic gains. Operating synergy may result from more efficient management, economies of scale, improved production techniques, or complementary resources. For instance, Merck, which was strong in research and development, merged with Sharpe & Dohme, which was strong in marketing. American Hospital Supply, the largest distributor of hospital supplies in the United States, merged with Baxter Travenol, a hospital supplies manufacturer. Financial synergy may result from the fact that the two firms have imperfectly correlated cashflows. Combining these two cashflows reduce their required cost of capital. Or the acquirer may have excess cash but lack good investment opportunities, while the target has good investment opportunities but lack cash. For example, Philip Morris combined with General Food because they had excess cash which they did not want to reinvest in the tobacco industry.

The synergy theories are advocated by Asquith (1983), Bradley, Desai and Kim (1983 and 1988) and Jensen and Ruback (1983). The 1988 study by Bradley, Desai and Kim measures the synergistic gains from acquisitions. It documents a 7.4% increase in the combined value of the acquirer and target firms.

Signaling theorists believe that managers engage in merger activities in order to convey their private information to investors. Dodd and Ruback (1977), Bradley (1980) and Firth (1980) calculate target firms' stock price reactions to tender offers. They found that even unsuccessful tender offers caused target firm stock prices to increase. Although Bradley, Desai and Kim (1983) voice doubt about this theory, Roll (1987) argued that signaling might have been the motive of some acquirers.

Agency theories of mergers suggest that mergers are motivated by the self-interest of the acquiring managers. Amihud and Lev (1981) argue that managers' most important asset is their own human capital, which is inevitably tied to the firms they work for. To achieve a higher degree of diversification of their own portfolio, they seek to diversify the firms' investment portfolios through conglomerate mergers. Jensen (1986) believes that managers become involved in takeovers so as to maximize the firm size, which may increase their pride or their compensation. Agency theories imply that managers are willing to acquire other firms even if such actions might reduce shareholders' wealth.

The Hubris hypothesis, first advanced by Roll (1987), maintains that acquisitions are motivated by manager's mistakes. Managers are overoptimistic in evaluating merger opportunities due to excess pride. Such overoptimism induces them to engage in biddings and acquisitions. A related theory is the winner's curse[8].

[8] See Capen, Clapp, and Campbell (1971) and Roll (1986).

Suppose bidders independently estimate the value of a target firm, base on which they determine their bid. The winning bid is necessarily the most optimistic estimate, which is likely to be an overestimation. This is consistent with the fact that acquiring firms tend to have zero or negative abnormal returns from mergers, while target firms typically obtain positive abnormal returns from mergers[9].

[9] See Jensen and Ruback (1983), Jarrell, Brickley and Netter (1988), and Agrawal, Jaffe and Mandelker (1992).

# Chapter 3

# Hypotheses: Incentive Effects

If long term performance plans are an effective motivating mechanism, then, as discussed in Chapter 2, the existence of long term performance plans in executive compensation contracts should be associated with more profitable corporate decisions. To test this and other related hypotheses, this study uses the t-test. Sample firms are divided into two groups based on the presence or absence of long term performance plan in their executive compensation packages. The distribution of abnormal returns from mergers are estimated for both groups. The adopting group is expected to have a higher average abnormal return than the non-adopting group.

The hypotheses are stated in greater detail in the following section. The reasons for using both stock market data and accounting data as performance measures are also discussed. Estimation of the accounting performance measure is discussed in section 3.2. Estimation of the stock market performance measure is outlined in section 3.3.

## 3.1 Hypotheses

The main arguments made in Chapter 2 can be summarized as follows: Long-term performance plans serve as a mechanism used by shareholders to reduce the moral hazard problem. Therefore, acquiring firms with a long-term performance plan (referred to as adopting firms hereafter) have smaller motivation problems than acquiring firms without a long-term performance plan (non-adopting firms). As a result, adopting firms will have higher abnormal returns from the mergers than non-adopting firms.

When applied to corporation acquisition decisions, it is hypothesized that:

- Adopting firms' investment decisions are more likely to be motivated by the desire to increase efficiency, obtain synergy or convey the managers' private information to the investors. Their shareholders are expected to obtain positive gains from their takeover activities.
- Non-adopting firms' investment decisions are more likely to be motivated by manager's self-interest or to be caused by mistakes. On average, their acquisition activities bring negative benefits to their shareholders.
- As a result of the first two hypotheses, adopting firms are likely to have higher gains from their takeover transactions than non-adopting firms.

Mathematically, let h be the stock market return or accounting rate of return. The subscript i represents individual firms. Firms i=1,...,n are adopting firms. Firms j=1,...,m are non-adopting firms. Also let $w_A$ and $w_N$ be the average performance of adopting firms and non-adopting firms, respectively, after adjusting for industry fluctuations:

$$W_A = \frac{\sum_{i=1}^{n} h_i}{n}$$

$$W_N = \frac{\sum_{j=1}^{m} h_j}{m}$$

Then the hypotheses mentioned above can be restated as follows:

| | | |
|---|---|---|
| Hypothesis I | Null: | $H_{0,1}$: $W_A=0$ |
| | Alternative: | $H_{A,1}$: $W_A>0$ |
| Hypothesis II | Null: | $H_{0,2}$: $W_N=0$ |
| | Alternative: | $H_{A,2}$: $W_N<0$ |
| Hypothesis III | Null: | $H_{0,3}$: $W_A=W_N$ |
| | Alternative: | $H_{A,3}$: $W_A>W_N$ |

Two performance measures, stock market return and an accounting rate of return, are used to test these hypotheses. Stock returns have been used by most accounting researchers as an appropriate measure of management performance.[10] The relevance of stock returns as a manager performance measure is derived from the efficient market hypothesis. Stock prices are assumed to reflect all public (weak form of efficient market) and private (strong form of efficient market) information about the value of the firm. Since the managers' task should be maximizing the value of the firm, stock prices are an appropriate proxy for their performance.

[10] See Benston (1985), Coughlin and Schmidt (1985), Murphy (1985), Antle and Smith (1986), Lambert and Larcker (1987) and Ely (1991).

According to Bushman and Indjejikian (1993), Kim and Suh (1993), and Sloan (1993), accounting returns should be used in addition to stock returns in evaluating management performance. Stock returns are affected not only by the managers' action, but also market fluctuations. Therefore they are noisy measures of the managers' action. Accounting returns, although also a noisy measure of the managers' actions, provides additional information about the managers' effort as long as they are not perfectly correlated to stock market returns. Lambert and Larcker (1987) propose that a firm should place more weight on accounting returns if the following conditions are satisfied:

(1) the market return distribution has a high variance;

(2) the correlation between the two performance measures is low, in other words, accounting returns provide much additional information;

(3) the manager holds more of the firm's stock. (Further emphasizing stock return in their compensation will over-expose the managers to stock market fluctuation.); and

(4) the firm's market is not growing. Accounting returns are results of past investing and financing actions of the firm; stock market prices are present value of expected future cash flows. For rapidly growing firms, accounting returns are poor indicators of future performance of the firms.

e importance of accounting returns as a management performance measure is empirically documented by Ely (1991) and Janakiraman, Lambert and Larcker (1992). Both studies find that accounting measures dominate stock returns in explaining compensation of managers. The method of calculating the accounting returns is described in the following section.

## 3.2 Measuring Cash Flow Performance

Common accounting measures used in accounting researches are return on equity [Lambert and Larcker (1987), Gibbons and Murphy (1990)], return on assets [Antle and Smith (1986), Ely (1991)], operating income [Abowd (1990), Belkaoui (1992), Clinch and Magliolo (1993)], and earnings per share [Barro and Barro (1990)]. This paper uses operating income to measure shareholders' benefits from mergers.

For each firm i, its yearly accounting return on invested capital is computed for the period year -3 to year +3. Year 0 is the year in which the merger occurs. Define

$$ROC_{it} = \frac{S_{it} - C_{it} - SA_{it}}{EQ_{it} + DEBT_{it}} \quad , \qquad (9)$$

where ROC = the return on invested capital,

S = sales revenue,

C = cost of goods sold,

SA = selling and administrative expense,

EQ = market value of equity = $(MV_{it} + MV_{it-1}) / 2$,

DEBT = book value of net debt,

i denotes the firm, and

t denotes the year.

In the numerator, the operating income is used to proxy for cash flows from operation. Net income [Ely (1991)] and earnings before extraordinary items [Lambert and Larcker (1987), Clinch (1991)] are more widely used as accounting measures of performance. However, these measures are affected by the accounting methods and

financing methods of an acquisition. In particular, the major effects of the accounting methods for mergers (that is, purchase method versus pooling of interest method) are in depreciation expense and goodwill expense. These two expense items are excluded from the numerator so that my performance measure is less subject to the influence of accounting methods for acquisitions. Interest expense/income is excluded so that the numerator will not be influenced by the type of financing of the acquisition.

To make the measure comparable across time and firms, the cash flow in the numerator is scaled by the assets employed to generate it. The total of equity and debt is used so that the denominator will not be affected by the method of financing for the merger. The market value of equity is used to prevent the results from being affected by the accounting methods for the mergers.

Like Healy, Palepu and Ruback (1992), this study assumes there are three factors for the difference between the pre-merger cash flow return and the post-merger cash flow return:

1. economy-wide and industry-specific fluctuations,
2. firm specific characteristics, and
3. the merger.

