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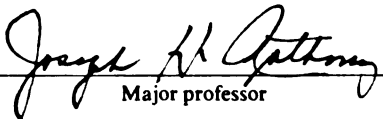
PENSION ACCOUNTING CHOICE: MANAGERIAL RESPONSE
TO SEC SCRUTINY OF DISCOUNT RATES

presented by

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has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Accounting


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**PENSION ACCOUNTING CHOICE: MANAGERIAL RESPONSE
TO SEC SCRUTINY OF DISCOUNT RATES**

By

Norman Harrison Godwin

A DISSERTATION

**Submitted to
Michigan State University
in partial fulfillment of the requirements
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ABSTRACT

PENSION ACCOUNTING CHOICE: MANAGERIAL RESPONSE TO SEC SCRUTINY OF DISCOUNT RATES

By

Norman Harrison Godwin

This study examines firm response to a September, 1993 letter written by the Chief Accountant of the Securities and Exchange Commission (SEC) recommending that firms reduce their assumed pension discount rates for 1993. Three hypotheses are developed concerning the degree to which a firm decreases its discount rate in light of the SEC recommendation. Based on positive accounting theory and the results of prior pension research, it is posited that differences in compliance across firms will reflect firm differences in the potential for being a target of SEC investigation, leverage, and the adjusted funding ratio. A fourth hypothesis is developed concerning the degree to which firms that comply alter another accounting choice in response to compliance. It is posited that of those firms that comply, those with incentives to report smoothed earnings will smooth the effect of compliance by changing another pension assumption, the salary progression rate.

All four hypotheses are tested via multivariate regression. A sample of 600 firms selected from Compustat is used for tests of hypotheses one through three. As expected, firms with a high potential for being a target of SEC investigation complied to a greater degree to avoid that scrutiny while firms with high leverage complied to a

lesser degree to avoid the costs of tightening debt covenants. Contrary to expectations, firms with low adjusted funding ratios complied to a greater degree. This result is interpreted as consistent with the theory of political costs. A smaller sample of 277 firms is used for tests of hypothesis four. As expected, firms that complied with the recommendation decreased their salary progression rates to mitigate the negative effect from compliance.

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Chapter One

INTRODUCTION AND OVERVIEW

This study examines firm response to a September, 1993 letter written by the Chief Accountant of the Securities and Exchange Commission (SEC) recommending that firms reduce their assumed pension discount rates for 1993. The general questions of interest are as follows: what impact did such a recommendation have on accounting choice; did certain firm characteristics systematically affect response to the recommendation in a manner consistent both with current accounting theory such as positive theory and with the results of previous pension research; and did some firms alter other accounting choices to mitigate the effect of compliance. Answers to these questions will contribute to the growing understanding of how accounting choices are made.

This introductory chapter continues in section 1.1 with a discussion of the SEC's recommendation for lower discount rates. Sections 1.2 and 1.3 contain overviews of the hypotheses tested and the research design, respectively. The results are summarized in section 1.4. Section 1.5 concludes this chapter with the organization of the remaining chapters.

1.1 SEC recommendation

Although several years have passed since the highly publicized issuance of Statement of Financial Accounting Standards No. 87, "Employers' Accounting for Pensions" (FAS 87), defined benefit pension plans have continued to draw attention. One aspect of the accounting for pensions that received recent scrutiny from the financial press, regulators, and political bodies is the discount rate assumption, a critical component in the calculation of both net periodic pension expense and pension liabilities. This scrutiny arose in the early 1990's due to concerns that firms were intentionally assuming discount rates that were too high given the declining interest rate

environment of the early 1990's. Assuming high discount rates results in less conservative estimates of pension expense and pension liabilities.

During 1993, the SEC took action. On September 22, SEC Chief Accountant Walter Schuetze sent a letter to the Emerging Issues Task Force (EITF) of the Financial Accounting Standards Board (FASB) making public the SEC's expectation that registrants comply at the next measurement date with the FASB's original recommendation in FAS 87 concerning discount rates. The FASB had held that to choose an appropriate discount rate, firms could consider the rates of return on "high-quality fixed-income investments currently available" (FAS 87, par. 44)¹. In its letter, the SEC defined "high-quality fixed-income investments" as those receiving a Moody's rating of Aa or higher. This definition effectively established the accepted set for 1993 discount rates as a range from 7% to 7.5%. The SEC threatened that any discount rate unreasonably high would trigger an official inquiry.

Although some type of admonishment from the SEC to consider lowering rates could have been anticipated by firms due to falling interest rates, the extreme degree of the SEC's position apparently was not expected². Timothy Lucas, chairman of the EITF and recipient of Schuetze's letter, commented that he could recall no previous announcement from the SEC concerning this matter. Financial press articles referred to the SEC's position as "lobbing what amounts to a grenade into the books," an "unprecedented warning," and a "great stir." Firms appear to have been caught off guard. In effect, those firms with high discount rates for 1992 were now faced with the unexpected impact of a lower discount rate for 1993.

¹ Even with this position from the FASB, in 1986, the year in which many firms early-adopted FAS 87, there was wide variation in the choice of discount rates [Stone and Ingram (1988)].

² Jereski, L. "SEC is Challenging Funding for Plans," *The Wall Street Journal*.

It is reasonable to assume that firms that chose a high discount rate in 1992 generally would be dissatisfied with the SEC's position. A portion of this dissatisfaction can be linked to firm responses to discussion memorandums and exposure drafts issued during the development stages of FAS 87. Concerned about potential volatility in pension expense and liabilities that would result from choosing discount rates based on current settlement rates, some of the 408 respondents suggested that an "averaging technique should be used to smooth potential year-to-year changes (in discount rates)" (FAS 87, par. 201). However, the FASB argued that "(i)f a financial measure purports to represent a phenomenon that is volatile, the measure must show that volatility or it will not be representationally faithful" (FAS 87, par. 174). Therefore, the FASB required that the discount rate be chosen as a current settlement rate defined as the rate of return on high-quality fixed-income investments currently available.

A potentially more pervasive source of firm dissatisfaction with the SEC's position is the effect that compliance has on the firm's financial statements. Decreasing the discount rate results in increased pension liabilities disclosed in the footnotes (e.g., the Accumulated Benefit Obligation) for the current year and increased pension expense for the following year. In a worst case scenario, the decrease in the discount rate could necessitate a separate reduction to stockholder's equity due to funding deficiencies as measured by the increased liability. In a best case scenario, the effect on disclosed liabilities and pension expense could be immaterial.

The latter scenario is improbable for the majority of pension sponsors. As indicated by the median sample firm discount rate for 1992 of 8.25%, compliance with the recommendation required a decrease of about one percent for at least half of all pension sponsors. Such a decrease can have a substantial negative impact on pension accounts. For example, in terms of the effect on disclosed liabilities, a one percent decrease in the discount rate can potentially result in an increase in the pension liability

of 20% or more [Winklevoss (1993)]. In terms of pension expense, the effect of reducing the discount rate one (two) percent has been estimated to be an average of 4.5% (8.8%) of after-tax income³. Thus, compliance with the SEC's recommendation can be very costly.

1.2 Overview of hypotheses

Several empirical questions arise as a result of the SEC's recommendation. First, what are the implications of an SEC recommendation? In other words, does a recommendation from the SEC have enough influence to alter an accounting choice that negatively impacts reported expenses and liabilities. Second, why is there variation, if any, in the degree of compliance across firms? Did factors suggested by existing theory and prior results from pension research influence the degree of compliance? Third, given that firms complied with the recommendation to some degree, did some firms alter other accounting choices to mitigate the effect of compliance? Answers to these questions will add to the understanding of how accounting choices are made.

This study examines each of these questions. Three hypotheses are developed concerning the degree to which a firm decreases its discount rate in light of the SEC recommendation. It is posited that differences in compliance across firms will reflect firm differences in certain economic and financial characteristics. A fourth hypothesis is developed concerning the degree to which firms that comply alter another accounting choice in response to compliance. It is posited that of those firms that comply, those with incentives to report smoothed earnings will smooth the effect of compliance by changing another pension assumption, the salary progression rate. An overview of each of the four hypotheses follows below.

The first of the three compliance hypotheses is based on the political cost hypothesis. The political cost hypothesis predicts that those firms under political

³ This estimation, based on approximately 2000 firms from Compustat, was provided by Sue West of SEI Capital Markets Research.

scrutiny will make accounting choices that help to avoid increased scrutiny and the costs associated with that scrutiny [Watts and Zimmerman (1986)]. Because the SEC's recommendation represents increased political scrutiny of accounting practice, firm compliance should be increasing in the perceived and actual costs of that scrutiny. However, because the perceived and actual costs of scrutiny are difficult if not impossible to measure, this study focuses on the potential for a firm to be an actual target of SEC investigation. Firms with a high potential for investigation should be willing to comply to avoid the costs associated with an SEC investigation. Thus, hypothesis one predicts that compliance with the recommendation is positively associated with the potential for being a target of SEC investigation.

The second hypothesis is based on positive accounting theory's debt-equity hypothesis, which predicts that the larger a firm's leverage, the more likely that firm is to make income increasing accounting choices [Watts and Zimmerman (1986)]. The debt-equity hypothesis is based on the assumption that leverage proxies for the presence of and closeness to debt covenants, assumptions validated by Duke and Hunt (1990) and Press and Weintrop (1990). Highly leveraged firms are therefore predicted to make income increasing accounting choices to avoid the costs associated with the violation of debt covenants. Because compliance with the SEC's recommendation reduces income as well as increasing disclosed liabilities, firms with high leverage should be hesitant to comply. Thus, hypothesis two predicts that compliance is negatively associated with leverage.

The development of hypothesis three draws from the results of previous pension research. Feldstein and Morck (1983) and Francis and Reiter (1987) find evidence consistent with firms choosing pension discount rates to create the appearance of a better funded plan. Proposed reasons for this behavior include avoiding the necessity of making contributions to the pension fund [Feldstein and Morck (1983)], avoiding potential political costs of having an unfunded plan [Francis and Reiter (1987)], and

avoiding negative perceptions of financial condition [Harper and Strawser (1993)]. Compliance with the recommendation reduces the reported funded status of the pension plan. Firms with less funded plans on an adjusted basis should therefore be hesitant to comply so that they may avoid the costs associated with reporting a less funded plan. Thus, hypothesis three predicts that compliance is positively associated with the funded status of the plan when adjusted to a common discount rate.

Hypothesis four is based on the smoothing hypothesis. The smoothing hypothesis predicts that firms choose accounting procedures to create stable earnings streams. Given that a firm complies with the recommendation and has an incentive to report smooth earnings, then that firm can offset the negative effect of compliance by reducing another pension assumption, the salary progression rate. The expectation of this type of smoothing behavior is supported by Ronen and Sadan (1981) who observe that smoothing can be accomplished through changes in pension actuarial assumptions. Thus, hypothesis four predicts that firms with incentives to report smooth earnings who lower their discount rate in compliance with the SEC are more likely to lower their salary progression rate.

1.3 Overview of research design

Tests of the above hypotheses are conducted on a sample of up to 751 firms using archival data collected from publicly available sources. Hypotheses one, two and three are tested by regressing a measure of compliance onto variables representing the three hypotheses as well as several control variables. Hypothesis four is tested by regressing the smoothing measure onto both the measure of compliance and several variables representing the incentive to report smoothed earnings. Various tests are conducted to discern the robustness of the results to alternate specifications.

1.4 Summary of results

The data in the study are consistent with the SEC's recommendation having a substantial impact on accounting choice. The decrease in the discount rate for 1993 for

the average firm was approximately one percent. This decrease translated into a significant decrease in the reported funded status for the average firm. In addition, the decrease was much more pronounced than in prior years, both in the magnitude of the change and in the percentage of firms making a change. This result illustrates that the change in the discount rate for 1993 was well outside the historical trend, suggesting the introduction of an outside influence in 1993, namely the SEC recommendation, which significantly altered accounting choice.

As expected, firms that faced a greater potential for being a target of SEC investigation complied with the recommendation to a greater degree (i.e., had larger decreases in their discount rates) to avoid being the target of SEC scrutiny. In addition, firms with higher leverage complied to a lesser degree to avoid the costs of tightening debt covenants. Contrary to expectations, firms with lower adjusted funding ratios complied to a greater degree than firms with higher adjusted funding ratios. Assuming that the adjusted funding ratio proxies for political sensitivity to the SEC in the pension area, such firm behavior can be interpreted as consistent with the theory of political costs. Firms with greater sensitivity, as measured by a low adjusted funding ratio, complied to a greater degree to avoid the costs associated with political scrutiny.

Finally, the data are consistent with firms smoothing the effect of compliance by decreasing the salary progression rate. The average decrease in the salary rate for 1993 was approximately one-half percent, a decrease well beyond the historical change both in magnitude and in the percentage of firms making a change. Regression results confirm that firms that complied with the SEC's recommendation decreased their salary rates to mitigate the negative effect from compliance.

1.5 Organization of remaining chapters

The remaining chapters are organized as follows. Chapter two discusses the accounting requirements for pension plans as prescribed by FAS 87 and the statutory requirements as prescribed by the Employee Retirement Income Security Act of 1974.

Reviews of relevant literatures and development of the hypotheses to be tested are contained in chapter three. Chapters four and five detail the research design and present empirical results, respectively. Concluding remarks are contained in chapter six.

Chapter Two

ACCOUNTING FOR PENSIONS

Employers sponsoring defined benefit pension plans are currently subject to two sets of regulations: the Employee Retirement Income Security Act of 1974 (ERISA) and Statement of Financial Accounting Standards No. 87, "Employers' Accounting for Pensions" (FAS 87). ERISA established statutory law for pension plans while FAS 87, issued by the Financial Accounting Standards Board (FASB) in 1985, established accounting and financial reporting rules. The two regulations are related but not equal.

This chapter continues with a review of FAS 87 in section 2.1. The two objectives of this review are to explain the pension accounting process prescribed by FAS 87 and to highlight the importance of actuarial assumptions in that process. Following this review is a discussion of ERISA in section 2.2. Section 2.3 follows with a comparison of the two regulations, specifically focusing on the actuarial assumptions under each regulation. The objective of this comparison is to demonstrate that funding considerations under ERISA can be separated from accounting considerations under FAS 87. Section 2.4 summarizes the chapter.

2.1 FAS 87

Although it could be adopted as early as 1985, FAS 87 became effective in 1987 for all firms sponsoring defined benefit pension plans⁴. The standard was the culmination of an eleven year effort by the FASB to establish better accounting and reporting rules for pension plan sponsors. This effort began in 1974 in response to

⁴ A defined benefit pension plan is a "pension plan that defines an amount of pension benefit to be provided (to the employee at retirement or other termination of employment), usually as a function of one or more factors such as age, years of service, or compensation." (FAS 87, glossary). In contrast, a defined contribution pension plan is a plan that "specifies how contributions to the (employee's pension) account are to be determined instead of specifying the amount of benefits the individual is to receive" at retirement or other termination of employment (FAS 87, glossary).

both passage of ERISA and criticism of Accounting Principles Board Opinion 8, "Accounting for the Cost of Pension Plans" (APB 8), the only accounting pronouncement governing pension accounting at that time. In 1980, the FASB issued two standards. The first, Statement of Financial Accounting Standards No. 35, "Accounting and Reporting by Defined Benefit Pension Plans," (FAS 35) addressed reporting by actual plans⁵. The second, Statement of Financial Accounting Standards No. 36, "Disclosure of Pension Information," (FAS 36) amended APB 8 by requiring new disclosures by plan sponsors such as net assets, vested benefits, and assumed rates of return. However, FAS 36 made no changes in the accounting provisions for the measurement of pension expenses and liabilities. The standard was an admittedly interim step towards the more comprehensive FAS 87 which would supersede both APB 8 and FAS 36. The passage of FAS 87 in 1985 continued "the evolutionary search for more meaningful and more useful pension accounting" (FAS 87, par. 5), but the FASB noted that even this standard was unlikely to be the final step in that evolution. Since 1985, however, pension accounting has remained relatively stable⁶.

The purpose of FAS 87 was twofold. First, it established a uniform calculation of pension expense in order to provide a more representationally faithful, understandable, and comparable measure of pension costs. Second, it provided for more detailed and understandable disclosures of pension liabilities in order to further

⁵ Note that FAS 35 established the accounting and reporting standards for the annual financial statements of defined benefit pension plans. The focus of this study is not on the accounting prescribed for the pension plan itself, but on the employer's accounting for pensions. FAS 36 and ultimately FAS 87 established standards for such employer accounting for pensions.

