The Determinants of the Market Reaction to an Announcement of a Change in Auditor

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(ABSTRACT)

The Securities and Exchange Commission (1974) has stated that the one of the fundamental underpinnings of federal securities law is the external auditor opinion of registrant financial statements. The SEC believes that the corporate practice of voluntary auditor change may be perceived by the investing public as attempted opinion shopping. The monitoring hypothesis of Jensen and Meckling (1976), on the other hand, posits that companies may change auditors in an attempt to control net agency costs. The objective of this dissertation is determine if the monitoring hypothesis is descriptive of the phenomenon of voluntary auditor change.

The monitoring hypothesis posits that changes in net agency costs are related to the change in auditor quality at the time of an auditor change, and that both changes in agency costs and change in auditor quality are related to the market reaction to the auditor change.

Auditor changes from 1980 to 1986 for New York Stock Exchange and American Stock Exchange companies were analyzed. The results indicate that changes in agency costs are related to change in auditor quality, as measured by the difference, from the old auditor to the new, in the auditor's share of the industry audit fees for the company that is changing auditors. Significant variables that measure changes in agency costs are

growth in company sales, change in long-term compensation plans, and change in the dividend payout ratio.

The results also indicate that changes in agency costs are related to market reaction to a change in auditors, but that the change in auditor quality is not. Variables that are significant in explaining the relationship are change in the debt ratio, change in the holdings of the largest stockholder, and prior receipt of a qualified opinion or disclosure of a disagreement between the company and the previous auditor.

The results provide strong support for the monitoring hypothesis and weak support for the opinion shopping hypothesis.

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1.0 Statement of the Problem

1.1 Introduction.

The stock market crash of Tuesday, October 24, 1929, followed a period of heavy stock speculation. The investor behavior that led to this collapse was the result of "... the existence of meaningless, inadequate, and misleading financial information" (Buckley, Buckley, and Plank, 1980, p. 8). A campaign plank of Franklin D. Roosevelt, elected president of the United States in 1932, was to regulate the securities market through disclosure requirements. This philosophy was embodied in the securities acts that were a part of the New Deal (Soderquest, 1988).[1] The Securities and Exchange Commission (SEC) was created in 1934[2] with the intent to "... proscribe activities that were viewed as being detrimental to the public interest, (2) to prescribe practices that allow investors to make informed decisions, and to create a means for enforcing the laws" (Buckley, Buckley, and Plank, 1980, p. 1). The SEC attempts to ensure "full and fair" disclosure of all material facts concerning securities offered for public investment by requiring corporate disclosures of many different activities (such as securities registration, economic and financial reporting, and proxy solicitation) and by attempting to

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[1] The securities acts were (1) Securities Act of 1933, (2) Glass-Steagall Act of 1933, (3) Securities Exchange Act of 1934, (4) Public Holding Act of 1935, (5) Trust Indenture Act of 1939, (6) Investment Company Act of 1940, and (7) Investment Advisers Act of 1940.

[2] Securities Exchange Act of 1934, §4.

create fair markets (through regulation and surveillance of national securities exchanges and of registered brokers and dealers).

The SEC verifies that its disclosure requirements are being met by reporting companies, but does not itself verify the truthfulness of individual disclosures. Rather, the SEC holds investment bankers responsible for certifying registration statements, and independent public accountants (auditors) responsible for certifying financial disclosures. Of particular relevance to this study is the importance of the auditor. As stated in Securities Act Release (SAR) 5534 (SEC, 1974), it is:

> One of the underpinnings of the Commission's administration of the disclosure requirements of the federal securities law is its reliance on the reports of independent public accountants on the financial statements of the registrants. These reports provide the assurance of an outside expert's examination and opinion, thereby substantially increasing the reliability of financial statements.

The importance of the auditor to the disclosure process is well recognized.

The auditor of record is tracked for publicly traded companies by the financial community.[3] After examining the company financial report and the accounting systems that produced it, the auditor offers an opinion on whether the financial condition of the company is fairly presented. The auditor's opinion can take four forms: (1) clean - the auditor believes that the financial report is fair, (2) qualified - the report is fair but deficient in some way, such as choice of an accounting policy that does not conform to generally accepted accounting principles, (3) adverse - the report is not fair: for example, the reports may be materially misleading because the company's accounting policies do not conform to generally accepted accounting principles, or (4) disclaimer - the auditor is unable to form an opinion on the financial report, such as when the auditor's independence is impaired. Research indicates that investors find the audit opinion to be useful information and react to changes in it.[4] Therefore, it has been conjectured that

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[3] Principle publications that track the auditor of record (and changes thereof) are *Who Audits America*, *Who Audits the World*, and the *Public Accounting Report*.

[4] Dopuch, Holthausen, and Leftwich (1986) found a negative market reaction to a disclosure of an auditor opinion changing from clean to qualified.

corporate management teams are willing to pay a premium in order to keep or acquire a clean opinion. Given the prospect of receiving a qualified opinion, management may alter strategy, change accounting policies to conform to the auditor's preferences, attempt to influence the auditor from issuing a qualified opinion, or perhaps even change auditors.

According to the *Public Accounting Report* (1988a, 1988c), corporations are changing their auditors at a record rate.[5] The *Public Accounting Report* surveys all companies changing auditors each year and reports the most popular reasons volunteered by corporations making auditor changes during 1987 to be cost (29%), service (15%), consolidation (15%), firm size (13%), location (11%), and rotation policy (10%) (*Public Accounting Report*, 1988b). These percentages have stayed fairly constant over time.

The reasons given by a company for a change in auditor may not tell the whole truth, however. The Securities and Exchange Commission (SEC, 1974) believes that auditor changes may be perceived as attempted opinion shopping, in spite of company claims to the contrary. Because the fact and appearance of auditor independence is essential to the public reliance on SEC administered disclosures (SEC, 1975), the SEC has responded to the above trend by issuing several regulations requiring disclosures about the circumstances surrounding the auditor change [Exchange Act Release (EAR) 9344, 1971; Accounting Series Release (ASR) 165, 1974; ASR 194, 1976; ASR 247, 1978; Financial Reporting Release (FRR) 31, 1988; and FRR 34, 1989].[6] The rationale for these disclosure requirements is that placing the company's action of changing auditors under public scrutiny should discourage opinion shopping because when investors examine the

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[5] According to the *Public Accounting Report*, there were 737 changes in 1986, 719 changes in 1987, and 679 changes during the first six months of 1988.

[6] This stream of regulations is reviewed in Section 2.4 of the dissertation.

disclosures they will have knowledge of the circumstances surrounding the auditor change and may attribute negative motivation to the change. That is, investors that perceive a change in auditor to be motivated by opinion shopping will react negatively because of a presumably less reliable set of financial disclosures and the potential for management manipulation and fraud (Fried and Schiff, 1981).

If SEC disclosure requirements have been successful, then companies will not change auditors for opinion shopping reasons except in extreme cases where the benefits to be accrued from changing auditors will outweigh the costs of a negative public reaction. In the absence of perceived opinion shopping, investors will be able to process the information from the auditor change disclosure and react according to other perceived motivation(s) for the change.

1.2 Background.

1.2.1 Circumstances surrounding the change in auditor.

The management of a company is primarily responsible for the selection of the auditor, even though many companies have formal procedures that involve the audit committee and stockholders.[7] The auditor serves at the pleasure of the company's management and is often retained indefinitely. Only rarely will the auditor resign. For

[7] If a company has an audit committee, selection of the company's auditor is generally one of its responsibilities (Jenkins and Robinson, 1985). In practice, this often means making a recommendation to management or else formally approving management's choice (Schroeder, Solomon, and Vickrey, 1986). The stockholders occasionally have the opportunity to ratify this selection when exercising their proxies, but apparently do not have the opportunity to vote between two or more auditors that have been nominated.

companies that contemplate a change in auditor, management will initiate a search for a new auditor at some point in time. One or more potential auditors may be interviewed. If benefits are judged to outweigh costs, management will decide to discharge the old auditor and engage a new auditor firm. This action will then be formally ratified by the board of directors and/or a key committee, i.e., the executive committee or the audit committee. Prior to 1989, which encompasses the period of this dissertation, the change in auditor was required to be be disclosed to the SEC within fifteen calendar days on form 8-K.[8] In 1989, however, the SEC (1989) reduced the filing time to five business days. After the 8-K is filed, the SEC makes it available to the public.

1.2.2 Why do companies change their auditor?

No general theory explaining why companies change auditors has yet emerged (Knapp and Elikai, 1988), although several motivations for why companies use auditors (Wallace, 1980, 1987) can be applied to the auditor change event. The principle motivations that have been suggested for why a company would change auditors are (1) signalling, (2) insurance, (3) monitoring, and (4) opinion shopping.[9]

The signalling hypothesis addresses an argument that managers have incentives to disclose projected superior future performance in order to distinguish the company and

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[8] The SEC considers both the discharge and the engagement to be reportable events. Although this could necessitate the filing of two 8-Ks, the formal ratifications of the events almost always occur simultaneously. Hence, only one 8-K is usually filed to report the auditor change.

[9] Several other reasons have been suggested for why a company might change its auditor. Companies that changed auditors have been surveyed (Carpenter and Strawser, 1971; Bedingfield and Loeb, 1974; and *Public Accounting Report*, 1988b) and have indicated that at least one of the following factors were considered in their decision: (1) change in management, (2) size of fees, (3) investment bankers insisting on a national auditing firm, (4) disagreements, (5) dissatisfaction with prior auditor, (6) desire for a national auditing firm, (7) merger, (8) parent and subsidiary to have same auditor, (9) rotation policy, (10) change in location, (11) size of audit firm, (12) desire for additional services, and (13) audit partner retires or changes firm. Predictably, opinion shopping was not included as a reason for the change.

the management team from others. These superior prospects can be signalled by the managers paying a stiff premium for an investment banker or auditor that a less well off company could not afford (Bar-Yosef and Livnat, 1984). If a company already has an auditor, a change to a more expensive auditor can also signal positive future performance.

The insurance hypothesis represents an argument that managers hire auditors in part to shift financial responsibility for financial disclosures (Wallace, 1980). This is sometimes called "deep pockets," because in instances of business failure the auditor may be the only solvent party that investors and creditors can sue. In normal circumstances where the chance of a company going bankrupt is negligible, hiring an auditor for insurance purposes would not be considered important by the market and other motivations would govern auditor selection. In times of financial distress, however, a company may change auditors for insurance purposes (Schwartz and Menon, 1985). That is, a company in financial distress may change to a larger auditor because of the new audit firm's deeper pockets.

The monitoring hypothesis is based on the work of Jensen and Meckling (1976). They explain that the separation of control from ownership, as evidenced in the agency relationship between company management and outside investor-owners, naturally results in a problem of moral hazard. That is, management will not operate the company to satisfy outside investor-owners' goals; rather, the company will be run to satisfy management's goals. Management's interests can be aligned with investor-owners' interests through such means as partial ownership in the company, compensation based on performance, formal control systems, budget restrictions, and employment of a monitor that will observe management performance and report to the investors. Jensen

and Meckling suggest that auditors approximate the function of a monitor.[10] This occurs when auditors investigate company records and measures of internal control in order to form an opinion on the fairness of presentation of company financial reports.

Essential to this hypothesis is the notion of the perceived credibility of the monitor. Jensen and Meckling argue that the magnitude of outside investors' initial investment depends upon selection of a credible monitor by the original owner-manager. That is, when an owner-manager sells a portion of the ownership interest in the company, prospective investors will only consider paying minimal amounts unless the owner-manager can convince the investor that the owner-manager's information signals are trustworthy. One means of doing this is for the owner-manager to hire a monitor to verify the information reports. The impetus for hiring the monitor comes from the owner-manager because the owner-manager will receive more from selling the equity interest. The prospective investors do not have the incentive to hire the monitor because they are already price-protected (willing to pay only minimal amounts) if the owner-manager's claims are fictitious.

DeAngelo (1981a, 1981b) and Simunic and Stein (1986, 1987) argue, within an agency framework, that different levels of auditor credibility will be demanded by various managements and supplied by different auditor firms. This notion has been adapted by empirical researchers as a justification for why companies change auditors.[11] Their argument is based on the realization that the managerial contracting environment may change over time. This results in a perception (by management and investor-owners) that the magnitude of the future agency problem between management and investors has changed. The empirical researchers assert that managers change auditors to mitigate

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[10] In this paper, the terms monitor and auditor will be used interchangeably, even though other parties, such as investment bankers, boards of directors, and subordinate management also serve as monitors (Fama, 1980).

[11] This body of research is reviewed in Section 2.2.

potential agency problems between the managers and investor-owners.[12] In general, these empirical researchers have found results consistent with the hypotheses that the choice of successor auditor is related to levels of and changes in variables that proxy for agency costs.

As discussed before, the SEC (1974) believes that some companies that switch auditors may be perceived as opinion shopping. Ellingsen and Frederick (1986) describe opinion shopping to be when companies switch auditors in an attempt to receive permission to use a controversial accounting treatment. The new auditor may be coerced by the company into allowing the treatment or may truly believe that the new treatment is superior.

The monitoring hypothesis is the focus of this study for two reasons. First, it is a well developed hypothesis that is currently receiving much attention. Second, it has received empirical support, as described in Section 2.2.1

1.2.3 How do investors react to an announcement of a change in auditor?

The SEC (1985) believes that it is important for the public to understand the relationship between the company and its independent auditor; hence, it requires disclosure of the events surrounding an auditor change on form 8-K.[13] Market researchers

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[12] The effect of these potential agency problems on the company's profitability and the return to investors is summarized as agency costs. Agency costs include the residual loss suffered by investor-owners when a nonowner-manager directs operations for his own interests instead of the interests of the investor-owners. This will have the ultimate effect of reducing dividends to the investor-owners. Steps taken by managers can limit or control the residual loss. These include the costs of structuring the manager's contract to reduce this conflict of interest and the costs of monitoring the manager's performance. The residual loss less the net benefits from steps taken to control this loss form net agency costs. The basic agency problem is explained by Jensen and Meckling (1976).

[13] The disclosure requirements for an auditor change is reviewed in detail in Section 2.3.1.

have studied this disclosure and have not found consistent results.[14] First, Johnson and Lys (1988) and Smith (1988) were not able to find a mean response by the market to a disclosure of an auditor change on form 8-K, but Teoh (1989) found a mean negative response. Second, in an attempt to link the market reaction to the opinion shopping hypothesis, Smith and Nichols (1982) report that auditor switching companies reporting disagreements incur a negative market reaction, but Johnson and Lys (1988) could not verify these results. Third, Nichols and Smith (1983) and Fried and Schiff (1981) argue that a change to a smaller auditor might be perceived as opinion shopping, but they, along with Johnson and Lys (1988) and Teoh (1989) could not find a mean market negative reaction to this type of change. Likewise, a change to a larger auditor might provoke a favorable reaction if it were perceived as either a positive signal or attempted control of increasing agency costs. Nichols and Smith (1983), Johnsons and Lys (1988), and Teoh (1989) could not find this positive reaction. Finally, Smith (1988) found that companies that disclose the termination of an auditor's services without naming a successor auditor on the same 8-K disclosure experience a negative market reaction, but he did not link this to a reason for the company to change auditors.

The lack of a consistent aggregate market reaction can be explained, in part, by the existence of cross-sectional variation in the market's reaction (Johnson and Lys, 1988); that is, a positive market reaction to the auditor change disclosure for some companies may be cancelled by a negative market reaction for others. The lack of consistent results might also be explained by the methodological shortcomings of (1) including companies that disclosed the auditor change on prior proxy statements, (2) choosing the incorrect period to look for a market reaction, and (3) including auditor changes under different sets of disclosure requirements.

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[14] The body of empirical research examining the market reaction to an 8-K disclosure of a change in auditors is reviewed in detail in Section 2.3.2.

1.3 Statement of the Problem.

Prior market studies fail to discover if the market reaction is associated with the reason for a change in auditor. If managers change the auditor to mitigate potential agency problems, then investors will react in a predictable fashion.[15] The direction of investor reaction, positive or negative, depends upon both the direction of change in auditor credibility and the company specific changes in agency costs.

Based on the DeAngelo (1981b) argument that the auditor's credibility is directly related to the size of the CPA firm, Nichols and Smith (1983) predicted that a change to a larger (presumably more credible) auditor would be perceived as good news and would receive a positive market reaction, and vice versa. Nichols and Smith (1983), Johnson and Lys (1988), and Teoh (1989) were unable to verify these reactions. Their results are explainable, however, if the market reaction to a change to an auditor of different size, or credibility, depends upon the interaction between change in auditor size and change in underlying agency costs. For example, a change to a smaller auditor might be perceived as bad news to the market if the company is experiencing increasing agency costs. A change to a smaller auditor might be perceived as good news if the company is experiencing decreasing costs.

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[15] This argument is presented in Chapter 3.

1.4 Research Question.

This dissertation is designed to address the auditor change dilemma by answering the following research question: *Does the potential agency problem contribute to cross-sectional variation in the market reaction?* Specifically, are changes in auditor credibility, given changes in agency cost proxies, related to the market reaction on a company-by-company basis? If so, then (1) SEC disclosure requirements were effective in inhibiting opinion shopping during the period studied by this dissertation, and (2) the monitoring hypothesis of Jensen and Meckling describes the relationship between outside shareholders, company management, and the auditor.

1.5 Research Design and Findings.

The relationship of change in net agency cost to the market reaction to a change in auditor is described by a two-stage model. First, change in auditor quality is modeled as a function of change in net agency costs. As net agency costs increase, there is increasing incentive for a manager to change to a higher quality auditor. Change in auditor quality should thus be directly related to change in net agency costs. Second, the market reaction is modeled as a function of change in net agency costs *and* change in auditor quality. That is, the market reaction does not depend solely on the change in auditor quality. Rather, the market judges the new auditor's ability to control net agency costs given the specific circumstances of the company. This two part model is depicted in Figure 1. Relationship A posits that change in auditor quality is a response

to change in agency costs. Relationships B and C posit that the market reaction to a change in auditors is a function of both change in agency costs and change in auditor quality.

The first stage of the model has received empirical support (Francis and Wilson, 1988; and DeFond, 1988) and is replicated here. That is, Francis and Wilson (1988) and DeFond (1988) report that change in auditor quality, as measured by change in auditor size, is related to changes in net agency costs. Change in auditor quality is operationally defined here as the change, from the prior auditor to the new, in (1) auditor size, (2) auditor market share in the client's industry, and (3) a measure of auditor independence from the client. Changes in net agency costs are operationally defined as changes in variables that proxy for residual loss and variables that proxy for control of residual loss. Using an univariate approach[16] and a multivariate approach (canonical correlation) to test this stage of the model, this dissertation reports that change in auditor quality, as measured by auditor's share of clients in the auditor changing client's industry, is significantly related to variables that proxy for changes in net agency costs. Change in auditor quality as measured by change in size or by change in auditor independence is not related to variables that proxy for changes in net agency costs. A reason for the difference in the results between this dissertation and prior studies is advanced.