To measure the effect of the merger on firm performance, it is necessary to filter out the effects of the first two factors in the following way: First of all, for each firm-year observation, the industry-adjusted ROC (IROC) is calculated as

$$IROC_{it} = ROC_{it} - IND_{it}, \qquad (10)$$

where $IROC_{it}$ = industry adjusted ROC of firm i in year t ,

$ROC_{it}$ = ROC of firm i in year t, calculated as in equation (9),

$IND_t$ = industry average ROC in year t.

$IND_t$ is the median of ROCs of all firms that belong to the same two-digit SIC code as firm i. The median instead of the mean is used because the ROCs are positively skewed within industries $IND_t$ captures the effect of economy-wide and industry-specific fluctuations. Therefore $IROC_{it}$ reflects firm performance arising from firm-specific characteristics and the merger.

Then the pre-merger performance ($PRE_i$) is calculated for each firm as:

$$PRE_i = \frac{1}{3}\sum_{t=-3}^{-1} IROC_{it}. \qquad (11)$$

$PRE_i$ is a measure for the performance of the firm in the pre-merger period. It represents for the return on firm-specific characteristics.

Similarly, the post-merger performance of the firm ($POST_i$) is computed as:

$$POST_i = \frac{1}{3}\sum_{t=1}^{3} IROC_{it} \qquad (12)$$

Finally, the post-merger performance ($POST_i$) of all firms in each subsample is regressed on their pre-merger performance ($PRE_i$) to filter out the effect of firm-specific factors on firm performance. In other words, for each of the two subsamples, the following model is estimated:

$$POST_i = \alpha_l + \theta\ PRE_i + e_i\ , \qquad (13)$$

where $\alpha_l$ represents abnormal return of subsample *l*,

i denotes firms in the subsample,

*l* denotes the subsamples,

*l* = 1 if firms in the subsample have long-term performance plan,

= 0 otherwise.

The focus of this study, $\alpha_l$, is post-merger returns purged of the effect of pre-merger returns. It is the abnormal return generated by the merger. The acquiring firms with long-term performance plans are expected to have higher abnormal returns

on their merger activities than firms without long-term performance plans. The t-test for the difference between two sample means is used to test the hypotheses mentioned in the previous section.

## 3.3 Measuring Stock Price Performance

In this section, I outline how I use stock market returns to measure company performance of the sample firms. Since the sample consists of NYSE firms that acquire other NYSE firms, they are typically large firms. Dimson and Marsh (1986), Lakonishok and Vermaelen (1990) and Agrawal, Jaffe and Mandelker (1992) suggest that adjusting for firm size is important in studies of the long-term performance of acquirers. Therefore, I will control for the market effect as well as the size effect in my sample.

The stock returns are assumed to be generated by a two-factor process:

$$R_{it} = \alpha_i + R_{ft} + \beta_i(R_{mt} - R_{ft}) + \varepsilon_{it} \ , \qquad (14)$$

where $R_{it}$ = the return on security i at time t ,

$R_{ft}$ = risk-free rate of return,

$\beta_i$ = the beta of security i,

$R_{mt}$ = the return on the market portfolio at time t,

$\varepsilon_{it}$ = abnormal return, and

$\alpha_i$ = a function of firm size.

Equation (14) can be rewritten as:

$$R_{it} = R_{ft} + \beta_s(R_{st} - R_{ft}) + \beta_i(R_{mt} - R_{ft}) + \varepsilon_{it} \ , \qquad (15)$$

where $\beta_s$ = the beta of the size factor, and

$R_{st}$ = the return on the size factor at time t.

The abnormal returns $\varepsilon_{it}$ are estimated by using the following model, which can be obtained by reorganizing equation (15):

$$\varepsilon_{it} = R_{it} - R_{st} - (\beta_i - \beta_s)(R_{mt} - R_{ft}) \quad , \qquad (16)$$

where

$R_{it}$ = the return on the stock of firm i over month t,

$R_{st}$ = the return on the size-control portfolios in month t,

$\beta_i$ = the beta of security i,

$\beta_s$ = the beta of size-control portfolio s,

$R_{mt}$ = the return on the NYSE equally weighted index, and

$R_{ft}$ = the yield on a one-month Treasury bill.

First of all, the stock returns are calculated from stock market data. Let $p_{it}$ = price of stock i at the end of month t and $d_{it}$ = dividend (if any) distributed by firm i in month t. The stock returns are computed as:

$$R_{it} = [ ( p_{it} + d_{it} ) / p_{it-1} ] - 1.$$

The returns on the size-control portfolios are computed in the following way: At the end of each calendar year, all NYSE stocks are allocated by their market value (ending stock price × number of shares of common stock outstanding) to ten decile portfolios. For each month over the following year, the return on each size-control portfolio is computed as the equally-weighted average return across all securities in the portfolio, that is,

$$R_{st} = \frac{\sum_{k=1}^{q} R_{kt}}{q} ,$$

where k=1,...,q denotes firms within size-control portfolio s.

The beta of each security i, $\beta_i$, is computed for each firm in my sample using the market model:

$$R_{it} = \alpha_i + \beta_i R_{mt} + e_{it},$$

where $R_{it}$ and $R_{mt}$ are monthly returns for firm i and for the market respectively at time t. The market model is estimated using stock returns from month +1 to month +36, month 0 being the acquisition completion month. This is different from most empirical studies, in which $\beta_i$ is estimated using the prior event stock and market returns. This is because an acquisition changes the composition of the acquiring firm's assets and debt-equity structure, and thus its risk-return characteristics. There is a strong possibility of beta shifts. Using pre-acquisition data to estimate beta may render the results unreliable. A similar approach has been used in empirical post-merger performance studies, such as Dimson and Marsh (1986), Lakonishok and Vermaelen (1990), and Agrawal, Jaffe and Mandelker (1992).

Similarly, the beta of size control portfolio s, $\beta_s$ is computed for each portfolio using the market model:

$$R_{st} = \delta_s + \beta_s R_{mt} + \gamma_{st} ,$$

where $\delta_s$ is the intercept and $\gamma_{st}$ is the error term. It is estimated using portfolio returns over the period from month +1 to month +36 after the merger completion of firm i.

The abnormal returns $\varepsilon_{it}$ are then calculated by using equation (16). They are summed up over months +1 to +36 for each firm i to obtain the cumulative abnormal return (CAR)for that firm:

$$CAR_i = \sum_{t=1}^{36} \varepsilon_{it} . \qquad (17)$$

After that, sample firms are divided into two groups based on whether they have a long-term performance plan at the time of acquisition. The cumulative abnormal returns are averaged over all stocks in each subsample to obtain the average abnormal return (AAR):

$$AAR = \frac{1}{N}\sum_{i=1}^{N} CAR_i \quad , \tag{18}$$

where N = number of firms in the subsample.

Finally, the t-test is used to determine whether the AAR of the two groups have the same mean.

# Chapter 4

# Empirical Results: Incentive Effects

The sample used in the empirical tests is described in section 4.1. Section 4.2 contains results on accounting performance tests. Section 4.3 presents results on stock market performance tests.

## 4.1 Data

The sample consists of NYSE firms which acquired other NYSE or AMEX firms during the period January 1988 to December 1989. Large target firms were chosen because acquisitions of these firms represent major investment decisions by the acquiring firms. If there is a difference between the investment decisions of long-term performance plan adopting firms and non-adopting firms, the difference is more likely to be detected in these transactions.

The acquiring firms were identified in the following way. The Center for Research in Security Prices (CRSP) database was searched to identify merger-related delistings in the sample period. The initial sample consisted of 155 and 124 firms for 1988 and 1989 respectively. Then information about the acquirers were obtained from

two sources: The Nexis database, and the Merger and Acquisitions Yearbooks. Non-U.S. or private companies were excluded because post-merger data were not available for these firms. This restriction reduced the sample to 63 firms.

Firms were also required to satisfy three criteria:

1. Proxy statements of the firms must be available on Nexis and Standard and Poor's Compustat Corporate Text Databases. This criterion was imposed to make sure that executive compensation agreements could be obtained.
2. Stock price data for the post-merger three-year period were available on CRSP tape.
3. Accounting data for the period from three years before to three years after the merger were available from Compustat's annual tape. The final sample is comprised of 45 acquiring firms. The sample selection process is summarized in Table 4.1.

The proxy statements of each firm were reviewed to determine whether it had a long term performance plan in its executive compensation package at the time of the mergers. The firms were divided into two groups accordingly. One group consists of 21 firms which had a long term performance plan when their acquisition activities took place. They are referred to as "adopting firms" hereafter. The other group is referred to as "non-adopting firms".

Besides the sample acquiring firms, a control sample was formed to provide a benchmark for interpretation of test results. Each acquiring firm was matched with a control firm which must satisfy the following criteria:

(1) It had the same two-digit SIC as the sample firm;

(2) It was of similar size as the sample firm. Firm size was measured by yearly sales amount;

(3) It did not engage in any merger activities from three years before to three years after the merger activity of the sample firm;

(4) Its long term performance plan adopting/non-adopting characteristics was opposite to that of the sample firm. That is, if the sample firm had a long term performance plan, then a firm without such a plan was chosen as the control, and vice versa.