⁶ Along with FAS 87, the FASB issued Statement of Financial Accounting Standards 88, "Employers' Accounting for Settlements and Curtailments of Defined Benefit Pension Plans and for Termination Benefits." Aside from FAS 88 and three amendments to FAS 87, no new pension standards have been released by the FASB since 1985.

improve financial reporting. In each of these objectives, actuarial assumptions play a key role. The following paragraphs discuss the liability and expense measures under the standard, define the most influential assumptions, and explain how these assumptions affect the liabilities and expense.

2.1.1 Liabilities

FAS 87 requires the estimation and disclosure of three liability measures: the vested benefit obligation (VBO), the accumulated benefit obligation (ABO), and the projected benefit obligation (PBO). The ABO and PBO are both actuarial present values of future benefits payable to employees for service to date. Given that pension benefits are defined as a function of future salary levels, the difference between the ABO and PBO is that benefits under the ABO are based on current and past salary levels while benefits under the PBO are based on projected future salary levels. The VBO is that portion of the ABO that has vested. The VBO and ABO provide information about the sponsor's obligation if the plan is discontinued today while the PBO provides information on the obligation assuming that the plan continues in effect and that expected future events such as salary increases occur. As a result, the PBO will generally be the largest measure followed by the ABO and then the VBO. All three are reported as of the end of the fiscal period.

FAS 87 also requires the recognition of a liability on the balance sheet if certain conditions are met. If cumulative pension expense to-date exceeds cumulative contributions to the pension plan, then an accrued pension liability must be included in the balance sheet. The value of this liability is the difference between the two cumulative amounts. Also, when the ABO exceeds plan assets, an additional minimum liability must be recorded for the difference. This required additional minimum liability is reduced by any accrued pension liability already recognized on the balance sheet.

2.1.2 Expense

FAS 87 also requires a uniform calculation of pension expense comprised of the following components: service cost, interest cost, return on plan assets, and amortization of prior service cost, gains or losses, and the transition asset/obligation. Of main concern to this study are service and interest costs. Service cost is the actuarial present value of benefits earned by employees for service in the current period. In other words, it is that portion of the PBO that is attributable to service rendered in the current period. Like the PBO, service cost reflects future salary levels. Interest cost is simply the increase in the PBO due to the passage of time and is calculated as the product of the beginning PBO balance and an appropriate interest rate.

2.1.3 Assumptions

Actuarial assumptions are extremely important to both the measurement of pension liabilities and the calculation of pension expense. Recognizing their importance, the FASB requires the disclosure of three main assumptions used in the accounting for pensions prescribed by FAS 87: the discount rate, the salary progression rate, and the expected return on plan assets. Each rate is to be chosen explicitly, meaning that each should reflect the best estimate of the plan's future experience with respect to that assumption alone (FAS 87, par. 191). Below is a discussion of the most influential assumptions, the discount and salary progression rates (FAS 87, par. 195), and how each impacts the accounting under FAS 87.

Under APB 8, the discount rate was defined as an average expected return on funds invested or to be invested (APB 8, Appendix A). FAS 87 separates this expectation into two components, the discount rate and the expected return on plan assets. This separation is done due to the FASB's belief that pension information is more understandable if the asset-related aspects of the pension plan are separated from the liability-related aspects (FAS 87, par. 180). Thus, the discount rate is defined in

FAS 87 as the "interest rate used to adjust for the time value of money" (FAS 87, glossary) while the expected return is defined as its name indicates.

FAS 87 states that "discount rates shall reflect the rates at which pension benefits could be effectively settled" (FAS 87, par. 44). The FASB's intention is that the discount rate be chosen by the sponsor as the best estimate of implicit rates in annuity contracts that could appropriately settle the pension obligation. In keeping with this intention, the FASB expects each sponsor to annually reevaluate its discount rate to determine whether it remains the best estimate of an effective current settlement rate. As a result, the FASB expects discount rates to change as interest rates rise or fall.

Of all assumptions made in current pension accounting, the discount rate has the most significant impact. First, it serves as the discount factor for the present value calculations of both the PBO and service cost. Second, it serves as the interest rate at which interest cost is calculated on the PBO. Note that the end-of-year discount rate is used for the PBO calculation while the beginning-of-year rate is used for the service and interest costs calculations. In general, as the discount rate decreases, the PBO, service cost, and interest cost increase⁷.

The salary progression rate has the second most significant impact on pension benefits and expenses. It is related to the discount rate in that each incorporates expectations of the same economic environment (FAS 87, par. 195); however, the salary progression rate is chosen explicitly and is therefore independent from the discount rate. The salary rate reflects the sponsor's best estimate of future salary increases to be granted to its employees. Because the PBO and service cost are both based on future salary levels, the salary rate impacts the magnitude of each. Due to its effect on the PBO, the salary rate also indirectly impacts the magnitude of interest cost.

⁷ Calculation of interest cost is affected in two ways: the rate used to calculate interest is decreased but the PBO is increased by the decrease in the rate. The latter increase is proportionally larger, thus causing interest cost to increase [Winklevoss (1993)].

Like the discount rate, the end-of-year salary rate is used for the PBO calculation while the beginning-of-year rate is used for the service cost calculation. In general, as the salary progression rate decreases, the PBO, service cost, and interest cost decrease⁸.

To illustrate how the discount and salary rates are generally used in the calculation of pension expense, the following example is taken from Fogarty and Grant (1995). Starting with a 45 year old employee with 15 years of service who will retire at age 65, the authors compute the annual pension benefit for that employee by projecting, via the salary progression rate, the current salary (\$50,000) to the employee's last year of expected employment and by assuming a pension benefit formula of 70 percent of that final year's salary. This annual benefit is then multiplied by the present value factor for an ordinary annuity over the assumed expected post retirement period (10 years) to obtain the total benefit due the employee during retirement. This total benefit is then discounted back to the end of the year for which pension expense is being calculated to obtain the present value of the total future benefit. Finally, this present value is divided by the employee's remaining years of service to obtain the current period's annual service cost component of pension expense.

One objective of Fogarty and Grant (1995) is to illustrate the impact of differing actuarial assumptions on the service cost component of pension expense. In Table 1 of their paper, the authors report values for annual service cost, computed as described above, under differing actuarial assumptions. A subset of that table is reported in Figure 1.

⁸ The third assumption under FAS 87 is the expected return on plan assets. While this study does not examine the expected return, it represents the long-term (e.g., five-year average) expected return on plan assets invested or to be invested (FAS 87, par. 45) and is used in the calculation of pension expense but not in the calculation of pension liabilities. For a detailed examination of the expected return, see Blankley and Swanson (1995).

		<u>Discount rate</u>	
		9%	10%
<u>Salary rate</u>	2%	\$ 3,246	\$ 2,613
	3%	\$ 3,945	\$ 3,176

Figure 1
Effect of differential actuarial assumptions

Figure 1 illustrates well the different aspects of changing the discount rate and/or the salary rate. First, it illustrates that changing the discount rate has a larger effect than changing the salary rate. Starting with a 10% discount rate and a 3% salary rate, the annual pension expense in the example is \$3,176. Reducing the discount rate one percent increases pension expense to \$3,945, an increase of 24.2%. In contrast, reducing the salary rate one percent decreases pension expense to \$2,613, a decrease of 17.7%. Second, it illustrates the offsetting nature of the two rates. Reducing both rates one percent increases pension expense to \$3,246 from \$3,176, and increase of only 2.2%. Overall, the example demonstrates the importance of assumptions in pension accounting⁹.

⁹ It should be noted that the figures in the example are based on a simplified calculation of service cost and are sensitive to the age of the employee. Fogarty and Grant's (1995) example also includes a 60 year old employee. For that employee, the effects of the two rate changes are still offsetting, but the effect of a change in the salary rate is now greater than the effect of a change in the discount rate. However, as the mean age of the civilian workforce as of 1990 was 37.7 years and rising [U.S. Department of Labor Bulletin 2426 (1993)], the figures of the 45 year old employee appear to be more relevant to the average pension plan.

2.2 ERISA

ERISA became law on September 2, 1974. Its main goal was to protect the interests of plan participants by establishing new rules for participation, adding mandatory vesting schedules, requiring disclosures of plan information, creating a system to insure pension payments, and setting minimum funding standards. Of primary concern to this study are the funding standards and the actuarial assumptions underlying these standards.

Under ERISA, the minimum required contribution for a given year includes several components: normal costs, supplemental costs, the balance in the funding standard account, and an additional funding charge, if necessary. Normal costs are those costs attributable to the current year of service by plan participants while supplemental costs are the current year's amortized portion of costs attributable to previous periods. The funding standard account balance is the amount of excess or deficit in funding as of the previous year, and the additional funding charge is a requirement designed to improve the funding of highly under-funded plans [see Winklevoss (1993) for a more technical discussion].

In calculating normal and supplementary costs, actuarial assumptions concerning future interest returns on plan assets, salary increases, and various types of decrements (e.g., mortality) must be made. Like FAS 87, the most influential of these assumptions are the funding interest rate and the equivalent salary increase rate. Unlike FAS 87, the funding interest rate is an expectation of investment returns from the plan's funding policy, not a rate at which pension obligations could be currently settled. The funding interest rate and equivalent salary increase rate are chosen as the actuary's best estimate of the long-term outlook for the plan considering past plan performance and current market trends. This long-term perspective is encouraged by ERISA so that contributions to the pension fund, and therefore participant security, will be relatively stable (i.e., unaffected by temporary market swings).

2.3 FAS 87 vs. ERISA

The main difference between ERISA and FAS 87 that is of interest to this study lies in the choice of assumptions, especially the choice of discount factors. While ERISA discounts future benefits payable to participants for service in the current year (i.e., normal costs) at the expected rate of investment return, FAS 87 discounts those benefits (i.e., service cost) at the current settlement rate. This difference stems from a divergence of perspectives. Actuaries are directed towards a more long-term perspective in choosing funding interest rates so that temporary fluctuations in the market or in firm performance do not result in changes in the rate for statutory funding¹⁰. On the other hand, employers are directed towards a more short-term perspective in choosing discount rates. As a result, rates used for statutory funding under ERISA can be different from the rates used for accounting under FAS 87 [Blankley and Swanson (1995)].

This difference in rates was not always the case. Under APB 8, the discount rate was equivalent to the ERISA funding interest rate. Thus, changes in the discount rate mirrored changes in the funding interest rate. However, under FAS 87, the discount rate can be changed while the funding interest rate remains the same. This type of disparity in assumption choice is illustrated in two 1993 reports prepared by Buck Consultants, a worldwide pension consulting firm. In *The Health of America's Pension Plans* and *Economic Pension Actuarial Assumptions Survey*, Buck Consultants reports that average discount rates fell from 8.2% in 1992 to 7.3% in 1993 while average funding interest rates remained steady at 8.2%.

The most important aspect of this ability to change the discount rate without changing the funding interest rate is the effect on cash flows or funding. Research on pensions prior to FAS 87 documented an association between changes in discount rates

¹⁰ Per discussions with pension actuaries, funding interest rate and equivalent salary increase rate assumptions for statutory funding purposes change infrequently.

and funding [e.g., see Healy and Palepu (1990)]. However, because statutory funding requirements are unaffected by changes in accounting discount rates under FAS 87, Blankley and Swanson (1995) find no evidence that actuarial assumptions under FAS 87 were manipulated to influence cash outflows to the pension plan. As a result, the choice of discount and salary rates under FAS 87 can be separated from funding considerations [Ali and Kumar (1993)].

2.4 Summary

In summary, sponsors of defined benefit pension plans are subject to ERISA, which is concerned with the funding of pensions, and FAS 87, which is concerned with the overall accrual accounting for pensions. Under FAS 87, firms are required to disclose three measures of the pension liability and recognize pension expense. Actuarial assumptions play a major role in measuring these amounts. In addition, the assumptions chosen under FAS 87 are different than those under ERISA. As a result, changing such assumptions does not affect minimum cash outflows required for statutory funding. Therefore, sponsors of pension plans can choose assumptions under FAS 87 without direct cash flow implications, thus allowing them to choose assumptions in reaction to other contracts of the firm. Chapter three will develop hypotheses concerning this type of behavior.

Chapter Three

HYPOTHESIS DEVELOPMENT

In their seminal article, Jensen and Meckling (1976) characterize the firm as a nexus of contractual relationships in which principals engage agents to perform some task on the principals' behalf. Emphasizing transaction costs between these principals and agents and opportunistic behavior resulting from incomplete contracts, Watts and Zimmerman (1978) began positive accounting theory. Under positive accounting theory, the firm's contracting parties hold private information and seek to maximize individual utility. Contracting and information costs are assumed to be non-zero and accounting is assumed to be an integral part of resulting contracts, both formal and informal. As a result, accounting choice affects these contracts and therefore firm value. Based on this role of accounting, positive accounting theory attempts to explain and predict managerial choices of financial accounting/reporting practices [Watts and Zimmerman (1986)].

Watts and Zimmerman (1990) explain that managers select accounting practices from an "accepted set" that is determined by the contracting parties. The accepted set is defined by restrictions which produce "best" or "accepted" accounting practices even in the absence of mandated accounting standards. The discretion embodied in the accepted set gives rise to accounting choice studies where accounting choice is explained by examining variables representing a manager's incentive to select one accounting practice over another or to select a certain combination of accounting practices. According to Watts and Zimmerman (1990), these studies are usually performed under one of three major contractual settings: management bonus plans, debt contracts, and the political process.

The SEC's recommendation concerning discount rates provides a setting in which to examine the determinants of accounting choice. As discussed in chapter one,

in 1993 the SEC recommended that firms reduce their discount rates to a range of 7% to 7.5%. Because compliance with this recommendation reduces income and increases liabilities, firm compliance could be contingent on the potential economic impact of these financial statement effects as well as the non-financial statement ramifications of such effects (e.g., tightening of debt covenants). In addition, because the SEC is a political body with the ability to impose costs on firms, compliance could also be contingent on the costs associated with SEC scrutiny due to noncompliance. Therefore, it is posited that differences in compliance across firms will reflect firm differences in certain economic and financial characteristics.

This chapter continues with the development of four hypotheses concerning firm compliance with the SEC's recommendation. Specifically, compliance is hypothesized to be increasing in the potential for being a target of SEC scrutiny, decreasing in leverage, and increasing in pension funding ratios. These three hypotheses are developed in section 3.1. Furthermore, of those firms that comply, those with incentives to report smoothed earnings are hypothesized to smooth the effect of compliance by changing another pension assumption, the salary progression rate. This hypothesis is developed in section 3.2. Section 3.3 summarizes the chapter.

3.1 Compliance with the SEC's recommendation

The decision of whether to comply or not with the SEC's recommendation can be considered as a tradeoff between the costs and benefits associated with compliance. The costs of compliance are those costs (e.g., tightening of debt covenants) that may arise as a consequence of the increases in expenses and disclosed liabilities generated by compliance. The benefits of compliance are the avoidance of the costs associated with increased political scrutiny from the SEC. Hypotheses associated with these costs and benefits of compliance are developed below.

3.1.1 Potential for SEC investigation

Accounting choice has been hypothesized to be affected by the potential and actual costs associated with scrutiny from political bodies [Watts and Zimmerman (1978)]. This reasoning has been formalized into the political cost hypothesis which predicts that those firms under political scrutiny will make accounting choices that help to avoid increased scrutiny and the costs associated with that scrutiny [Watts and Zimmerman (1986)]. The SEC's recommendation, originating from a powerful political body with the ability to impose significant costs on firms, represents a specific case of increased political scrutiny of accounting practice. Avoidance of the costs associated with this increased political scrutiny is therefore a benefit of compliance.

SEC scrutiny begins in the Division of Corporate Finance with an examination of a firm's annual filing [Skousen (1991)]. If the examination uncovers a violation, then the SEC either will send a letter of comments to the registrant detailing the problems with the filing or in cases of substantial violations, will refer the problem to the Division of Enforcement [Kile (1993)]. When a letter of comments is sent, the registrant has the opportunity to respond to the issues raised. If the SEC is satisfied with the response, then the investigation is dropped. If the SEC is not satisfied, then it can instruct the registrant to better comply in future filings or require the registrant to submit an amended filing. When the violation is referred to the Division of Enforcement, official enforcement actions, summarized in the SEC's Accounting and Auditing Enforcement Releases (AAER's), are conducted. Official enforcement actions can result in the suspension of trading of a registrant's security, civil injunctions, or referrals to criminal authorities.