The second stage of the model has not previously been tested empirically. The market reaction is operationally defined as the risk adjusted excess returns surrounding the date that disclosure, on form 8-K, of the auditor change becomes publicly available. Based on ordinary least squares regression, this dissertation reports that changes in net agency costs (in the presence of change in auditor quality), prior receipt of a qualified opinion, and reported disagreements between the company and the auditor are very

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[16] The univariate approach separately examined the relationship between each of the auditor quality variables and the variables that proxy for changes in net agency costs.

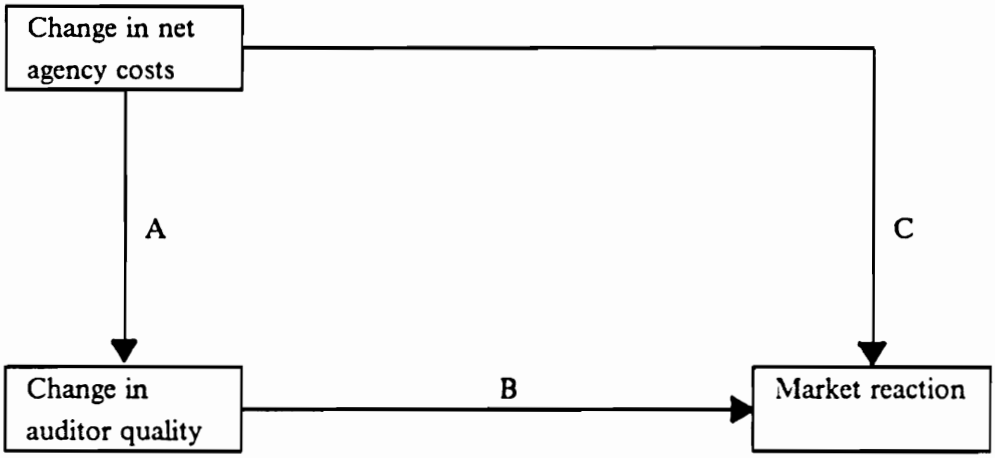

Figure 1. Model of Auditor Change–Monitoring Hypothesis.

strongly related to the market reaction to a disclosure of an auditor change. Change in auditor quality, in the presence of changes in net agency costs, is not related to the market reaction. A related finding is that these variables are also very strongly related to the excess market reaction on an earlier date when the board of directors approves the change.

1.6 Overview of the Dissertation.

Chapter Two contains a review of relevant literature. It has three parts: (1) descriptions of the role of the auditor, (2) motivations that underlie the company decision to change auditors, (3) the events that surround the disclosure of a change in auditors. Chapter Three contains a description of the monitoring hypothesis and its prescriptions

for the market reaction to a change in auditor. Chapter Four contains the design of the research project. Chapter Five describes the results. Chapter Six states conclusions, limitations, and extensions.

2.0 Review of Related Literature

The objective of this chapter is to review the lines of research that have contributed to formulation of the research question. The first section deals with why companies use auditors. Although the subject of study in this dissertation is auditor change, a thorough understanding of the use of auditors is nevertheless essential to understanding why companies change auditors. Three presumptive hypotheses are reviewed. The second section deals with why companies switch auditors. The three presumptive hypotheses of auditor use have been extended to explain why companies change auditors. The hypotheses and related empirical research are compared, and sufficient support is demonstrated to justify this dissertation's focus on the monitoring hypothesis. The third section reviews the empirical studies of the market reaction to a disclosure of an auditor change. Problems with the research designs of these studies raise doubts about the reported conclusions and justify the research emphasis of the second part of this dissertation.

2.1 Why Companies Use Auditors.

The New York Stock Exchange (NYSE) instituted a requirement in 1933 that listed companies present audited financial statements. Congress passed a similar requirement for SEC reporting companies in the Securities Act of 1934. Prior to passage of these

requirements, however, many companies already employed external auditors (Watts and Zimmerman, 1983; Chow, 1982). Although the law did require some companies to start procuring external audits of their financial reports, the increase in demand for audit services was minimal (Wallace, 1980). Wallace (1980, 1987) describes three presumptive hypotheses--monitoring, signalling, and insurance--that represent "reasonable explanations" for the demand of auditing practices.[17] Summary descriptions of these hypotheses are now presented because proponents of each argue that their particular description of why a company initially chooses an auditor may also be related to the company decision to change auditors.

2.1.1 Monitoring hypothesis.

In their formulation of the agency problem confronting business organizations, Jensen and Meckling (1976) attempt to explain why auditing adds credibility and serves as a control device. They initially describe a firm that is owned and managed by one individual, who receives the total return or profit (both monetary and nonmonetary) from the firm's activities. A potential agency problem of moral hazard can result when

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[17] A theory is a proposition "relating to the nature, action, cause, or origin of a phenomenon or a group of phenomena" (Gove, 1961, p. 2371). Theories are used to (1) enhance understanding of the phenomenon and (2) form predictions of the future actions of that phenomenon. Theories are composed of propositions, principles, and assumptions. Presumptive hypotheses are conceptual statements or propositions of the phenomenon. According to Wallace (1980, p. 7):

> Hypotheses attempt to abstract essential features of reality that are useful in predicting what is or what would be under a specified set of conditions. By definition, hypotheses are not realistic descriptions of the numerous details which might affect a phenomenon of interest. ... The degree to which IF conditions accurately describe reality is unimportant, given that the resulting predictions are reasonably accurate.

Presumptive hypotheses are not directly verifiable because they are conceptual and abstract. Plausible presumptive hypotheses contribute to formation of testable hypotheses concerning behavior of observable variables that are related to the abstractions. Favorable results of experimental tests of these testable hypotheses "do not confirm truth of presumptive hypotheses, but only attest that such hypotheses could be true" (Richardson, 1980, p. 19).

the owner-manager sells a portion of the ownership to outsiders.[18] Where the control of the firm (when the firm's operations are directed by a manager) is separated from its ownership, information asymmetry between the two will result.[19] Separating control from ownership makes it possible for the manager to exploit this information asymmetry by directing the company to satisfy personal goals instead of investor-owners' goals. For example, the manager may divide the firm's profit into both monetary and non-monetary forms and consume a portion of profits. If the manager does not report this consumption to the investor-owners, the investor-owners will not know that the total return was more than reported. This agency problem produces a cost (equal to the amount of the manager's consumption of the owners' return) because the investor-owners can (and likely do) receive a smaller return than they would if they were sole proprietor-managers. This cost is often referred to as a residual loss.

Jensen and Meckling explain that investors recognize the potential for this agency problem by offering to invest a smaller amount than if there were no separation of ownership and control.[20] Thus, the investors force the owner-manager to bear the cost of the potential agency problems. The owner-manager then has an incentive to limit the potential effects of the agency problem in an attempt to receive more for the proposed sale of ownership interest. For example, the owner-manager can agree to limit consumption of organizational resources, work to improve the return to the outside owners,

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[18] A moral hazard problem occurs when the manager takes actions to maximize personal utility instead of taking actions to maximize shareholder utility.

[19] Information asymmetry exists when one party has more information than another. In this case, the manager will have more information about firm events than the investors who are physically separated from daily firm activities.

[20] The investors predict the magnitude of the potential agency problem and value the firm accordingly. In this process, the investors are said to be price-protected. That is, the investors are indifferent to whether the manager hires an auditor because they will invest little without an auditor and more with an auditor with appropriate credibility (Jensen and Meckling, 1976). In either case, they will demand sufficient return for their rational expectations of the manager's control of the residual loss. As summarized by Wallace (1980), the notion of rational expectations implies that investors will (1) expect the manager's self-interest to diverge from theirs, (2) be able to estimate the amount of divergence, and (3) adjust prices to reflect the costs of divergence.

and hire a monitor to verify that the net overall agency cost is truly being reduced. If the residual loss is thus controlled, the investors should be willing to pay more for the investment. The excess of the price increase paid by the investors over the owner-manager's expenditures to limit the residual loss goes to the manager.[21] In other words, the manager reaps the benefit from controlling agency costs.

Equity relationships are also affected when management issues debt. As a result of such a transaction, an agency relationship is created between the creditor and the manager. Issuing debt can increase equity agency costs because the creditor will encourage the manager to agree to debt covenants that will restrict the manager from taking risky courses of action (Myers, 1977; Lambert, 1986). Equity agency costs increase because investor-owners prefer to diversify away risk at the portfolio level. Restricting the firm from taking potentially profitable, but risky, actions at the firm level will result in a lower expected return to investor-owners at the portfolio level. This is another example of residual loss.

Several researchers (DeAngelo, 1981a, 1981b; Simunic and Stein, 1986, 1987; and Fama, 1980) have added to the monitoring hypothesis. Reviews of their contributions follow.

DeAngelo (1981b) discusses the relationship between audit services, independence, and fees. She explains that the value of an audit depends on the auditor's competence and independence--that is, the auditor's perceived ability to discover errors in the accounting system and withstand client pressures to make selective disclosures when such a shortcoming is discovered. She labels the auditor's ability to resist managerial pressure "audit quality." Because larger auditors have more clients at stake than smaller auditors, they have an incentive to resist managerial pressure that will outweigh the benefits

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[21] The owner-manager is no longer a sole proprietor after selling part or all of the firm's equity and is henceforth referred to as a manager.

of selected opportunistic behavior. "This implies, ceteris paribus, the larger the auditor ... the higher the perceived quality of the audit" (p. 184). She further reasons that audit fees charged by large auditors will reflect this audit quality. Observing that clients may have different levels of agency costs, she implies that there will be a heterogeneous demand for audit quality. She reasons that clients must consider different audit firms in order to choose different levels of audit quality because a specific audit firm has an incentive to maintain a consistent level of audit quality.

In a companion paper (1981a), DeAngelo explains that audit firms that provide comparable levels of audit quality will compete for audit engagements through price discounts for the initial audit engagements. These discounts, or low ball bids, are a competitive response to multiple suppliers of comparable audit quality. She reasons that the practice of low balling is not a challenge to independence for large auditors because the audit firm will still be able to charge premiums for audit quality in subsequent periods.[22] Larger auditors thus receive a larger benefit for remaining independent and will still be perceived as supplying more audit quality than smaller auditors.

Simunic and Stein (1986, 1987) argue that the demand for differentiated audits is a function of the contribution of the audit to organizational control, the credibility of the audit as perceived by shareholders and creditors, and the types of additional service offered (e.g., management advisory services) by the audit firm. A given auditor only provides one product, a specific combination of these three factors. According to Simunic and Stein, there is an inherent conflict between managers and investors over credibility. A credible auditor can prevent a manager from concealing actions motivated by self-interest. Management will make the original choice of auditor based on its own interests; but because the investors will be price-protected, the choice of auditor will in-

[22] Audit fees higher than costs, a condition called a quasi-rent, can occur in subsequent periods because the client incurs a cost to change auditors. DeAngelo suggests that the major cost is disclosure of the circumstances surrounding the change in auditor.

corporate the investors' demands for credibility. As the potential for a future agency problem (i.e., the residual loss) grows, the likelihood that the manager will hire an auditor of appropriate credibility increases. According to Simunic and Stein, the manager must weigh the benefits of higher credibility against the cost of employing an audit firm that will provide this quality. Although Simunic and Stein recognize that agency costs for a given company can change over time, they do not mention the possibility of changing auditors in response.

The agency cost explanation of the firm was continued by Fama (1980). Fama adds the notion that efficient markets can discipline the managers to control agency costs. Because there is a market for managers, managers must exert some control over agency costs or face replacement. In addition, lower level management and the board of directors monitor the top level of management. Fama argues that although market reactions can sensitize management toward controlling agency costs, investors have an incentive to diversify their risk by investing in a portfolio of investments. In this case, lower cost forms of monitoring, such as boards of directors, are likely to survive because investors will have diversified the effects of risk and agency costs away from any one firm.

Two studies have used the monitoring hypothesis to predict auditor usage under certain circumstances. Watts and Zimmerman (1983) argue that if the Jensen and Meckling hypothesis is correct, then "independent auditors are expected in the earliest firms where the manager did not supply all the capital" (p. 613). They provide anecdotal evidence in support of this contention. Chow (1982) argues that companies employing external auditors would be (1) larger, (2) more leveraged, and (3) have more accounting measures included in debt covenants than companies not employing external auditors. He examined NYSE companies during the 1920s (prior to U.S. auditing requirements)

and reports results consistent with his arguments. The results of these two studies provide support for the monitoring hypothesis.

In summary, the Jensen and Meckling theory attempts to explain the auditor functions of providing credibility to management's financial reports and controlling the quality of information within the context of agency costs. Auditors serve as a monitor over managerial actions to ensure that reporting is honest and fair.

2.1.2 Signalling hypothesis.

The signalling hypothesis describes "The selection of an auditor [as] ... an action which conveys assessments about future cash flows to market participants" (Bar-Yosef and Livnat, 1984, p. 308). Signalling is needed because of the asymmetry of information between managers and investors which causes investors to be unsure of the relative quality of various investments. Managers have incentives to disclose projected superior future performance in order to distinguish the company and the management team from others.[23] One setting occurs when a manager changes to a higher quality auditor prior to seeking new capital. Titman and Trueman (1986) add that as higher levels of auditor quality are chosen, investors assess greater value to the company.

[23] Akerlof (1970) uses the market for "lemons" to demonstrate that there are incentives to hide bad information instead of signalling it.

2.1.3 Insurance hypothesis.

The insurance hypothesis posits that managers hire auditors in part to shift financial responsibility for financial disclosures (Wallace, 1980). It is sometimes labeled "deep pockets," because in instances of business failure the auditor is often the only solvent party that investors and creditors can sue. This hypothesis has become popular as the litigation environment in the United States has evolved.

Two trends have contributed to the development of this hypothesis. The first is the expectations gap between the accounting profession's view of the auditor's role versus the users' perceptions (Mednick, 1986). The auditors believe their role is to exercise due care and diligence in forming a judgement concerning the fairness of financial reports. They start their investigation on the assumption that the financial statements are a fair presentation of the company financial position, and they structure their tests to find evidence that will disconfirm this assumption. As a result, they believe that their judgement, or opinion, is not in any way a guarantee of the financial health of the reporting organization. Users believe that auditors assume the worst, and that they search for confirmation of all financial information. Users feel that any business failure must have been an audit failure because auditors did not cause underlying financial difficulties to be disclosed (Kaplan, 1987). "Accountants are understandably horrified that their work is being judged with a result-oriented application of 20/20 hindsight, while everyone else is incredulous that an audit could possibly satisfy generally accepted standards and yet be so deficient in actual fact" (Kaplan, 1987, p. 3).

The second trend involves expanding the notion of product liability to embrace accountants' liability. Product liability means that a manufacturer is responsible for any injury caused by a defective product. Accountants have been found liable in some cases,

however, even if they performed an audit using generally accepted audit standards: "The motivation behind such suits seems to be the belief that no risk is to be borne as simply bad luck or fate but that all loss should be compensated by someone" (Minow, 1984).

Two studies have used this hypothesis as a foundation for examining litigation practices against auditors. Palmrose (1987) examined suits against auditors for the period of 1970 to 1985, and concludes that economic downturns tend to be associated with increases in auditor litigation, auditor litigation is often associated with business failure, and that often the suit against the auditor is dismissed. She also reports that the client company declares bankruptcy in 50% of the cases in which the company's auditor is sued. Later, Palmrose (1988) found that Big Eight firms do get sued more often than non-Big Eight firms but pay off at about the same rate as non-Big Eight firms. Overall, the litigation rate is extremely low. The results of these two studies are consistent with what would be expected if this hypothesis was true.

2.2 Why Companies Switch Auditors.

Regardless of why companies use auditors, the current legal and business environment requires their use. As discussed before, companies do change auditors and appear to be doing so at an increasing rate. There is no overall theory of auditor change (Knapp and Elikai, 1988), but it has been suggested that at least four motivations underlie the company decision to change its auditor. Three of these motivations--monitoring, signalling, and insurance--are adaptations or extensions of the three presumptive hypotheses explaining auditor demand that were discussed in Section 2.1. The fourth, opinion shopping is the final motivation that is discussed here. Each of

these motivations is presented as a presumptive hypothesis explaining the demand for new auditors.

The rest of this section is organized thusly. Each of the four motivations are presented, in a separate subsection, as a presumptive hypothesis pertaining to why a company changes auditors. A summary and analysis of the empirical research that supports these hypotheses is included in each subsection. This section concludes with an analysis of the four hypotheses and an argument for proceeding with the monitoring hypothesis.

2.2.1 Monitoring.

The importance of the external auditor in controlling net agency costs was discussed in Section 2.1.1. The motivation for a manager to change auditors after having a given level of auditor quality was not discussed, however. Palmrose (1984), DeFond (1988), and Francis and Wilson (1988) have conducted empirical research based on three tenets of an unstated, but implied, theory of auditor change.

1. A change to a larger auditor (e.g., from a non-Big Eight (NBE) to a Big Eight (BE) auditor) represents an increase in auditor quality. Conversely, a change to a smaller auditor represents a decrease in auditor quality.
2. A change from one auditor of a given level of quality to a second auditor of higher quality reduces net agency costs.
3. There is a direct relationship between a change in net agency costs and a change in auditor quality.

This view of the auditor change phenomenon is the basis for a model that is presented in Chapter 3 of this dissertation. The tenants of this theory are incorporated as follows. First, when a company changes its auditor, the change in auditor quality is directly related to the change in net agency costs for that company. Second, the market reaction

to a disclosure of a change in auditor depends upon both the change in auditor quality and the change in net agency costs.

The monitoring hypothesis has been used as the basis in several empirical studies to predict that variables that serve as proxies for agency costs are related to variables that serve as proxies for auditor quality. These studies are Palmrose (1984), Eichenseher and Shields (1989), Healy and Lys (1986), Simunic and Stein (1987), Francis and Wilson (1988), and DeFond (1988). Their reported results, described below, provided a moderate level of support for the monitoring hypothesis.

Palmrose (1984) studied companies in four industries (office equipment, retail food trade, gas utilities and electric utilities) for the period 1981-1982 to determine if agency cost proxies--such as size of the company, owner/managerial ownership, leverage, number of subsidiaries, managerial compensation, and exchange listing--are related to the post-auditor change level of auditor quality. She used two different surrogates for quality: (1) Big Eight (BE) versus non-Big Eight (NBE) auditor; and (2) auditor with large industry market share (specialist) versus auditor with small industry market share (nonspecialist). She reports that both surrogates of quality are positively related to company size, but are unrelated to the other agency cost proxies.