Table 4.2 provides a list of the sample acquiring firms. The target firms are listed in Table 4.3. The industry composition of the acquiring firms is shown in Table 4.4. More than half of the firms in each group are in manufacturing industries. This is expected since manufacturing is the largest industry among NYSE and AMEX firms. Only nine out of the twenty one adopting firms have the same two-digit standard industry code (SIC) as a non-adopting firm. A higher percentage (43%) of the adopting firms are public utility companies than that of the non-adopting firms (17%), whereas a higher proportion (29%) of the non-adopting firms are in consumer manufacturing industries as compared to the adopting firms (14%). In addition, the natural resources, merchandising, and business/personal services industries are present in the non-adopting group only. There seems to be a difference in the industry composition between the adopting and non-adopting subsamples.

Tables 4.5, 4.6 and 4.7 provide information about the characteristics of the mergers. They compare the acquiring firms with their target firms with respect to their primary SIC, size and management compensation feature. According to Table 4.5, twelve (fifteen) mergers in the adopting (non-adopting) subsample involve firms with

different two-digit SIC, thus can be considered conglomerate mergers. The Chi-square statistic of 0.1339, which is significant at 0.1% level, supports the hypothesis that the two subsamples have the same proportion of conglomerate mergers.

Table 4.6 reports descriptive statistics about the size of target firms relative to that of the acquiring firms. On average, the target firms are about 12% as large as the acquiring firms. It shows that these acquisition activities are important investment decisions of the acquirers. The large difference between the mean relative size of 57% and the median of 12% is caused by two large observations, both of which are over 3.0 in magnitude.

Table 4.7 compares the management compensation packages of acquirers and their targets. It shows the number of acquirers and target firms which have adopted a long term performance plan at the time of the mergers. Out of the thirty five target firms whose proxy statements are available, twenty of them have the same adopting/non-adopting feature as their acquirers. I was unable to obtain proxy statements of ten target firms because all the target firms were delisted shortly after the mergers. As a result, no statistical comparison can be made between the two subsamples.

Descriptive statistics of the acquiring firms are shown in Table 4.8. It shows the common measures of firm size: sales, total assets and market value of shareholders' equity. On average, the non-adopting firms are less than half of the size of the adopting firms. The Mann-Whitney U tests indicate that the non-adopting firms are significantly smaller than the adopting firms.

Table 4.9 presents summary statistics of the sample firms' price-earnings ratio, market-value-to-book-value ratio of assets, and market-value-to-book-value ratio of

shareholders' equity. These are common measures of company growth opportunities. The U test statistics of all three variables are insignificant. The two groups of firms apparently faced similar degree of growth opportunities. Therefore any difference in their returns from takeover activities can be attributed to the different effectiveness of corporate decisions.

## 4.2 Results on Cash Flow Performance

Table 4.10 summarizes the distribution of estimated betas of the acquiring firms. The value of the pre-merger betas ranges from 0.3400 to 1.9728, with a mean of 0.9973. The value of the post-merger betas ranges from 0.3954 to 3.0045, with an average of 1.2590. The hypothesis that the firms have the same betas before and after the mergers is rejected at the 1% significance level.

This upward shift of betas may be caused by the acquirers' increased leverage after the mergers. As mentioned in Chapter 2, mergers have two offsetting effects on the acquirers' cost of capital. On one hand, since the acquirers' cash flow stream is imperfectly correlated with that of the acquired firms, the acquirers bankruptcy probabilities is lowered after the mergers [Higgins and Schall (1975)]. On the other hand, acquisitions in the 1980s were typically financed by high interest debts. The acquirers' financial risk is increased by the mergers. The documented upward shift of beta implies that the second effect dominates the first one. This "increased-leverage" effect is documented by Shrieves and Pashley (1984). They find that mergers significantly increase the acquiring firms' financial leverage, after controlling for size and industry effects.

Panel A of Table 4.11 shows summary descriptions for industry-adjusted cash flow returns (IROC) of the sample firms before and after the mergers. The IROC of the control firms are shown in Panel B. The matching sample for adopting firms have a mean IROC of -0.87% and 3.38% in the pre-merger and post-merger periods respectively. The matching sample for non-adopting firms have a mean IROC of -0.25% and 5.04% in the pre-merger and post-merger periods respectively. None of these means are significantly different from zero. The null hypothesis that the control firms' average abnormal return equal to zero cannot be rejected at 10% significance level.

For the sample adopting firms, their average pre-merger cash flow return (PRE) from equation (11) is -6.99%, which is significant at the 1% level. But their average cash flow return after the mergers (POST) from equation (12), -1.37%, is not statistically different from zero. In other words, the adopting firms performed below industry average before the mergers. But their performance was comparable to the industry average after the mergers took place. On the other hand, the non-adopting firms on average have insignificant cash flow returns (mean = -6.28%) in the pre-merger periods, but they have significantly negative cash flow returns (mean = -17.04%, significant at 5% level) in the post-merger years. The performance of the adopting firms apparently improves over time, while that of the non-adopting firms does not.

Regression results of equation (13) are shown in Table 4.12. The dependent and independent variables are post-merger abnormal returns and pre-merger abnormal returns respectively. Both variables have been adjusted for industry-wide fluctuations. The signs of the coefficients, $\theta$, on the post-merger abnormal returns represent the

effect of firm characteristics on firm performance. The estimated coefficients on pre-merger returns are significantly positive in both subsamples. This implies that firm characteristics are a major determinant of firm performance in both pre-merger and post-merger periods. Firms that perform well in the pre-merger period also tend to perform well in the post-merger period.

Regarding the magnitudes of the coefficients, the coefficient of the adopting firms is 0.6550. The coefficient of the non-adopting firms is 1.3821. If the two subsamples are independent of each other, then the estimated t-statistic for the difference in sample means is 2.01, which is significant at 5% level. Non-adopting firms have a greater coefficient than the adopting firms. That is, they have a greater improvement in their returns from firm-specific factors. These results are inconsistent with the hypothesis that adopting firms performed better than non-adopting firms.

The intercepts, $\alpha_I$, of the regression models represent abnormal returns purged of industry and firm-specific factors. In other words, they represent returns induced by the mergers. On average, the non-adopting firms have negative abnormal returns at 5% significance level, while the returns of their matching firms have positive abnormal returns. The adopting firms and their matching firms have statistically insignificant abnormal returns. According to the t-test, the hypothesis that the two groups of firms have the same mean abnormal returns is rejected at 5% level ($t^* = 2.21$). The results on the intercepts, $\alpha_I$, weakly support the hypothesis that adopting firms have higher abnormal returns from their acquisition activities than that of non-adopting firms.

In summary, the results on the intercept ($\alpha_I$) of the regression model suggest that long-term performance plans help shareholders to motivate managers, but the

results on the coefficient on post-merger performance ($\theta$) suggest otherwise. The findings are inconclusive.

## 4.3 Results on Stock Market Performance

Panel A of Table 4.13 reports the post-merger stock market returns of the acquiring firms, calculated from equation (16). As pointed out in section 3.3, the abnormal returns have been adjusted for beta risk and firm size. They represent shareholders' benefit due to the mergers. Regarding the performance of adopting firms, their abnormal returns range from -17.3% to 4.6%. Their mean abnormal return of -6.32% and their standard error of 1.08% results in a t-statistic of 1.31. The null hypothesis that the adopting firms' abnormal returns equal to zero can be rejected at 5% significance level. The abnormal returns of the non-adopting firms range from -29% to -1%, with an average of -7.5% and a standard error of 1.15%. The null hypothesis that their abnormal returns are equal to zero can be rejected at 5% significance level

In contrast, none of the control samples has negative abnormal returns over the same time period. The abnormal returns of control firms are provided in Panel B. The control sample for adopting firms has an average return of 1.75%, which is significantly different from zero. The return distribution for non-adopting firms has a mean of 2.36%, which is significantly positive. Compared to the abnormal return distributions of control firms, the distributions of acquiring firms have similar variances but much lower means. The acquiring firms' performance was worse than that of comparable firms in their industries.

Such below-average performance of acquiring firms has been documented by prior studies such as Jensen and Ruback (1983), Jarrell, Brickley and Netter (1988), and Agrawal, Jaffe and Mandelker (1992). All of these studies examine the abnormal returns of acquiring firms in the 1980s. They find statistically insignificant abnormal returns to the acquiring firms' shareholders. Our sample adopting firms' performance from mergers is in line with the findings of these studies. Their performance is average compared to other acquiring firms in the same time period. The lack of abnormal gain to acquiring firm shareholders may be caused by competition among bidders, increased regulations on takeover attempts [Schipper and Thompson (1981), Bradley, Desai and Kim (1988)] and innovation of takeover defense tactics (such as golden parachutes, poison pills, and white knight bidders).

The third null hypothesis, that the adopting firms have the same abnormal returns as the non-adopting firms, has a t-statistic of 3.47 and can be rejected at 5% significance level. The adopting firms received higher returns from their merger decisions than the non-adopting firms. Such difference in their performance is associated with the presence/absence of a long-term performance plan in the management compensation package. This finding is consistent with adopting firms having smaller motivation problems than non-adopting firms. Long-term performance plans seems to be an effective mechanism for shareholders to reduce the moral hazard problem of the management.

# Chapter 5

# Hypotheses: Risk-Sharing Effects

Companies that adopted long term performance plans claim that these plans better align management's incentives with those of the shareholders' by increasing the sensitivity of compensation to performance. However, increased compensation-performance sensitivity also imposes greater risk on executives, which should result in higher expected compensation. This study uses a multiple regression to test such hypothesized association between expected executive compensation and the presence of a long term performance plan.