Accounting research has shown that action taken by the SEC imposes tangible costs on the targeted registrant. Negative cumulative abnormal returns have been documented for firms filing amended financial statements in response to letters of comment [Kile (1993)], for firms receiving AAER's [Feroz, Park, and Pastena (1991)],

for firms whose trading of stock is suspended by the SEC [Howe and Schlarbaum (1986)], and for firms that are targets of general SEC litigation [Nourayi (1994)]. In addition, Feroz et al. (1991) report that of all firms receiving AAER's, top managers are forced to resign or are fired in seven out of ten cases, stockholders sue management in eight out of ten cases, and the auditor is censured in four out of ten cases.

While violations concerning discount rates would most likely be handled through the letter of comments process, the costs documented for all forms of SEC action suggest that the perceived costs of SEC scrutiny would include loss of firm value, deterioration of managerial reputation, and potential litigation. Other costs could include the actual costs of responding to SEC investigations, the potential for the SEC to scrutinize other areas of financial reporting, lack of discretion in future years in the area prompting the SEC's scrutiny, and degradation of financial reporting credibility¹¹. Compliance with the SEC's recommendation concerning discount rates should be increasing in these perceived and actual costs of SEC scrutiny.

While the relation between the costs of SEC scrutiny and compliance is predicted to be positive, the inability to measure these costs precludes a direct test of the prediction. However, a related prediction is that compliance is positively associated with the potential for being an actual target of SEC investigation. Due to the large number of reports filed annually with the SEC and the disproportionately small staff of reviewers, the SEC reviews only selected annual filings in a given year [Skousen (1991)]. Thus, those firms that are more likely to be selected for such a review should have a stronger incentive to comply. As a result, it is expected that compliance with the SEC's recommendation is increasing in the potential for being a target of SEC investigation. As discussed in chapter four, the interaction of total

¹¹ These examples of potential costs were obtained in discussions with several audit partners and managers of Big Six accounting firms who are involved with pension accounting and/or SEC communications.

assets and the discount rate before the recommendation will proxy for the potential for being a target of SEC scrutiny. This leads to the following hypothesis:

H₁: Compliance with the SEC's recommendation is positively associated with the potential for being a target of SEC investigation.

3.1.2 Leverage

During the late 1970's and early 1980's, researchers began to investigate the ability of leverage to explain accounting policy/procedure choice [see Holthausen and Leftwich (1983) and Watts and Zimmerman (1986) for a review of these studies]. These investigations were based largely on the testable implications from agency theory as described by Jensen and Meckling (1976) and were extensions of the introductory step toward a positive theory of accounting taken by Watts and Zimmerman (1978). The actual testing of leverage arose from the assumption that contracting costs are positive in the negotiating, writing, evaluating, and renegotiating processes associated with debt contracts. Researchers reasoned that as a firm moved closer to violation of its debt covenants, the firm would choose or support accounting procedures to mitigate the costs of such a violation. However, in lieu of the costly activity of obtaining data on debt covenants and in an attempt to ascertain whether incurring these costs might prove worthwhile in future tests, researchers included various measures of leverage as proxies for closeness to violation of debt covenants. As a result, researchers actually tested the following debt-equity hypothesis as opposed to the more theoretical covenant-based hypothesis:

Ceteris paribus, the larger a firm's debt/equity ratio, the more likely the firm's manager is to select accounting procedures that shift reported earnings from future periods to the current period [Watts and Zimmerman (1986, p. 216)].

The results of the early tests of the debt-equity hypothesis were consistent with the predictions of the hypothesis. In their review of the growing positive accounting literature, Holthausen and Leftwich (1983) concluded that leverage was one of two firm-specific factors that were systematically related to accounting policy/procedure choice. Watts and Zimmerman (1986) concluded similarly, noting that the empirical regularity of the explanatory power of leverage was a previously unrecognized phenomenon. While both of these reviews provided informal evidence of the descriptive validity of the debt-equity hypothesis, Christie (1990) provided a much stronger conclusion by aggregating test statistics across the studies reviewed by Holthausen and Leftwich (1983) and Watts and Zimmerman (1986). He found that leverage was one of six variables with significant explanatory power across studies. Thus, the debt-equity hypothesis was found to be descriptive and generalizable.

Tests of the debt-equity hypothesis were based on the assumption that leverage is an appropriate proxy for closeness to violation of debt covenants. Duke and Hunt (1990) and Press and Weintrop (1990) both provide evidence that this assumption is reasonable. Employing correlation analysis, Duke and Hunt (1990) find a significantly positive relation between the existence of debt covenants and each of their seven leverage proxies as well as a significantly positive relation between their leverage proxies and the closeness to debt covenants that are based on retained earnings. Press and Weintrop (1990) provide similar results, concluding that the "overall pattern of results on tests of (debt covenants based on leverage, net worth, and working capital) suggests that leverage level is associated with closeness to constraints" (p.81). Thus,

the assumption that leverage is an appropriate proxy for closeness to debt covenant violation was validated.

Leverage has been included in investigations of pension accounting choice because these choices affect both earnings and liabilities. Some researchers have found leverage to be explanatory. Francis and Reiter (1987) find a significant relation between adjusted funding ratios and leverage. Ali and Kumar (1993) find that the income effect from adoption is closely associated with closeness to debt covenants. Other researchers, especially those investigating pension assumptions, have had no success with leverage. Feldstein and Morck (1983) find that leverage cannot explain the assumed discount rate under APB 8. Similarly, Thomas (1988) finds that leverage cannot explain the funding interest rate assumed by firms for statutory purposes.

There are two potential reasons for the failure of these latter two studies to detect a relation between leverage and assumption choice. First, the studies focus only on the level of the discount rate. In contrast, this study will focus on the change in the discount rate brought on by the SEC's recommendation. Investigating the change is advantageous because it places firms with varying discount rates on a comparable basis by differencing away the previous discount rate. More importantly, it also allows for a focus on the earnings and liability effects of a discount rate change instead of on the discount rate itself. Second, both studies were conducted when APB 8 was in effect. Ali and Kumar (1993) find evidence consistent with the hypothesis that accounting incentives have more influence under FAS 87 than under APB 8. Therefore, this study is conducted in a time period under the accounting of FAS 87.

Because compliance will reduce earnings due to the increase in pension expense, firms that are close to violation of debt covenants, as indicated by higher leverage, should make more aggressive (i.e., higher) pension assumptions to avoid the decrease to earnings and subsequent tightening of debt covenants that would result from full compliance. Stated differently, compliance with the SEC's recommendation is

expected to be negatively associated with the degree of leverage. As discussed in chapter four, long-term debt divided by total assets will proxy for leverage. This leads to the following hypothesis:

H₂: Compliance with the SEC's recommendation is negatively associated with leverage.

3.1.3 Funding ratio

The pension funding ratio is defined as the ratio of pension assets to pension liabilities. This ratio has been the subject of several previous empirical studies [e.g., Feldstein and Morck (1983), Francis and Reiter (1987), and Harper and Strawser (1993)]. Of most importance to the current study is Feldstein and Morck (1983) who examine the relation between a firm's discount rate and its funding ratio. Standardizing each sample firm's unfunded vested liability to the average discount rate chosen by all their sample firms, the authors find a significantly positive relation between a firm's discount rate and the size of its unfunded vested liability. This relation implies that while firms with assets exceeding liabilities choose lower discount rates, firms with liabilities exceeding assets choose higher discount rates to appear less unfunded. Feldstein and Morck (1983) conclude that "(i)t is clear...that firms do engage in strategic attempts to reduce their reported unfunded vested pension liabilities...." (p. 202). In their investigation of pension funding strategies, Francis and Reiter (1987) conclude similarly, noting that "firms may be using higher disclosure rates to create the 'appearance' of well funded pension plans" (p. 56).

Based on the above findings, it appears that firms manipulate their funding ratios through pension assumption choices to give the impression of a better funded plan. Proposed reasons for this behavior include avoiding the necessity of making contributions to the pension fund [Feldstein and Morck (1983)], avoiding potential political costs of having an unfunded plan [Francis and Reiter (1987)], and avoiding

negative perceptions of financial condition [Harper and Strawser (1993)]. These propositions from prior research suggest that the funding ratio signals the overall quality of the pension plan, where lower quality plans are faced with additional costs in the form of increased contributions, political scrutiny, and negative financial statement user perceptions.

If the true quality of a firm's pension plan is measured as the funding ratio adjusted to some standard or common discount rate, then those firms with lower adjusted funding ratios (i.e., lower overall pension plan quality) should be hesitant to comply with the SEC's recommendation, for compliance will reveal their plan's inferior quality. In contrast, those firms with higher adjusted funding ratios (i.e., higher overall pension plan quality) should be willing to comply to reveal their plan's superior quality. Thus, compliance should be increasing in the adjusted funding ratio, which leads to the following hypothesis:

H₃: Compliance with the SEC's recommendation is positively associated with the adjusted funding ratio.

3.2 Smoothing the effect of compliance

Patterns associated with reported earnings appear to be a focal point of many firm managers. As Barth, Elliott, and Finn (1992) note, many firms devote considerable space in their annual reports to emphasize their earnings patterns. This emphasis on earnings patterns is puzzling, for there is no current theory of firm value that explicitly incorporates earnings patterns. In an attempt to explain why firms would be concerned with earnings patterns, Barth et al. (1992) suggest three plausible scenarios that would make earnings patterns value relevant. Firms could be rewarded in the market through the correlation of their earnings patterns with growth, persistence, and risk; through the market's increased ability to predict future earnings due to the consistent earnings patterns; or through the private information revealed by

the manager through the earnings pattern. While it is unclear which of these three scenarios, if any, is valid, Barth et al. (1992) find that the market assigns a premium to the value of firms that exhibit a non decreasing earnings pattern for a period of at least five years duration. Thus, not only do firms appear to be concerned with earnings patterns, but the market may eventually reward such behavior as well.

Research on earnings patterns is not new. The smoothing hypothesis, which can be traced back to as early as Hepworth (1953), has been the subject of much accounting research in the last few decades. The hypothesis predicts that managers choose accounting procedures to create stable earnings streams. Ronen and Sadan (1981) explain that income smoothing behavior, broadly speaking, is an attempt to signal information to users of financial statements. This broad definition is consistent with Barth et al.'s (1992) third scenario. However, Ronen and Sadan (1981) note that the more operational definition used in accounting research is that smoothing is a means to dampen fluctuations of earnings around some normal or expected level.

Much of the research on the smoothing hypothesis has been an attempt to demonstrate the descriptive validity of the hypothesis. Several researchers have been successful in doing so [see Ronen and Sadan (1981) for a detailed review of early smoothing studies]. For example, Hand (1989) finds that firms smooth transitory decreases in earnings through the recognition of "paper gains" associated with debt-equity swaps. Other researchers have analytically explored the motivations for smoothing, suggesting that smoothed earnings increase firm value through decreased perceived bankruptcy risk [Trueman and Titman (1988)], enhanced perceived value from potential shareholders [Dye (1988)], and clearer perceptions of managers' expectations of future cash flows [Suh (1990)]. Still other researchers have attempted to use a costly contracting framework to explain why firms smooth earnings [e.g., Moses (1987) and Beattie et al. (1994)]. While these studies find associations between smoothing behavior and variables such as firm size, existence of bonus plans, earnings

variability, and outside ownership concentration, a consistent set of explanatory variables for smoothing has yet to be developed.

In the area of pensions, smoothing issues have surfaced in both practice and research. In practice, the most notable area of smoothing concerns is found in the development stages of FAS 87. As stated earlier, practicing professionals who responded to the discussion memorandums and exposure drafts for FAS 87 were concerned about potential volatility in pension expense and liabilities. Some of these respondents suggested that an averaging method with respect to actuarial assumptions could be used to smooth potential effects from year-to-year changes in such assumptions. It is clear that the issue of smoothed expenses (or lack thereof) associated with pensions has been a point of interest since the beginning of FAS 87.

In pension research, smoothing has been investigated directly. For example, Ali and Kumar (1993) find that the income effect from adoption of FAS 87 was used to smooth income. Although not addressing smoothing issues, other pension research has produced results that are consistent with smoothing. For example, Bodie, Light, Morck and Taggart (1985) find that more profitable firms choose lower discount rates. While the authors characterize this finding as firms attempting to build financial slack in the form of over funded pension plans during more profitable years, another plausible explanation is that firms who are more profitable choose lower rates to decrease earnings while firms who are less profitable choose higher rates in order to boost earnings.

The SEC's recommendation is another setting in which to investigate smoothing behavior. Because some managers are more reluctant to bear the perceived costs of reporting reduced earnings, some firms that reduce their discount rate in compliance with the recommendation should be expected to choose other accounting practices to offset the reduction in earnings caused by the change in the discount rate. One option available to these firms is the choice of another pension assumption, the salary

progression rate. The expectation of this type of smoothing behavior is supported by Ronen and Sadan (1981) who observe that smoothing can be accomplished through changes in pension actuarial assumptions. As illustrated in section 2.1.3, while an identical decrease in the salary rate will not completely offset a decrease in the discount rate, as the discount rate is reduced, the salary rate can also be reduced to partially offset the negative effect on earnings from the decrease in the discount rate. Therefore, of those firms that comply, those with incentives to report smoothed earnings should be more likely to smooth the effect of compliance by decreasing the salary progression rate. This leads to the following hypothesis:

H₄: Firms with incentives to report smooth earnings who lower their discount rate in compliance with the SEC are more likely to lower their salary progression rate.

3.3 Summary

This chapter contains the development of the four hypotheses that arise as a result of the SEC's recommendation. Compliance with the recommendation is posited to be increasing in the potential for being a target of SEC investigation, decreasing in leverage, and increasing in the adjusted funding ratio. In addition, firms that both comply and have incentives to report smoothed earnings are posited to decrease the salary progression rate to offset the effect of compliance. The research design employed to test these four hypotheses is explained in chapter four.

Chapter Four

RESEARCH DESIGN

This chapter details the research design employed to test hypotheses one through four. Section 4.1 summarizes the process of selecting sample firms. Sections 4.2 and 4.3 describe the tests for compliance and smoothing, respectively. Section 4.4 summarizes the chapter.

4.1 Sample selection

The sample selection process begins with all firms on Standard and Poor's Compustat Annual Tapes (1993 version). Firms from this population are included in the final sample if they meet the following requirements necessary to test hypotheses one through four. First, firms must sponsor a pension plan subject to the reporting requirements of FAS 87. Second, because discount rates are sensitive to interest rates, all sample firms must face the same economic conditions; thus, sample firms must have a December year-end. Imposing these two restrictions yields 1,530 firms. This subset is further reduced by 289 firms by eliminating all firms in the financial industry (SIC codes 6000-6999). An additional 490 firms are eliminated from the sample because they do not have non-missing discount rate and salary rate information for both 1992 and 1993. Finally, so that the sample is comprised of firms that are faced with a decision to comply or not with the SEC's recommendation, all firms with 1992 discount rates below eight percent are removed. Eight percent is chosen as the cutoff because full compliance to the seven percent lower bound of the SEC's range would require a decrease of one percent, an accounting change that can have a significant impact on the financial statements [Winklevoss (1993)]. This final restriction results in

a loss of 151 firms and leaves a final sample of 600 firms¹². Table 1 summarizes the sample selection process.

Table 1
Sample selection

Requirements for inclusion in final sample	Firms Lost	Firms Remaining
Firm must sponsor a pension plan subject to FAS 87 and have a December year-end		1,530
Firm must have a SIC code other than 6000-6999	289	1,241
Firm must have non-missing discount and salary rates for 1992 and 1993	490	751
Firm must have a 1992 discount rate greater than or equal to eight percent	151	600

4.2 Tests of compliance

Hypotheses one, two, and three posit that compliance with the SEC's recommendation is contingent on the potential for being a target of SEC scrutiny, leverage, and the adjusted funding ratio, respectively. These hypotheses are tested via multivariate regression. Dependent, independent, and control variables used in the regression are discussed below.