Eichenseher and Shields (1989), on the other hand, report the opposite. For companies that switch auditors, leverage, managerial and board ownership, and the existence of an audit committee are related to choice of successor auditor (BE or NBE), but size of company is not. The choice of auditor for companies not switching auditors is not related to any of the four agency cost variables.

Simunic and Stein (1987) examined the relationship of agency variables to the choice of auditors (BE or NBE) for all companies going public in 1981. They hypothesized that when privately-held companies go public, underwriters are chosen not only for their marketing expertise, but for their willingness to monitor management and certify

the offering as well (Easterbrook, 1984). The underwriters recommend employment of a specific auditor partly to diversify the risk of this certification. Consequently, auditors must also monitor management for its effectiveness in addition to monitoring management for the truthfulness of its financial reports. Simunic and Stein test the relationship of internal agency costs (size, geographic dispersion, and reporting complexity), external agency costs (leverage, outside ownership, quality of the underwriter, and type of offering), and demand for consulting services (age of the company, recent growth in sales, and degree of industry regulation) to auditor choice. They report that the internal agency cost variables plus recent growth in sales significantly affect choice of new auditor, supporting their contention that choice of auditor in the market of new issues would be related to the level of credibility and monitoring that the auditor could provide. They also report a positive, significant, relationship between the quality of investment banker and auditor chosen by management, and a company's market value for a new issue.

These studies, summarized in Table 1, do not provide a strong test of the first relationship in the model of auditor change (changes in agency costs are related to a change in auditor quality) for two reasons. First, although these studies examine companies that change auditors, the response variable was the level of auditor quality, not the change in auditor quality. Second, these studies used variables measuring levels of agency costs, and not changes in those levels. Only Simunic and Stein (1987) include a variable that serves as a proxy for change in, rather than level of, agency costs. These two factors may have combined to produce results in which only some agency cost proxies were related to auditor quality.

Healy and Lys (1986), Francis and Wilson (1988), and DeFond (1988) examined whether a change in auditor quality is related to agency cost proxies. In addition, they included variables that proxy for changes in agency costs. Table 1 also summarizes these articles.

Table 1. Article Summaries: Agency Costs, Auditor Quality and Auditor Change.

Author	Sample: Exchanges Years	Dependent Var. Auditor Quality: Level or Change	Independent Var. Agency Costs: #/Level or Change	Results: Overall significance # Variables significant
Palmrose (1984)	NYSE,AMEX,OTC 1981-1982	Level	4/Levels	p < .01 1
Eichenseher & Shields (1989)	AMEX 1973-1978	Level	4/Levels	p < .01 3
Simunic & Stein (1987)	NYSE,AMEX,OTC 1981	Level	1/Change 9/Levels	p < .01 1L, 3CH
Healy & Lys (1986)	NYSE,AMEX,OTC 1981-1982	Change	3/Changes 1/Level	p < .01 1L, 1CH
DeFond (1988)	NYSE,AMEX,OTC 1983	Change	5/Changes	p < .01 4
Francis & Wilson (1988)	NYSE,AMEX,OTC 1978-1985	Change	6/Changes	p < .05 3
		Change	5/Levels	p > .10 1
		Change	6/Changes 5/Levels	p < .05 3L, 3CH

Healy and Lys (1986) used a sample of companies whose NBE auditing firms later merged into BE accounting firms. Most of these companies remained with the acquiring BE firm or retained another BE auditor. Some clients, however, switched from the acquiring BE auditing firm to a NBE auditor. Healy and Lys argue that the choice of successor auditor (BE or NBE) can be likened to an increase in auditor quality versus no change in auditor quality. Healy and Lys report that the choice of successor auditor (BE or NBE, change or no change) is related to the agency cost variables of size and growth, but not to subsequent debt or equity issues.

Healy and Lys do not provide a strong test of the first step in the monitoring model of auditor change for two reasons. First, they do not examine the case where the successor auditor represents a decrease in auditor quality. Second, the opportunity for companies to move to a BE auditor is at zero transaction cost. Many companies may

not have changed auditors in the absence of an audit firm merger. Francis and Wilson (1988) and DeFond (1988) provide better tests of the first leg of the model because they (1) consider decreases, as well as increases, of auditor quality at the auditor change, and (2) they exclude auditor changes that are the result of audit firm merger.

Francis and Wilson (1988) examined 78 companies that changed auditor level from 1978-1985. They hypothesized that variables that serve as proxies for changes in, and levels of, agency costs will be related to the direction of auditor change (BE to NBE or NBE to BE). They report three variables out of six that proxy for changes in agency costs (change in bonus plan, change in large-owner holdings, and growth in sales) to be related to the change in auditor level. When they analyze the levels in agency costs they report two variables out of five (long-term debt percentage and size of company) that proxy for levels of agency costs to be related to the change in auditor level. When they jointly examine levels and changes in variables that proxy for agency costs, they report three of the levels variables and three of the changes variables to be significantly related to changes in auditor level.

Francis and Wilson make an important contribution to the body of research examining the relationship between agency costs and auditor change for two reasons. First, their research design is the first to include an auditor quality variable that considers both an increase and decrease in auditor quality. Second, they attempt to examine the relative merit of changes of agency cost variables as opposed to levels in those variables.

Their study is affected by two potential limitations, however. First, they drew their sample from two different populations. They located 67 companies changing auditors with three years of financial data on the restricted version of *Standard and Poor's* COMPUSTAT. These companies are primarily traded on the NYSE & AMEX exchanges and tend to be larger than nonlisted companies. They then completed their

sample by adding 129 OTC companies with sufficient data that changed auditors.[24] Test results from their study are sample specific, because the sample is not representative of either population (listed or nonlisted) or of the overall population of SEC-reporting companies. The role of the auditor in controlling agency costs may be different for a smaller company than for a larger company because smaller companies are not able to afford as many other control mechanisms. The second limitation of Francis and Wilson's study is that they include only companies that change level of auditor. Companies with no change in auditor level (quality) are not included.[25] These shortcomings limit the external validity of their results and may have contributed to their weak results.

DeFond (1988) also contributed to this line of research. He attempted to improve on the prior research in two ways. First, he asserts that the previous choice of dependent variable (usually BE versus NBE auditor) does not adequately measure the new auditor's ability to provide an increase in monitoring. He reasons that auditor quality is composed of several aspects, and that to focus on only one (change in auditor size) produces a variable of low power. He suggests simultaneously considering four variables: change in level of auditor (BE, national auditor, NBE), size of new auditor relative to the size

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[24] These 196 (67 + 129) companies produced 78 companies changing level of auditor.

[25] Francis and Wilson redid their analysis (for all but two of the 196 companies) using a continuous scale auditor quality variable computed as the size of the new auditor (as measured by the the natural log of the sum of all client revenues) relative to the size of the old auditor. Their results were consistent with the first analysis, except that when considering both levels and changes of agency cost variables, only two changes variables and no levels variables are significant. Their response variable, however, was not truly continuous. A change from a small NBE auditor to a BE auditor could produce a much larger number than for a change from a large NBE auditor to a BE auditor, and both would be much larger than for a change from a smaller BE auditor to a larger BE auditor. Because there are extremely large differences in the size of auditors between groups, their continuous variable was really a variable with discrete values. It is also unclear that differences in auditor quality can be reasonably measured by this scale. For example, a change in BE auditors might produce a value of 1.2, but a change from small NBE to BE might produce a large number (say 50). If a case can be made that the larger BE auditor is 1.2 times more credible than the smaller BE auditor, does this mean that the BE auditor is 50 times more credible than the small NBE auditor? Because of these scale problems, this analysis does not adequately address the shortcomings of their earlier analysis using only companies that changed levels of auditors.

of the old,[26] change in auditor level of industry specialization,[27] and change in independence of the auditor (size of client relative to total client base of the auditor). He used principal components analysis to construct a dependent variable that is a linear combination of the four variables. Second, he included only variables measuring changes in agency costs surrounding the change in auditors, for a four year period, in order to identify changes in monitoring level that are either in anticipation of or in response to changes in agency costs. His agency cost variables are the change in management's ownership percentage, change in the debt ratio, change in short-term accruals, growth in total assets, and existence of a subsequent securities issue. All but the accruals variable are reported to be significantly related to the dependent variable.

DeFond's results are subject to several limitations. First, DeFond deletes all observations where there is no change in the level of the auditor (60% of the total). This means that his results are not generalizable to all companies changing auditors, only to companies that change levels. Because of this, DeFond was not able to determine if companies that do not change level have little change in variables that serve as a proxy for agency costs. Second, his sample of 101 companies changing auditors is not from one population, but includes companies traded on the NYSE, AMEX, and OTC exchanges. This makes his results sample specific. Third, he used principle components analysis to form a linear combination of auditor quality. In situations where there is unequal variance among the variables in the linear combination, the first principle

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[26] DeFond used the Eichenseher and Danos (1981) and Danos and Eichenseher (1982) method to measure the size of the auditor. In this method, the size of the auditor is defined as the total audit fees of that auditor. Eichenseher and Danos used the square root of a company's sales (Simunic, 1980) as a surrogate of the fees that company would pay an auditor summed for every identifiable client of the auditor. DeFond addresses the scale problem, discussed in the previous note, by limiting the maximum value of this variable.

[27] DeFond determined the auditor's share of fees from a given industry in the same manner as Danos and Eichenseher (1982) and Palmrose (1984). In this method, a company's audit fees is proxied for by the square root of the company's sales. The total audit fees for the industry is computed by summing the square root of company sales for all companies in the industry. Auditor market share is computed as the auditor's fees from the industry divided by total fees from the industry.

component will be dominated by the variable with the largest variance. In DeFond's group of four auditor quality variables, the variable measuring change in auditor level has a much greater variance than the other variables. This means that his linear combination variable is predominantly change in auditor level. Also, because the principle components are constructed independently of any relationship with the agency cost variables, then it is possible for other components to be more closely related to the independent variables than the first. The principle component of auditor quality that is most highly correlated to agency costs should be used, even if it is not the component that explains most of the joint variance. Fourth, he reported significant, high correlations among his auditor quality variables and among his agency cost variables, which, if indicative of collinearity problems, would make it more difficult to determine the separate contributions of individual agency cost variables.

The studies reviewed in this section do not provide a clean test of the relationship between variables that serve as a proxy for change in auditor quality and variables that serve as a proxy for changes in agency costs. Although there does appear to be some relationship between the variables, it is unclear how strong and how generalizable the reported results are. Because of the inability to reach strong conclusions as the result of these studies, the best that can be said for their ability to support the monitoring hypothesis is that support is moderate at best. Further study is warranted.

2.2.2 Signalling.

Johnson and Lys (1988) argue that companies may desire to signal future prospects by changing their auditor if they already employ one. In this situation, a change would only be made to larger auditor if positive future prospects are anticipated. Not only will

the new, higher quality auditor provide a verification of future financial disclosures, but their selection comes at a cost that managers would not have chosen to incur unless they believed that there was a high probability of the higher cash flows actually materializing. The signal by management will allow investors to reduce their estimation of the riskiness of the investment risk, which should result in a positive market reaction (Fama and Laffer, 1971).

Johnson and Lys (1988) attempted to find support for this hypothesis. They tested a model in which the relative size of the new auditor to the old, as a result of the auditor switch, is a function of the change in the financial structure and financial performance after the auditor change. The Danos and Eichenseher (1982) methodology was used to calculate the size of the auditor. The variables they chose to represent each company's change in financial structure and performance were growth rates of total assets before and after realignment, the change in external financing (ratio of proceeds from equity and debt issues to total assets), the change in acquisition expenditures (ratio of expenditures to total assets), the change in cash flow from operations (ratio of cash flows from operations to total assets), and times-interest earned before realignment. Johnson and Lys report that all variables are statistically significant. All exhibit positive relationships except prior growth. Johnson and Lys conclude that the results support the signalling hypothesis.

Johnson and Lys then constructed a second empirical test in order to gather support for the Fama and Laffer (1971) contention that a signal indicating future growth should result in a positive market reaction. They reason that if the change in size of the auditor is a signal of future growth in profits, then, because the results described in the first part of their study support a conclusion of signalling, changes to a larger auditor should result in a positive market reaction. They were unable to find this reaction.

The Johnson and Lys conclusion, that the results of their study support the signalling hypothesis, is not very tenable. First, most of the variables that they included in their model measure growth in the size of the company instead of growth in profitability. A company that grows as the result of acquisition and merger does not necessarily return dividends to investors at a higher rate than a company that chooses to finance its growth from earnings (Lev, 1986; Jensen, 1984). Growth in earnings has been found to be significantly related to growth in firm value (Ou and Penman, 1989). Second, growth in profitability is not included as a variable. Third, the market reaction is not modeled as function of future performance, but only as a function of change in auditor. Further research is warranted.

2.2.3 Insurance.

The insurance hypothesis can also be extended to explain auditor changes. A company in financial distress may hire a new auditor on the basis of perceived ability of the auditor to insure the company in the event that it goes bankrupt (Schwartz and Menon, 1985). In normal circumstances, where the chance of a company going bankrupt is remote and there is little demand for insurance, hiring an auditor for insurance purposes is unlikely. On the other hand, if a company is experiencing financial distress, the market should react favorably to a disclosure that the company is hiring an auditor with "deeper pockets." When a company is not in financial distress, the market may respond to the change in auditor, but the reaction does not depend upon the new auditor as insurance.

Two studies (Schwartz and Menon, 1985; and Eichenseher and Shields, 1985) have used this hypothesis as a basis for examining the phenomenon of auditor change.

Schwartz and Menon (1985) consider this hypothesis when they examine auditor selection among companies that soon declare bankruptcy. They operationally define a financially distressed company as a company within four years of declaring bankruptcy. They identified a sample of 132 NYSE and AMEX companies that filed for bankruptcy from 1974 to 1982. These companies were matched with a control group of companies that did not go bankrupt but were in the same industry and were of the same approximate size. Schwartz and Menon report that during the prior four years, 27% of the companies going bankrupt changed auditors compared to only 10% of the control group. This difference is extremely significant ($p < 0.001$).

Schwartz and Menon then took a closer look at the failing companies in order to find factors related to switching or not switching. They found that companies that switched were less likely to receive a subsequent qualified audit opinion than companies that did not switch. They did not find an auditor change to be related to a change in top management. Also, they found that companies switching were likely to switch auditor type, going either from NBE to BE, or BE to NBE. Finally, they did not find the propensity for audit switches by failing companies to be related to the size of the company.

Schwartz and Menon provide modest support for the opinion shopping motivation when they report that financially distressed companies switching auditors are less likely to receive a subsequent qualified opinion. Their results do not support the insurance motivation because they find no pervasive movement to a larger auditor for companies in financial distress. They could not link all their results to any one motivation for changing auditors, and conclude that companies in financial distress have a tendency to change auditors for different reasons than financially healthy companies.

Eichenseher and Shields (1985), on the other hand, studied the relationships between auditors, audit committees, and auditor changes for AMEX listed companies from 1973 to 1979. Their stated motivation was the insurance hypothesis. They report that

companies in their study without audit committees showed no tendency to switch to BE auditors, but companies with audit committees exhibited a distinct tendency to change to a BE auditor. They conclude that this would support the insurance hypothesis because boards of directors are presumably concerned about their increased legal liability and will hire BE auditors to demonstrate that they are exercising due care in performing their duties.

Their results do not support the insurance hypothesis for three reasons. First, Eichenseher and Shield provide no evidence that the incidence of litigation against boards was increasing during their test period or that the financial condition of the companies in their sample was deteriorating. As discussed above, healthy companies should not be motivated to change to auditors with deeper pockets. Second, the results could be explained by the monitoring hypothesis. That is, growing companies face larger agency costs and need a higher level of auditing. Third, they tested whether the audit committee creation rate was coincident with passage of the Foreign Corrupt Policies Act of 1976 (which increased the director legal liability). They argue that the increasing trend toward creation of audit committees, from 53% of AMEX companies 1976 to 85% in 1981, supports the insurance hypothesis. It does not because the SEC was recommending the creation of audit committees during this time.

Wilson (1987) argues that the market should react unfavorably to a change in auditors by a healthy company, and that the market should react unfavorably to a change by a company in financial distress. His study was motivated by the opinion shopping hypothesis, but the results can be applied to support the insurance hypothesis. He reports a significant negative mean market reaction to a disclosure of a change in auditors for companies that were financially healthy, and a neutral mean market reaction to a disclosure of a change in auditors for companies in financial distress. The results are consistent with expectations if the insurance hypothesis is true.

In conclusion, as of yet there is little empirical support for the insurance hypothesis of auditor change. Admittedly, the reported results of Schwartz and Menon (1985) and Eichenseher and Shields (1985) do not disconfirm the insurance hypothesis. A redesign of their studies could produce results that would be consistent with the insurance hypothesis. Further study is needed.

2.2.4 Opinion shopping.

The SEC (1974) position has been that companies may sometimes switch auditors in an attempt to receive permission to use an improper accounting treatment. This requires that the successor auditor sacrifice professional ethics in order to be engaged (Ellingsen and Frederick, 1986). It is important to distinguish this practice from the legitimate business practice of seeking a second opinion on the accounting for a particular transaction. The fact and the appearance of the auditor's independence from company management is essential to maintaining the integrity of the financial markets and the independent audit function. Opinion shopping, at the very least, creates the perception that the auditor favors the client's reporting objectives and that the auditor is not accepting the responsibilities of acting as watchdog (SEC, 1985). At the extreme, company management is definitely trying to find a more compliant auditor in an effort to secure a favorable accounting treatment that eventually will produce misleading financial reports. In some circumstances, however, consulting with other auditors occurs when there is a legitimate difference of opinion between the engaged auditor and the company, and consultation is necessary to arrive at an appropriate solution. The difference between opinion shopping and appropriate consulting is largely a state of mind (Ellingsen and Frederick, 1986).

Opinion shopping has drawn the attention of the SEC and the AICPA. The SEC has issued a series of regulations[28] that attempts to limit the abuses of opinion shopping through increasing disclosure of the circumstances surrounding the auditor change. The objective of these disclosures is to illuminate the situations in which the company may be attempting to shop for a more favorable accounting treatment. This would allow investors to distinguish auditor changes motivated for opinion shopping purposes from auditor changes prompted other reasons. The AICPA (1978) has stated that opinion shopping results in an environment where auditors are continually competing for new clients. The AICPA has issued auditing two standards, SAS 7 and SAS 50, that define auditor responsibilities in potential audit shopping situations.

Investors should react negatively in situations in which they perceive that the company is trying to secure inappropriate accounting treatment (Fried and Schiff, 1981). If investors cannot rely on the company's financial reports, then the expectation of future cash flows is more uncertain and investors then will devalue their investments. The SEC disclosure requirements for auditor switches are very important because they can enable the investor to distinguish potential opinion shopping situations from auditor changes motivated for other reasons.

The opinion shopping hypothesis has received marginal support from empirical studies that examine the relationship between the change in auditor and (1) disagreements between management and the auditor, and (2) receipt of a qualified opinion. These studies are reviewed in the two following subsections.