Section 5.1 discusses the multiple regression and its associated hypotheses. Estimation procedure of the dependent variable is described in section 5.2. Section 5.3 outlines the estimation methods of the independent variables. Section 5.4 discusses the regression results.

## 5.1 Hypotheses

The multiple regression of compensation used to test the hypotheses is as follows:

$$COMP_j = \gamma_0 + \gamma_1 \cdot LTP_j + \gamma_2 \cdot IROC_j + \gamma_3 \cdot BETA_j + \gamma_4 \cdot GROW_j + \gamma_5 \cdot SIZE_j + \gamma_6 \cdot CEO_j + \gamma_7 \cdot TENURE_j + \gamma_8 \cdot AGE_j + \gamma_9 \cdot STK_j + \varepsilon_j \quad (19)$$

where COMP = compensation received by executive;

LTP = 1 if executive compensation package includes a long term performance plan;

0 otherwise;

IROC = industry adjusted rate of return, as calculated in Chapter 4;

BETA = market beta of the firm;

GROW = growth rate of the firm, measured by its ratio of market value to book value;

SIZE = annual sales amount of the firm;

CEO = 1 if the executive is the CEO of the firm;

0 otherwise;

TENURE = number of years the executive is in the firm;

AGE = age of the executive; and

STK = value of stock ownership by the executive.

The subscript j represents individual executive.

The coefficient on long term performance plan (LTP) represents the effects of risk sharing on management compensation. Since the seminal paper by Holmstrom (1979), theorists have used the principal-agent framework to explain various types of contractual relationships. Applied to the relationship between shareholders and their firms' executives, it follows that risks are born by the executives due to the unobservability of the managers' actions.

According to the basic principal-agent theories, shareholders are assumed to be risk-neutral. Managers are risk averse and effort averse. If the managers' effort is observable, then the shareholders can rely on monitoring to ensure that the manager acts in the best interests of the shareholders. The optimal solution would suggest that the shareholders bear all the uncertainties related to firm performance and that the manager should be paid a flat wage high enough to retain him in the firm, that is, his compensation should be made completely insensitive to performance.

However, if the manager's action is neither observable nor directly inferable from firm performance due to the stochastic nature of production, then the shareholders cannot rely solely on monitoring mechanisms to motivate the manager. The manager's compensation should be made contingent on firm performance, so as to ensure that he will take actions that maximize firm performance. Because risk is transferred from the risk neutral shareholders to risk averse manager, the resulting risk allocation is suboptimal.

Preliminary empirical studies regarding the risk-sharing effects of management compensation contracts include Lambert, Larcker and Verrecchia (1991) and Gaver and Gaver (1993). Lambert, Larcker and Verrecchia examine whether managers' cash compensation includes rewards for accepting greater risk. Their sample is comprised of cash compensation of CEOs of 370 firms over the period 1970-84. For each company, they compute (1) the amount of cash compensation to the CEO, averaged over time, and (2) the variance of CEO compensation over time. Then they regress the averages of CEO compensation on the variances of CEO compensation. They argue that the variances reflect the amount of risks born by the CEOs. The results

show a positive relationship between the average and the variance of cash compensation.

Gaver and Gaver test whether managers of risky firms are paid more than managers of less risky firms. They use firm growth rates as proxy for firm riskiness, assuming that high growth firms have less stable investment project portfolios, therefore are more risky. They find that on average managers of high growth firms are paid more.

This study extends the previous studies by directly investigating the risk-sharing effects of a specific component of management compensation, namely, long term performance plan. If managers in adopting firms are paid a risk premium, then their expected compensation, controlled for other factors, should be higher than that of their counterparts in non-adopting firms. As a consequence, the coefficient of the plan adoption variable, LTP, should be positive.

The coefficient on IROC, $\gamma_2$, captures the association between compensation and performance. Although in theory the managers' pay should be dependent on performance, empirical studies on the compensation-performance link have yielded inconclusive results. Using a sample of 2,213 CEOs from 1295 firms, and a total of 7,750 CEO-year observations, Jensen and Murphy (1990) find that CEO wealth changes only by $3.25 for a $1,000 change in shareholder wealth. They believe that the sensitivity of pay to performance is too low. In contrast, using a sample of 303 executives from 116 firms in a similar time period as Jensen and Murphy's study, Clinch (1991) concludes that executive compensation is adequately linked to stock returns. A positive coefficient on IROC, $\gamma_2$, would support the former's conclusion, while an insignificant coefficient would support the latter's conclusion.

As Amihud and Lev (1981) point out, managers' most important asset is their own human capital, which is inevitably tied to the firms they work for. High risk of the firm will impose undesirable high risk on the manager's portfolio of assets. It follows that the risk that managers bear depends on the firm's riskiness. A firm's riskiness can be divided into two components: systematic risk and idiosyncratic risk.

The firm's systematic risk can be represented by its market beta (BETA). Systematic risk is associated with market fluctuations. The manager will bear such risk despite his employment or unemployment by the firm. Thus he should receive no compensation from bearing such risk. On the other hand, the manager would not bear the idiosyncratic risk of the firm if he was not employed by the firm. Therefore he will demand a premium for such risk. This study adopts the method of Gaver and Gaver (1993) as follows: A firm's idiosyncratic risk is represented by its growth opportunities (GROW), which in turn is proxy by the ratio of its market value to its book value. The coefficients of BETA and GROW are expected to be zero and positive, respectively.

The CEO variable is included because tournament theories suggest that an executive's compensation depends greatly on his position. Tournament theories imply that firms use competition among employee's for higher positions as a motivation method. The higher the hierarchy, the bigger the prize - compensation increases - to the winner.[11] Therefore, the coefficient of the CEO dummy variable is predicted to be positive. For similar reasons, the larger the firm, the more tournament levels a manager need to advance to become a CEO. Thus the coefficient on firm size (SIZE) is expected to be positive.

---

[11] See Leonard (1990), Murphy (1985), and Gerhart and Milkovich (1990).

The executive's age (AGE) is used to measure his/her general human capital. Agency theories assume that a manager should be paid at least his reservation wage[12], which increases with his human capital. It follows that a manager's compensation level should vary directly with his human capital level. [Rosen (1982) and Murphy (1986)] The coefficient on AGE is predicted to be positive.

The executive's tenure (TENURE) in the firm represents his firm-specific human capital. As a manager stays longer with the firm, he is likely to become more familiar with the firm and acquire a higher level of firm-specific human capital. Mincer and Jovanovic (1981) and Topol (1991) show that managers earn additional compensation for their acquired firm-specific human capital.[13] Therefore the coefficient on TENURE is hypothesized to be positive.

Finally, the managers' stock ownership (STK) is commonly proposed as one of the motivating devices. For example, Morck, Schleifer and Vishny (1988) find that firm performance improves as the managers' stock ownership is increased from 0 to 5%. The more the firm relies on management stock ownership to motivate managers, the less it needs to rely on monetary compensation. Thus the coefficient on stock ownership is expected to be negative.

In a nutshell, an executive's compensation is hypothesized to vary directly with the presence of a long term performance plan, firm growth opportunities, firm size, the executive's tenure, and his age. The coefficients of firm performance and firm beta are

---

[12] Reservation wage is the best alternative compensation the manager will get in the labor market. It is his opportunity cost of joining the firm. See Grossman and Stiglitz (1976).

[13] A similiar approach has been used by Lambert, Larcker and Verrecchia (1991). The executive's number of year in the position has also been used instead of his number of years with the firm. The two measures of tenure give similar results.

predicted to be non-negative. Finally, an executive's compensation is expected to decrease with his stock ownership.

## 5.2 Estimation Methods

Having discussed the expected signs of the coefficients in equation (19), his section presents techniques for estimating the dependent variables, executive compensation. As described in Chapter 2, a compensation package is usually composed of a base salary, short term cash bonus, deferred compensation, payoffs from long term performance plans, stock bonuses, stock options, and restricted stocks. The valuation of the last three components is described in detail as follows.

Both stock bonuses and restricted stocks are common shares of the firm granted to the executives. They are valued as the number of shares granted times the share price at the end of the granting year.

In its Pronouncement Number 123: "Accounting for Stock Based Compensation", the FASB allows firms to choose between two alternative approaches when computing the value of employee stock options: Black-Scholes and binomial. The Black-Scholes method is theoretically superior to the binomial method, while the binomial method is simple to implement. This paper follows the practice of prior research[14] and uses the Black-Scholes model to valuate stock options granted to individual executives:

$$OPTION_j = S_j \cdot N(d_1) - X \cdot \exp(-rT) \cdot N(d_2) \qquad (20)$$

where OPTION = value of options granted to executive at the end of the grant year;

[14] Examples are Murphy (1985) and Antle and Smith (1985).

$S$ = stock price of the firm at the year end;

$r$ = the ten year treasury bond yield;

$X$ = exercise price of the option;

$d_1 = (\sigma\sqrt{T})^{-1} \cdot [\ \ln (S/X) + ( r + (\sigma^2/2)) \cdot T\ ]$;

$d_2 = d_1 - \sigma T$;

$\sigma$ = annual volatility of the stock prices; and

$N(\cdot)$ = cumulative probability function for a standardized normal variable.

The subscript j indicates individual executives.