4.2.1 Dependent variable

The change in a firm's discount rate from 1992 to 1993 proxies for compliance with the SEC's recommendation and serves as the dependent variable. Given that the

¹² Descriptive information on the 151 firms lost because their 1992 discount rates are below eight percent is reported in chapter five.

SEC established a target range to which firms could move their discount rates in compliance, measuring compliance as the raw change in the discount rate requires a control for the level of the discount rate before the change. Such a control is needed because a firm moving from eight to seven percent complies the same as a firm moving from nine to seven percent although the measure of compliance is different. Therefore, the discount rate chosen in 1992 is included in the regression to account for a firm's discount rate before the SEC's recommendation.

Measuring compliance as the change in the discount rate also raises the concern that compliance is mis-measured by some amount of change that would have been made without the SEC's recommendation. Ideally, the expected change could be estimated by projecting the 1993 discount rate via longitudinal analysis of past discount rates as compared to factors such as the historical interest rates on Aa corporate bonds. However, an analysis of this type is precluded by the lack of a sufficiently long data series. Only six observations (1987-1992) of the discount rate are available for most firms, as FAS 87 was not required to be adopted until 1987. An alternative to projecting a firm specific discount rate is to estimate an expected change for all firms given macro economic conditions. However, subtracting such an expected change from the actual change only alters the compliance measure by a scalar, the effect of which goes to the intercept term of the regression. Thus, compliance is measured as the entire change in the discount rate.

4.2.2 Independent variables

In order to test hypothesis one, a proxy for the potential for being a target of SEC scrutiny must be employed. As mentioned in chapter three, the SEC reviews selected annual filings in a given year due to the large number of reports filed annually with the SEC and the disproportionately small staff of reviewers. However, it is not clear which firms are more likely to be selected for such a review. Feroz et al. (1991) state that the SEC chooses candidates for formal investigation partly on the value of the

message that it can send and partly on the probability that it can be successful in the investigation. If the SEC investigates certain registrants in order to send a message to all registrants, the value of that message is assumed to be most likely increasing in firm size. If the probability of success is also an important determinant of which firms are investigated, then the SEC should be expected to target those firms that are abusing the discount rate choice the most (i.e., those firms choosing the highest discount rates). Firms that meet both criteria should therefore have the highest potential for being a target of SEC scrutiny. Thus, the interaction between a firm's total assets and its assumed discount rate for 1992 is included in the regression as the proxy for the potential for being a target of SEC investigation if a firm chooses not to comply. Its coefficient is expected to be negative.

As mentioned in chapter three, many measures of leverage have been employed in prior research. The measure used for hypothesis two is long term debt divided by total assets. This measure is consistent with Francis and Reiter (1987), who find a significant relation between leverage and funding strategies. The coefficient on this variable is expected to be positive.

For purposes of hypothesis three, the adjusted funding ratio is defined as the ratio of pension plan assets to the Accumulated Benefit Obligation (ABO), where the ABO is "adjusted" to seven percent. The ABO is chosen because if the ABO exceeds plan assets, a minimum liability must be created that often increases the liability that a firm reports on its balance sheet. Also, Barth (1991) demonstrates that market prices are most closely associated with the combination of the ABO and plan assets.

Therefore, firms are expected to put most of their emphasis on the ABO.

To calculate the adjusted funding ratio, the first step is to calculate what the ABO would be if a firm used a seven percent discount rate. Previous research has employed a linear transformation to obtain an adjusted liability measure [Feldstein and Morck (1983), Bodie et al. (1985), Francis and Reiter (1987)]. This transformation is

accomplished by multiplying the unadjusted ABO by the ratio of the common discount rate to the disclosed discount rate. The same transformation is employed in this study with the 1992 ABO and the 1992 discount rate serving as the unadjusted ABO and the disclosed discount rate, respectively. Once the adjusted ABO is calculated, then the adjusted funding ratio is determined by dividing 1993 plan assets by the adjusted ABO. Using 1993 plan assets allows the adjusted funding ratio to measure how well funded the plan would be on an adjusted basis given contributions to the pension plan during 1993. A ratio less than (greater than) one implies that the pension plan is under (over) funded. The coefficient on this variable is expected to be negative.

4.2.3 Control variables

Previous research on pensions under the guidelines of APB 8 suggests that capital availability, a proxy for the ability to fund the plan, impacts pension accounting choice to some degree [e.g., Bodie et al. (1985), Francis and Reiter (1987), and Healy and Palepu (1990)]. Based on arguments here and elsewhere [Ali and Kumar (1993), Blankley and Swanson (1995)], funding and accounting decisions can be separated from each other under the guidelines of FAS 87. Thus, the impact of funding considerations on accounting choice is not as strong under FAS 87 as under APB 8. However, there is no doubt that accounting decisions under FAS 87 have at least an indirect effect on funding decisions. For example, the accrued pension liability that is reported on the balance sheet is the difference between the cumulative amount of pension expense recognized to date and the cumulative amount contributed to the plan to date. Thus, if a firm does not wish to increase this liability, then as pension expense increases due to compliance, funding must be increased as well. However, if the firm lacks the available capital to increase funding, then compliance may be reduced. This implies that capital availability may impact the degree of compliance with the SEC's recommendation. Consistent with Francis and Reiter (1987), capital availability is measured as cash flows from operations less dividends and capital expenditures.

Another factor that may impact compliance is the materiality of the pension plan. If a firm's pension plan is immaterial to its overall financial position, then the firm could be more likely to comply with the SEC's recommendation, for the firm incurs little cost from choosing a lower discount rate. However, if a firm's pension plan is material to its overall financial position, then the firm could be less likely to comply.

Because pension plans affect both income and liabilities, the materiality of the pension plan to overall financial position is measured in two ways. The first measure focuses on the size of the plan relative to the size of the firm and is measured as the adjusted ABO divided by total assets. The second measure focuses on the impact of pension expense on net income and is measured as the absolute value of pension expense divided by the absolute value of net income before pension expense. Absolute values are taken so that the measure will be non-negative for all firms; otherwise, firms with pension income instead of pension expense or a net loss instead of net income would have a negative value that would misrepresent the impact of pension expense on net income. Both measures are included in the regression, but a directional prediction is made only for the former. Firms with smaller plans relative to firm size are expected to be more likely to comply with the SEC's recommendation. In other words, the coefficient is expected to be positive.

Other factors that may impact compliance are plan characteristics such as the structure of benefits (fixed versus percentage of wages) and the group of employees covered (hourly versus salary). These characteristics may be uniform across industries [Francis and Reiter (1987)]. Therefore, an industry dummy variable is included to control for the impact on compliance of systematic differences between plan characteristics. If this variable also proxies for the degree of unionization in firms, it will control for the effects unions may have on compliance. Two digit SIC codes will

be used for the dummy variable. This leads to the following regression to be estimated for tests of hypotheses one, two, and three:

$$\Delta DR_i = \alpha + \beta_1 DR_i + \beta_2 SCRUTINY_i + \beta_3 LEV_i + \beta_4 AFR_i + \beta_5 CAPITAL_i + \beta_6 PSIZE_i + \beta_7 PE_i + \beta_8 D_{Industry} + \varepsilon_i$$

where

ΔDR	Change in the discount rate from 1992 to 1993;
DR	1992 discount rate;
$SCRUTINY$	Interaction between DR and 1992 total assets;
LEV	1992 total long-term debt divided by 1992 total assets;
AFR	1993 total pension assets divided by 1992 adjusted ABO;
$CAPITAL$	1992 cash from operations less capital expenditures and dividends;
$PSIZE$	1992 AFR divided by 1992 total assets;
PE	Absolute value of 1992 pension expense divided by the absolute value of 1992 net income before pension expense;
$D_{Industry}$	Dummy variable based on two-digit SIC code;
i	Firm index.

4.3 Tests of smoothing

Hypothesis four posits that firms with incentives to report smoothed earnings will decrease their salary rate in order to partially offset the decrease in earnings resulting from the decrease in the discount rate. Like hypotheses one through three, hypothesis four is tested with a multivariate regression. Discussions of the dependent, independent, and control variables follow below.

4.3.1 Dependent variable

Testing of hypothesis four requires an estimation of the expected change in the salary rate in the absence of the SEC's recommendation. The difference between this expected change and the actual change is the amount of smoothing conducted by firms and serves as the dependent variable for tests of hypothesis four. This smoothing measure differs slightly from usual tests of smoothing in that it is not measured in terms of earnings. However, due to the difficulty in estimating the earnings impact of

a change in the salary rate and assuming that the earnings impact is positively associated with the magnitude of the change in the salary rate, the change itself is used in this study as the smoothing measure.

According to FAS 87, the salary progression rate is comprised of three potential sources of salary increases: merit, productivity, and inflation. As the standard states,

(m)erit increases are those that an individual employee will receive as that employee progresses through a career.... The second component is labor's share of productivity gains. The third component attempts to anticipate general compensation increases that result from inflation [par. 203, footnote 16].

Before discussing each component, emphasis should be placed on the salary rate being an estimate of the future growth in salaries. By nature the rate represents a long term outlook incorporating all years of service for all employees until retirement. Thus, the expected salary rate for any given year can be thought of as the previous year's rate plus or minus any revisions in long term expectations. As introduced above, these revisions can be associated with merit, productivity, and/or inflation.

With this long term outlook, there is little reason to expect a change in the merit and productivity components for 1993. Winklevoss (1993) states that while the rate of increase due to merit generally decreases with an employee's age, merit increases on the whole have little effect on aggregate payroll over time if the distribution of ages and services among employees remains relatively stable. This statement implies that in the absence of some firm specific layoff or hiring of a certain age group of employees, the merit component of the 1993 salary rate should be roughly the same as that component of the 1992 rate. Winklevoss (1993) also states that estimating potential salary increases due to productivity is very difficult and that the importance of this component may have decreased over the years. Thus, absent the enactment or elimination of a profit-sharing plan or the development of a new product that

guarantees increased future profitability and thus implies the ability to share more profits with labor via increased salaries, the productivity component of the 1993 salary rate should also be roughly the same as that component of the 1992 rate.

Of the three components, the inflation factor has the most significant impact on future salaries and is most likely represented by a constant compound rate that is consistent with long-term average inflation rates [Winklevoss (1993)]. Thus, short term fluctuations in inflation rates should not affect the salary rate as long as those fluctuations do not revise long term perspectives of inflation. Even if firms adjust salary rates based on yearly fluctuations in inflation rates, the rate of inflation during 1992 and 1993, as indicated by the average annual percentage change in the Consumer Price Index for all urban consumers (CPI), was stable at 3.0%. Thus, like the merit and productivity components, there is little if any reason to expect a change in the inflation component of the salary rate. As a result, the entire change from 1992 to 1993 is considered unexpected and is characterized as an attempt to smooth the earnings effect from compliance.

4.3.2 Independent variables

The first independent variable included in the regression is the change in the discount rate. As discussed earlier, the change in the discount rate proxies for the degree that a firm complies with the SEC's recommendation. If a firm wants to smooth the effect of compliance, then a large decrease in the discount rate should cause a large decrease in the salary rate. Thus, a positive coefficient is expected and is consistent with smoothing behavior.

Additional independent variables that potentially distinguish between firms that are more or less likely to smooth earnings are also included in the regression. One of these variables is the ownership structure of the firm. Smoothing can be viewed as an earnings management technique attempting to signal information to reduce the information asymmetry that persists between managers and owners [Schipper (1989)].

As a result, assuming that information asymmetry decreases with the degree of concentration in ownership, those firms with more concentrated ownership will be less likely to smooth earnings. Results from Beattie et al. (1994) and Bange and De Bondt (1995) are consistent with this reasoning. Thus, to control for the impact ownership concentration has on the incentive to smooth the effect from compliance, the ratio of common stock held by institutional investors to total common stock outstanding, a measure consistent with Bange and De Bondt (1995), is included in the regression. Institutional investor data is obtained from *Moody's Handbook of Common Stocks* and *Moody's Handbook of Nasdaq Stocks*. The coefficient on this variable is expected to be positive.

A third variable included in the regression is the surprise in earnings. If firms want smooth earnings streams, then those firms with negative unexpected earnings should be more inclined to smooth the effect of compliance while those firms with positive unexpected earnings should be less inclined to offset the reduction to earnings caused by compliance. As discussed in chapter two, changes in actuarial assumptions in 1993 affect earnings in 1994. As a result, firms do not know the amount of unexpected earnings at the time the assumptions are made. However, assuming that firms have perfect foresight with respect to at least the direction of the 1994 unexpected earnings, then a dummy variable can be included in the regression to represent the sign of the 1994 unexpected earnings. Unexpected earnings is defined as the change in earnings before pension expense. The dummy variable takes the value of one if the 1994 unexpected earnings is negative and zero otherwise. The coefficient on this variable is expected to be positive.

Two other general variables found to be associated with smoothing that are included in the regression are firm size as a proxy for potential political costs [Moses (1987)] and past earnings variability as a proxy for past propensity to smooth earnings

[Beattie et al. (1994)]. Firm size is measured as total assets. Past earnings variability is measured as the standard deviation of the past five years of earnings.

4.3.3 Control variables

Four additional control variables are included in the regression analysis. First, the expense associated with a firm's pension plan may be immaterial with respect to the firm's total earnings. As a result, a change in the discount rate for such a firm would have a small relative effect on the firm's aggregate condition. Thus, to control for the impact on earnings of a change in the discount rate, the absolute value of pension expense divided by the absolute value of net income before pension expense is included in the regression. As in section 4.2.3, absolute values are taken so that pension income or a net loss will not cause the measure to misrepresent the true materiality of the pension plan¹³. The coefficient on this variable is expected to be negative, as firms with plans that impact their earnings to a greater extent would be expected to smooth the impact of compliance to a greater degree.

Second, in the 1990's firms have continued to face increased national and global competition. As a result, firms have often been forced to "down-size" or "right-size" in order to stay competitive. Along with these restructuring efforts, firms may also reduce future salary expectations, which would be reflected in the salary progression rate. While it is not clear that any revisions in future salary expectations that might coincide with these restructurings should occur in 1993 to any greater extent than in any prior or future years, inclusion of a control variable for decreased salary rates due to downsizing seems appropriate. Thus, a crude proxy for the extent that a firm is down-sizing and reducing future salary expectations due to competition, the change in

¹³ Negative pension expense (i.e., pension income) can result if current service and interest costs are small compared to large expected returns on investments and/or large amortizations of actual gains from investments and prior service cost. The regression testing hypothesis four is estimated both with and without firms with negative pension expense. Chapter five reports those results.

the number of employees, is included in the regression. The coefficient on this variable is expected to be positive.

Third, firms with a higher 1992 salary rate relative to other firms may have more leeway to decrease their salary rate. Therefore, the salary rate chosen in 1992 is included to account for the level of the salary rate before any change.

Finally, plan characteristics such as the structure of benefits (fixed versus percentage of wages) and the group of employees covered (hourly versus salary) may impact the degree in which firms change the salary rate. As stated in section 4.3.2, these characteristics may be uniform across industries [Francis and Reiter (1987)]. Therefore, an industry dummy variable is included to control for the impact of systematic differences between plan characteristics on the change in the salary rate. If this variable also proxies for the degree of unionization in firms, it will control for the effects unions may have on compliance. Unions recently have increased scrutiny of pension plans. They most likely would be displeased with a reduction in assumed future salary increases. Two digit SIC codes will be used for the dummy variable. This yields the following regression to be estimated for tests of hypothesis four:

$$\Delta SR_i = \alpha_i + \beta_1 \Delta DR_i + \beta_2 INSOWN_i + \beta_3 UEARN_i + \beta_4 SIZE_i + \beta_5 VAR_i + \beta_6 PE_i + \beta_7 DOWNSIZE_i + \beta_8 SR_i + \beta_9 D_{Industry} + \varepsilon_i$$

where

ΔSR	Change in the salary rate;
ΔDR	Change in the discount rate;
$INSOWN$	Common shares held by institutional investors divided by total shares;
$UEARN$	Dummy variable taking the value of one if the 1994 earnings surprise is negative, zero otherwise;
$SIZE$	Total assets;
VAR	Standard deviation of earnings over the past five years;
PE	Absolute value of pension expense divided by the absolute value of net income before pension expense;
$DOWNSIZE$	Change in employees;
SR	1992 salary rate;
$D_{Industry}$	Dummy variable based on two-digit SIC code;
i	Firm index.