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[28] This stream of SEC actions will be reviewed in Section 2.3.1.

2.2.4.1 Management-auditor disagreements and auditor switching.

The opinion shopping hypothesis of auditor change has been used to predict that companies that disagree with their auditor will change to a more compliant auditor.

McConnell (1984a) attempted to relate the propensity of Big Eight (BE) auditors and non-Big Eight auditors (NBE) to disagree with clients over accounting issues and how this affected the company decision to switch auditors. He argues that larger auditors have a competitive advantage over smaller auditors in securing clients which makes them more immune to pressures from the clients. Hence, they are more apt to be involved in unresolved disagreements than smaller auditors. He reasons that smaller auditors, when faced with pressure from their clients to not disagree and to be more flexible, are not as inclined to disagree because they fear losing market share. In particular, NBE auditors should have a lower rate of disagreements with management than BE auditors, which would signify a lesser degree of independence. McConnell (1984a) tested this assertion by examining the rate of unresolved disagreements with BE and NBE auditors.

The population sampled for his study was the group of companies filing Form 8-K for an auditor change during 1974-1978. It included companies from all three exchanges (NYSE, AMEX, and OTC). McConnell reports that if the predecessor auditor was a BE firm, an unresolved disagreement was reported on form 8-K in 18% of auditor changes. When the predecessor was a NBE firm, disagreements were reported in 8% of auditor changes, a difference that was statistically significant ($p = 0.001$). The disagreement rate differed among BE firms, with Arthur Young (30%) and Peat Marwick (27%) having the highest rates of disagreement. McConnell also reports a significant movement from NBE to BE auditors, and for a company to continue with a BE auditor if the predecessor was a BE auditor. The disagreement rates for successor companies

were also higher for BE firms (16%) than NBE firms (10%) ($p = 0.03$). The BE auditors that had a high percentage of disagreements tended to get new clients that did not report disagreements with the prior auditor. The accounting firms that had a low percentage of disagreements tended to get new clients that did report disagreements with the prior auditor.

McConnell concludes that the difference in the disagreement rate, between NBE and BE auditors, could support opinion shopping as a motivation for changing auditors. There is another possible explanation for his results, however. A smaller company may possess less internal accounting expertise. This could lead the company to rely more on its auditor than a larger company would. A greater reliance on the auditor could lead to either less inclination or less ability to disagree on accounting issues. Alternatively, these results are consistent with expectations if the monitoring hypothesis were true. That is, if BE auditors are perceived as being more credible than NBE auditors, then BE auditors should be more independent as evidenced by a higher disagreement rate. If there is a general trend for companies to grow larger, and if net agency costs increase as company sizes increase, then it is reasonable to expect a movement from NBE auditors to either NBE auditors with a higher disagreement rate, or to BE auditors.

The manner in which the sample was selected also reduces the reliance that can be placed on McConnell's conclusions. McConnell drew his sample from all NYSE and AMEX companies reporting a change in auditor, but only 20% of the OTC companies reporting a change were included. Prior research shows that NYSE and AMEX companies differ greatly from OTC companies in such statistics as percentage use of BE and NBE auditors (Dopuch and Simunic, 1980; McConnell, 1984b), the rate of unresolved disagreement between auditor and management (McConnell, 1985), and the rate of qualified opinions (Chow and Rice, 1982). McConnell's results are neither applicable to either group nor generalizable to the economy as a whole. Because it is unclear which

group of companies is responsible for the results, it must be concluded that his study provides only limited support for opinion shopping as a motivation for a change in auditors.

2.2.4.2 Qualified opinions and auditor switching.

The opinion shopping hypothesis of auditor change has been used as the basis for prediction that companies that have just received a qualified opinion (or are about to) will switch to an auditor that will give them a clean opinion.

Chow and Rice (1982) selected 141 companies from the population of SEC registering companies (NYSE, AMEX, and OTC) to test these speculations. Twelve percent of the companies receiving qualified opinions in 1983 switched auditors in 1984, compared to three percent of the companies receiving clean opinions who switched, a statistically significant difference ($p < .01$). Chow and Rice then developed a logistic regression model in which the switch of an auditor (yes or no) was the dependent variable. Several independent variables (receipt of a qualified opinion, management change, merger activity, and new financing) were used. They report that the model is marginally significant ($p = .10$), with receipt of a qualified opinion being the only significant variable ($p = .05$). They also examined the auditors to which companies switch. The reported results indicate that companies receiving a qualified opinion tend not to switch to an auditor that has traditionally given a smaller percentage of qualified opinions. Moreover, companies that switch auditors after receiving a qualified opinion are less likely to receive a clean opinion from the successor auditor the next year. Because of this, Chow and Rice conclude that a company switching auditors after receiving a qualified opinion is not necessarily opinion shopping. They suggest that perhaps the reason

for the switch is to signal a change in agency costs. Unfortunately, they provide no evidence in support of this assertion.

Craswell (1988) attempted to replicate the findings of Chow and Rice (1982) using Australian data. The disclosure requirements for companies switching auditor in Australia are similar to those in the United States. According to Craswell, the Companies Act 1961 requires managers to disclose to the financial community (1) their intention to change auditors, and (2) the auditor's summation of the circumstances associated with the change. Craswell searched for auditor changes that occurred within five years of the receipt of the first qualified opinion. Like Chow and Rice, Craswell found that companies that receive a qualified opinion change auditors at a significantly higher rate (6%) than companies that have not received a qualified opinion (2%). The rate of auditor change is 12% for companies that receive serious qualifications. Craswell reports that for companies that change auditors, the new auditor will assign a qualified opinion 60% of the time. No attempt is made to compare this rate to the rate of qualified opinions assigned by the old auditor. This makes it impossible to determine if there are less qualified opinions after the change, which would be expected if the opinion shopping hypothesis were true.

Smith's (1986) approach to studying the issue of opinion shopping is different. He reasons that a company that is successful at opinion shopping will receive a qualified opinion from the predecessor auditor and a clean opinion the next accounting period from the successor auditor. To clearly show that opinion shopping motivates the change, Smith argues that the circumstances leading to a disagreement between management and the predecessor auditor must continue to persist, with the predecessor refusing to reissue an unqualified opinion. He used a case study approach in which he examined the qualified opinion before the switch, successor's opinion, and the auditor's letter. His sample was selected from companies listed on the NYSE and AMEX ex-

changes. He reports that a company was successful at opinion shopping in only five out of 139 auditor switches from 1978 to 1982, a rate that demonstrates little support for the opinion shopping hypothesis.

Chen and Ettredge (1988) chose to study the size of successor auditor for a company receiving a qualified opinion. They cite DeAngelo (1981b), who contends that the size of an auditor should be a surrogate for independence. Chen and Ettredge reason that a company switching to a smaller auditor may be opinion shopping because the smaller auditor may not have the necessary resources to remain independent. They selected 92 companies (from the NYSE, AMEX, and OTC population) that switched between mid-1984 and mid-1986 after receiving a qualification.[29] Measuring size as a continuous variable (based on the revenues of the audit firm's client companies), they report that companies receiving a qualified opinion and switching tend to switch to a smaller auditor, while companies not receiving a qualified opinion tend to switch to a larger auditor.

Chow and Rice (1982), Smith (1986), and Craswell (1988) do not provide support for the opinion shopping hypothesis, but Chen and Ettredge (1988) do. The principle limitation to the Chow and Rice, and Smith, studies is that they anticipate seeing an immediate change in the auditor's opinion from qualified to clean. Craswell does not analyze the change in the auditor opinion. Chen and Ettredge predict a lag of unspecified length before qualified auditor opinions are changed to clean opinions, so their test does not look for future changes in opinion. Instead, they attempt to determine if the switch was made to a smaller auditor that would potentially be more flexible in future accounting issues. DeFond and Jiambalvo (1988) provide additional support for this contention. They report that the return on asset ratio is higher in subsequent years for

[29] Chen and Ettredge (1988) also included companies switching in the last month of the fiscal year in which they received a qualified opinion. They reasoned that by the last month of the year the company should know about the potential qualification, giving it a reason to switch auditors.

companies that switch from BE to NBE auditors after receipt of a qualified opinion, and it is lower for companies that switch to a BE auditor.

2.2.4.3 Conclusions.

McConnell (1984a), who examines the relationship between disagreements and auditor switches, does not provide support for the opinion shopping hypothesis. It is difficult to assess that support is provided by the empirical studies examining the relationship between auditor opinion and auditor switches. It has not been demonstrated that a company switching auditors systematically receive a different opinion from the auditor to which it switches. It has also not been demonstrated that the rate of auditor switches is greater for companies that experience auditor-manager disagreements than for those that do not. Both conditions should exist if the opinion shopping hypothesis were true. Consequently, it must be concluded that only limited support exists for the opinion shopping hypothesis.

2.2.5 Other studies of auditor switching.

The following papers (Danos and Eichenseher, 1982; Eichenseher and Shields, 1983; Haskins and Williams, 1988; Williams, 1988; DeAngelo, 1982; Baber, Kang, and Sivaramakrishnan, 1989; Anderson, Stokes, and Zimmer, 1990; and Kauffman and Yardley, 1990) attempt to relate auditor-specific factors to the company decision to switch auditors.

Danos and Eichenseher (1982) examined auditor changes indirectly by testing for factors related to the change in auditor market share. They report that industry spe-

cialists (market share $\geq$ 10%) from 1972-1979 were predominantly BE firms, although a few second tier (national) firms and regional firms had sufficient clients to be considered to be industry specialists to some degree. When companies in regulated industries change auditors, BE firms as a whole and BE industry specialists tend to increase their market share. When companies in nonregulated industries change auditors, BE firms as a group tend to increase market share, but BE specialists tend to lose market share. They conclude that regulatory environment is a factor in choice of new auditor.

Eichenseher and Shields (1983) surveyed the CFOs of corporations reporting auditor changes in 1976 and 1977 for their perceptions of the characteristics of both predecessor and successor auditor. Their objective was to identify the perceived differences in auditors that might affect the company decision to change auditors. They found that small clients were concerned about fees and the quality of working relationships, and large clients were concerned about fees and structural variables such as geographical coverage and range of services provided. They do provide some support for the notion that fees are an important determinant in the choice of auditor.[30] Two factors limit their contribution. First, Eichenseher and Shields' did not verify their survey results by referring to the 8-Ks on file with the SEC. Second, their results are not motivated by any particular hypothesis for auditor change.

Haskins and Williams (1988) used CART, a recursive partitioning algorithm, to test the interaction and relative importance of several variables to the company decision to change auditors. Their sample of 5,943 companies was drawn from all corporations reporting to the SEC (NYSE, AMEX, OTC) in 1985 and 1986. Their procedure tested the importance of type of audit opinion, company sales, financial distress, auditor market share, perceived auditor expensiveness, and changes in company ownership to predict a

[30] Similar results were obtained by PAR (1988b) from a later survey of auditor-switching companies.

change in auditors. The first three variables were found to be more important in predicting auditor changes than the others (although all were significant). Haskins and Williams argue that the first three variables were related to opinion shopping while the others might be related to monitoring or to the range of auditor services offered. Their model predicted 97% of the companies that did not change auditors and 70% of the companies that did.

Williams (1988), jointly motivated by the monitoring and opinion shopping hypotheses, reasons that the company decision to change auditors may be the result of three factors: changes in the principal-agent contracting environment, auditor effectiveness, and events such as qualified opinions or declining earnings that tarnish the client's reputation. The first two factors can be linked to the monitoring hypothesis, and the third factor can be linked to the opinion shopping hypothesis. Williams selected his sample from major exchange companies (NYSE and AMEX) that reported an auditor change from 1974-1982. These companies were matched with a control group that did not change auditors. The dichotomous dependent variable measured whether a change in auditor had occurred.[31] There were ten independent variables--three measuring changes in the client contracting environment, two measuring level of auditor effectiveness, and five measuring client reputation. Stepwise logistic regression produced two significant independent variables that measure auditor effectiveness (industry specialist and audit engagement tenure), and one that measures tarnished reputation (negative publicity). Williams' results do not really support either hypothesis. His results are suspect for two reasons. First, test results from his study are sample specific, because the total sample is not representative of either population (listed or nonlisted) or of the

[31] The Williams (1988) study was not included in Section 2.2.1 (monitoring hypothesis) because of the difference in dependent variable. The studies in 2.2.1 used a surrogate for auditor quality for the dependent variable, and only included companies that changed auditors in their study.

overall population of SEC-reporting companies. Second, his did not separately examine the issue of auditor quality and monitoring levels.

DeAngelo (1982) studied the practice of auditor switching for companies in the oil and gas industry at the time the Financial Accounting Standards Board passed *Statement of Financial Accounting Standards (SFAS) #19.* This standard mandated use of the successful efforts method of accounting for revenues. She argues that companies that prefer to use the full costing method will be more likely than successful efforts companies to change auditors because (1) incumbent auditors would tend to be reluctant to let companies evade the new standard by altering the other accounting techniques to offset effects of the new standard, and (2) the managers' lobbying position on the accounting issue would be undercut if their auditors had opposing views. She reports a large increase in the number of auditor changes in 1976 and 1977, the period when SFAS 19 was in effect. This increase was attributable to the companies that were forced to change from full costing to the successful efforts method. The results of her study were not intended to contribute to the support of any presumptive hypothesis of auditor change, and they do not. The results do support a conclusion, however, that companies acted as if they believed that SFAS 19 would have a negative economic impact on them.

Baber, Kang, and Sivaramakrishnan (1989) argue that auditor switches result from auditor/client disagreements regarding accounting practices. They reason that an auditor change with the same level of auditor, say between two BE auditors, is likely to be caused by a desire to receive permission to use an alternative accounting procedure from an auditor of similar credibility. A change in auditors that crosses auditor level, say from a NBE auditor to a BE auditor, results from a desire to increase the level of auditor credibility. They report that auditor switches between two BE audit firms is accompanied by a change in the behavior of accounting accruals. This change in accounting accruals results in an increase in earnings. Auditor switches involving a change in au-

ditor level are not accompanied by a change in the behavior of accounting accruals. This study is not designed to provide support for any of the presumptive hypotheses of auditor change.

Anderson, Stokes, and Zimmer (1990) examined the incidence of auditor switching after an acquisition for the case where the acquiring company's auditor is different from the acquired company's auditor. They note that because there are costs associated with changing auditors (e.g., opportunity cost of losing satisfactory auditing services, new auditor search costs, and new auditor start-up costs), a change to the acquiring company's auditor is not expected unless there are material benefits in excess of costs. Anderson, Stokes, and Zimmer hypothesize that when the acquiring and acquired companies are in the same line of business, the acquired company is more likely to change to the acquiring company's auditor than if the two companies are in different lines of business. They also hypothesize a change in auditors if the acquiring company's auditor has a larger share of clients in the acquired company's industry than the acquired company's old auditor. They argue that the benefit of auditor switches in the first case is to capitalize on the acquiring company's economies of scale. They argue that the benefit of the switch in the second case is to switch to a higher level of auditor expertise (or credibility). Anderson, Stokes, and Zimmer examined Australian takeovers from 1978 to 1985. They report a change to the acquiring company's auditor in 58% of the takeovers, but are unable to find evidence to support their hypotheses.

Kauffman and Yardley (1990) hypothesize that knowledge of an audit firm's structure can be used to predict changes in an auditor's share of clients within particular segments of the economy. Audit firm structure is described by Kinney (1986) and Cushing and Loebbecke (1986) as the result of a process by which audit firms adopt audit technologies. Audit firm structure exists along a continuum, with highly structured at one end and completely unstructured at the other. Structured audit firms use pre-

scribed audit plans and have formal rules for many procedures and the integration of results. Unstructured audit firms tend to use less structured guidance and rely more on the judgement of the field auditor. Mutchler and Williams (1989) report a relationship between audit firm structure and characteristics of audit client pools. Kauffman and Yardley argue that "if technology is a strategy for differentiating the audit product in a manner that provides a competitive advantage in some segments of the audit market, the association between technology and market penetration should be greater in the appropriate market segments" (p. 2). They report results consistent with their hypothesis.

2.2.6 Conclusions.

This section has reviewed research that examines the relationship of various factors to either auditor switching, or the choice of auditor given that there was a change. The results imply that companies do sometimes change auditors, e.g., over disagreements with the auditor, after receipt of qualified opinions, and in extreme financial distress, in a manner to suggest that opinion shopping might be taking place. In addition, it appears that choosing an auditor to monitor a given level of agency costs appears to be a reason motivating some changes. Finally, it appears possible that sometimes companies signal future changes through changing auditors. No general theory exists to pull all these relationships together (Knapp and Elikai, 1988).

The preceding literature supports a conclusion that the monitoring hypothesis is more viable than the other hypotheses of auditor change. Hence, the factor that was chosen for the first part of the study is change in agency costs. That is, the first leg of the model of auditor change that will be studied is that change in auditor quality is related to change in agency costs.

There are several problems in drawing conclusions from this body of research. First, most studies have examined auditor switches over a multiyear period. The incidence of auditor switching has been increasing over time, possibly implying that the motivations for making the auditor switches have changed over time. Second, most studies have drawn a mixed sample from the major exchanges (NYSE and AMEX) and the OTC exchange. These differ according to type of auditor used, incidence of switching, and possibly the motivation for changing. These two factors combine to produce a possible confounding of the results for the preceding studies.

2.3 The Events That Surround a Disclosure of a Change in Auditors.

2.3.1 The method of disclosing a change in auditors.

In order to study the market reaction to auditor change announcements, it is necessary to examine what exactly is announced and how the announcement is made. The SEC believes that companies sometimes change auditors in order to obtain more favorable opinions (SEC, 1974, 1985). If investors perceive this practice to be widespread, then less reliability will be attributed to audited financial reports. This could undermine the entire system of financial disclosures. The SEC has chosen to control the practice of opinion shopping by requiring that the major events surrounding a change in auditors

be disclosed on the publicly available Form 8-K.[32] This would let interested parties judge for themselves the motivation for the auditor change.

Changes in auditor-change disclosure rules have occurred in 1971, 1974, 1976, 1977, 1978, 1988, and 1989. The changes in 1976, 1977, and 1989 were relatively minor. Therefore, auditor-change regulation can be thought of as having five distinct periods: before 1971, 1971-1974, 1974-1978, 1978-1988, and after 1989. These periods of regulation may have produced different conditions for auditor change decisions. Nonetheless, studies that have examined auditor switching did not consider these changing conditions in their analyses. This makes suspect the reliance that can be placed on their conclusions.