Since the Black-Scholes model assumes stock prices to be distributed log-normal, the volatility of stock prices, $\sigma$, is estimated in the following procedure. First, relative stock price for a firm is computed as:

$$R_t = S_t / S_{t-1} \qquad (21)$$

where $R_t$ is the relative stock price at period t. Let n represent the number of relative stock prices available for computation. Then the annual volatility for an executive is calculated as:

$$\sigma = ( \sqrt{n} )^{-1} \cdot [\ \ln(R_t) - E_t[\ln(R_t)]\ ]^2 \cdot \sqrt{253} \qquad (22)$$

The first part of the right hand side expression represents volatility of stock prices per trading day. The Black-Scholes model assumes that stock price volatility increases in time at a rate of square root of time. Since there are 253 trading days per year, multiplying volatility by $\sqrt{253}$ gives the annualized stock price volatility.

# Chapter 6

# Results: Risk-sharing Effects

## 6.1 Data

The sample consists of the three highest-paid executives in each firm in each of the three years after the firm's acquisition transaction. Since six proxy statements cannot be obtained, I have 381 executive-year observations in total.

Table 6.1 contains summary statistics about the dependent variable in the regression. The executive total pay varies between $473,943 and $15.8 million, with a mean of $2.7 million and a median $1.7 million. The number of shares granted to executives is usually not disclosed. In the 73 cases in which this information is available, the value of the stocks ranges from $3,666 to $5,175,400. The mean value is $846,614, while the median is $350,750. On average, it represents 31% of total compensation received by those executives. This percentage is in line with the Journal of Accountancy survey in 1991.

The value of stock options granted differs between $62,500 and $10.7 million. Such magnitudes are also consistent with the Journal of Accountancy survey in 1991. The large discrepancy between its mean of $1.7 million and its median of $0.99 million

is due to an exceptionally large amount of $10.7 million in one observation. The next largest amount is $7 million.

Table 6.2 presents summary statistics of the executives' characteristics. On average, they have stayed with the firms for 13 years. The minimum tenure with the firm is 1 year and the maximum tenure is 40 years. The number of years they have held their current position ranges from 1 year to 26 years, with a mean of 7 years. Their age also show a large difference among them. The youngest executive is 31 years old. The oldest one is 79 years old. Their average age is 52. Their stock ownership averages at $25,428.

## 6.2 Regression Results

The regression results are shown in Table 6.3. The main null hypothesis, that the coefficient of the long term performance plan dummy variable is equal to zero, cannot be rejected at conventional significance levels. This evidence is inconsistent with our argument that firms with long term performance plans pay a risk premium to their executives. Possible reasons are:

(1) Long-term performance plans do not increase the uncertainty that managers face regarding their compensation. Long-term performance plans, which measure managers' performance over a multi-year period, might actually shield them from short term fluctuations in the economy and industry, thereby reducing the uncertainty facing the managers.

(2) Although long term performance plans increase the risk to managers, firms adjust other aspects of the compensation contracts such that the total risk to managers does not increase.

(3) Managers under a long-term performance plan are paid a risk premium, but this study failed to identify the risk premium because of measurement errors. From the standpoint of the option holders, employee stock options are different from traded stock options in several aspects:

- Employee stock options typically expire in 10 years from the grant date, while traded stock options expire within a year.
- Employee stock options are vested according to a vesting schedule, typically 3 years. Most traded stock options are American options, exercisable at any time until expiration.
- Upon termination of employment, an executive has a short period in which to exercise his vested options. After this grace period, all of his stock options will be forfeited.
- Because SEC regulations restrict shortselling by insiders, executives holding employee stock options cannot hedge the risk associated with their options by shortselling the firm's stock.

In addition to these restrictions, the fact that a manager's wealth is highly tied to a firm's stock performance also makes an option less valuable to the manager than to an outsider. Therefore the value of an option to a manager can be well below a Black-Scholes valuation of a traded stock option[15]. Researchers are only beginning to explore the appropriate valuation methods for employee stock options. Examples are

[15] See Lambert, Larcker, and Verrecchia (1991).

Huddart (1994) and Rubinstein (1994). As Pavlik, Scott and Tiessen (1993) point out, there is no obviously appropriate method to value options granted to executives. (4) Murphy (1985) and Kerr and Kren (1992) find that employee stock options granted are in inverse proportion to a firm's stock returns in the granting year. If stock prices fall below the exercise price of existing stock options, then those options are frequently reissued at lower exercise prices. Stock options might be granted not as a reward for past performance or past risk-bearing, but as an incentive for future performance. This future orientation of stock options may have led to the observed weak relationship between the risk born by managers and their compensation level.

The coefficients on firm size and CEO position are significantly positive at 5% level. Thus an executive's compensation increases with the number of hierarchies in the firm (proxied by firm size) and the position of the executive as the CEO. These results provide evidence for the tournament theory. Tournament models predict that hierarchy plays an important role in determining an employee's compensation. Interestingly, the coefficient of the CEO variable is 2,025,224. That means, on average, a CEO is paid over $2 millions more than the other top executives. This is also consistent with tournament theories, which stipulate that the compensation differentials between hierarchies should be greater for higher levels in the firm. Since the CEO is the highest position in a company, the differential between the CEO and the other executives should be the greatest among all the levels. The importance of hierarchy in the determination of executive pay is also documented in a private survey of executives by Leonard (1990).

The coefficient of company growth (GROW) is positive at 5% significance level. This evidence supports the hypothesis that an executive's pay is directly related

to the growth opportunities of the company. As mentioned in Section 6.1, this direct association between executive pay and firm growth may be due to the higher risk of the firm or the more complex responsibilities of the manager.

The coefficients of the other independent variables, namely, IROC, BETA, TENURE, AGE, and STOCK are not significantly different from zero. The lack of association between compensation and firm performance (IROC) may be due to the measurement problems of compensation mentioned above. The insignificance of market beta (BETA) as a factor for compensation indicates that managers are not compensated for bearing systematic risk. The little influence of managers' general human capital (AGE) and firm-specific human capital (TENURE) reiterates the results of Altonji and Shakotko (1987) and Abraham and Farber (1987), who find that specific human capital, relative to other factors, is not an important determinant of compensation. The insignificance of the stock ownership (STOCK) coefficient shows that the sample firms did not substitute compensation with stock ownership to motive their executives. As Pavlik, Scott and Tiessen (1993) point out, firms may or may not use management stock-ownership as a motivating mechanism. They base their decision on the costs of writing and monitoring the contracts and their need for external capital.

# Chapter 7

# Conclusion

This thesis contributes to existing literature on the effects of management compensation packages. This thesis extend prior studies by examining both incentive effects (the benefits) and risk-sharing effects (the costs) of these contracts. Shareholders of companies should attempt to achieve the optimal tradeoff between costs and benefits when they design their managers' compensation contracts.

This study focuses on long term performance plans, which are widely claimed to be an effective motivating mechanism. A sample of acquiring firms is chosen. Two measures of corporate performance, accounting returns and stock market returns, are used to quantify the effectiveness of their acquiring decisions. The total compensation of their top executives are computed and compared.

The empirical findings can be summarized as follows:

The tests based on accounting returns provide conflicting results regarding the incentive effect of long-term performance plans. Acquiring firms with long term performance plans do not have a higher abnormal return from their acquisition activities than acquiring firms without any long term performance plans. However, according to their stock market returns, adopting firms benefit more from their

acquisition activities than non-adopting firms. The results provide weak evidence for the hypothesis that long term performance plans motivate managers to make investment decisions in the interests of the shareholders.

Surprisingly, it is found that on average, managers paid under long-term performance plans do not earn a higher level of compensation than managers who are not paid under such plans. Managers are not compensated for bearing the additional risk associated with long-term performance plans. A plausible reason for the failure to document the risk premium is the difficulty in valuing employee stock options.

The above investigation is about the effects on managers of a specific component of management compensation mix - long term performance plans. The extent to which the conclusions are applicable to other components of the compensation mix, and how the components complement one another, remain unexplored. Examination of these issue will provide us with additional insights. Moreover, in our analysis, I treat the adoption of non adoption of long term performance plans as an exogenous variable. I made no attempt to explain why some firms choose to add a long term performance plan to their compensation package, while other choose not to do so. Investigation into this issue will add to our knowledge on the determinants of compensation contracts and the behavior of the contracting parties.