4.3.4 Additional smoothing tests

As explained in chapter two, even though pension actuarial assumptions are chosen explicitly and are therefore independent from one another, the salary rate is nonetheless related to the discount rate in that each incorporates expectations of the same economic environment (FAS 87, par. 195). Therefore, an alternative hypothesis to the claim that the above coefficient on the change in the discount rate is evidence of smoothing behavior is that the coefficient simply represents the positive correlation inherent in the two rates due to their common component. One way to attempt to rule out this alternative hypothesis is to examine the relation between the salary rate and the discount rate in prior years and compare the current year's relation to the historical trend. If the relation between the salary rate and the discount rate is no different in 1993 than in prior years, then any claim of smoothing activity is questionable. However, if the salary rate is reduced in conjunction with the decrease in the discount

rate in a more pronounced way in 1993 than in past years, then such a claim for smoothing activity is still warranted.

To ascertain which of the above two scenarios is true, a regression equation with the following variables is estimated. The dependent variable is the change in the salary rate. The independent variables are the change in the discount rate, a dummy variable taking the value of one if the year is 1993 and the value of zero otherwise, and the interaction of the two. If the relation between the two rates is more pronounced in 1993, then the coefficient on the interaction term should be positive and significant. A fourth independent variable, the change in the CPI, is also included in the regression. It is included for two reasons. First, it controls for any impact that changes in short-term inflation may have on yearly changes in the salary rate. Second, and perhaps more importantly, it helps to determine the appropriateness of the expectation developed in section 4.3.1 for the change in the salary rate. A significant coefficient on the change in the CPI indicates that salary rates are changed in accord with short-term inflationary changes and, since the change in the CPI was zero in 1993, implies that an expectation of no change in the salary rate for 1993 is appropriate.

Data for the regression analysis is limited to the years 1987 through 1993, for adoption of FAS 87 was not required until 1987. The examination is also limited to a subset of firms identified from the final sample. This latter limitation of the data set is necessary because discount and salary rate assumptions must be collected by hand from the pension footnote in annual reports or 10-K filings from 1987 to 1990¹⁴. The subset of firms for the regression is comprised first of 200 firms chosen at random and is supplemented with an additional 77 firms collected in an earlier pilot study, yielding a

¹⁴ Although other pension data items disclosed in the footnotes such as plan assets, components of pension expense, and liability measures are reported on the Compustat tapes prior to 1991, pension actuarial assumptions prior to 1991 are not reported.

total subset of 277 firms with pension assumption data from 1987 to 1993. These 277 firms are used to estimate the following regression:

$$\Delta SR_{i,t} = \alpha_{i,t} + \beta_1 \Delta DR_{i,t} + \beta_2 D_{1993} + \beta_3 \Delta DR_{i,t} * D_{1993} + \beta_4 \Delta CPI_t + \varepsilon_{i,t}$$

where

ΔSR	Change in the salary rate;
ΔDR	Change in the discount rate;
D_{1993}	Dummy variable taking the value of one if 1993; zero otherwise;
ΔCPI	Change in the Consumers' Price Index;
i	Firm index;
t	Year index, 1988-1993.

4.4 Summary

This chapter contains a description of both the sample selection process and the research design employed to test hypotheses one through four. The final sample consists of 600 firms. All four hypotheses are tested via multivariate regressions. Descriptive information about the sample and results of the regressions are reported in chapter five.

Chapter Five

RESULTS

This chapter presents the results of the tests specified in chapter four. Section 5.1 presents descriptive statistics for the sample. Sections 5.2 and 5.3 describe the results for the compliance and smoothing hypotheses, respectively. Section 5.4 summarizes the chapter.

5.1 Descriptive Statistics

As stated in the introduction, one of the first empirical questions arising from the SEC's recommendation is whether such a recommendation contained enough influence to alter accounting choice. The descriptive information reported in Tables 2 and 3 suggests that the recommendation did indeed affect accounting choice. Table 2 contains 1992 and 1993 information for the full sample of 600 firms. Most noticeable in the table is the large decrease in the mean 1993 discount rate, down from 8.39% in 1992 to 7.45% in 1993. This decrease is statistically significant at $p < .01$ and is consistent with the conclusion that the SEC's recommendation had a significant impact on discount rate choice. The information in Table 3, which reports changes in the discount rate, salary rate, and rate of return for the years 1988 through 1993 for the subset of 277 firms, yields additional support for this conclusion. As seen in panel A, the change in the discount rate in 1993 is much more pronounced than in all prior years, both in the magnitude of the change and in the percentage of firms making a change. This result illustrates that the change in the discount rate for 1993 was well outside the historical trend, suggesting the introduction of an outside influence in 1993, namely the SEC recommendation, which significantly altered accounting choice¹⁵.

¹⁵ Data from a random sample of 306 firms in Blankley and Swanson (1995) illustrate the same trend in discount rates. The authors focus on the overall relation between discount rates and interest rates for the time period 1987 through 1993 and treat the SEC's recommendation as one factor affecting that relation. The authors conclude that

Table 2 also shows a decrease in the mean salary rate, down from 5.55 % in 1992 to 4.93 % in 1993. This decrease is statistically significant at $p < .01$ and is consistent with the existence of smoothing behavior within the salary rate choice. Information in Table 3 also is consistent with this conclusion. As seen in panel B and similar to the change in the discount rate, the change in the salary rate in 1993 is much more pronounced than in all prior years, both in the magnitude of the change and in the percentage of firms making a change. This break from the historical trend is consistent with the hypothesis that the salary rate was changed to compensate for the change in the discount rate.

The adverse impact on the financial statements of such a large decrease in the discount rate can be seen in the ABO and the funding ratio reported in Table 2. The median ABO increased approximately 25 % in 1993, up from \$53 million to \$66 million. While this increase is not statistically significant, when compared to the average percentage increase for the years 1988 through 1992 of 4 % (not reported in Table 2), the increase in 1993 is consistent with the reduction in the discount rate having a substantial impact on pension liabilities. Moreover, the difference between the two percentages (21 %) is consistent with Winklevoss' (1993) rule-of-thumb of a 20 % increase in the pension liability for every 1 % decrease in the discount rate. When combined with a lower percentage increase in contributions, the increase in the ABO produced a significant decrease ($p < .01$) in the mean funding ratio, down from 1.30 to 1.18. Thus, the decrease in the discount rate clearly had an adverse impact on the financial statements.

Also evident in Table 2 is the fact that pension plans have a material effect on the overall financial position of the firm. Pension expense for the median firm was

discount rates were slow to reflect the decline in interest rates in the early 1990s; however, they do not attribute the decline to the SEC's recommendation.

Table 2
Descriptive statistics for 600 sample firms

Variable	Yr	N	Mean	Std Dev	25 %	Med	75 %
Discount rate	92	600	8.39	.367	8.00	8.50	8.50
	93	600	7.45 ^c	.400	7.25	7.50	7.50
Salary rate	92	600	5.55	.802	5.00	5.50	6.00
	93	600	4.93 ^c	.803	4.50	5.00	5.50
Rate of return	92	582	9.19	.891	8.50	9.00	9.75
	93	581	8.99 ^c	.894	8.50	9.00	9.50
Accumulated Benefit Obligation (ABO)	92	593	499	1856	15	53	270
	93	592	572	2083	17	66	319
Plan assets	92	597	643	2538	18	69	368
	93	596	692	2722	20	75	371
Reported funded status	92	593	1.30	.439	1.08	1.25	1.49
	93	592	1.18 ^c	.360	.97	1.14	1.33
Pension expense divided by net income before expense	92	594	.24	.812	.03	.08	.16
	93	592	.34	1.09	.03	.07	.17
Plan assets divided by total assets	92	597	.16	.171	.06	.11	.21
	93	596	.17	.187	.06	.11	.22
Leverage	92	600	.28	.207	.14	.28	.37
	93	600	.27	.200	.12	.26	.36
Capital	92	591	-41	403	-34	-1	13
	93	590	-16	367	-27	-1	20
Total assets	92	600	3596	11270	195	723	2935
	93	600	3795	13074	205	725	3189

^{a(b)(c)} 1993 value is significantly different than 1992 value at less than the .10(.05)[.01] level

Table 3
Changes in disclosed actuarial assumptions, by year

n=277

Panel A: Change in discount rate						
	1988	1989	1990	1991	1992	1993
mean	0.17 ^c	-0.17 ^c	0.04 ^a	-0.16 ^c	-0.14 ^c	-0.96 ^c
median	0.00	0.00	0.00	0.00	0.00	-1.00
st dev	0.46	0.45	0.36	0.41	0.33	0.48
n < 0	19	77	29	88	78	254
n > 0	58	14	57	21	10	0
n	221	226	228	228	252	277
Panel B: Change in salary rate						
	1988	1989	1990	1991	1992	1993
mean	0.01	-0.05 ^b	-0.06 ^c	-0.16 ^c	-0.17 ^c	-0.63 ^c
median	0.00	0.00	0.00	0.00	0.00	-0.50
st dev	0.47	0.38	0.35	0.53	0.47	0.69
n < 0	17	24	25	56	51	173
n > 0	23	12	12	8	5	2
n	216	222	225	227	253	277
Panel C: Change in rate of return						
	1988	1989	1990	1991	1992	1993
mean	0.18 ^c	0.09 ^c	0.06 ^b	0.05 ^b	-0.08 ^c	-0.22 ^c
median	0.00	0.00	0.00	0.00	0.00	0.00
st dev	0.53	0.39	0.36	0.36	0.37	0.48
n < 0	11	11	16	14	36	76
n > 0	50	31	33	29	12	10
n	222	226	227	229	248	266

^{a(b)(c)} significantly different from zero at less than the .10(.05)[.01] level

about 7% (8%) of net income before pension expense for 1992 (1993). In addition, plan assets for the median firm equaled about 11 % of total assets for both years.

In summary, descriptive statistics on sample firms are consistent with the SEC's recommendation having a significant effect on accounting choice. Discount rates were reduced almost a full percentage point for the average firm, which resulted in a significant decrease in the reported funded status of the average pension plan. Salary rates were also reduced more than a half of a percentage point, an event consistent with smoothing behavior in accounting choice. Further examination of the changes in the discount and salary rates via regression analysis follows below.

5.2 Results for tests of compliance

The second empirical question arising from the SEC's recommendation is whether there were any factors that systematically affected firm compliance. In chapter three, hypotheses one through three were developed from this underlying question. Tables 4 and 5 contain evidence helpful in answering this question.

Table 4 reports the Pearson correlation coefficients for the independent variables used in the multivariate regression estimated to test hypotheses one through three. High correlations between independent variables indicate the presence of multicollinearity, which reduces the power of t-tests [Kennedy (1989)]. None of the independent variable coefficients in Table 4 approach 0.8 to 0.9, the benchmark Kennedy (1989) gives for a high degree of multicollinearity. Thus, it appears as if multicollinearity is not a major problem in the data set.

In addition to providing assurance that multicollinearity is not a major problem, Table 4 reveals that several correlations between variables are significantly different from zero. Of main interest are those correlations involving DR, the 1992 discount rate. The 1992 discount rate is significantly correlated with three independent

Table 4
Correlation coefficients

n=600

	DR	SCRUTINY	LEV	AFR	CAPITAL	PSIZE	PE
DR	1.00						
SCRUTINY	.08 ^b	1.00					
LEV	.02	-.06	1.00				
AFR	-.21 ^c	-.01	-.01	1.00			
CAPITAL	-.05	.25 ^c	-.08 ^a	.03	1.00		
PSIZE	.11 ^c	.02	-.14 ^c	-.19 ^c	-.00	1.00	
PE	.14	.01	.02	-.07 ^a	-.08 ^a	.22 ^c	1.00

^{a(b)(c)} significant at less than the .10(.05)[.01] level

The variables in table 4 are defined as follows:

DR 1992 discount rate;
 SCRUTINY Interaction between DR and 1992 total assets;
 LEV 1992 total long-term debt divided by 1992 total assets;
 AFR 1992 ABO (adjusted to seven percent) divided by 1993 total pension assets;
 CAPITAL 1992 cash from operations less capital expenditures and dividends;
 PSIZE AFR divided by 1992 total assets;
 PE Absolute value of 1992 pension expense divided by absolute value of 1992 net income before pension expense.

variables: SCRUTINY¹⁶, PSIZE, and AFR. The positive correlation with SCRUTINY ($p < .05$) is consistent with the suggestion of Francis and Reiter (1987) that larger firms may choose higher discount rates to avoid potential political costs. The positive correlation with PSIZE ($p < .01$) is consistent with the materiality of the pension plan affecting discount rate choice. Firms whose pension plans are more material to their overall financial positions tend to choose higher discount rates to obtain the benefits of decreased liabilities and expenses associated with higher discount rates. The negative correlation with AFR ($p < .01$) is consistent with the claims of prior pension research such as Feldstein and Morck (1983) that firms whose true funded status is low tend to choose higher discount rates to give the appearance of a better funded plan.

Given that the dependent variable for testing hypotheses one, two, and three is the change in the discount rate, the significant correlations between the 1992 discount rate and both SCRUTINY and AFR can be problematic. Without controlling for the impact that these two independent variables have on the level of the discount rate before compliance with the SEC's recommendation, the coefficients on these variables in a multivariate regression are biased. To eliminate this bias, the 1992 discount rate is included in the regression to control for the level of the discount rate before the change. Such an inclusion then allows for the regression coefficients on the independent variables testing hypotheses one, two, and three to represent the effect on compliance beyond that amount of change necessary because of the variables' effects on the prior level of the discount rate.

¹⁶ Before discussing the individual correlations in Table 4, it should be noted that SCRUTINY, which is the interaction of total assets and the level of the 1992 discount rate, correlates with total assets at .99. Thus, although the SCRUTINY variable attempts to capture more than just a size effect, the practical measurement is no different than the standard measure of firm size. An alternative measurement for SCRUTINY is a dummy variable taking the value of one (zero) if a firm is (not) in the top quartile of both assets and discount rates. Regression results using this alternative measure are similar to those reported in Table 5.

Table 5 reports the results of the multivariate regression estimated for hypotheses one, two, and three. Although the final sample is comprised of 600 firms, 21 firms are lost due to missing data for the independent variables, bringing the total number of firms for the regression estimation to 579. Because the results of estimating the regression equation specified in chapter four are qualitatively similar with and without industry dummy variables, Table 5 reports results without those variables. The adjusted R^2 for the regression is .37¹⁷.

Most notable in the table is the large t-statistic on the coefficient for DR, the discount rate chosen in 1992. While DR is included in the regression mainly to control for the level of the discount rate prior to the SEC's recommendation, its coefficient provides further evidence on the impact of the SEC's recommendation on accounting choice. The negative coefficient indicates that firms well above the acceptable range of discount rates had large decreases in their rates while firms closer to the range had smaller decreases. It appears that, in general, firms did not decrease their discount rates by some constant amount, say one percent, to satisfy the SEC. Rather, they decreased their discount rates by the amount necessary to get within the SEC's desired range. In other words, the SEC appears to have achieved its desired result.

Compliance hypotheses one, two, and three are tested by the coefficients on SCRUTINY, LEV, and AFR, respectively. Hypothesis one predicts that compliance will be positively associated with the potential for being a target of SEC investigation because those firms with a high potential can avoid investigation by complying. Since compliance is measured as the difference between the discount rate in 1992 and 1993, a negative coefficient on SCRUTINY is expected. The coefficient has the predicted sign

¹⁷ White's (1980) test determines whether any heteroskedasticity present in the regressors results in an abnormal variance-covariance matrix of the OLS estimator [Kennedy (1993)]. The null of no heteroskedasticity is not rejected at the .10 level. Thus, heteroskedasticity does not appear to affect the regression results. In addition, regression results are robust to influential data diagnostics.

and is significant at $p = .023$ for a one-sided test. This supports hypothesis one. Firms that faced a higher potential for being a target of SEC scrutiny complied with the SEC's recommendation to a greater extent than other firms in order to avoid the costs of SEC scrutiny.

Hypothesis two predicts that compliance will be negatively associated with a firm's leverage since compliance increases disclosed liabilities and decreases net income through an increase in pension expense. Thus, a positive coefficient on LEV is expected. The coefficient has the predicted sign and is marginally significant at $p = .072$ for a one-sided test. Thus, hypothesis two is weakly supported. Firms with higher leverage tended to comply less than firms with lower leverage in order to avoid reduced earnings and the costs associated with increased leverage and the tightening of debt covenants.