The first of the series of SEC pronouncements regulation was *Exchange Act Release No. 9344: Notice of Adoption of Amendments to Form 8-K, Form 7-Q and Form N-1Q*, (SEC, 1971b). The SEC felt that a timely disclosure of a change in auditor would be "meaningful" to investors (SEC, 1971a) and should therefore be treated as public information. In EAR 9344, the SEC required a corporation to disclose the engagement of a new auditor at the parent company level as item twelve on form 8-K and item ten on form N-1Q. In addition, the company was required to disclose (in a separate letter) any disagreements over the previous eighteen months with the prior auditor that could have resulted in a qualified audit opinion if the controversial issue had not been resolved in favor of the auditor. To verify this disclosure, the corporation was to request a letter

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[32] Form 8-K, the "current report," is used to make immediate disclosure of significant events that occur during the year. Most information is narrative and follows no specific format. It contains the following items (17 Code of Federal Regulations §249.308, 1989):

1. Changes in control of registrant.
2. Acquisition or disposition of assets.
3. Bankruptcy or receivership.
4. **Change in the registrant's certifying accountant.**
5. Other events.
6. Resignation of registrant's directors.
7. Financial statements and exhibits.
8. Change in fiscal year.

from the prior auditor stating agreement or disagreement with the corporation's filing. In case of disagreement, the auditor was requested to explain why it was felt that the corporate disclosure was deficient. The 8-K was to be due at the SEC ten days after the end of the month in which the new auditor was engaged.

In 1974, the SEC proposed increasing the level of disclosure concerning corporations changing auditors in Securities Act Release (SAR) 5534 (SEC, 1974). The Commission justified this action by stating the need to strengthen the auditor's independence from corporate management. As stated in SAR 5534 (p. 37999),

> It is essential that both the fact and the appearance of independence be sustained so that the confidence of the investing public in the reliability of audited financial statements and the integrity of the public accounting profession will be maintained and enhanced. To this end, the Commission has concluded that it is desirable to increase the level of disclosure regarding relationships between independent accountants and their clients.

The Commission felt that the practice of changing accountants in order to obtain more favorable treatment was a very real threat, and that increasing the disclosures on Form 8-K would discourage the practice of opinion shopping.

Late in 1974, in *Accounting Series Release No. 165: Notice of Amendments to Require Increased Disclosure of Relationships Between Registrants and Their Independent Public Accountants* (SEC, 1975), several amendments to the auditor change disclosure requirements were enacted. First, the date of the previous auditor's resignation or discharge was made a reportable event in addition to the prior requirement of the engagement of a new auditor.[33] Second, the change of an auditor for a significant subsidiary was also added to the list of necessary disclosures. Third was to be disclosure of qualified or adverse audit opinions received in the past two fiscal years. Fourth, the period for reportable disagreements was extended to the prior two fiscal years and the subsequent interim period. Fifth, disclosure of all disagreements, both resolved and unresolved, was required. The disagreements were now to be disclosed on the 8-K, not on

[33] This means that the company must file two separate 8-Ks if the discharge (or resignation) of the prior auditor and the employment of a successor auditor are separated by more than fifteen days.

a separate letter. Sixth, Regulation S-X was amended to require footnote disclosure on financial statements, quarterly and annual, for any contested items reported on the 8-K. In addition, the footnote disclosure was to disclose the difference between the reported financial statement disclosure and what would have been reported if the alternative accounting treatment had been followed. Finally, the proxy statement was to now contain a section describing the relationship with the company's auditor. This section was to contain the names of both the prior auditor and the current auditor, and any disagreements with the old auditor disclosed on the 8-K.

ASR 165 was intended to be a significant improvement over EAR 9344. A key item was the timely disclosure of the discharge or resignation of the prior auditor. The SEC (1974) felt that some corporations were unduly delaying disagreements by waiting to name a new auditor. Another key item was requiring disclosure of *all* disagreements with the prior auditor, including those that had been resolved, on Form 8-K and not in a separate letter. The SEC (1975) observed that reporting companies were not reporting disagreements when they apparently existed. At this time, the SEC was apparently satisfied with its new disclosure requirements. As stated in SAR 5534 (SEC, 1974, p. 38000), "It is believed that such disclosure requirements may have the effect of discouraging shifts in accountants simply to obtain approval of an alternative accounting approach."

In *Accounting Series Release No. 194: Reporting Disagreements with Former Accountants--Adoption of Amendments of Requirements.* ASR 194 (SEC, 1976), the SEC decided to relax the disclosure requirements in the face of criticism about ASR 165. This criticism centered around the disclosure of effects of alternative accounting procedures for Regulation S-X. The financial statement footnote disclosures listing the effects of disagreements with the prior auditor would now be disclosed only if the prior auditor's

treatment was not used and resulted in a material difference in the financial statements. ASR 194 represents only a minor change in auditor change disclosure requirements.

In 1977, the SEC changed the due date of 8-K disclosures in EAR 13156 (SEC, 1977a). The new requirement was that the 8-K would be filed within 15 calendar days of the event and that the auditor letter would be due no later than 30 days after the 8-K filing.

The SEC (1977b) then proposed requiring 8-K disclosure for all reasons for an auditor change and disclosure of whether the decision to change auditors was approved either by the audit committee or the board of directors. The Commission felt that "the increased disclosure of facts surrounding a change of auditors should aid investors in better understanding and evaluating the registrant's relationship with its independent accountants (SEC, 1977b, p. 53633)." Both proposed disclosures were designed to limit opinion shopping. The first, disclosure of all reasons for the change, was proposed in order to help identify disagreements that might have preceded a case of opinion shopping. The second proposal was intended to highlight auditor changes that were made solely by management. A change without board or audit committee approval presumably is a case of opinion shopping.

After receiving some critical replies concerning the first proposal, the SEC only adopted the second in *Accounting Series Release No. 247: Auditor Changes.* (SEC, 1978). Many respondents had suggested that in all likelihood, candid responses about reasons for the change would not be received. While the SEC did not require disclosure of all reasons for making an auditor change in ASR 247, it did recommend that 8-K disclosures include all the reasons. The SEC also voiced its concern about registrant enthusiasm for reporting disagreements because some companies did not report disagreements on the 8-K that later showed up on the former auditor's letter. It admonished registering companies to do better. ASR 247 represents only a minor increase in new disclosure

requirements. Perhaps the most significant portion of it was the warning for companies to start reporting disagreements.

In SAR 6594, the SEC (1985) stated its continued concern with opinion shopping and the reluctance of companies to report disagreements when changing auditors. The SEC restated its intent to attempt to control opinion shopping through full disclosure of all facts surrounding a change in auditor and any related disagreements between the management and the old auditor. It proposed requiring corporate disclosure of all contacts with outside auditors after the company had disagreed with its auditor and also asked for additional suggestions about solutions to the opinion shopping problem. Two years later, in SAR 6719, the SEC proposed additional disclosures about auditor changes (SEC, 1987, p. 24018):

> The information to be disclosed would be: (1) an identification of the issues that were the subject of those consultations; (2) a brief description of the newly engaged accountant's views on those issues; (3) the names of other accountants consulted and a general indication of the extent, if any, the views of such other accountants materially differed from those of the newly engaged accountant; and (4) a statement by the registrant whether it consulted the former accountant on those issues, and if so, a summary of the former accountant's views. The registrant would request that the former accountant provide a statement as to whether it agrees with the registrant's summary of its position on such issues, and if not, the respects in which it does not agree.

This led to the issuance of *Financial Reporting Release No. 31: Disclosure Amendments to Regulation S-K, Form 8-K, and Schedule 14A Regarding Changes in Accountants and Potential Opinion Shopping Situations.* (SEC, 1988). Under this release, "disclosure is required of only those issues discussed with the newly engaged auditors prior to their engagement that ... were the subject of a reportable event or disagreement with the former auditor (p. 12924)." Discussions with other auditors consulted but not hired need not be disclosed. A second disclosure was also required, discussing whether the former auditor resigned or was dismissed. Also, the disclosure requirements for the auditor relationship the proxy statement were amended to include disclosure of changes of auditor for the preceding two years and interim period, instead of disclosing any change in auditor since the last proxy statement.

In FRR 34 (SEC, 1989), the SEC moved to make the 8-K disclosure much more timely. Prior to this pronouncement, full disclosure could take up to forty-five calendar days after the change in auditor.[34] FRR 34 reduced the total time period to fifteen business days. The 8-K would now be due five business days after the change and the auditor letter would now be due ten business days after the 8-K filing, but in no case could the auditor letter be held by the company more than two days.

In summary, the SEC believes that opinion shopping is a threat and has attempted to restrict the practice of opinion shopping through requiring disclosure of the events surrounding the change in auditors. The pronouncements that enacted the disclosure requirements are summarized in Table 2. A corporation must now disclose (for the parent corporation and principal subsidiaries) both the termination of its external auditor and the selection of a successor on Form 8-K, on the next financial report (10-Q or 10K) and on the proxy statement. Any disagreements over accounting issues for the preceding two years must also be disclosed, accompanied by a letter from the auditor stating agreement or disagreement with the corporate disclosure. In addition, the issues discussed with the new auditor prior to his formal engagement must be disclosed. The change in auditor must now be disclosed within five business days.

Because of the mandated disclosure requirements, the filing of the 8-K has become the primary device for publicly announcing a change in auditor. Johnson and Lys (1988) found that for the period from 1973 to 1982, none of the 194 companies used in their study had a public announcement of auditor change prior to filing Form 8-K.[35] Because proxy statements must also contain auditor change information, it is possible that on occasion the public will receive news of the auditor change on the proxy statement prior

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[34] A company had fifteen calendar days in which to file the 8-K. The auditor letter that was to accompany the 8-K was due no later than thirty calendar after the 8-K filing.

[35] Johnson and Lys (1988) examined the *Wall Street Journal Index* for a period of six months around the 8-K filing. In 5% of the cases, a public announcement *followed* the 8-K filing. None preceded it.

Table 2. Summary of Disclosure Requirements.

SEC Pronouncement	New Disclosure Requirements
EAR 9344 (1971)	Disclose (8-K) engagement of parent's new auditor. 8-K due 10 days after end of month. Disclose (in separate letter) disagreements occurring over past 18 months. Corporation to request letter from auditor commenting on 8-K filing.
ASR 165 (1974)	Disclose (8-K) engagement of subsidiary's new auditor. Disclose (8-K) discharge of parent's & subsidiary's old auditor. Disclose (8-K) disagreements occurring over past two fiscal years. Disclose (8-K) qualified opinions for past two fiscal years. Disclose (on proxy) relationship with auditor. Disclose (on 10K, 10Q) alternative effects of disputed accounting rules.
ASR 194 (1976)	Revoke disclosure of alternative effects on 10K, 10Q.
EAR 13156 (1977)	8-K now due 15 calendar days after change. Auditor letter now due 30 calendar days after 8-K.
ASR 247 (1978)	Disclose (8-K) board or audit committee approval (if any). Warning to companies to completely disclose disagreements. Request for companies to disclose (8-K) all reasons for change.
FRR 31 (1988)	Disclose (8-K) issues discussed prior to engagement with new auditor.
FRR 34 (1989)	8-K now due 5 business days after change. Auditor letter now due 10 business days after 8-K.

to the filing of the 8-K. No studies have examined proxy statements for prior disclosure of the auditor change.

Significant changes in auditor-change disclosures have occurred in 1971, 1974, 1978, and 1988, producing five periods of auditor-change regulation. The differing levels of regulation could have affected company decision to switch auditors differently within each period. Most studies examining auditor switching have not incorporated these changing conditions into their analyses, which reduces the reliance that can be placed on their conclusions.

In addition, *Public Accounting Report* (1988a) reports a much higher incidence of auditor switching in the decade of the 1980s over prior years. This might be attributable to increased competition for audit clients (Berton, 1985) or for some other reasons. It is unclear that the same auditor change event is driving the market reaction over the entire 1971-1989 period.

To avoid the confounding that can result from using auditor changes from different periods, only auditor changes during the 1980-1986 period were addressed in this dissertation. The disclosure requirements for this period were as follows. An SEC reporting company experiencing either the disengagement of an auditor or the engagement of a successor auditor was required to disclose the event in Item 4 of Form 8-K within fifteen calendar days. Any material disagreements for the preceding two years, resolved or unresolved, between the company and the prior auditor were also to be disclosed. A letter from the prior auditor stating agreement (or the lack thereof) with the company's position on the existence of disagreements had to accompany the 8-K. The company was also required to disclose whether the audit committee and the board of directors were involved in the decision to change auditors.

2.3.2 Empirical studies of the market reaction to a switch of auditors.

The empirical studies reviewed in this section--Fried and Schiff (1981), Smith and Nichols (1982), Nichols and Smith (1983), Wilson (1987), Smith (1988), Eichenseher, Hagigi, and Shields (1989), Teoh (1989), and Johnson and Lys (1988)--study the market reaction to disclosure that a company is voluntarily changing auditors.

Fried and Schiff (1981) were the first researchers to study the market reaction to a company switching auditors. Their research was motivated by the SEC justification of its regulation of auditor switches, i.e., its desire to curb opinion shopping. That is, the market should react in a negative manner to a company attempting to decrease auditor independence by switching auditors. Fried and Schiff's principle testable hypotheses are that (1) the market should react negatively to an announcement of an auditor change, (2) the market should react negatively to an announcement of an auditor change that follows a disagreement between management and the auditor, and (3) the market should react positively to a change from a non-Big Eight (NBE) to a Big Eight (BE) auditor.

Fried and Schiff identify 48 NYSE and AMEX companies that changed auditors from 1972-1975 for which Center for Research in Security Prices (CRSP) return data were available for five years surrounding the auditor change. They report a significant negative excess return for a 21 week period surrounding the 8-K filing date. They do not report a significant negative reaction for the ten companies of their group (21%) that disclosed a disagreement between management and the auditor. They also do not report a significant positive reaction for the seven companies (15%) that switched from a NBE to a BE auditor.

Fried and Schiff's conclusion of an overall negative market reaction to a change in auditors is questionable for the following reasons. First, their sample companies

changed auditors from 1972-1975, which means that the market was reacting to announcements under two sets of disclosure rules. Second, they do not report checking for prior announcements in *The Wall Street Journal* (WSJ). Third, their window around the event is quite wide. Use of a wide window to test the market reaction to an event is used when it is uncertain when news of the event reaches the market. But it has the disadvantage that it may contain superfluous events that affected the market reaction. Their 21 week window may have included many more events than just the auditor change. Therefore, their window really measured the excess market return for the period surrounding the auditor change, and not just the disclosure itself. Since Fried and Schiff were concerned with the reaction to SEC disclosure rules, a narrower window of a small number of weeks (one or two) surrounding the 8-K filing may have been more appropriate. Fourth, they use a paired sample matched on the bases of industry and long-term beta. Paired samples may produce weak results because of the difficulty in locating a close match. Finally, the disagreements subset and the NBE to BE subset are too small to have adequate statistical power.

Smith and Nichols (1982) examined disagreements (reported with auditor switches on Form 8-K) to determine if they are viewed by the market as valuable information in setting the value of a security (Fried and Schiff's second hypothesis). They report a market reaction that is significantly more negative for 8-Ks containing information about disagreements than for 8-Ks not containing information about disagreements. Smith and Nichols' study addresses several of the shortcomings of the Fried and Schiff study. First, their sample group contained 27 companies reporting disagreements on Form 8-K. Second, they checked *The Wall Street Journal* for confounding or prior announcements. Third, they tested for market reaction in the week of the 8-K filing, which is a significantly smaller window than that used by Fried and Schiff. Fourth, they used a two sample t-test to test the difference between the means of the two groups. Thus,

they avoided the loss of power associated with failure to find an exact match. Their study, however, covers 1973 to 1979, which falls under three different sets of SEC disclosure requirements.

Nichols and Smith (1983) were motivated by the contention that larger auditors are perceived as more credible than smaller auditors (Dopuch and Simunic, 1980, 1982; DeAngelo, 1981a, 1981b). They argue that investors will react positively to a change to a larger auditor and negatively to a change to a smaller auditor. They only tested this argument in one direction, however. They hypothesized that companies switching from BE to NBE auditors would have a more negative reaction than companies switching from NBE to BE auditors. From testing a sample of 29 companies switching from NBE to BE auditors, Nichols and Smith report being unable to find the hypothesized difference. Nichols and Smith's results cannot be applied in support of the monitoring hypothesis because a change to a larger auditor may not necessarily be an attempt to control agency costs and therefore may not be perceived as good news, nor a change to a smaller auditor as bad news. Their study also ignores changes in disclosure requirements during the period covered 1973 to 1979.

Smith (1988) studied the usefulness of the increased disclosure requirements dictated by ASR 165 (SEC, 1975). ASR 165 changed the reporting event from the engagement of a new auditor to the termination of the old auditor. This means that a company may have to file two 8-Ks: one when there is a disengagement, and another when there is at least a fifteen day delay before hiring a new auditor. Smith tested 8-Ks reporting the disengagement to see if they could be characterized as containing more bad news than 8-Ks containing disclosure of both disengagement and engagement.[36] He reports that, for 8-Ks that disclosed both a disengagement and a new auditor engagement,

[36] From the SEC's perspective, bad news is defined as reporting a disagreement and/or reporting a recent qualified opinion (SEC, 1975).

35% of NYSE and AMEX company filings before 1974 contain a disclosure of a disagreement and/or a qualifed opinion compared to 48% of filing companies after adoption of ASR 165. For companies that delayed naming a new auditor after ASR 165 was issued, the percentage is 86%. That is, more companies have disclosed bad news after ASR 165 than before, and bad news is more likely if there is a delay in name a successor auditor. Smith also reports that the market reacts negatively to post-ASR 165 filers who delay naming a new auditor, but it reacts in a neutral fashion to all 8-Ks in their sample that name both an old and new auditor. After a closer examination of individual company 8-Ks, he concluded that the group that delayed naming a new auditor did so involuntarily. Smith's sample contained auditor changes from 1973-1982.

Johnson and Lys (1988) were motivated by the signalling hypothesis. They argue that a change to a larger auditor should provoke a positive market reaction, a change to a smaller auditor should provoke a negative reaction, and a change to a similar auditor should provoke no reaction. Using daily returns, they report being unable to find significant non-zero mean market price reactions for the three groups or for the overall group during a three-day window. They do report that the variance of the return increased for the subset of companies switching to a smaller auditor, implying offsetting reactions. The only significant market returns were for accumulations over longer periods of time (the two months before and the two months after) surrounding the announcement. These results do not support the signalling hypothesis because the focus is not at the time of the *event* of announcing a change in auditor, and because the window is too long to account solely for news leakage. Johnson and Lys were also unable to verify Smith and Nichols' (1982) finding of a negative market reaction to 8-K filings that disclose a disagreement between management and the prior auditor. Their study can be criticized because the time period of auditor changes (1973-1982) disregards changes in SEC disclosure requirements.

Eichenseher, Hagigi, and Shields (1989) examined the effect of auditor change announcements in the OTC market. Their study of 87 companies that changed auditors during 1980-1982 produced results showing a significant negative market reaction to an auditor change disclosure. Their finding of an aggregate market reaction in the OTC market contrasts with prior studies that found no aggregate market reaction on the NYSE or AMEX.