TABLE 4.1

Sample Selection

| | |
|---|---|
| Initial sample | 279 |
| Less: Targets not acquired by public corporations | 216 |
| Proxy statement unavailable | 18 |
| Final Sample | 45 |

TABLE 4.2
List of Acquiring Firms

| |
|---|
| Acton Corp. |
| Alltel Corp. |
| American Brands Inc |
| American Telephone & Telegraph Co. |
| Archer Daniels Midland Co. |
| Arkla Inc. |
| Bank of New York Inc. |
| Black & Decker Corp. |
| Bristol Myers Co. |
| Chemical Banking Corp. |
| Cincinnati Bell Inc. |
| Consolidated Freightways Inc. |
| Cooper Industries Inc. |
| Crompton & Knowles Corp. |
| Cyprus Minerals Co. |
| Dana Corp. |
| Delta Woodside Industries Corp. |
| Dow Chemical Co. |
| General Electric Co. |
| General Signal Corp. |
| Hadson Corp. |
| Halliburton Co. |
| Jostens Inc. |
| Keycorp |
| M A Com Inc. |
| Mark IV Industries Inc. |
| Mediq Inc. |
| N U I Corp. |
| Nynex Corp. |
| Paccar Inc. |
| Pacific Enterprises |
| Pacificorp |
| Panhandle Eastern Corp. |
| Parker Hannifin Corp. |

TABLE 4.2

List of Acquiring Firms

(Continued)

| |
|---|
| Pennzoil Co. |
| Primerica Corp. |
| Salant Corp. |
| Sara Lee Corp. |
| Southdown Inc. |
| Southern Co. |
| Symbol Technologies Inc. |
| Transamerica Corp. |
| Union Pacific Corp. |
| Unisys Corp. |
| Walgreen Co. |
| West Point Pepperell Inc. |

TABLE 4.3
List of Target Firms

| |
|---|
| A G S Computers Inc. |
| Adams Russell Inc. |
| Ambrit Inc. |
| Arundel Inc. |
| Beard CoC L C America Inc. |
| C P National Corp. |
| Cetec Corp. |
| Champion Spark Plug Co. |
| Champion Products Inc. |
| City Gas Co. - Florida |
| Copelco Financial Services Group |
| E II Holdings Inc. |
| Emery Air Feight Corp. |
| Emhart Corp. |
| Entex Inc. |
| Essex Chemical Corp. |
| Facet Enterprises Inc. |
| Foote Mineral Co. |
| G C A Corp. |
| Gearhart Industries Inc. |
| Grand Auto Inc. |
| Gull Inc. |
| Ingredient Technology Corp. |
| Irving Bank Corp. |
| Manhattan Industries Inc. |
| Moore McCormack Resources Inc. |
| M S I Data Corp. |
| Paradyne Corp. |
| R T E Corp. |
| Roper Corp. |
| Sabine Corp. |
| Savannah Electric & Power Co. |
| School Pictures Inc. |
| Squibb Corp. |

TABLE 4.3
List of Target Firms
(Continued)

| |
|---|
| Stanwood Corp. |
| Stevens J P & Company Inc. |
| Stop & Shop Companies Inc. |
| Sunstates Corp. |
| Texas Eastern Corp. |
| Timeplex Corp. |
| Utah Power & Light Co. |
| Vanguard Technologies International Inc. |
| Varo Inc. |
| Williams A L Corp. |

TABLE 4.4
Breakdown of Sample Firms by SIC

| | Adopting firms | Non-adopting firms |
|---|---|---|
| Natural resources: | | |
| 1000-1099 | 0 | 1 |
| 1600-1699 | 0 | 1 |
| Consumer manufacturing: | | |
| 2000-2099 | 1 | 1 |
| 2100-2199 | 0 | 1 |
| 2200-2299 | 1 | 1 |
| 2300-2399 | 0 | 1 |
| 2800-2899 | 1 | 2 |
| 2900-2999 | 0 | 1 |
| Industrial manufacturing: | | |
| 3000-3099 | 0 | 1 |
| 3200-3299 | 0 | 1 |
| 3400-3499 | 0 | 1 |
| 3500-3599 | 3 | 1 |
| 3600-3699 | 2 | 1 |
| 3700-3799 | 2 | 0 |
| 3900-3999 | 1 | 1 |
| Transportation/public utilities: | | |
| 4000-4099 | 0 | 1 |
| 4200-4299 | 1 | 0 |
| 4800-4899 | 4 | 1 |
| 4900-4999 | 4 | 2 |
| Merchandising: | | |
| 5900-5999 | 0 | 1 |
| Financial services: | | |
| 6000-6099 | 1 | 0 |
| 6100-6199 | 0 | 3 |
| Business/personal services: | | |
| 7300-7399 | 0 | 1 |
| Total number of firms | 21 | 24 |

TABLE 4.5

Composition of Conglomerate/Non-conglomerate Mergers

in the Adopting and Non-adopting Samples

| | Adopting Firms | Non-adopting Firms | Total |
|---|---|---|---|
| Number of: | | | |
| Conglomerate* Mergers | 12 (12.6) | 15 (14.4) | 27 |
| Non-conglomerate Mergers | 9 ( 8.4) | 9 ( 9.6) | 18 |
| Total | 21 | 24 | 45 |

Chi-square Statistic = 0.1339

* A merger is considered to be a conglomerate merger if the acquiring and target firms have different two-digit SIC. It is considered to be a non-conglomerate merger otherwise.

Figures in parentheses represent the expected numbers of observations.

TABLE 4.6

Size of Target Firms Relative to Their Acquirers

| Market value of Acquired Firm/Market Value of Acquiring Firm: | |
|---|---|
| Max. observation | 4.4909 |
| 75% observation | 0.5256 |
| Median | 0.1193 |
| 25% observation | 0.0268 |
| Minimum | 0.0015 |
| Mean | 0.5728*** |
| Standard Error | 0.1435 |

*** Significant at 1% level in two-tailed tests.

TABLE 4.7

Comparison of Management Compensation Packages

between Acquiring and Target Firms

| | Number of Acquirers which have Long-term Performance Plan | No Long-term Performance Plan | Total |
|---|---|---|---|
| Number of Target Firms which have: | | | |
| Long-term Performance Plan | 9 (6.5) | 5 (7.47) | 14 |
| No Long-term Performance Plan | 10 (9.8) | 11 (11.2) | 21 |
| Target Firm Proxy Statement Unavailable | 2 (4.7) | 8 (5.3) | 10 |
| Total | 21 | 24 | 45 |

Chi-square statistic = 4.71

Figures in parentheses represent the expected numbers of observations.

TABLE 4.8

Descriptive Statistics of Firm Size

| | Sales | | Total assets | |
|---|---|---|---|---|
| | adopters | non-adopters | adopters | non-adopters |
| Max. observation | 51974.0 | 13377.0 | 67349.0 | 23318.5 |
| 75% observation | 7643.9 | 4281.6 | 11596.4 | 4272.2 |
| Median | 2423.5 | 795.3 | 4786.3 | 1147.6 |
| 25% observation | 1188.0 | 276.6 | 1536.0 | 175.5 |
| Minimum | 424.2 | 18.9 | 360.7 | 66.2 |
| Mean | 7388.5 | 2572.1 | 11174.6 | 4527.8 |
| Significance level of Mann-Whitney U test: | | 0.0197 | | 0.0145 |

| | Market Value | |
|---|---|---|
| | adopters | non-adopters |
| Max. observation | 39842.7 | 17044.1 |
| 75% observation | 4643.4 | 2778.2 |
| Median | 1354.0 | 625.7 |
| 25% observation | 852.1 | 120.5 |
| Minimum | 209.7 | 12.8 |
| Mean | 5635.3 | 2245.0 |
| Significance level of Mann-Whitney U test: | | 0.0757 |

TABLE 4.9

Descriptive Statistics of Growth Opportunities

| | Price-earnings Ratio | |
|---|---|---|
| | adopters | non-adopters |
| Max. observation | 19.1057 | 98.6111 |
| 75% observation | 14.4000 | 15.9942 |
| Median | 11.5597 | 10.3846 |
| 25% observation | 9.7431 | 6.7105 |
| Minimum | 2.5790 | 3.7671 |
| Mean | 12.1676 | 17.1580 |
| Significance level of Mann-Whitney U test: | | 0.4992 |

| | MV* of assets/BV* of assets | | MV of SE*/BV of SE | |
|---|---|---|---|---|
| | adopters | non-adopters | adopters | non-adopters |
| Max. observation | 2.8255 | 3.1230 | 5.6729 | 9.2588 |
| 75% observation | 1.3448 | 1.4240 | 1.8680 | 1.7700 |
| Median | 1.2209 | 1.1230 | 1.6427 | 1.3726 |
| 25% observation | 1.1209 | 1.0098 | 1.2760 | 1.0392 |
| Minimum | 0.9840 | 0.7290 | 0.6586 | 0.4007 |
| Mean | 1.3446 | 1.3052 | 1.8669 | 1.8461 |
| Significance level of Mann-Whitney U test: | | 0.5524 | | 0.3171 |

* MV stands for market value.
BV stands for book value.
SE stands for stockholders' equity.

TABLE 4.10

Estimated Values of Beta

Market Model [a]: $R_{it} = \alpha_i + \beta_i R_{mt} + e_{it}$

| | Pre-Merger β [b] | Post-Merger β[c] | Post-merger β minus Pre-merger β |
|---|---|---|---|
| Number of Observation | 40[d] | 45 | 40 |
| Maximum | 1.9728 | 3.0045 | 1.3745 |
| Median | 1.1001 | 1.1552 | 0.1689 |
| Minimum | 0.3400 | 0.3954 | -0.9294 |
| Mean | 0.9973 *** | 1.2590 *** | 0.2205*** |
| Standard Error | 0.0514 | 0.0758 | 0.0697 |

*** Significant at the 1% level in two-tailed tests.

a $R_{it}$ and $R_{mt}$ are monthly returns for firm i and for the market respectively at time t.

b The pre-merger beta is estimated using stock prices from month -48 to month -13. Month 0 is the merger completion month.

c The post-merger beta is estimated using data from month +1 to month +36.

d Five firms do not have sufficient pre-merger data for beta estimation.