Hypothesis three predicts that compliance will be positively associated with a firm's adjusted funding ratio because a firm with a low adjusted funding ratio will want to hide the true quality of its pension plan while a firm with a high ratio will want to comply to reveal the true quality of its plan. Thus, a negative coefficient on AFR is expected. The coefficient has the wrong sign and is significant at $p = .050$ for a two-sided test. The positive coefficient implies that those firms with lower adjusted funding ratios complied to a greater degree than those firms with higher adjusted funding ratios. A potential explanation for this result is developed in section 5.2.4 below.

Although no hypothesis is stated concerning the impact of the materiality of the pension plan relative to overall firm financial position, a positive coefficient is expected on PSIZE. The coefficient is as expected and is significant at $p = .024$ for a one-sided test, indicating that those firms whose pension plans were more (less) material to their overall financial position complied to a lesser (greater) extent with the SEC's recommendation. The coefficients on the other control variables, CAPITAL and PE, are insignificant.

Table 5
Regression results for hypotheses one, two, and three

$$\Delta DR_i = \alpha + \beta_1 DR_i + \beta_2 SCRUTINY_i + \beta_3 LEV_i + \beta_4 AFR_i + \beta_5 CAPITAL_i + \beta_6 PSIZE_i + \beta_7 PE_i + \varepsilon_i$$

$$\text{Adjusted } R^2 = .37$$

$$n=579$$

Independent Variables	Coefficients	Standard errors	T-statistics	P-values ^a
Intercept	5.23	0.38	13.87	.001
DR	-0.75	0.04	-17.25	.001
SCRUTINY	-0.00	0.00	-2.00	.023
LEV	0.10	0.08	1.47	.072
AFR	0.07	0.04	1.97	.050
CAPITAL	0.00	0.00	0.72	.474
PSIZE	0.19	0.10	1.99	.024
PE	-0.02	0.02	-0.82	.413

^a P-values are one-sided for all variables except AFR, CAPITAL and PE

The variables in table 5 are defined as follows:

ΔDR Change in the discount rate from 1992 to 1993;
DR 1992 discount rate;
SCRUTINY Interaction between DR and 1992 total assets;
LEV 1992 total long-term debt divided by 1992 total assets;
AFR 1993 total pension assets divided by 1992 adjusted ABO;
CAPITAL 1992 cash from operations less capital expenditures and dividends;
PSIZE AFR divided by 1992 total assets;
PE Absolute value of 1992 pension expense divided by absolute value of 1992 net income before pension expense.

In summary, regression results support hypotheses one and two but not hypothesis three. In addition, the coefficient on DR is consistent with the decrease in discount rates being driven by the SEC's recommendation. Other tests and an alternative explanation for the results for hypothesis three follow below.

5.2.1 Alternative measure for compliance

As discussed in chapter four, the measure of compliance for the above regression is the change in the discount rate from 1992 to 1993. Measuring compliance in this manner requires a control for the level of the discount rate before the change, which is accomplished by including the level of the discount rate as an independent control variable in the regression. Instead of measuring compliance in a manner that requires such an independent control variable, compliance can be measured in a percentage format. If movement of the discount rate to 7.0 percent is considered full compliance, the actual change in the discount rate divided by the change necessary for full compliance yields a percentage of compliance that ranges from zero to one. For example, a firm moving its discount rate from 9.0 to 8.0 percent would comply at a rate of 50 percent $[(9.0-8.0)/(9.0-7.0)]$. Using this alternative measure for compliance as the dependent variable in the regression testing hypotheses one through three then eliminates the need for the inclusion of the 1992 discount rate as a control variable.

Table 6 reports the results of the regression when this alternative measure of compliance is employed as the dependent variable and the 1992 discount rate is removed from the independent variables. Most notable is the large decrease in the adjusted R^2 , down from .37 in the original regression to .01 in the current regression. This decrease appears to result solely from the alternative specification of compliance and the removal of the 1992 discount rate from the independent variables, for the coefficients on the independent variables are very similar to those in the original regression. Thus, conclusions with respect to hypotheses one, two, and three are similar if compliance is measured as the change in the discount rate with the 1992

Table 6
Regression results with alternative measure of compliance

$$\text{COMPLIANCE}_i = \alpha + \beta_1 \text{SCRUTINY}_i + \beta_2 \text{LEV}_i + \beta_3 \text{AFR}_i + \beta_4 \text{CAPITAL}_i + \beta_5 \text{PSIZE}_i + \beta_6 \text{PE}_i + \varepsilon_i$$

$$\text{Adjusted } R^2 = .01$$

$$n = 579$$

Independent Variables	Coefficients	Standard errors	T-statistics	P-values ^a
Intercept	-0.79	0.04	-17.97	.001
SCRUTINY	-0.00	0.00	-1.82	.034
LEV	0.09	0.06	1.49	.069
AFR	0.06	0.03	2.24	.026
CAPITAL	0.00	0.00	0.60	.551
PSIZE	0.16	0.07	2.15	.016
PE	-0.01	0.01	-0.76	.447

^a P-values are one-sided for all variables except AFR, CAPITAL and PE

The variables in table 6 are defined as follows:

COMPLIANCE Change in the discount rate from 1992 to 1993 divided by the change necessary to move to a discount rate of seven percent;

SCRUTINY Interaction between 1992 discount rate and 1992 total assets;

LEV 1992 total long-term debt divided by 1992 total assets;

AFR 1993 total pension assets divided by 1992 adjusted ABO;

CAPITAL 1992 cash from operations less capital expenditures and dividends;

PSIZE AFR divided by 1992 total assets;

PE Absolute value of 1992 pension expense divided by absolute value of 1992 net income before pension expense.

discount rate as an independent control variable or as a percentage of compliance ranging from zero (no compliance) to one (full compliance).

5.2.2 Robustness tests for hypothesis one

Regression results are consistent with hypothesis one. Firms facing a higher potential for SEC scrutiny, as measured by firm size, complied to a greater degree than firms facing a lower potential for scrutiny. However, that support may be contingent on the measurement of the dependent variable. To test the robustness of the results to an alternative measure of firm size, total sales is substituted for total assets as a measure of firm size, and the regression is estimated again. The results are very similar for both measures of firm size. Therefore, support for hypothesis one does not appear to be contingent on variable measurement.

5.2.3 Further analysis of hypothesis two

Although Duke and Hunt (1990) conclude that the definition of the leverage is not a critical issue in a research design, another potential reason for the weak result is the specification of the variable for leverage. As discussed in chapter four, leverage is measured as long-term debt divided by total assets to be consistent with Francis and Reiter (1987). Measuring leverage with long-term debt in the numerator seems appropriate as pension liabilities are long-term in nature; however, the use of assets in the denominator is somewhat arbitrary. Other measures of leverage based on long-term debt used in previous studies include, but are not limited to, long-term debt divided by the market value of equity and long-term debt divided by the book value of equity. To ascertain the sensitivity of the regression results to the specification of leverage, the regression is estimated with each of these two additional specifications. The coefficient on leverage for each of the alternative specifications is weaker than the original specification of long-term debt divided by total assets. Thus, the specification of leverage is not a reason for the weak leverage result in Table 5.

5.2.4 Alternative explanation for hypothesis three

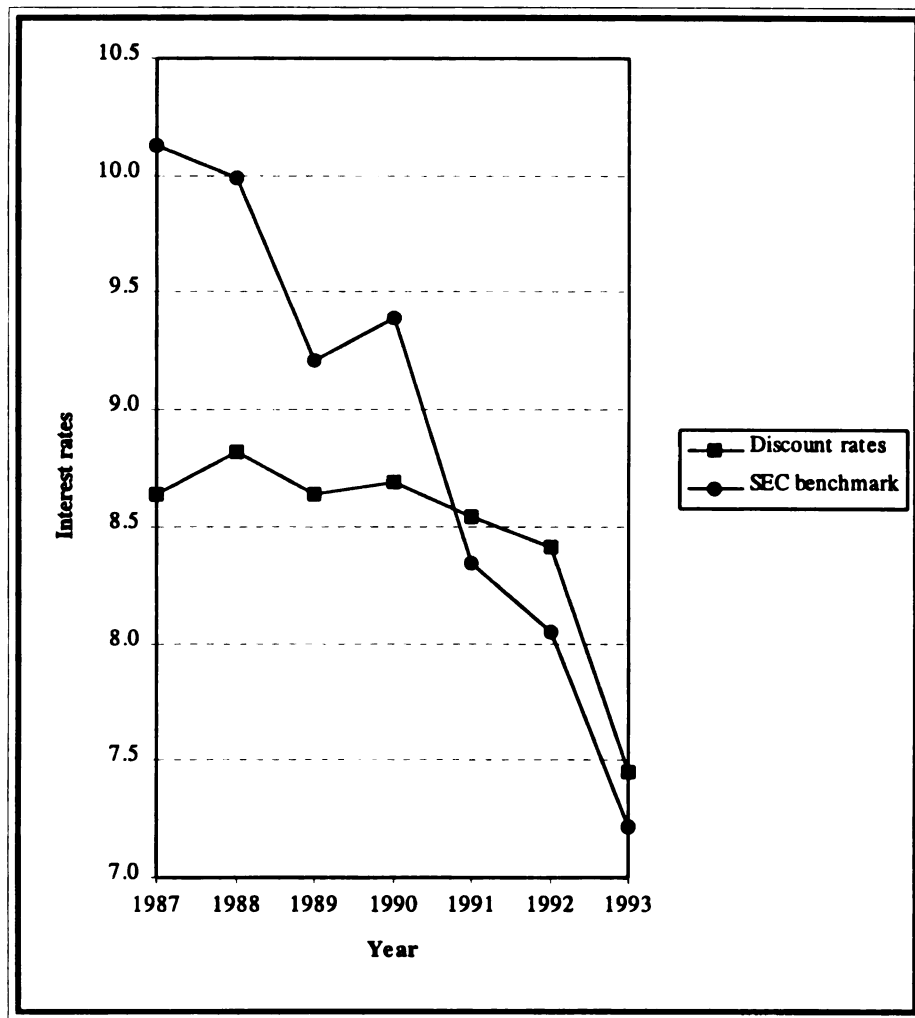
Hypothesis three predicts that compliance with the SEC's recommendation will be positively associated with a firm's adjusted funding ratio because a firm with a low adjusted funding ratio will want to hide the true quality of its pension plan through non-compliance while a firm with a high ratio will want to reveal the true quality of its plan through compliance. Regression results are opposite this prediction, indicating that firms with lower adjusted funding ratios complied to a greater degree than firms with higher adjusted funding ratios. Assuming that the adjusted funding ratio proxies for political sensitivity, these results are consistent with the theory of political costs. Firms with greater sensitivity, as measured by a low adjusted funding ratio, complied with the SEC's recommendation to a greater degree to reduce the political costs associated with the SEC scrutiny.

Traditionally, researchers testing the theory of political costs have used firm size to proxy for a firm's political sensitivity under the assumption that larger firms are more politically sensitive and have larger wealth transfers imposed on them [Watts and Zimmerman (1986)]. However, this practice has been met with criticism. Researchers have argued that it is difficult to make reliable links between the theory of political costs and tests employing firm size due to the lack of explicit links to events in the political arena [Wong (1988)] and to the poor construct validity of firm size as a proxy for political sensitivity [Ball and Foster (1982), Bernard (1989)], among other reasons¹⁸. The current study addresses and abates these two criticisms. First, the SEC's recommendation is clearly an event in the political arena from which inferences about political costs can be drawn. Second, the assumption that sensitivity to the SEC's recommendation varies with the adjusted funding ratio (i.e., that the adjusted funding ratio has high construct validity) is supported in two ways.

¹⁸ See Key (1995) for a review of the issues relating to firm size as a proxy for political costs.

First, parties that impose political pressure on firms have generally focused on the funded status of pension plans or how pension accounting choices affect a plan's funded status. For example, since 1990 the Pension Benefit Guaranty Corporation (PBGC) has published annually a list of the fifty most unfunded plans in the United States. A firm makes the list based solely on its funded status as computed by the PBGC. In addition, the United States Congress attached pension legislation to the 1994 General Agreement on Tariffs and Trade legislation to increase the degree and speed of pension plan funding. This attached legislation was in part a response to concerns from Labor Secretary Robert Reich and PBGC Executive Director Martin Slate that pension under-funding was a chronic problem (The Wall Street Journal, March 15, 1995). Finally, for the last decade The Wall Street Journal and other financial news outlets have periodically printed articles addressing various aspects of pension funding.

Second, and perhaps more important, the SEC's action came at a time when mean firm discount rates were higher than the rates of return on high-quality fixed income investments. Figure 2 of Blankley and Swanson (1995) graphically illustrates the movement of mean discount rates and rates of return on high-quality fixed income investments from 1987 to 1993. Figure 2 in this study partially replicates Blankley and Swanson's (1995) figure but replaces their mean discount rate data with data from this study. As seen in the Figure 2, rates of return on high-quality fixed investments were higher than mean discount rates from 1987 to 1990. However, not until rates of return on high-quality fixed investments dropped below mean discount rates did the SEC take any action. This suggests that the SEC's main concern was not that discount rates should mirror rates of return on high-quality investments, per se, but that funding ratios should not be inflated by choosing discount rates that are higher than rates of return on high-quality fixed investments. In other words, discount rates should have a ceiling so that funding ratios are not grossly inflated.



	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>
Discount rates	8.64	8.82	8.64	8.69	8.54	8.41	7.45
SEC benchmark*	10.13	9.99	9.21	9.39	8.34	8.05	7.22

*SEC benchmark is defined as the rate of return on high-quality fixed income investments.

Figure 2
Comparison of discount rates and SEC benchmark

Given that the SEC's recommendation appears to have originated from a concern over inflated funding ratios, the assumption that the adjusted funding ratio is a better proxy for sensitivity to the SEC scrutiny is supported. Thus, the testing of hypothesis three constitutes a good test of the theory of political costs. Results are consistent with the theory. Firms with lower adjusted funding ratios complied with the recommendation to a greater degree to avoid any costs that the SEC might impose on them.

5.2.5 Risk effect

Firm risk has been suggested in prior research as a factor that affects pension accounting choices such as actuarial assumptions and funding strategies [e.g., Feldstein and Morck (1983), Bodie et al. (1985), and Francis and Reiter (1987)]. The traditional argument, especially with respect to funding strategies, has centered around the function of the Pension Benefit Guaranty Corporation (PBGC). The PBGC is a federal agency that guarantees payment of basic retirement benefits earned by American workers participating in private-sector defined benefit pension plans. If a firm is unable to fulfill its promised pension obligation, the firm can legally satisfy that obligation by transferring all pension assets and 30% of the market value of the firm's net worth to the PBGC. Therefore, authors have argued that risky firms should fund their plans less to increase the value of the pension "put" option. Tests of this implication have produced mixed results with Bodie et al. (1985) finding evidence consistent with the risk argument and Francis and Reiter (1987) finding evidence inconsistent with the risk argument.

Because the PBGC insurance is based on statutory funding and the discount rate under FAS 87 has no direct effect on statutory funding, it is unlikely that this traditional risk argument centering around the PBGC insurance should affect the discount rate. However, if the pension plan is viewed as a form of corporate debt with the beneficiaries as the providers of capital, it is reasonable to believe that some

component of the discount rate is a reflection of the riskiness of the firm. Feldstein and Morck (1983) interpret their regression results with a similar argument, suggesting that firms may choose interest rates under APB 8 to reduce the pension liability in order to reduce the overall assessment of firm risk. Therefore, it is necessary to examine the impact of firm risk on compliance.