Wilson (1987) was motivated by the opinion shopping motivation for a change in auditors. His premise is that investors generally will react negatively to an announcement of a change in auditors because they perceive that the company may be opinion shopping (Schiff and Fried, 1981). He reasons that investors are more likely to foresee an auditor change by a company in financial distress because companies in financial distress are more likely to change auditors than companies in financial health. This led Wilson to predict that healthy companies will experience a negative price reaction to a change in auditors, whereas distressed companies will not. Wilson identified 79 NYSE and AMEX companies that (1) changed auditors from 1977 to 1981 and (2) had sufficient CRSP return data. He used the parameters from Ohlson's (1980) multivariate failure prediction model to compute a financial condition score. He ranked the 79 companies on the basis of this scale, and divided them into groups of high financial risk (40 companies) and low financial risk (39). He reports that only the low financial risk group of companies had a significantly negative market reaction for the week the SEC received the 8-K.

Teoh (1989) attempted to find support for the opinion shopping and monitoring hypotheses of motivations for changing auditors. She identified auditor changes from 1973 to 1985. Her sample did not include many auditor changes from the 1980s because she identified the change date from *Who Audits America.* During the 1970s, *Who Audits America* listed the year, month, and day of the auditor change. During the 1980s, how-

ever, *Who Audits America* stopped listing the day, often did not list the month, and sometimes left the date field blank. If the date of the 8-K was not available, she could not separately identify 8-Ks for auditor switches in the SEC master list of filings. Such companies could not be included in the sample because the SEC master list of filings was the source for the SEC receipt date and the on-file date.[37]

Teoh reports a significant negative market reaction for 440 companies for a three day window around the SEC receipt date, but not for 341 companies around the on-file date. A five day window around the on-file date did produce a significant negative reaction, however. Further partitioning of companies by auditor changes in which there is a change in level did not produce significant reactions. Results are significantly negative for changes after a clean opinion but not significant after a qualified opinion. Teoh concludes that her results support the opinion shopping hypothesis but not the monitoring hypothesis.

All of the above studies (summarized in Table 3) are deficient because authors did not check earlier proxy statements for disclosure of the company's intentions. For example, on proxy statements mailed in April, 1978 and April, 1979, Acton Corporation asked shareholders to ratify Arthur Young as the auditor for the 1978 and 1979 fiscal years, respectively. On the proxy statement mailed in May, 1980, Acton stated that it could not recommend any auditor for 1980 because it intended to solicit bids from several auditing firms. The board of directors subsequently approved a change in auditors to Pannell, Kerr, Forster in October, 1980, and filed an 8-K in November. If the earlier studies included the Acton Corporation auditor change in their sample, a portion of the

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[37] The on-file date is the date the SEC finishes processing the 8-K and makes it available to the public. The on-file date is usually 0-3 days after the SEC receives the 8-K.

market reaction to the change in auditors occurred months before the researchers looked for it.[38]

These studies can also be criticized because of their choice of event date.[39] A change in auditors is the culmination of a process that typically starts when management first entertains the notion of a possible switch. Private discussions with prospective auditors are then conducted as management explores possible successors. If management decides to proceed, an agreement between the new auditor and management must be reached. The audit committee and board of directors are then asked to ratify the change in auditors. Within 15 calendar days, the company is required to disclose this event by filing Form 8-K with the SEC. After receiving the Form 8-K, the SEC processes it and makes it available to the public within one or two days.[40] Documents are placed in binders in the public reference room and are available for 30 days. After this time, microfiche copies of the 8-K are available to researchers from an information service in the public reference room. Figure 1 depicts this process and the three dates of interest.

Prior studies (Smith and Nichols, 1982; Nichols and Smith, 1983; Johnson and Lys, 1988; and Smith, 1988) were based on the assumption that the market immediately reacts to the public disclosure of an auditor change, and they used the SEC receipt date as the date when the information became publicly available. It is possible that two factors combine to weaken the clarity of results from focusing solely on the SEC receipt

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[38] There is a very good chance that the earlier studies did include Acton because it met all their sample selection criteria.

[39] An event date is the date(s) examined for an abnormal market reaction to a particular disclosure.

[40] This estimate of processing time (for 8-Ks prior to 1986) was provided by federal personnel and private researchers working in the SEC public reference room in Washington D.C. Since 1986, they estimate that the processing time has lengthened to two or three days because of the increase in the number of registrants. The SEC described its review process in FRR 34 (SEC, 1989, supra note 5, p. 8770):

> The Division of Corporation Finance reviews all incoming Item 4 Forms 8-K. This review may result in a referral to the Commission's Division of Enforcement, examination of the current or next financial statements on a high priority basis, or disposition according to the routine comment process. The Division of Enforcement makes appropriate inquiries when it receives referrals on these matters from the Division of Corporation Finance.

Table 3. Article Summaries: Market Reaction to the 8-K Disclosure.

Author	Sample: Exchanges Years Size	Event period: Date Window	Results
Fried & Schiff (1981)	NYSE, AMEX 1972-1975 48	SEC receipt weeks -10 to +10	Negative reaction to all changes. No reaction to changes following a disagreement. No reaction to NBE to BE changes.
Smith and Nichols (1982)	NYSE, AMEX 1973-1979 27	SEC receipt week 0	Negative reaction to changes following a disagreement.
Nichols and Smith (1983)	NYSE, AMEX 1973-1979 22 BE to NBE 29 NBE to BE	SEC receipt week 0	No reaction to NBE to BE changes. No reaction to BE to NBE changes. BE to NBE is significantly more negative than NBE to BE.
Smith (1988)	NYSE, AMEX 1973-1982 191 & 24	SEC receipt week 0	No reaction for 191 changes naming both old and new auditor. Negative reaction for 24 changes naming old but not new auditor.
Johnson & Lys (1988)	NYSE, AMEX 1973-1982 194	SEC receipt days -1 to +1	No reaction to all changes. No reaction to changes to same size or larger auditor. No significant negative reaction to change to smaller auditor. Significant squared reaction to change to smaller auditor.
Eichenseher, Hagigi, & Shields (1989)	OTC 1980-1982 87	SEC receipt weeks: 5 total	Negative reaction to all changes. Negative reaction to 11 BE to NBE changes. No reaction to 23 NBE to BE changes
Wilson (1987)	NYSE, AMEX 1977-1981 79	SEC receipt weeks 0 & +1	Negative reaction to changes by healthy companies. No reaction to changes by financially distressed companies.
Teoh (1989)	NYSE, AMEX 1973-1985 440	SEC receipt days -1 to +1	Negative reaction to all changes. No reaction to NBE to BE changes. No reaction to BE to NBE changes.
	341	On-file days -1 to +1	No reaction to all changes. No reaction to NBE to BE changes. No reaction to BE to NBE changes.

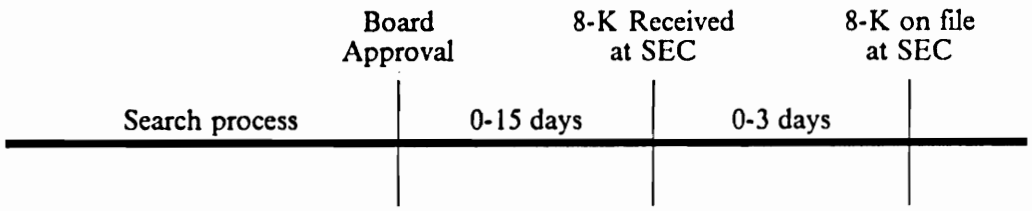

Figure 2. Events Pertaining to Disclosure of Auditor Change.

date. First, information disclosed on SEC reports may not always be impounded into the security price immediately. For example, Dopuch, Holthausen, and Leftwich (1986) found a negative market reaction to qualified audit opinions when reported in *The Wall Street Journal*, even though they were disclosed earlier on Form 10-K. Because the 8-K is not immediately available to the public upon receipt by the SEC, focusing on the SEC receipt date may result in being too early for the market reaction.

A second factor is that the first date the information can become available is that of the board of directors meeting where the proposed change of auditors is approved. If inside and/or outside directors pass this information on to outsiders, trading in that security subsequent to the board vote may incorporate the brokers' information about the auditor change. For example, Linn and McConnell (1983) used the board of directors meeting as the date on which news about antitakeover amendments became publicly available.

In summary, prior research has not been able to find an aggregate market reaction to the disclosure of a change in auditors for NYSE and AMEX companies. Nonetheless,

there is evidence of market reactions for *distinct groups* of companies. This lends support to a hypothesis that the market does react to auditor changes for individual or small groups of companies.

3.0 A Positive Theory of Auditor Change

The monitoring hypothesis asserts that managers are motivated to hire auditors because of the existence and level of agency costs. On the other hand, the monitoring hypothesis has not been formally extended to explain what motivates managers to change auditors. Empirical research has nevertheless contended that both levels of and changes in agency costs are related to the auditor selected when a company changes auditors, and has found support for these contentions.[41] In order to address the research question, it is necessary to extend the monitoring hypothesis to posit the manager's motivation for making a change in auditors and to predict the investor response to this change.

The following discussion presents an argument that the manager will have an incentive to adjust the system of monitoring and control conditional upon anticipated changes in the magnitude of the agency problem. This includes an adjustment to the level of monitoring provided by the auditor.

The amount the owner-manager receives from investors when selling a portion of the company is based on (1) the investors' expectations of the future dividends of the organization, (2) the cash flow from a liquidating dividend at the time of disinvestment, and (3) the investors' perceptions of the riskiness of these cash flows. The future cash flows will result from actions directed by the manager, and are affected by the projected

[41] This research was reviewed in Section 2.3.6, and includes Palmrose (1984), Eichenseher and Shields (1986), Healy and Lys (1986), Simunic and Stein (1987), Francis and Wilson (1988), and DeFond (1988).

level of monitoring. The expected value of the cash flows resulting from a dividend in any period, in the eyes of a hypothetical investor, can be calculated by:

$$C_t = \sum_{l=1}^{L} \sum_{k=1}^{K} a_{lt}\, p_{kt}(c_{kt} \mid A_{lt}) c_{kt} \tag{3.1}$$

where C_t = expected value of dividend in period t, $t = 1...T$,
c_{kt} = potential dividend of size k occurring in period t, $k = 1...K$,
A_{lt} = monitoring level l and other available information for period t, $l = 1...L$,
a_{lt} = probability of A_{lt} in period t
$p_{kt}(c_{kt} \mid A_{lt})$ = probability of c_{kt} in period t, given A_{lt}
$\sum a_{lt}$ = 1, and
$\sum p_{kt}$ = 1.

Then, assuming reinvestment at the existing rate of return at time t, the investor's valuation can be depicted using the risk-adjusted dividend capitalization formula (Myers and Turnbull, 1977; Easton, 1985), modified to reflect the perceived level of monitoring (as part of the vector of other available information):

$$V_0 = \sum_{t=1}^{T-1} \frac{C_t}{\prod_{t=1}^{t} (1 + E(R_t \mid A_t))} + \frac{C_T}{\prod_{t=1}^{T} (1 + E(R_t \mid A_t))} \tag{3.2}$$

where V_0 = present value of the dividend stream,
C_t = expected dividend in period t,
A_t = expected monitoring level and other information in period t,
$C_T \mid A_t$ = expected liquidating dividend at time T conditional upon A_T,
$E(R_t \mid A_t)$ = expected rate of return in period t conditional upon A_t.

The amount the owner-manager receives from investors results from an equilibrium. Equations 3.1 and 3.2 are presented to describe factors that underlie this price.

Investors base their expectations of C_t on several factors, including a_{lt},the probability of future levels of monitoring,[42] and $p_{kt}(c_{kt} \mid A_{lt})$, the probability of future dividends, given various levels of monitoring A_{lt}. Because of expected conflicts of interests between the manager and investors, the investors will presume C_t to be less than it could otherwise have been if there were no agency costs.[43] This will cause the initial valuation V_0

[42] A specific a_{lt} depends upon the level of monitoring originally selected by the manager (Simunic and Stein, 1986, 1987).

[43] At any given time, an auditor will offer to provide a specific mix of product (credibility from providing a full audit of financial reports, control, and other services) across all clients (Simunic and Stein, 1986). A

to be less than the maximum V_0 that could have been attained had there been no agency costs. In other words, V_0 will be net of the cost of agency, which in turn is the net of the residual loss and the benefit gained from taking steps to control the managers. The possibility of a residual loss is reflected in the vector of possible c_k. The manager's willingness to maintain control of agency costs is reflected in the vector of probabilities, a_{it}, of attaining the monitoring levels A_{it} that the manager may elect to employ.

V_0 also depends upon the risk-adjusted rate of return used by investors to discount expected dividends. If the manager agrees to a system of monitoring and control, the probability of a negative return[44] to investor-owners is reduced, which in turn reduces $E(R_t)$, which in turn increases V_0. In other words, the expected rate of return is conditional upon the level of monitoring and control chosen, of which auditing is a part. The possibility of the selection of monitors perceived as noncredible by the market will contribute to the risk of the investment. As investors perceive an increased possibility for greater risk, the expected R_t increases, which in turn decreases V_0.

Over time, three factors cause the current auditor's relationship with the owner-manger to deteriorate. First, the potential exists for the size of an organization's residual loss to change. Organizational and environmental changes create an opportunity for net agency costs to change materially. Various control mechanisms are designed to maintain the alignment of the manager's interest with that of the investors. If these controls continue to function adequately, net agency costs will change little. In other words, the manager continues to be constrained from taking actions that would not be within the range of actions representative of the investors' interest. If, on the other hand, the control mechanisms are overwhelmed and can no longer limit the manager's

rational manager will select an auditor after considering the benefits from the various auditor product mixes available at their respective costs. The choice will also consider the effect that the change in auditor quality will have on net agency costs and will depend upon the manager's preferences.

[44] Jensen and Meckling describe this negative return as a wealth transfer from investors to the manager.

actions to some subset that is agreeable to investors, the effect on the residual loss may be so significant that net agency costs change dramatically.

Second, there can be change in the vector of factors that control the magnitude of the residual loss. While the auditor may be able to provide a consistent level of monitoring, other measures of control may change, as in a change in degree of managerial ownership. These changes may contribute to net agency costs increasing, which might be brought back into control if the manager were to increase the level of audit quality.

Third, managers may change their preferences for maintaining a given level of net agency costs. One method of changing the level of net agency costs is to change the level of audit quality.

These changes cause a company's security prices to change on the secondary market as investors revise expectations of future managerial choices about investment projects and level of control. The forces that influenced the owner-manager to secure an effective level of monitoring at the initial sale of company equity will continue to influence the manager to maintain an appropriate level of monitoring in the future.

To illustrate, investors are price protected when the owner-manager originally sells equity in the company to outsiders. After the sale of equity, the manager could void the agreed level of monitoring and consume the entire amount of equity contributed by investors, one of the $c_{kt} \mid A_{it}$ possibilities, but is constrained from doing so by the existence of other control mechanisms. Examples of these are bonding provisions, the labor market for managers, executive compensation and bonus plans, partial ownership in the company, anticipated proceeds from future equity and debt offerings, and the market for corporate control (Fama, 1980). Thus, even if the manager does not retain a monitor that credibly informs investors of managerial actions, investors may still be protected because other control mechanisms can combine to give the manager an incentive to maintain appropriate monitoring levels.

When the manager takes an action to change auditors, say at time x ($0 < x < T$), the investors will revise their estimates of the value of the company. The associated distributions of a_{lt} and $p_{kt}(c_{kt} \mid A_{lt})$ will need to be revised. Consequently, the expectations of future C_t and risk will change. These changes will lead to a new V_x at time x, which may result in a change in the equilibrium security price if the change in valuations is material.

This leads to several observations. If it appears that agency costs are materially on the rise, management may seek to dampen the increase by changing to a higher quality auditor. Investor recognition of lower net agency costs and a reduction in risk, as a result of the auditor change, should lead to higher prices for the stock. The higher prices result because even though the investors may have recognized the potential for the manager to change to a higher quality auditor,[45] the actual change removed all uncertainty.

If agency costs appear to be decreasing materially, it may be that a lower quality auditor can maintain adequate control. Changing to such an auditor may have an immaterial effect on future returns because of the small decrease in fees relative to total cash flows. Thus, investors may be indifferent to a change in auditors when agency costs are on the decline. On the other hand, if investors do not believe that the lower quality auditor can aid in maintaining adequate control over the decreased agency costs, then the price that investors are willing to pay for the stock may decline.

These illustrations reflect the assumption that other measures of control are sufficient to provide an incentive for management to minimize net agency costs and choose an auditor of appropriate quality. If they are not sufficient, a change in audit quality

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[45] The investors may have anticipated this, given the existence of other measures of control.

may be disappointing to the market. To the extent that the investors are unable to perfectly foresee this change, the price they are willing to pay for the stock may decline.

This discussion of the monitoring hypothesis results in the following test model of auditor change. The first stage of the model is that a change in agency costs leads to a change in auditor quality. This is depicted as relationship A in Figure 3 (which was presented as Figure 3 in Chapter 1.). The second stage of the model is that the market reaction to an auditor change depends upon the change in auditor quality (relationship B in Figure 3) and the change in agency costs (relationship C).