TABLE 4.11

Industry-adjusted Cash Flow Returns of

Adopting and Non-adopting Firms in Years Surrounding Mergers

Model: $IROC_{it} = ROC_{it} - IND_{it}$

Panel A: Accounting Returns of Acquiring Firms

| | Adopting Firms | Non-adopting Firms |
|---|---|---|
| Industry-adjusted cash flow returns in pre-merger 3-year periods: | | |
| mean | -0.0699** | -0.0628 |
| standard error | 0.0238 | 0.0394 |
| Industry-adjusted cash flow returns in post-merger 3-year periods: | | |
| mean | -0.0137 | -.1704*** |
| standard error | 0.0247 | 0.0680 |

TABLE 4.11

Industry-adjusted Cash Flow Returns of
Adopting and Non-adopting Firms in Years Surrounding Mergers

(Continued)

Model: $IROC_{it} = ROC_{it} - IND_{it}$

Panel B: Accounting Returns of Control Firms

| | Adopting Firms | Non-adopting Firms |
|---|---|---|
| Industry-adjusted cash flow returns in pre-merger 3-year periods: | | |
| mean | -0.0087 | -0.0025 |
| standard error | 0.0804 | 0.0397 |
| Industry-adjusted cash flow returns in post-merger 3-year periods: | | |
| mean | 0.0338 | 0.0504 |
| standard error | 0.1345 | 0.00875 |

$IROC_{it}$ = industry adjusted ROC of firm i in year t.
$IND_t$ = industry median ROC in year t.
$ROC_{it}$ = cash flow return on invested capital of firm i in year t, computed as:

$$ROC_{it} = \frac{S_{it} - C_{it} - SA_{it}}{EQ_{it} + DEBT_{it}},$$

where S = sales revenue,
C = cost of goods sold,
SA = selling and administrative expense,
EQ = market value of equity = $(MV_{it} + MV_{it-1}) / 2$, and
DEBT = book value of net debt.

** significant at 5% level in two-tailed tests
*** significant at 1% level in two-tailed tests

TABLE 4.12

Abnormal Industry-adjusted Cash Flow Returns of Acquiring Firms in Three-year Periods after the Mergers

Model: $POST_i = \alpha_l + \theta\ PRE_i + e_i$

Panel A: Accounting Returns of Acquiring Firms

| | | Adopting Firms | Non-adopting Firms |
|---|---|---|---|
| $\alpha_l$: | Estimated Coefficient | 0.0320 | -0.0835* |
| | Standard Error | (0.0276) | (0.0444) |
| $\theta$ | Estimated Coefficient | 0.6550** | 1.3821*** |
| | Standard Error | (0.2681) | (0.2429) |

Panel B: Accounting Returns of Control Firms

| | | Adopting Firms | Non-adopting Firms |
|---|---|---|---|
| $\alpha_l$ | Estimated Coefficient | 0.0765 | 0.0507** |
| | Standard Error | (0.0484) | (0.0243) |
| $\theta$ | Estimated Coefficient | 1.4368** | 0.9916 |
| | Standard Error | (0.6467) | (0.6064) |

$PRE_i$ = the pre-merger performance :

$$PRE_i = \frac{1}{3}\sum_{t=-3}^{-1} IROA_{it} \quad .$$

$POST_i$ =The post-merger performance:

$$POST_i = \frac{1}{3}\sum_{t=1}^{3} IROA_{it} \quad .$$

$\alpha_l$ = abnormal return of subsample $l$.

$l$ = 1 if firms in the subsample have long-term performance plan,
= 0 otherwise.

* significant at 1% level in two-tailed tests

** significant at 5% level in two-tailed tests

*** significant at 10% level in two-tailed tests

TABLE 4.13
Post-merger Stock Market Performance of Firms

Model: $\varepsilon_{it} = R_{it} - R_{st} - (\beta_i - \beta_s)(R_{mt} - R_{ft})$

Panel A: Abnormal Stock Returns of Acquiring Firms

| | Adopting Firm | Non-Adopting Firm |
|---|---|---|
| | % | % |
| Mean | -6.3172*** | -7.4681*** |
| Standard Error | 1.0775 | 1.1457 |
| Maximum | 4.5785 | -0.9950 |
| Minimum | -17.3141 | -28.9539 |

Panel B: Abnormal Stock Returns of Control Firms

| | Matching Sample to Adopting Firm | Matching Sample to Non-Adopting Firm |
|---|---|---|
| | % | % |
| Mean | 1.7541*** | 2.3583*** |
| Standard Error | 0.2416 | 0.2148 |
| Maximum | 3.4464 | 4.4366 |
| Minimum | -0.0014 | 0.8367 |

$\varepsilon_{it}$ = the abnormal return of sample firm i in month t.
$R_{it}$ = the return on the stock of firm i over month t.
$R_{st}$ = the return on the size-control portfolios in month t.
$\beta_i$ = the beta of security i.
$\beta_s$ = the beta of size control portfolio s.
$R_{mt}$ = the return on the NYSE equally weighted index.
$R_{ft}$ = the yield on a one-month Treasury bill.
*** significant at 10% level in two-tailed tests.

TABLE 6.1

Descriptive Statistics of Compensation

| | |
|---|---|
| Total compensation: | |
| Maximum | 15,829,481 |
| Median | 1,730,833 |
| Minimum | 473,943 |
| Mean | 2,724,899 |
| Standard deviation | 2,607,797 |
| | |
| Stock compensation: | |
| Maximum | 5,175,400 |
| Median | 350,750 |
| Minimum | 3,666 |
| Mean | 846,614 |
| Standard deviation | 1,076,496 |
| | |
| Stock option compensation: | |
| Maximum | 10,709,999 |
| Median | 990,600 |
| Minimum | 62,500 |
| Mean | 1,698,168 |
| Standard deviation | 1,853,224 |

TABLE 6.2

Descriptive Statistics of Executive Characteristics

| | |
|---|---|
| Number of years with the firm: | |
| Maximum | 40 |
| Median | 9 |
| Minimum | 1 |
| Mean | 13.08 |
| Standard deviation | 7.24 |
| | |
| Number of years in the position: | |
| Maximum | 26 |
| Median | 5 |
| Minimum | 1 |
| Mean | 7.05 |
| Standard deviation | 5.63 |
| | |
| Age: | |
| Maximum | 79 |
| Median | 31 |
| Minimum | 53 |
| Mean | 52 |
| Standard deviation | 6.32 |
| | |
| Stock ownership: | |
| Maximum | 660579 |
| Median | 1852.40 |
| Minimum | 12.36 |
| Mean | 25428 |
| Standard deviation | 83649 |

TABLE 6.3

Factors Determining Management Compensation

Model: $COMP_j = \gamma_0 + \gamma_1 \cdot LTP_j + \gamma_2 \cdot IROC_j + \gamma_3 \cdot BETA_j + \gamma_4 \cdot GROW_j + \gamma_5 \cdot SIZE_j + \gamma_6 \cdot CEO_j + \gamma_7 \cdot TENURE_j + \gamma_8 \cdot AGE_j + \gamma_9 \cdot STK_j + \varepsilon_j$

| | Coefficient | Std Error | Prob>\|t\| |
|---|---|---|---|
| INTERCEPT | 2082440 | 2830934 | 0.4649 |
| LTP | 97059 | 607702 | 0.8737 |
| IROC | -1034008 | 627063 | 0.1046 |
| BETA | 121662 | 525096 | 0.8176 |
| SIZE | 113.56 | 29.24 | 0.0003 |
| GROW | 1281106 | 679955 | 0.0646 |
| CEO | 2025224 | 641122 | 0.0025 |
| TENURE | -7793 | 42398 | 0.8548 |
| AGE | -15555 | 47543 | 0.7447 |
| STK | -24.21 | 35.85 | 0.5021 |
| R-square = 0.4786 | Adjusted R-square = 0.3977 | | |
| F = 5.916 | | | |

COMP = compensation received by executive
LTP = 1 if executive compensation package includes a long term performance plan
0 otherwise
IROC = industry adjusted rate of return
BETA = market beta of the firm;
GROW = growth rate of the firm, measured by its ratio of market value to book value;
SIZE = annual sales amount of the firm;
CEO = 1 if the executive is the CEO of the firm
0 otherwise
TENURE = number of years the executive is in the firm
AGE = age of the executive
STK = value of stock ownership by the executive
The subscript j represents individual executive.

## References


Agrawal, A., J. Jaffe and G N Mandelker. 1992. The Post merger performance of acquiring firms: A re-examination of an anomaly. *Journal of Finance* 52 (September): 1605-1621.

Abowd, J. M. 1990. Does performance-based managerial compensation affect corporate performance? *Industrial and Labor Relations Review* 43 (February): 53S-73S.

Abraham, K. G., and H. S. Farber. 1987. Job duration, seniority, and earnings. *American Economic Review* 77 (June): 278-97.

Agrawal, A., and G. N. Mandelker. 1987. Managerial incentives and corporate investment and financing decisions. *Journal of Finance* 42 (September): 823-37.

Altonji, J. G., and R. A. Shakotko. 1987. Do wages rise with job seniority? *Review of Economic Studies* 54 (July): 437-59.

Antle, R., and A. Smith. 1985. Measuring executive compensation: Methods and an application. *Journal of Accounting Research* 23 (Spring): 296-325.

Antle, R., and A. Smith. 1986. An empirical investigation of the relative performance evaluation of corporate executives. *Journal of Accounting Research* 24 (Spring): 1-39.

Asquith, P. 1983. Merger bids, uncertainty, and stockholder returns. *Journal of Financial Economics* (April): 51-84.

Baiman, S. B. 1990. Agency research in managerial accounting: A second look. *Accounting, Organizations and Society* 15 (4): 341-71.

Banker, R. D., and S. M. Datar. 1989. Sensitivity, precision, and linear aggregation of signals for performance evaluation. *Journal of Accounting Research* 27 (Spring): 21-39.