Firm risk is measured as the Standard and Poor's debt rating disclosed on Compustat¹⁹. Similar measures have been used in Feldstein and Morck (1983), Bodie et al. (1985), and Francis and Reiter (1987). If some component of the discount rate is a reflection of firm risk, then the discount rate and the debt rating should be correlated. Table 7 presents correlations between discount rates and debt ratings for the 288 (301) firms with available data in 1992 (1993). As seen in the table, 1992 discount rates correlate positively and significantly ($p = .045$) with 1992 debt ratings, implying that firms with higher risk tend to choose higher discount rates. However, 1993 discount rates do not correlate significantly ($p = .738$) with 1993 debt ratings. These two correlations taken together, coupled with the fact that only 57 of the 278 firms with rating data available for both years had a change in their debt ratings, suggest that as firms moved to the SEC's tight range of acceptable discount rates, firms may have removed any risk component within their discount rates. This implies that the decrease in the discount rate in 1993 was affected by firm risk because firm risk affected the 1992 discount rate but not the 1993 discount rate. To the extent that this reasoning is true, however, the inclusion of the 1992 discount rate in the regression estimated to test hypotheses one, two, and three should control for any impact that firm risk has on the change in the discount rate. As a result, it appears as if any conclusions drawn previously should not be altered because of the impact of firm risk.

¹⁹ The Standard and Poor's debt rating works as follows: A firm with a rating of Aaa (i.e., low risk) would be coded as a 2, a firm with a rating of Aa would be coded as a 3, and so on.

Table 7
Correlations between discount rates and debt ratings

	DIS92	DIS93	RATING92	RATING93
DIS92	1.00			
DIS93	.24 ^c	1.00		
RATING92	.12 ^b	-.02	1.00	
RATING93	.08	.02	.98 ^c	1.00

^{a(b)(c)} significant at less than the .10(.05)[.01] level

The variables in table 7 are defined as follows:

DIS92 1992 discount rate;

DIS93 1993 discount rate;

RATING92 Standard and Poor's debt rating for 1992;

RATING93 Standard and Poor's debt rating for 1993.

5.2.6 Analysis of firms lost in sample selection

As mentioned in chapter four, firms with 1992 discount rates below eight percent are eliminated from the sample in order to leave only those firms that have a decision to comply or not with the SEC's recommendation. This results in a loss of 151 firms. An issue that arises as a result of this elimination is whether the eliminated firms differ systematically from the firms that remain in the sample and whether this difference impacts the testing of hypotheses one, two and three. For example, one could argue that those firms that would face a high potential for SEC scrutiny given an SEC recommendation could have already reduced their discount rates in a prior year to avoid such future scrutiny. If this is the case, then the ability to detect a relation between compliance and the potential for scrutiny is limited, for those firms with a high potential for scrutiny have already complied. Table 8 presents a comparison of firms grouped by 1992 discount rates.

The first three variables in Table 8 indicate that firms with discount rates equal to or above eight percent are similar to firms with discount rates below eight percent with respect to the size of the accumulated benefit obligation, the assets contributed to the plan, and the funding ratio. However, the two groups are not similar with respect to the adjusted funding ratio. Firms choosing higher discount rates have significantly smaller adjusted funding ratios ($p < .01$). This result is consistent with the significantly negative correlation ($p < .01$) between independent regression variables AFR and DR found in Table 4 and further corroborates the claims of Feldstein and Morck (1983) that firms manipulate their funded status through discount rate choice.

Although the absolute sizes of the average pension liability and the average plan assets are similar across groups, the pension plans of firms choosing higher discount rates are significantly more material to their overall financial positions. Pension expense divided by net income before pension expense and the adjusted liability divided by total assets are both significantly greater ($p < .01$ and $p < .10$, respectively) for firms

Table 8
Descriptive statistics for firm groups based on 1992 discount rate

mean (median) [std dev]

Variable	Firms ≥ 8.0% n=600	Firms < 8.0% n=151
ABO	499 (53) [1859]	618 (39) [1713]
Plan assets	643 (69) [2537]	771 (58) [2123]
Reported funding ratio	1.30 (1.25) [.439]	1.34 (1.30) [.179]
AFR	1.09 ^c (1.05) [.378]	1.29 (1.25) [.389]
PE	.24 ^c (.08) [.812]	.13 (.07) [.179]
Psize	.16 ^a (.11) [.170]	.13 (.10) [.146]
Total assets	3596 (723) [11228]	3370 (703) [6255]
Scrutiny	30476 (5940) [97685]	24588 (5170) [45703]
Leverage	.28 ^a (.28) [.207]	.25 (.26) [.200]
Capital	-41 (-1) [403]	-25 (-1) [186]
Salary rate	5.55 ^b (5.50) [.802]	5.40 (5.25) [.865]
Rate of return	9.19 ^c (9.00) [.891]	8.50 (8.50) [.927]

^{a(b)(c)} significantly different across groups at less than the .10(.05)[.01] level

with higher discount rates. This result supports the inclusion of control variables in the regression testing hypotheses one through three.

Firms with discount rates above eight percent also have higher leverage ($p < .10$) than firms with lower discount rates. This difference is consistent with hypothesis two, which predicts that firms with high leverage will be hesitant to comply with the SEC's recommendation. It appears that firms with lower leverage have already reduced their discount rates, thus leaving a subset of firms for the final sample that face similar incentives with respect to leverage. The resulting sample of relatively highly leveraged firms may therefore inhibit the ability to detect a relation between leverage and compliance and could explain the weak support for hypothesis two.

5.3 Results for tests of smoothing

The final empirical question arising from the SEC's recommendation that was developed into hypothesis four is whether firms that complied with the recommendation smoothed the negative effect by decreasing their salary rates. As discussed in section 5.1, descriptive statistics are consistent with firms using the salary rate in this manner. Table 2 reports that the mean salary rate decreased from 5.55% in 1992 to 4.93% in 1993. In addition, Table 3 illustrates that this decrease in the salary rate was much more pronounced than in prior years, both in the magnitude of the decrease and in the percentage of firms making a change. The following paragraphs discuss the results of the multivariate regression estimated to answer hypothesis four.

Table 9 presents the correlation matrix of independent variables included in the multivariate regression specified in chapter four. As seen in the table, multicollinearity does not appear to be an issue with respect to the majority of variables as most correlations are insignificantly different from zero. However, there are highly significant correlations between total assets and both the variance of earnings ($r = .56$, $p < .001$) and the reduction in employees ($r = -.42$, $p < .001$). In addition, the individual t-statistics for both variables are less than .21 when the regression is

estimated, and the overall results of the regression are unchanged when the variables are excluded. Thus, given that total assets may proxy for both variables, where larger firms have a higher variance in earnings and larger reductions in employees, the regression testing hypothesis four is estimated and reported without the variance of earnings and the reduction in employees as independent variables.

Table 10 reports the results of the multivariate regression estimated for hypothesis four. Predicted signs and definitions of all variables included in the regression are summarized in Figure 3. There are two items to note before discussing the results of the regression. First, Table 10 reports regression results excluding industry dummy variables. Results including such dummies are similar to those reported in the table. Second, only 373 of the possible 600 firms are used in the regression estimation because institutional ownership data from Moody's is available for only 378²⁰ firms. To the extent that the firms included in Moody's differ systematically from firms not included in Moody's with respect to other financial characteristics such as discount rates, pension plans and firm size, the remaining sample may inhibit correct inferences about hypothesis four. A comparison of values for each of the regression variables for firms with and without institutional ownership data reveals no significant differences across any variable except for firm size, which is expected given that Moody's tends to follow larger firms. Thus, the reduction in the sample size does not appear to be problematic for test of hypothesis four.

The results reported in Table 10 are consistent with hypothesis four²¹. The coefficient on the change in the discount rate is positive and highly significant, indicating that firms that decreased their discount rates in compliance with the SEC's

²⁰ Only 373 of the 378 firms with institutional ownership data are used in the regression estimation due to missing data for other regression variables.

²¹ The null of no heteroskedasticity for White's (1980) test is not rejected at the .10 level.

Table 9
Correlation matrix

	Δ DR	SIZE	PE	UEARN	VAR	DOWN SIZE	INS OWN	SR
Δ DR	1.00							
SIZE	-.10 ^b	1.00						
PE	-.02	-.01	1.00					
UEARN	-.03	.03	-.06	1.00				
VAR	-.08 ^a	.56 ^c	-.01	.01	1.00			
DOWN SIZE	.03	-.42 ^c	.00	.06	-.48 ^c	1.00		
INS OWN	.02	.06	.00	.14 ^c	.06	-.03	1.00	
SR	.02	.02	.00	-.05	-.00	-.02	.08	1.00

^{a(b)(c)} significant at less than the .10(.05)[.01] level

The variables in table 9 are defined as follows:

Δ DR	Change in 1993 discount rate;
SIZE	Total assets;
PE	Absolute value of pension expense divided by absolute value of net income before pension expense;
UEARN	Dummy variable taking the value of one if the 1994 earnings surprise is negative, zero otherwise;
VAR	Standard deviation of the past five years of earnings;
DOWNSIZE	Change in number of employees;
INSOWN	Common shares held by institutions divided by total common shares;
SR	1992 salary rate.

Variable	Definition	Predicted sign
ΔDR	Change in the discount rate	+
INSOWN	Common shares held by institutional investors divided by total common shares outstanding	+
UEARN	Dummy variable taking the value of one if the 1994 earnings surprise is negative, zero otherwise	+
SIZE	Total assets	-
PE	Absolute value of pension expense divided by the absolute value of net income before pension expense	-
SR	1992 salary rate	-

Figure 3
Predicted signs for hypothesis four regression coefficients

Table 10
Regression results for hypothesis four

$$\Delta SR_i = \alpha_i + \beta_1 \Delta DR_i + \beta_2 INSOWN_i + \beta_3 UEARN_i + \beta_4 SIZE_i + \beta_5 PE_i + \beta_6 SR_i + \epsilon_i$$

Adjusted R² = .37
n=373

Independent Variables	Coefficients	Standard errors	T-statistics	P-values ^a
Intercept	2.08	0.22	9.65	.001
ΔDR	0.46	0.06	7.80	.001
INSOWN	0.15	0.12	1.29	.098
UEARN	0.09	0.06	1.55	.061
SIZE	-0.00	0.00	-1.24	.109
PE	-0.04	0.02	-1.85	.033
SR	-0.43	0.04	-12.02	.001

^a P-values are one-sided for all variables

The variables in table 10 are defined as follows:

ΔSR Change in the salary rate;
 ΔDR Change in the discount rate;
 INSOWN Common shares held by institutional investors divided by total shares;
 UEARN Dummy variable taking the value of one if the 1994 earnings surprise is negative, zero otherwise;
 SIZE Total assets;
 PE Absolute value of pension expense divided by the absolute value of net income before pension expense;
 SR 1992 salary rate;
 i Firm index.

recommendation decreased their salary rates to offset the negative effect from compliance. All control variables also have their predicted signs and are significant at $p = .109$ or lower for one-sided tests. In other words, firms with smaller institutional ownership (INSOWN), negative future transitory earnings (UEARN), larger total assets (SIZE), more material pension plans relative to overall financial position (PE)²², and higher 1992 salary rates (SR) were more likely to smooth the effect of compliance with the SEC's recommendation.

The dependent variable in the above regression, ΔSR , has a large number of observations with the value of zero. Of the 373 sample firms used in the estimation, 133 did not change their salary rate during 1993. Ordinary Least Squares (OLS) regression estimates can be biased if the dependent variable is limited in some way [Kennedy (1993)]. To ascertain the sensitivity of the above OLS results to this potential bias, the regression is also estimated using Tobit. The Tobit procedure is normally used for data with either censored or truncated dependent variables that arise from the unobservability of the dependent variable above or below some threshold or the unobservability of the independent variable above or below some threshold, respectively [Kennedy (1993), Maddala (1991)]. The procedure is therefore not always appropriate for data sets whose dependent variable contains a large number of *observed* values, in this case zero, at one extreme of its range of values [Maddala (1991)]. However, estimation of the above regression using Tobit provides a reasonable check against the possibility that the OLS regression results are biased and misleading.

Table 11 contains the Tobit results. As seen in the table, the results are similar to the OLS results in Table 10. The coefficient on the change in the discount rate continues to be positive and highly significant, and the coefficients on the control

²² Of the 373 firms employed in the regression estimation, 73 reported negative pension expense. Estimating the regression excluding these firms produces qualitatively similar results.

Table 11
Tobit regression results

$$\Delta SR_i = \alpha_i + \beta_1 \Delta DR_i + \beta_2 INSOWN_i + \beta_3 UEARN_i + \beta_4 SIZE_i + \beta_5 PE_i + \beta_6 SR_i + \varepsilon_i$$

Independent Variables	Coefficients	Standard errors	T-statistics	P-values ^a
Intercept	3.69	0.36	10.10	.001
ΔDR	0.55	0.09	5.77	.001
INSOWN	0.08	0.18	0.47	.321
UEARN	0.20	0.09	2.19	.014
SIZE	-0.00	0.00	-2.59	.005
PE	-0.05	0.03	-1.56	.059
SR	-0.62	0.06	-10.34	.001

^a P-values are one-sided for all variables

The variables in table 11 are defined as follows:

ΔSR	Change in the salary rate;
ΔDR	Change in the discount rate;
INSOWN	Common shares held by institutional investors divided by total shares;
UEARN	Dummy variable taking the value of one if the 1994 earnings surprise is negative, zero otherwise;
SIZE	Total assets;
PE	Absolute value of pension expense divided by the absolute value of net income before pension expense;
SR	1992 salary rate;
i	Firm index.

variables continue to be directionally consistent with predictions. Thus, it appears that conclusions drawn from the OLS regression are appropriate. Firms that reduced their discount rates in compliance with the SEC's recommendation smoothed the effect of compliance by reducing the salary rate.

5.3.1 Results from additional smoothing tests

As discussed in chapter four, an alternative hypothesis to the claim that the coefficient on the change in the discount rate in the above regression is evidence of smoothing behavior is that the coefficient simply represents the positive correlation inherent in the two rates due to their common component. Data for the analysis of this alternative hypothesis is restricted to a randomly selected 277 firms from the total sample of 600 firms. The process of random selection is intended to avoid the existence of biases in the subset that might result in erroneous inferences about the whole sample. Table 12 presents a comparison of the 277 firms in the subset with the remaining 323 firms omitted from the analysis to confirm that the randomization worked. As seen in the table, the subset of firms is not significantly different from the remaining firms with respect to any financial variables of interest. Thus, the subset appears to be representative of the whole sample and should allow for valid inferences about the whole sample.

The alternative hypothesis is first addressed by examining the yearly correlations between changes in the discount rate and salary rate from 1988 to 1992. Table 13 presents these correlations. Each correlation in the table is based only on data from those firms with a non-zero change in either the discount rate or the salary rate for the given year. This restriction is imposed because inference is sought concerning the relation between changes in the two rates when some change is made in at least one rate. As seen in the table, correlations for three of the five years are not significantly different from zero at the $p < .10$ level. Further, the correlation in 1991 has a negative sign. As a whole, analysis of the history of these correlations does not generate the

Table 12
Comparison of subsample and non-subsample firms

mean (median) [std dev]

Variable	Firms in subsample n=277	Firms not in subsample n=323
ABO	546 (71) [2013]	593 (61) [2145]
Plan assets	655 (76) [2619]	724 (72) [2811]
Funded status	1.16 (1.13) [.358]	1.20 (1.16) [.362]
PE	.61 (.07) [5.21]	.37 (.08) [1.22]
Total assets	4313 (706) [17633]	3351 (745) [7145]
Discount rate	7.45 (7.50) [.425]	7.45 (7.50) [.377]
Change in discount rate	-.96 (-1.00) [.485]	-.93 (-1.00) [.465]
Salary rate	4.92 (5.00) [.836]	4.93 (5.00) [.776]
Change in salary rate	-.63 (-.50) [.692]	-.63 (-.50) [.643]

^{a(b)(c)} significantly different across groups at less than the .10(.05)[.01] level

Table 13
Yearly correlations between changes in discount rates and salary rates

1988-1992

Year	Correlation	P-value	N
1988	0.12	.257	91
1989	0.18	.073	99
1990	0.15	.132	97
1991	-0.04	.650	122
1992	0.24	.013	107

expectation of a highly significant coefficient on the change in the discount rate in the original smoothing regression.

The alternative hypothesis is further addressed by estimating the second regression specified in section 4.3.4 of chapter four. Table 14 presents the results of this estimation. The results first provide evidence on whether the relation between the change in the discount rate and the change in the salary rate was stronger in 1993 than in prior years. The coefficient on the change in the 1993 discount rate ($\Delta DR \cdot D_{1993}$) is significantly greater than zero at $p < .0001$, indicating that the relation was indeed more positive in 1993 than in prior years. This result rules out the alternative hypothesis that the coefficient on the change in the discount rate in the original smoothing regression was due solely to the normal relation between the two rates, thus allowing for the conclusion that the salary rate was reduced to smooth the negative effect of compliance with the SEC's recommendation.