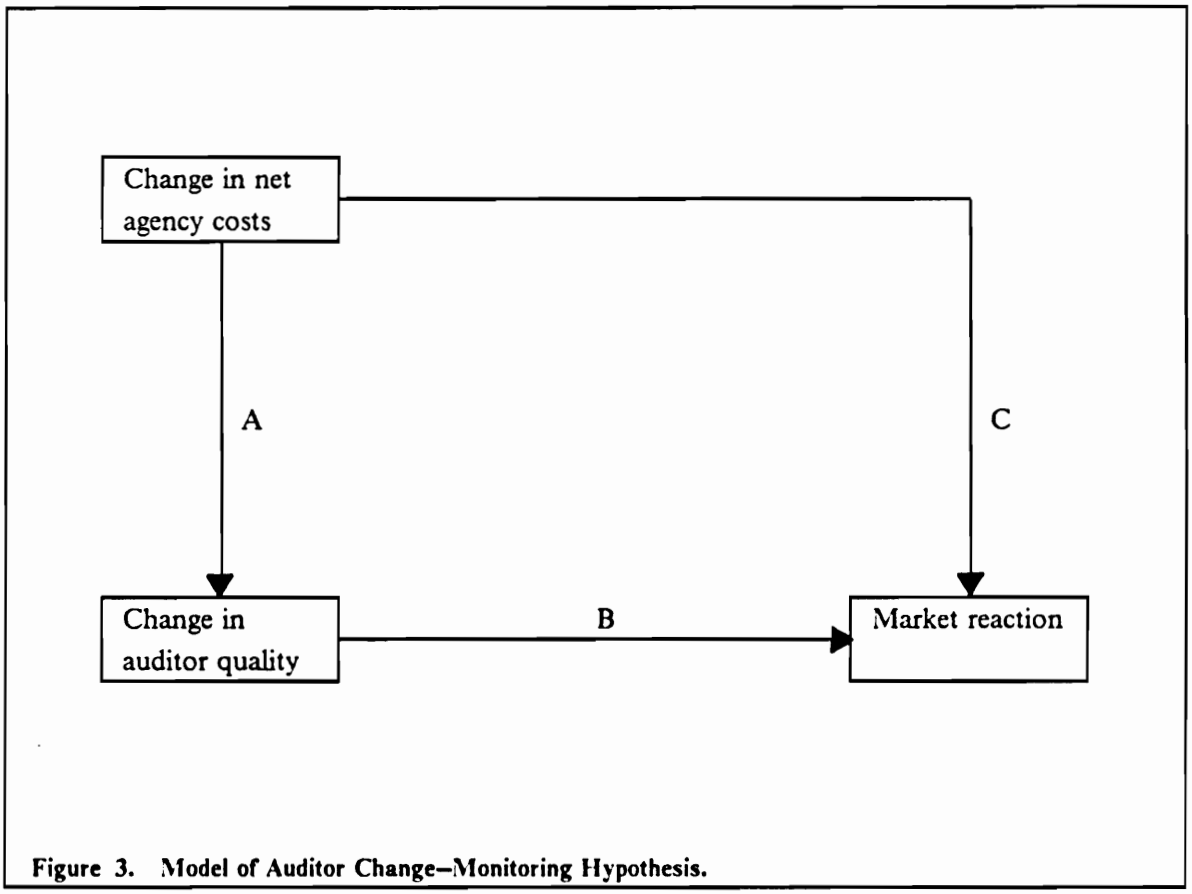

Figure 3. Model of Auditor Change–Monitoring Hypothesis.

4.0 Design of the Experiment

This section sets forth the hypotheses and the method of study that will be used to address the research question.

4.1 Research Hypotheses.

An auditor change model that is consistent with the monitoring hypothesis was presented in Chapter 3. As noted therein, the manager's motivation to use auditors is a function of the potential agency problem between the managers and shareholders. Over time, the perceived magnitude of this potential problem (as described by net agency costs) can change. A change in auditors may be an attempt by the manager to create a new, acceptable level of net agency costs by changing the level of auditor credibility. This part of the model implies the following null hypothesis:

H1: Change in net agency costs is unrelated to a change in auditor quality.

As discussed in Section 2.3.6, empirical research has not yet provided a powerful test of this part of the model.

If the change of auditor is an attempt to create a new, acceptable level of net agency costs, then investors will respond to this motivation as they form expectations

of future dividends.[46] Any subsequent trading of the company's stock will incorporate these expectations into the stock price as new investors will price-protect themselves upon investing. This leads to the following null hypotheses:

H2: Change in auditor quality is unrelated to investor reaction to a change of auditor.

H3: Change in net agency costs is unrelated to investor reaction to a change of auditor.

As discussed in Section 2.3.2 empirical researchers have not yet reported whether the market response to disclosure of an auditor change is an efficient response to changes in the agency environment between managers and shareholders. There is, however, evidence of a market reaction for some companies (Johnson and Lys, 1988; Teoh, 1989). While many companies experience no abnormal market reaction to an auditor change, others experience positive or negative reactions. The focus of the present study is explaining the cross-sectional variation of the market reaction. Coupled with the apparent relationship between change in agency costs and change in auditor quality, it seems plausible that the market should react to a change in an auditor's quality given a change in agency costs.

4.2 Operational Model.

The first hypothesis tests whether change in agency costs affects change in auditor quality. This relationship can be depicted by the following model:

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[46] This is based on $c_{kt} \mid A_{it}$ and $R_t \mid A_t$ in equations (3.1) and (3.2) of Chapter 3.

$$\text{change in auditor quality} = f(\text{change in agency costs}) \quad (4.1)$$

In this model, changes in agency cost variables (i.e., residual loss and other measures of control) are assumed to be exogenous.[47] The potential for auditor quality to change in response to changes in agency costs was discussed in Chapter 3.

Hypotheses two and three test whether change in agency costs and change in auditor quality are related to the investor reaction to disclosure of a change in auditors. This relationship can be depicted by the following model:

$$\text{market reaction} = f(\text{change in auditor quality, change in agency costs}) \quad (4.2)$$

In this model, changes in agency cost variables and change in auditor quality are assumed to be exogenous variables insofar as the market reaction is concerned.

This specification allows change in agency costs to have both a direct and indirect effect on the market reaction. In effect, the model describes a market reaction that is dependent on the change in auditor quality, given changes in company-specific agency costs.

These models form a system describing auditor change and the reaction to that change. Note that the investor reaction is modeled as a function of both change in auditor quality and changes in agency costs, whereas auditor quality is a function of those same changes in agency costs. As long as the investor reaction does not affect the change in auditor quality, and the errors from these equations are not correlated, the system is recursive (Gujarati, 1988).

The following paragraphs describe the operational variables for this model. The variables will be presented by type: (1) variables that serve as proxies for change in

[47] Although agency cost variables are considered exogenous for purposes of this study, changes in auditor quality may affect some of these variables, which in turn may affect subsequent changes in auditor quality.

agency costs, (2) variables that serve as proxies for change in auditor quality, and (3) a variable that serves as a proxy for the unexpected market reaction.

4.2.1 Proxy variables for changes in agency costs.

Agency costs are not observable because they result from investor expectations and perceptions of the agency problem. Therefore, in order to test the hypotheses, a number of operational variables must be used as proxies for factors related to the severity of the agency problem.[48] The theory developed in Chapter 3 posits these factors to be (1) change in the residual loss and (2) change in level of control. Following this line of reasoning, the operational variables suggested below were used as surrogates.

4.2.1.1 Surrogates for residual loss changes.

One aspect of the residual loss component of agency costs is that the residual loss increases as managers take actions in their interests rather than the investors' interest. An example of self-serving managerial actions is the managerial consumption of pecuniary and nonpecuniary company resources. The potential for managers to take such self-serving actions leads to the adoption of measures of control that constrain the manager's choices and limit the size of the residual loss. Paradoxically, when a manager's choices are constrained, the residual loss may also grow. That is, a manager whose actions are constrained has incentives to play it safe, the result of which may be a lower

[48] Problems of bias and inconsistency (the bias will not disappear in large samples) in the coefficient estimates usually result when proxy variables do not fully capture the nature of the true agency costs. It is hoped that the following variables are reasonable proxies, and therefore the problem is not significant.

expected portfolio return to investors and an increase in the residual loss. Myers (1977) and Lambert (1986), for example, argue that investors prefer that the manager take high-return investments even if they are risky because the investors can diversify away the risk at the portfolio level.

A second aspect of the residual loss is its magnitude. Wealth transfers from stockholder to manager can be greater for large companies than for small (Palmrose, 1984).

These aspects of the residual loss are developed into four operational variables (ACCR, DEBT, GROWTH, and MGMT) as follows. First, managerial consumption of company resources is a difficult variable to observe. Because managerial compensation is often based on accounting income, Healy (1985) argues that accounting accruals can be manipulated by managers to increase their bonus payments. The operational variable presumed to capture this aspect is short term accruals (receivables plus inventories less payables) as a percentage of total assets. Changes in this ratio, during the period observed, will be labeled ACCR (DeFond, 1988). Second, a manager's choice of actions is constrained when the company issues debt. Debt covenants can restrict production/investment policy, payment of dividends, subsequent financing policy, the pattern of payoffs to bondholders, and bonding activities by the company (Smith and Warner, 1979). The restrictive nature of debt covenants is presumed to be measurable by the percentage of long term debt to total assets at the time of the auditor change, because more debt implies more covenants, which in turn leads to more restrictions on top management (Chow, 1982; Palmrose, 1984). Changes in this ratio are labeled DEBT. Third, the size of the company can affect the magnitude of the residual loss (Palmrose, 1984). The change in size is measured by the percentage change in sales (adjusted for inflation), and is labeled GROWTH. Fourth, recalling equation (3.1), new management signals a need for investors to reanalyze C_t because of the possibility of new $c_{kt} \mid A_{it}$ and

$p_{kt}(c_{kt} \mid A_{it})$. MGMT is a dichotomous variable depicting whether there is a change in management prior to the change in auditors. The manager of interest in this dissertation is the chief executive officer (CEO) (Bonnier and Bruner, 1989).

4.2.1.2 Surrogates for changes in level of control.

In an attempt to realign the manager's interests with those of the investors (Smith and Watts, 1982), managers are often given partial ownership of the company and/or have their compensation tied to actions that specifically benefit stockholders. Another means by which investors can adjust the manager's level of control is to demand a level of monitoring that would inform investors of attempts by management to violate contractual or control provisions (Jensen and Meckling, 1976). In this regard, Easterbrook (1984) argues that net agency costs are reduced if the company is constantly in the market for new capital because the company's activities will be reviewed by the investment bankers and the new capital contributors. Shleifer and Vishny (1986) demonstrate that large block-holders have incentives to monitor management and exert influence over management through proxy fights and negotiations.[49]

These aspects of measures of control are developed into five operational variables (MSTK, LTCOMP, ISSUE, DIV, and LGOWN) as follows. Morck, Shleifer, and Vishny (1988) argue that the benefits to control from a manager's stock ownership follow a nonlinear function. They reason that at manager ownership levels of less than 5%, the manager may not own enough of the company to have an incentive to work for maximization of shareholder wealth; and at ownership levels in excess of 25%, manage-

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[49] Shleifer and Vishny (1986) analyzed large block holding in the 1980 Fortune 500 companies. The average holding of the largest shareholder was 15.4%, with 78% of the companies reporting that the largest shareholder held at least 5% of the common stock.

ment may be sufficiently entrenched to guarantee continued employment with the company regardless of performance. Between the levels of 5% and 25%, however, managerial stock ownership provides the proper incentive effect. Hence, managerial stock ownership is constructed herein as a dichotomous variable measuring whether the level of managerial and board ownership is within this range.[50] MSTK is the change in the observation variable over the measurement period. A second operational variable relates to the fact that bonus plans are often tied to accounting numbers such as net income (Smith and Watts, 1982; Healy, 1985). This variable, long term compensation, is a function of a dichotomous construct that measures the existence (1 = yes, 0 = no) of a performance plan linking executive bonuses to long term goals stated in terms of accounting numbers. LTCOMP is the change in this dichotomous variable over the period.[51] A third operational variable, ISSUE, is a dichotomous variable that measures whether the company has raised capital on a firm commitment basis prior to the auditor change. It is used because this type of offering, which is essentially a purchase by the investment banker for resale, is preceded by a due diligence investigation by the company's investment banker. Through this process, the investment banker signals its certification of the worth of the issue (Smith and Warner, 1979). Rozeff (1982) argues that

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[50] Morck, Shleifer, and Vishny (1988) analyzed the effect of officers' and outside directors' ownership on Tobin's q and found strong support for their contention of a nonlinear relationship between manager stock ownership and investor benefits. They then decomposed the board of director membership into company officers and outside directors and found no difference. Outside directors will apparently work harder to increase shareholder wealth when they have significant holdings, but can become entrenched with very high ownership levels. Because of the similar results, the effects will be combined to ease data collection.

[51] Prior studies (Francis and Wilson, 1988; DeFond, 1988) have used the variable BONUS, which is the change in short term bonus plans. BONUS will not be used here for two reasons. First, most companies have had short term bonus plans in place for a number of years. Therefore, a variable measuring change in the existence of bonus plan will have little discrimination. Second, it is difficult to gather detailed information on the specific details of bonus plans on 10-Ks and proxy statements because most disclosures merely discuss existence of the plans. Hence, a variable measuring change in bonus plan details will show little discrimination. Use of LTCOMP avoids both of these limitations. Fewer companies have long term compensation plans tied to accounting numbers because they have become popular only in the last decade. There are enough companies that have adopted or dropped performance plans during the period under study to allow LTCOMP to be a discriminating variable. The adoption of such plans is discussed on proxy statements (and often presented for shareholder vote), making the data readily available.

dividend payments reduce agency costs by forcing the company into the capital markets to undergo the scrutiny of the investment banker. DIV is used to capture this aspect of control is defined as the change in the dividend payout ratio (dividends per share ÷ earnings per share) over the observation period. LGOWN is the change in the percentage holding of the largest block investor. As blockholdings change, the largest holder faces different incentives to monitor management and hence, serve as a control (Shleifer and Vishny, 1986).

Johnson and Lys (1988) and DeFond (1988) measured the change in agency costs for the period of time from two years before the auditor switch to two years after the switch, recognizing that auditor switches can be made as an adjustment for changed conditions or in anticipation of changed conditions. There is no theoretical support for the choice of any particular length of time, however. DeFond (1988) repeated his analysis for shorter lengths of time with little difference in the empirical relationships. Because of (1) a problem of locating sufficient data for a four year period of change in agency costs, and (2) DeFond's experience of using shorter periods, a three year period was used in this dissertation to measure change in agency costs.

4.2.2 Proxy variables for change in auditor quality.

The level of monitoring supplied by the auditing firm is also not directly observable, hence surrogate variables that serve as proxies for auditor quality must be used. Principle surrogates suggested for auditor quality have been (1) size of the auditor (DeAngelo, 1981b), (2) brand name of the auditor (DeAngelo 1981b; Simunic and Stein, 1986, 1987), (3) market share of the auditor (Danos and Eichenseher, 1982; Shockley and Holt (1983), and, (4) relative importance of client's fees to total auditor revenues

(DeFond, 1988). These aspects of auditor quality are developed into three operational variables (ALEV, SPEC, and INDEP) as follows.

DeAngelo (1981b) argues that larger auditors have more incentive to remain independent (than smaller auditors) because they risk losing more client fees if they are perceived to be less than independent. DeAngelo (1981b) and Simunic and Stein (1986,1987) also argue that auditing firms have made large investments in brand name as a means of differentiating levels of credibility. They suggest that BE auditors provide a different or higher level of monitoring than NBE auditors. Beatty (1989) and DeFond (1988) argue that NBE auditors also seek to differentiate on the basis of credibility. They reason that NBE auditors with national practices (that is, offices in different areas of the United States) are perceived to be more credible than nonnational, NBE auditors. There is a high degree of redundancy between the size of the auditor and the brand name of the auditor. The auditors with the highest or best brand name (BE) are also the largest auditors in the United States. All BE auditors are larger than any other auditors on the bases of numbers of clients and revenues from audits (Wootton, Tonge, and Wolk, 1990). Similarly, national, NBE auditors are larger than nonnational, NBE auditors. Because both concepts vary in a similar manner with respect to size, one operational variable, ALEV, is used as a surrogate. ALEV is defined as the change in level of the auditor, which is measured as follows. The level of auditor is an ordinal classification variable where 2 = BE; 1 = national, NBE; and 0 = other NBE. ALEV is equal to the change in brand name of the auditor over the period of study. This ordinal classification variable can take five values: 2, 1, 0, -1, and -2. Positive values represent increases in auditor level.

Auditor market share by industry has also been hypothesized to be a surrogate of auditor credibility (Danos and Eichenseher, 1982; Shockley and Holt, 1983). Market share is measured using Danos and Eichenseher (1982) methodology, in which the size

of the market, say for a given industry, is defined as the total auditor fees from that industry. The amount of auditor fees from specific clients is considered to be proprietary information by auditing firms and is not publicly disclosed by the audited companies. Simunic (1980) and Turpen (1990) report that a surrogate for the size of a given audit fee can be computed by taking the square root of the client's net sales revenue. Danos and Eichenseher (1982) compute an auditor's market share within a given industry by summing, over all their clients within that industry, the square root of the client's net sales revenue, and dividing this by the sum, for all companies within the industry, of the square root of net sales revenue. In the present study, SPEC is the difference between the old and new auditor's industry market share. Positive values represent increases in auditor market share.

Finally, DeAngelo (1981b) considers independence to be synonymous with auditor quality.[52] DeFond (1988) constructed a measure of independence that is a function of client fees. That is, an auditor is hypothesized to be more independent in a situation where the client's fees are relatively small in relation to total auditor revenues, as compared to the case where the client's fees are relatively large. In the latter case, the auditor has an incentive to be less independent in order to protect the audit fee. DeFond defined a measure of independence to be the ratio of the client's sales revenue to the sum of sales revenues for all clients of the audit firm. Using the Simunic (1980) surrogate for auditor fees, the independence of an auditor should then be computed as the ratio of the square root of the client's revenue to the sum of the square roots of all client revenues for that auditor. In this study, INDEP is the difference between the ratio for the old auditor and the ratio for the new auditor. Positive values represent increases in independence.

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[52] This concept was reviewed in Section 2.1.

4.2.3 Proxy variable for the market reaction.

In this study, the market reaction to an auditor change is presumed to be measurable by the unexpected, or excess, return for a security on a given day. This excess return is the difference between the actual return for a security and the return expected for that security (Bowman, 1983; Brown and Warner, 1980, 1985).

This dissertation uses the risk adjusted model of Sharpe (1964) and Lintner (1965) to calculate the expected return of a given security. The single factor model, as depicted by Fama, Fisher, Jensen, and Roll (1969), describes the relationship between the return of a single security and the return of the market:

$$\tilde{R}_{it} = \alpha_i + \beta_i \tilde{R}_{mt} + \varepsilon_{it} \tag{4.3}$$

where,

$\tilde{R}_{it}$	is the return on security i in period t,
$\tilde{R}_{mt}$	is the return on the market portfolio in period t,
α_i, β_i	are parameters for security i,
ε_{it}	is the error term in period t,
$E(\varepsilon_{it})$	$= 0$,
$\sigma(\tilde{R}_{it}, \varepsilon_{it})$	$= 0$,
$\sigma(\tilde{R}_{mt}, \tilde{R}_{mt+1})$	$= 0$,
$\sigma(\varepsilon_{it}, \varepsilon_{jt})$	$= 0$.

The parameters of the model are first estimated during one period, using ordinary least squares regression, and then are used to calculate the excess returns during another period according to:

$$e_{it} = R_{it} - (a_i + b_i R_{mt}) \tag{4.4}$$

where,

R_{it}	is the observed return on security i in period t,
R_{mt}	is the observed return on the market portfolio in period t,
e_{it}	is the excess return of security i in period t,
a_i, b_i	are estimated constants for security i,

which are observed to have the properties,

$E(e_{it})$	$= 0$,
$Cov(e_{it}, e_{jt})$	$= 0$.