Barro, J. R., and R. J. Barro. 1990. Pay, performance, turnover of bank CEOs. *Journal of Labor Economics* 8 (October): 448-81.

Belkaoui, A. 1992. Executive compensation, organizational effectiveness, social performance and firm performance: An empirical investigation. *Journal of Business Finance and Accounting* 19 (January): 25-38.

Bizjak, J., J. Brickley, and J. Coles. 1993. Stock-based incentive compensation and investment behavior. *Journal of Accounting and Economics* 16 (January/April/July): 349-72.

Black, F., and M. Scholes. 1973. The pricing of options and corporate liabilities. *Journal of Political Economy* 81 (May/June): 637-54.

Bradley, M., A. Desai, and E. H. Kim. 1983. The rationale behind interfirm tender offers: information or synergy? *Journal of Financial Economics* 11 (April): 183-206.

_____, _____, and _____. 1988. Synergistic gains from corporate acquisitions and their division between the stockholders of target and acquiring firms. *Journal of Financial Economics* 21: 3-40.

Brickley, J. A., S. Bhagat, and R. C. Lease. 1985. The impact of long-range managerial compensation plans on shareholder wealth. *Journal of Accounting and Economics* 7 (April): 115-29.

Bushman, R., and R. Indjejkian. 1993. Accounting income, stock price, and managerial compensation. *Journal of Accounting and Economics* 16 (January/April/July): 3-24.

Clinch, G. 1991. Employee compensation and firms' research and development activity. *Journal of Accounting Research* 27 (Spring): 59-78.

Clinch, G., and J. Magliolo. 1993. CEO compensation and components of earnings in bank holding companies. *Journal of Accounting and Economics* 16 (January/April/July): 241-72.

Coughlin, A., and R. Schmidt. 1985. Executive compensation, management takeover, and firm performance: An empirical investigation. *Journal of Accounting and Economics* 7 (April): 43-66.

Crystal, G. S. 1993. Does increased pay sensitivity really spark an increase in performance? *The Crystal Report* 5 (May): 1-4.

Diamond, D., and R. Verrecchia. 1982. Optimal managerial contracts and equilibrium security prices. *Journal of Finance* 37 (May): 275-87.

Dimson, E. and P. Marsh. 1986. Event study methodologies and the size effect: The case of UK press recommendations. *Journal of Financial Economics* 17: 113-142.

Dodd, P., and R. Ruback. 1977. Tender offers and stockholder returns: An empirical analysis. *Journal of Financial Economics* 5 (December): 351-74.

Ely, K. 1991. Interindustry differences in the relation between compensation and firm performance. *Journal of Accounting Research* 29 (Spring): 37-58.

Gaver, J. F., and K. M. Gaver. 1993. Additional evidence on the association between the investment opportunity set and corporate financing, dividend, and

compensation policies. *Journal of Accounting and Economics* 16 (January/April/July): 125-60.

Gaver, J. F., K. M. Gaver, and G. P. Battistel. 1992. The stock market reaction to performance plan adoptions. *Accounting Review* 67 (January): 172-82.

Gibbons, R., and K. J. Murphy. 1990. Relative performance evaluation for chief executive officers. *Industrial and Labor Relations Review* 43 (February): 30S-51S.

Gordon, L. and J. Pound. 1990. ESOPs and corporate control. *Journal of Financial Economics* 27: 525-555.

Healy, P. M., K. G. Palepu and R. S. Ruback. 1992. Does corporate performance improve after mergers? *Journal of Financial Economics* 31 (January): 135-175.

Higgins, R. C., and L. D. Schall. 1975. Corporate bankruptcy and conglomerate maerger. *Journal of Finance* (March): 93-113.

Holmstrom, B. 1979. Moral Harzard and observability. *Bell Journal of Economics* 10 (Spring): 74-91.

Huddart, S. 1994. Employee stock options. *Journal of Accounting and Economics* (September): 207-231.

Janakiraman, S. N., R. A. Lambert, and D. F. Larcker. 1992. An empirical evaluation of the relative performance evaluation hypothesis. *Journal of Accounting Research* 30 (Spring): 53-69.

Jarrell, G. A.., J. A. Brickley, and J. M. Netter. 1988. The market for corporate control: the empirical evidence since 1980. *Journal of Economic Perspectives* 2 (Winter): 49-68.

Jensen, M., and K. J. Murphy. 1990a. Performance pay and top-management incentives. *Journal of Political Economy* 98 (April): 225-64.

_____. 1990b. CEO incentives: It's not how much you pay but how. *Harvard Business Review* 90 (May/June): 138-53.

Jensen, M., and R. Ruback. 1983. The market for corporate control: The scientific evidence. *Journal of Financial Economics* 11 (April): 5-50.

Kerr, J. L., and L. Kren. 1992. Effect of relative decision monitoring on chief executive compensation. *Academy of Management* Journal 35 June): 25-46.

Kim, O., and Y. Suh. 1993. Incentive efficiency of compensation based on accounting and market performance. *Journal of Accounting and Economics* 16 (January/April/July): 25-54.

Kumar, R., and P. R. Sopariwala. 1992. The effect of long-term performance plans on stock prices and accounting numbers. *Journal of Financial and Quantitative Analysis* 27 (December): 561-73.

Lambert, R. A. 1993. The use of accounting and security price measures of performance in managerial compensation contracts: A discussion. *Journal of Accounting and Economics* 16 (January/April/July): 101-24.

Lambert, R. A., and D. F. Larcker. 1985. Golden parachutes, executive decision-making, and shareholder wealth. *Journal of Accounting and Economics* 7 (April): 179-203.

Lambert, R. A., and D. F. Larcker. 1987. An analysis of the use of accounting and market measures of performance in executive compensation contracts. *Journal of Accounting Research* 25 (Supplement): 85-129.

Lambert, R. A., D. F. Larcker, and R. E. Verrecchia. 1991. Portfolio considerations in valuing executive compensation. *Journal of Accounting Research* 29 (Spring): 129-49.

Langetieg, T. C. 1978. An application of a three-factor performance index to measure stockholder gains from merger. *Journal of Financial Economics* (December): 365-83.

Larcker, D. 1983. The association between performance plan adoption and corporate capital investment. *Journal of Accounting and Economics* 5 (April): 3-30.

Leonard, J.S. 1990. Executive pay and firm performance. *Industrial and Labor Relations Review* 43 (February): 13S-29S.

Lewellen, W. G., C. Loderer, and K. Martin. 1987. Executive compensation and executive incentive problems: An empirical analysis. *Journal of Accounting and Economics* 9 (December): 287-310.

Lewellen, W. G., C. Loderer, and A. Rosenfeld. 1985. Merger decisions and executive incentive stock ownership in acquiring firms. *Journal of Accounting and Economics* 7 (April): 209-31.

Lakonishok, J. and T. Vermaelen. 1990. Anomalous price behavior around repurchase tender offers. *Journal of Finance* 45 (June): 455-477.

Mincer, J., and B. Jovanovic. 1981. Labor mobility and wages. In *Studies in Labor Markets*, edited by S. Rosen. Chicago: University of Chicago Press.

Morck, R., A. Schleifer, and R. W. Vishny. 1988. Management ownership and market valuation. *Journal of Financial Economics* 20 (January/March): 293-315.

Murphy, K. 1985. Corporate performance and managerial remunerations: An empirical analysis. *Journal of Accounting and Economics* 7 (April): 11-42.

Murphy, K., and J. Zimmerman. 1993. Financial performance surrounding CEO turnover. *Journal of Accounting and Economics* 16 (January/April/July): 273-316.

Narayanan, M. P. 1985. Managerial incentives for short-term results. *Journal of Finance* (December) 1469-1484.

O'Reilly, C. A., B. G. Main, and G. S. Crystal. 1988. CEO compensation as tournament and social comparison: A tale of two theories. *Administrative Science Quarterly* 33 (June): 257-74.

Pavlik, E. L., T. W. Scott, and P. Tiessen. 1993. Executive compensation: Issues and research. *Journal of Accounting Literature* 12: 131-189.

Roll, R. 1986. the Hubris hypothesis of corporate takeovers. *Journal of Business* 59: 197-216.

Rosen, S. 1986. Prizes and incentives in elimination tournaments. *American Economic Review* 76 (September): 701-15.

Rothschild, M. and J. E. Stiglitz. 1971. Increasing Risk II: Its Economic Consequences. *Journal of Economic Theory* 3: 66-84.

Rubinstein, M. 1994. On the Accounting Valuation of Employee Stock Options. *Working Paper, University of California at Berkeley* (July).

Sloan, R. 1993. Accounting earnings and top executive compensation. *Journal of Accounting and Economics* 16 (January/April/July): 56-100.

Smith, A. J. 1993. Earnings and management incentives. *Journal of Accounting and Economics* 16 (January/April/July): 337-48.

Stein, J. 1989. Efficient capital markets, inefficient firms: A model of myopic corporate behavior. *The Quarterly Journal of Economics* (November): 655-669.

Tehranian, H., N. Travlos, and J. F. Waegelein. 1987. Management compensation contracts and merger-induced abnormal returns. *Journal of Accounting research* 25 (Supplement): 51-76.

Tehranian, H., and J. F. Waegelein. 1985. Market reaction to short-term executive compensation plan adoption. *Journal of Accounting and Economics* 7 (April): 131-44.

Topol, R. 1991. Specific capital, mobility, and wages: Wages rise with job seniority. *Journal of Political Economy* 99 (February): 145-76.