The results in Table 14 also provide evidence on the reasonableness of the expectation of the change in the salary rate developed in chapter four for purposes of measuring the dependent variable for the original smoothing regression. The coefficient on the change in the Consumers' Price Index (ΔCPI) is positive and significant, indicating that changes in the salary rate from 1987 to 1992 were positively related to changes in the CPI over the same period. Because the change in the CPI was zero for 1993, the positive relation in prior years suggests that the change in the salary rate in 1993 should tend towards zero as well. Thus, the data is consistent with the expectation that the change in the salary rate for 1993 should be zero in the absence of smoothing behavior.

Table 14
Regression results for alternative hypothesis for hypothesis four

$$\Delta SR_{i,t} = \alpha_{i,t} + \beta_1 \Delta DR_{i,t} + \beta_2 D_{1993} + \beta_3 \Delta DR_{i,t} * D_{1993} + \beta_4 \Delta CPI_t + \varepsilon_i$$

Adjusted R² = .22
n = 1409

Independent Variables	Coefficients	Standard errors	T-statistics	P-values
Intercept	-0.07	0.01	-4.91	.001
ΔDR	0.19	0.03	5.59	.001
D_{1993}	-0.07	0.07	-1.08	.281
$\Delta DR * D_{1993}$	0.31	0.07	4.41	.001
ΔCPI	0.06	0.02	3.35	.001

The variables in table 14 are defined as follows:

ΔSR Change in the salary rate;
 ΔDR Change in the discount rate;
 D_{1993} Dummy variable taking the value of one if 1993, zero otherwise;
 ΔCPI Change in the Consumers' Price Index;
i Firm index;
t Year index, 1988-1993.

5.3 Summary

This chapter contains the results of tests of hypotheses one through four. Hypothesis one predicts that compliance with the SEC's recommendation is increasing in the potential for being a target of SEC scrutiny. The data are consistent with this hypothesis. Hypothesis two predicts that compliance is decreasing in leverage. The data are also consistent (weakly) with this hypothesis. Hypothesis three predicts that compliance is increasing in the adjusted funding ratio. The data are inconsistent with this hypothesis. However, to the extent that the adjusted funding ratio is a proxy for political sensitivity, the results for hypothesis three are consistent with the political cost hypothesis. Hypothesis four predicts that those firms that comply with the recommendation will smooth the effect by reducing the salary rate. The data are consistent with this hypothesis. Concluding remarks are contained in chapter six.

Chapter Six

CONCLUSIONS

This study examines firm response to a September, 1993 letter written by the Chief Accountant of the Securities and Exchange Commission (SEC) recommending that firms reduce their assumed pension discount rates for 1993. The study provides answers to the following empirical questions that arise as a result of the recommendation. First, what are the implications of an SEC recommendation? Does a recommendation from the SEC have enough influence to alter an accounting choice that negatively impacts reported expenses and liabilities. Second, why is there variation, if any, in the degree of compliance across firms? Did factors suggested by existing theory and prior results from pension research influence the degree of compliance? Third, given that firms complied with the recommendation to some degree, did some firms alter other accounting choices to mitigate the effect of compliance?

Section 6.1 summarizes the research findings to the above questions. Section 6.2 lists the contributions of the study to existing accounting research. Suggestions for future research are contained in section 6.3.

6.1 Summary of research findings

As stated above, one of the first empirical questions arising from the SEC's recommendation is whether such a recommendation contained enough influence to alter accounting choice. The data in the study are consistent with the SEC's recommendation having a substantial impact on accounting choice. The decrease in the discount rate for 1993 for the average firm is approximately one percent. This decrease translates into a significant decrease in the reported funded status for the average firm. In addition, the decrease in the discount rate is much more pronounced than in prior years, both in the magnitude of the change and in the percentage of firms making a change. This result illustrates that the change in the discount rate for 1993

was well outside the historical trend, suggesting the introduction of an outside influence in 1993, namely the SEC recommendation, which significantly altered accounting choice.

The second empirical question is whether the extent of compliance with the recommendation can be explained by factors suggested by existing theory and pension research. This question is addressed by hypotheses one, two and three. Hypothesis one predicts that compliance with the SEC's recommendation is positively associated with the potential for being a target of SEC investigation. The data are consistent with this hypothesis. Larger firms appear to have complied with the recommendation to a greater extent to avoid being a target of SEC investigation. This result is consistent with the political cost hypothesis of positive accounting theory.

Hypothesis two predicts that compliance with the SEC's recommendation is negatively associated with leverage. The data are weakly consistent with this hypothesis. Firms with higher leverage appear to have complied to a lesser extent to avoid the reduction to earnings and the subsequent costs of tightening debt covenants. This result is consistent with the debt-equity hypothesis of positive accounting theory.

Hypothesis three predicts that compliance with the SEC's recommendation is positively associated with the adjusted funding ratio. The data are inconsistent with this hypothesis. Firms with low adjusted funding ratios appear to have complied to a greater extent than firms with high adjusted funding ratios. This result is interpreted as consistent with the political cost hypothesis. Given that the adjusted funding ratio proxies for political sensitivity to the SEC in the pension area, firms with greater sensitivity, as measured by a low adjusted funding ratio, appear to have complied with the SEC's recommendation to a greater extent to reduce the political costs associated with the SEC scrutiny.

The final empirical question of whether those firms that complied with the recommendation altered other accounting choices to mitigate the effect from

compliance is addressed by hypothesis four. Hypothesis four predicts that firms with incentives to report smooth earnings who lower their discount rate in compliance with the SEC are more likely to lower their salary progression rate. For 1993, the average decrease in the salary rate is approximately one-half percent. This decrease is much more pronounced than in prior years, both in the magnitude of the change and in the percentage of firms making a change. This break from the historical trend is consistent with hypothesis four. Regression results are also consistent with hypothesis four. Firms appear to have smoothed the effect of compliance by reducing the salary progression rate. This result is consistent with the smoothing hypothesis.

6.2 Contributions

This study contributes to the accounting research literature in several ways. First, the study highlights the difference between the discount rate chosen under Statement of Financial Accounting Standards No. 87, "Employers' Accounting for Pensions" (FAS 87) and the funding interest rate chosen under the Employee Retirement Income Security Act of 1974 (ERISA). An important aspect of this difference is that a change in the discount rate has no direct cash flow effects. Cash flows are affected by statutory funding requirements, which are determined by the funding interest rate, not the discount rate. As a result, the study illustrates that care must be taken by both academic researchers and the popular press in characterizing the effect on cash flows from a change in actuarial assumptions under FAS 87.

Second, the study illustrates that the SEC has a substantial impact on accounting choice. While this result is perhaps not surprising, the means to the end result is somewhat surprising. Accounting choice studies are usually conducted around events such as pronouncements from the Financial Accounting Standards Board, Financial Reporting Releases by the SEC, or some other statement emerging from the official processes of a regulatory body. This study illustrates that accounting choice can also be affected by non-official statements such as a letter from the Chief Accountant of the

SEC. As a result, the study should impel researchers to investigate accounting choice in a much wider array of settings, thus providing a richer understanding of how accounting choices are made.

Third, the study provides further evidence consistent with both the political cost and debt-equity hypotheses of positive accounting theory as well as the smoothing hypothesis. As the study employs a unique setting, a recent time period, and an accounting choice in the pension area, the study helps to establish the robustness of these three hypotheses across different settings, different time periods, and different accounting choices.

6.3 Suggestions for future research

One of the objectives of the SEC's letter was to tie the discount rate to the rate of return on high quality fixed income investments. An extension of this research is to examine the movement of discount rates subsequent to 1993 to ascertain how well they correspond to the SEC's benchmark rate. Deviations from the benchmark may be systematically related to financial and/or non-financial aspects of firms.

Another direction for future research is to examine the reaction of the market to the changes in the discount rates brought on by the SEC's recommendation. Feldstein and Morck (1983) find that pension liabilities are impounded into market values at a common discount rate. However, this result is found when pensions are governed by Accounting Principles Board Opinion 8. Does the market continue to impound pension liabilities at a common rate given the SEC's recommendation and is that common rate equal to the SEC's benchmark?

Finally, searches for other statements made by the SEC outside its normal policy-making process can be conducted to identify additional ways in which the SEC affects accounting choice. Gaining a better understanding of the SEC's impact on accounting choice may provide a better understanding of the political cost hypothesis and lead to stronger tests of the hypothesis.

LIST OF REFERENCES

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- Accounting Principles Board, 1966, Opinion No. 8: Accounting for the cost of pension plans.
- Ali, A., and K.R. Kumar, 1993, Earnings management under pension accounting standards: SFAS 87 versus APB 8, *Journal of Accounting Auditing and Finance*, 427-446.
- American Institute of Certified Public Accountants, 1993, Audit Risk Alert-1993, 11-3.
- Ball, R. and G. Foster, 1982, Corporate financial reporting: A methodological review of empirical research, *Journal of Accounting Research*, 161-234.
- Bange, M.M. and W. De Bondt, 1995, R&D-budgets and corporate earnings targets, working paper.
- Barth, M.E., 1991, Relative measurement errors among alternative pension asset and liability measures, *The Accounting Review*, 433-463.
- Barth, M.E., J.A. Elliott and M.W. Finn, 1992, Market rewards for increased earnings patterns, working paper.
- Beattie, V., S. Brown, D. Ewers, B. John, S. Manson, D. Thomas and M. Turner, 1994, Extraordinary items and income smoothing: A positive accounting approach, *Journal of Business Finance and Accounting*, 791-811.
- Bernard, V., 1989, Capital markets research in accounting during the 1980's: A critical review, in *The State of Accounting Research as We Enter the 1990's*, University of Illinois, 72-120.
- Blankley, A.I. and E.P. Swanson, 1995, A longitudinal study of SFAS 87 pension rate assumptions, *Accounting Horizons*, 1-21.

- Bodie, Z., J. Light, R. Morck and R.A. Taggart, 1985, Corporate pension policy: An empirical investigation, *Financial Analysts Journal*, 10-16.
- Buck Consultants, Inc., 1995, Economic Pension Actuarial Assumptions Survey - 1993.
- Buck Consultants, Inc., 1994, The Health of America's Pension Plans - 1993.
- Christie, A.A., 1990, Aggregation of test statistics: An evaluation of the evidence on contracting and size hypotheses, *Journal of Accounting and Economics*, 15-36.
- Coopers & Lybrand, 1994, Audit Committee Update 1994, 17.
- Duke, J.C. and H.G. Hunt III, 1990, An empirical examination of debt covenant restrictions and accounting-related debt proxies, *Journal of Accounting and Economics*, 45-63.
- Dye, R.A., 1988, Earnings management in an overlapping generations model, *Journal of Accounting Research*, 195-235.
- Employee Retirement Income Security Act, 1974 (Washington, D.C.).
- Feldstein, M. and R. Morck, 1983, Pension-funding-decisions, interest rate assumptions, and share prices, In *Financial Aspects of the United States Pension System*, (Z. Bodie and J. Shoven, eds.), (Chicago, University of Chicago Press), 177-207.
- Feroz, E.H., K. Park and V.S. Pastena, 1991, The financial and market effects of the SEC's accounting and auditing enforcement releases, *Journal of Accounting Research*, 107-142.
- Financial Accounting Standards Board, 1980, Statement of Financial Accounting Standard No. 35: Accounting and reporting by defined benefit pension plans (FASB, Stamford, CT).
- Financial Accounting Standards Board, 1980, Statement of Financial Accounting Standard No. 36: Disclosure of pension information (FASB, Stamford, CT).
- Financial Accounting Standards Board, 1985a, Statement of Financial Accounting Standard No. 87: Employers' accounting for pensions (FASB, Stamford, CT).

- Financial Accounting Standards Board, 1985b, Statement of Financial Accounting Standard No. 88: Employers' accounting for settlements and curtailments of defined benefit pension plans and for termination benefits (FASB, Stamford, CT).
- Fogarty, T.J. and J. Grant, 1995, Impact of the actuarial profession on financial reporting, *Accounting Horizons*, 23-33.
- Francis, J.R. and S.A. Reiter, 1987, Determinants of corporate pension funding strategy, *Journal of Accounting and Economics*, 35-59.
- Hand, J., 1989, Did firms undertake debt-equity swaps for an accounting paper profit or true financial gain?, *The Accounting Review*, 587-623.
- Harper, R.M. and J.R. Strawser, 1993, The effect of SFAS 87 on corporate funding of defined benefit pension plans, *Journal of Business Finance and Accounting*, 815-833.
- Healy, P.M. and K.G. Palepu, 1990, Effectiveness of accounting-based dividend covenants, *Journal of Accounting and Economics*, 97-123.
- Hepworth, S.R., 1953, Periodic income smoothing, *The Accounting Review*, 32-39.
- Holthausen, R.W. and R.W. Leftwich, 1983, The economic consequences of accounting choice, *Journal of Accounting and Economics*, 77-117.
- Howe, J.S. and G.G. Schlarbaum, 1986, SEC trading suspensions: Empirical evidence, *Journal of Financial and Quantitative Analysis*, 323-334.
- Jensen, M.C. and W.H. Meckling, 1976, Theory of the firm: Managerial behavior, agency costs and ownership structure, *Journal of Financial Economics*, 305-360.
- Jereski, L. "SEC is challenging funding for plans," *The Wall Street Journal*, November 7, 1993.
- Karr, A.R. and E.E. Schultz, "Stealth legislation: Pension rules tacked quietly on trade bill portend vast changes," *The Wall Street Journal*, March 15, 1995.
- Kennedy, P., 1993, A guide to econometrics - Third edition (The MIT Press, Cambridge, MA).
- Key, K., 1995, Political cost incentives for earnings management in the cable television industry, working paper.

- Kile, C., 1993, An analysis of the impact of omitted evaluative information on financial reporting: Evidence from disclosures to amend management's discussion and analysis, working paper.
- Maddala, G.S., 1991, A perspective on the use of limited-dependent and qualitative variable models in accounting research, *The Accounting Review*, 788-807.
- Moses, O.D., 1987, Income smoothing and incentives: Empirical tests using accounting changes, *The Accounting Review*, 358-377.
- Nourayi, M.M., 1994, Stock price responses to the SEC's enforcement actions, *Journal of Accounting and Public Policy*, 333-347.
- Press, E.G. and J.B. Weintrop, 1990, Accounting-based constraints in public and private debt agreements, *Journal of Accounting and Economics*, 65-95.
- Ronen, J. and S. Sadan, 1981, Smoothing income numbers (Addison-Wesley)
- Schipper, K., 1989, Commentary on earnings management, *Accounting Horizons*, 91-102.
- Skousen, K.F., 1991, An introduction to the SEC: Fifth edition (South-Western Publishing, Cincinnati, Ohio).
- Stone, M., 1982, A survey of research on the effects of corporate pension plan sponsorship: Implications for accounting, *Journal of Accounting Literature*, 1-33.
- Stone, M. and R.W. Ingram, 1988, The effect of Statement No. 87 on the financial reports of early adopters, *Accounting Horizons*, 48-61.
- Suh, Y.S., 1990, Communication and income smoothing through accounting method choice, *Management Science*, 704-723.
- Thomas, J.K., 1988, Corporate taxes and defined benefit pension plans, *Journal of Accounting and Economics*, 199-237.
- Trueman, B. and S. Titman, 1988, An explanation for accounting income smoothing, *Journal of Accounting Research*, 127-139.
- U.S. Department of Labor, Bureau of Labor Statistics, Bulletin 2426, 1993.
- Watts, R.L. and J.L. Zimmerman, 1978, Towards a positive theory of the determination of accounting standards, *The Accounting Review*, 112-134.

- Watts, R.L. and J.L. Zimmerman, 1986, Positive accounting theory (Prentice Hall, Englewood Cliffs, NJ).
- Watts, R.L. and J.L. Zimmerman, 1990, Positive accounting theory: A ten year perspective, *The Accounting Review*, 131-156.
- Winklevoss, H.E., 1993, Pension mathematics with numerical illustrations, second edition, (Irwin, Homewood, IL).
- Wong, J., 1988, Political costs and intraperiod accounting choice for export tax credits, *Journal of Accounting and Economics*, 37-51.

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