4.2.4 Other variables.

As discussed in Section 2.3.1, an 8-K must disclose (1) any disagreements between management and the prior auditor, and (2) qualified opinions on financial reports for the two preceding fiscal years. The SEC (1971b) believes that this information is necessary for investors to assess the significance of an auditor change disclosure. Smith and Nichols (1982) report a significant negative reaction to 8-Ks that disclose a disagreement, but no significant mean reaction to 8-Ks filed without mention of a disagreement. Prior receipt of a qualified opinion also appears to be a factor related to the market reaction to an auditor change disclosure (Teoh, 1989).

In this dissertation, DISAGREE represents the disclosure of a disagreement on form 8-K. QUAL measures receipt of a qualified opinion on either of the two preceding financial reports.[53]

4.2.5 Recursive model incorporating operational variables.

The model of factors related to the cross-sectional variation of the market return, equations (4.3) and (4.4), can now be summarized as:

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[53] A variable denoting either disagreement or receipt of qualified opinion, D&Q, is used as an alternative to use of both DISAGREE and QUAL. Inclusion of only D&Q is helpful if it adequately measures the company's dissatisfaction with its auditor as jointly described by DISAGREE and QUAL and if it facilitates use of the statistical procedures through using fewer degrees of freedom.

$$ALEV_i = \beta_{1,0} + \beta_{1,1}ACCR_i + \beta_{1,2}DEBT_i + \beta_{1,3}GROWTH_i + \beta_{1,4}MGMT_i + \beta_{1,5}MSTK_i + \beta_{1,6}LTCOMP_i + \beta_{1,7}ISSUE_i + \beta_{1,8}DIV_i + \beta_{1,9}LGOWN_i + \varepsilon_{1i} \quad (4.5)$$

$$INDEP_i = \beta_{2,0} + \beta_{2,1}ACCR_i + \beta_{2,2}DEBT_i + \beta_{2,3}GROWTH_i + \beta_{2,4}MGMT_i + \beta_{2,5}MSTK_i + \beta_{2,6}LTCOMP_i + \beta_{2,7}ISSUE_i + \beta_{2,8}DIV_i + \beta_{2,9}LGOWN_i + \varepsilon_{2i} \quad (4.6)$$

$$SPEC_i = \beta_{3,0} + \beta_{3,1}ACCR_i + \beta_{3,2}DEBT_i + \beta_{3,3}GROWTH_i + \beta_{3,4}MGMT_i + \beta_{3,5}MSTK_i + \beta_{3,6}LTCOMP_i + \beta_{3,7}ISSUE_i + \beta_{3,8}DIV_i + \beta_{3,9}LGOWN_i + \varepsilon_{3i} \quad (4.7)$$

$$e_{it} = \beta_{4,0} + \beta_{4,1}ACCR_i + \beta_{4,2}DEBT_i + \beta_{4,3}GROWTH_i + \beta_{4,4}MGMT_i + \beta_{4,5}MSTK_i + \beta_{4,6}LTCOMP_i + \beta_{4,7}ISSUE_i + \beta_{4,8}DIV_i + \beta_{4,9}LGOWN_i + \beta_{4,10}ALEV_i + \beta_{4,11}INDEP_i + \beta_{4,12}SPEC_i + \beta_{4,13}DISAGREE_i + \beta_{4,14}QUAL_i + \varepsilon_{4i} \quad (4.8)$$

where,
- e_{it} = excess return for company i at event date t,
- ACCR = change in ratio of short term accruals to total assets,
- DEBT = change in ratio of debt to total assets,
- GROWTH = percentage change in sales (adjusted for inflation),
- MGMT = change in top management,
- MSTK = change in dichotomous measure of management stock ownership,
- LTCOMP = change in existence of performance plan,
- ISSUE = new stock issues,
- DIV = change in dividend payout ratio,
- LGOWN = change in holding of largest block holder,
- ALEV = change in level of auditor,
- INDEP = change in ratio of client fees to total auditor revenues,
- SPEC = change in auditors' market share,
- DISAGREE = 8-K disclosure of disagreement,
- QUAL = qualified opinion given to prior financial reports, and
- ε_{ki} = the error term, k = 1,2,3,4.

Equations (4.5), (4.6), (4.7), and (4.8) suffer from an omitted variable problem. As discussed in Chapter 3, the change in auditor quality is also dependent upon a variable that measures price of an audit of given quality. The fee for an audit engagement could serve as a proxy for this variable, but it is not publicly available information. Several researchers (Simunic, 1980; Palmrose, 1986a, 1986b; Francis and Stokes, 1986; Simon and Francis, 1988) have examined the pricing of audit services, but had to survey companies for the fees they actually paid. Conclusions from this line of research are that (1) BE audit prices are significantly higher than NBE prices (Francis and Stokes, 1986),

(2) BE audit fees for large companies reflect a discount due to economies of scale (Francis and Stokes, 1986), and (3) audit prices are discounted for the first three years of an audit engagement (Simon and Francis, 1988). Omitting this price variable introduces a bias, and estimated coefficients are biased and inconsistent. In equations (4.5), (4.6), and (4.7), it seems reasonable to presume that change in auditor fees would be positively related to auditor quality variables and positively correlated with the other included explanatory variables.[54] As such, one could argue that, by omitting this variable, the OLS estimates of the remaining parameters are larger than they would have been had auditor fees been included. It becomes more difficult to assess the direction of the bias when auditor fees are omitted from equation (4.8). This results from the interactions between the direct and indirect relationships of the agency cost variables. Omitting the price variable makes it more difficult to reject the null hypothesis, because the error term, e_{kt}, captures the explanatory power of the omitted price.

4.3 Method of Data Analysis.

The first research hypothesis, *change in net agency costs is unrelated to a change in auditor quality*, will be analyzed through use of equations (4.5), (4.6), and (4.7). This tests leg A of the model in Figure 3. A univariate or a multivariate approach can be used to test the relationships among the operational variables when there are two or more variables on each side of the relationship. The strengths and weaknesses of each procedure will be discussed below in Section 4.3.1.

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[54] For example, auditors possessing greater credibility can charge more for their services.

The second and third research hypotheses, *change in auditor quality is unrelated to the investor reaction to a change in auditor quality*, and *change in net agency costs is unrelated to the investor reaction to a change in auditor*, will be analyzed through use of equation (4.8). This tests the relationships indicated by legs B and C in Figure 3. The principal statistical procedure used to test the relationship between the single continuous dependent (or response) variable, e_{it}, and the several independent (or criterion) variables is ordinary least squares (OLS) regression. The use of this procedure will be discussed below in Section 4.3.2.

4.3.1 Part 1: Auditor quality and agency costs.

This section is divided into two parts. The first part is a discussion of the form of the test of the first hypothesis. The second part covers the choice and application of the appropriate statistical procedures.

4.3.1.1 Testing the hypothesis.

H1 was tested by analyzing equations (4.5), (4.6), and (4.7). H1 was rejected when the agency cost change variables are jointly related to an auditor quality variable. The expected signs of the coefficients of the explanatory variables from these equations were specified a priori. Examining the statistical significance of the incremental explanation provided by individual independent variables in the presence of the others gives insight as to which aspects of agency costs are driving the association. Six of the independent variables used in this dissertation have been used by either DeFond (1988) or Francis and Wilson (1988). They hypothesized that ACCR, DEBT, GROWTH, MSTK, and

ISSUE would be directly related to change in auditor quality, and LGOWN would be inversely related. The expected direction was found for all variables except for ACCR, which was reported by DeFond to have a negative, but statistically nonsignificant relationship with change in auditor quality in the presence of the other variables. The variables used by Francis and Wilson (1988) and DeFond (1988), along with expected sign and reported results, are summarized in Table 4.

Three variables, MGMT, LTCOMP, and DIV, have not been used before to examine the relationship between changes in agency costs and change in auditor quality. All three are hypothesized to be directly related to change in auditor quality. When companies change CEOs, there is a potential for the residual loss to increase. Control mechanisms that worked for the prior CEO may not be sufficient to influence the new CEO to work in the interests of the stockholders. In response, the new CEO may change to a new auditor, signalling to stockholders a willingness to work in their interests. LTCOMP refers to additional compensation that is being offered to top management if it aligns its interests with those of the stockholders. Top management has an incentive to verify that it is not manipulating accounting data in order to achieve larger bonuses. Increases in the dividend payout ratio, measured here by DIV, presage an entry into the capital markets in which an investment banker will monitor the company's management (Rozeff, 1982). Because investment bankers prefer auditors of higher quality, an increase in the dividend payout ratio will tend to be associated with a subsequent change to an auditor of higher quality.

4.3.1.2 Statistical procedures.

The purpose of this section is to describe the appropriate statistical procedures for analyzing the relationship between auditor quality and agency costs.

Table 4. Expected Sign of Coefficients in Equations (4.5), (4.6), and (4.7).

Variable	Albrecht Expected	Francis & Wilson Expected	Francis & Wilson Actual	DeFond Expected	DeFond Actual
ACCR	+			+	-
DEBT	+	+	+	+	+ **
GROWTH	+	+	+ ***	+	+ ***
MGMT	+				
MSTK	+	+	+	-	- ** (a)
LTCOMP	+				
BONUS (b)		+	+ **		
ISSUE	+	+	+ *	+	+ *
DIV	+				
LGOWN	-	-	-		
Adj. R sq.			.045		.225
F stat.			2.520 **		6.180 ***

* $p < .10$
** $p < .05$
*** $p < .01$

(a) DeFond used a continuous variable measure of managerial stock ownership which is not comparable to the method used in Francis and Wilson or used here. He predicted a significant negative relationship between his measure and change in auditor quality.

(b) Francis and Wilson used BONUS to represent change in short term bonus plans that are tied to accounting numbers.

The three auditor quality variables are important features of equations (4.5), (4.6), and (4.7). Three dependent variables are necessary because different attributes of auditor quality have been suggested: size of auditor, industry concentration, and independence. While these are distinct and separate attributes, they can overlap. For example, larger auditors are more likely to audit several clients within an industry than are smaller auditors. Also, a large client is more likely to represent a major share of a smaller auditor's portfolio of clients than of a larger auditor's portfolio of clients.

Two general approaches can be used when there are two or more dependent variables, as in this case. The first general approach is a univariate approach. In this approach, the relationship between the several independent variables, representing changes in agency costs, and the dependent variables, representing changes in auditor quality, is analyzed one dependent variable at a time. Inferences are drawn separately from the three separate analyses concerning the relationship between agency costs and auditor quality. Though interdependencies between the independent variables are considered in the analysis, interdependencies between the dependent variables are not. Multiple regression most commonly relates a single continuous dependent variable to several independent variables, and is used here as an alternative to multivariate canonical analysis.

A second general approach is a multivariate approach. In this approach, the relationship between the three dependent variables and all the independent variables is analyzed concurrently. The advantage of this approach is that the interdependencies between the dependent variables are considered when analyzing the relationship between the dependent variables and the independent variables. Canonical correlation is the multivariate statistical procedure that is most appropriate here (Hair, Anderson, Tatham, 1987). It is not ideal, however, because it only analyzes the relationship between the two groups of variables in an indirect fashion. It would be ideal if a

multivariate technique existed that could directly examine the relationship between the dependent and independent variables.

Both approaches, univariate and multivariate, were used to infer whether changes in agency costs are related to changes in auditor quality. A description of the statistical techniques used, and their critical assumptions, is discussed below.

Univariate approach: Several multiple regressions.

In the univariate approach, the relationship between the variables representing changes in agency costs and the variables representing changes in auditor quality is analyzed one dependent variable at a time. This approach is used when it is not clear that the assumptions of the multivariate procedure, canonical correlation in this case, are being met. The assumption that is usually the most stringent constraint is that of multivariate normality. Univariate procedures do not face this hurdle.

The procedure that is used is multiple linear regression (Hair, Anderson, and Tatham, 1987). Multiple regression follows an ordinary least squares (OLS) approach to determine the best linear relationship between the independent variables and the dependent variable. It does this by forming the linear combination of the independent variables that maximizes the squared multiple correlation between the linear combination and the dependent variable.[55] This squared multiple correlation, or R^2, measures uniquely the percentage variation in the dependent variable that is predicted (or explained) by the independent variables.

Multiple regression has two uses here. The first is to determine if the agency cost variables predict ALEV, SPEC and INDEP. The second is to examine the strength of the association between the individual independent variables and the single dependent

[55] An alternative explanation of multiple linear regression is that it finds that linear combination of the independent variables that minimizes the sum of the squared errors of prediction.

variable. A detailed description of multiple regression, tests of significance, assumptions, and tests of assumptions can be found in Appendix A.

Multivariate approach: Canonical correlation.

The multivariate approach examines the strength of the relationship between two sets of variables in one procedure. The procedure that is appropriate for examining the relationship between a multiple dependent variables and multiple independent variables is Hotelling's (1936) canonical correlation (Hair, Anderson, and Tatham, 1987).[56] Canonical correlation is the most general case of the general linear model (Thompson, 1984). Canonical correlation is a test of association, not of causality. That is, it only determines if two sets of variables are related. It does this through forming the linear combination of the dependent variables and the linear combination of the independent variables such that the correlation between the two linear combinations (variates) is maximized.

Canonical correlation is used for three purposes in the current study. The first is to test the strength of association between the two sets of variables, changes in auditor quality and changes in agency costs. The second is to test the ability of the agency cost variables to explain the auditor quality variables. The third is to test the partial correlation between individual agency cost variables and the auditor quality variables. A detailed description of canonical correlation, tests of significance, assumptions, and tests of assumptions can be found in Appendix A.

Treatment of collinearity.

The tests indicate that some of the independent variables are highly correlated,

[56] According to Hair, Anderson, and Tatham (1987), variables can be either continuous or discrete.

which implies a problem with collinearity. Collinearity should be avoided because when two or more variables are closely related, the estimates of the regression coefficients become unreliable and statistical power is lost (making it more difficult to reject the null hypothesis of no association between the dependent and the separate independent variables). The problem may be mitigated by dropping redundant variables.[57] This was done in the present study before testing the coefficients of the model. Dropping one of a pair of highly correlated variables is used only when variables are closely associated. For example, GROWTH and ISSUE may measure the same variable because companies that actively seek capital often do so in order to expand. If successful, the company will experience an increase in sales. The drop rule followed was: if one variable of the pair was continuous and the other was discrete, the discrete variable was deleted. If two variables were highly correlated but not closely associated, both were left in the regression.

Unfortunately, dropping a variable can result in violating the assumption of a correctly specified model. In this case, however, with the potential for closely associated variables, model misspecification should not result. Variables may be dropped in both multiple regression (Pedhazur, 1982) and canonical correlation (Thompson, 1984) in order to find a better fit. It must be emphasized that this is not the motivation behind any variable deletion in this dissertation.

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[57] Gujarati (1988) suggests (1) dropping a variable(s) highly correlated with another variable, (2) using multivariate techniques such as factor analysis or principle components analysis, or, in a regression application, (3) ridge regression. Dropping a variable results in an underspecified model with biased estimators. Multivariate techniques and ridge regression are purely statistical solutions that lack interpretability. Dropping a variable at least allows interpretability.

4.3.2 Part 2: Market reaction, auditor quality, and agency costs.

This section is divided into three parts. The first part is a discussion of the form of the tests of the second and third hypotheses. The second part covers the factors involved in determining the form and amount of the market reaction to a disclosure of an auditor change. The third part details the statistical tests used in the tests of the hypotheses.

4.3.2.1 Testing the hypotheses.

Foster (1978) explains that the basic model used in the analysis of the cross-sectional variation of the market return is:

$$e_{it} = f(X_1, X_2, \ldots, X_K) \tag{4.09}$$

where e_{it} is the excess return for security i and the X_k are any number of explanatory variables associated with it. There are two advantages to using this method. First, the analysis is on a continuous scale. It is not necessary to partition the sample into discrete groups and compare average reactions (Bowman, 1983). This is particularly valuable when several variables are associated with the market reaction, and it becomes difficult to find a sample large enough to be partitioned into enough groups to study the individual effect of each variable. Second, this approach is valuable when there is an aggregate market reaction, but the positive market reaction for some companies is canceled by the negative market reaction for others. In other words, this approach uses the independent variables to explain the variation in the excess returns across the companies in the sample.

In the present study, the response variable is the e_{it} proposed in Section 4.2.3. The cross-sectional variation in the e_{it} was examined through using OLS regression.

H2 and H3 were tested through use of equation (4.8). The testing rule for H2 was to reject if the auditor quality change variables, in the presence of the agency cost change variables, disagreements, and qualified opinions, were related to the market reaction to a change in auditors. The testing rule for H3 was to reject if the agency cost change variables, in the presence of the auditor quality change variables, disagreements, and qualified opinions, were jointly related to the market reaction. The importance of each variable to the overall models was also examined. The expected signs of all the explanatory variables for equation (4.8) could not be specified a priori because of the interactions between the agency cost and auditor quality variables. It is safe to hypothesize, however, that auditor quality change variables are directly related to the excess market reaction and that the disagreement and qualified opinion variables are inversely related to the excess market reaction variable.

4.3.2.2 A closer look at the market reaction.

Excess returns and standardized excess returns.

As discussed before, the term market reaction that is used in this dissertation actually refers to the unanticipated market reaction on a given day. Two measures of the unanticipated market reaction are used. The first is a excess return, e_{it}. The second is a standardized return, v_{it}. The event study methodology that was used to compute these returns is described in Appendix B.

The analysis was performed using standardized returns because of the potential for the return generating function to be more variable for some companies than for others. Standardized returns are essentially Z-scores, where the excess return for a given com-

pany is divided by the mean squared error derived from the estimation period regression. In the case where the variance of the return generating function is constant across all companies, standardized returns are equivalent to the excess returns.

As discussed earlier, there are three dates that the change in auditor can potentially be disclosed, which means that the market returns had to be examined around all three dates (illustrated in Figure 4). The first event date is the date, reported on Form 8-K, on which the change in auditors was effected. This is specifically identified on Form 8-K as either a board of directors meeting or an audit committee meeting in a majority of auditor changes. The event date reported on Form 8-K is assumed to be the date of a board of directors meeting or an audit committee meeting for all auditor changes. The second event date is the SEC receipt date, which the SEC requires to be within 15 days of the first event date. The third event date is the date that the SEC places the 8-K on file in the public reference room. This is the earliest date that the public can peruse the 8-K. This date was not available for this study, hence the Disclosure, Inc. stamp date was used as a proxy for it. The on-file date usually occurs within three days of the SEC receipt date.

The estimation period for this study was defined relative to the initial event pertaining to the disclosure of the change in auditor (i.e., the date that the board and/or audit committee approved the change). The estimation period began 170 days before this date (-170), and proceeded until 21 days before (-21). This resulted in an estimation period of 150 days. The prediction period began 20 days (-20) before the board approval date, extended through the board date (date 0), and ended 20 days after the on-file date (on-file +20). Figure 5 illustrates the estimation and prediction periods.

Aggregation of excess and standardized returns.

The excess returns for each of the three event dates were used in equation (4.8) to

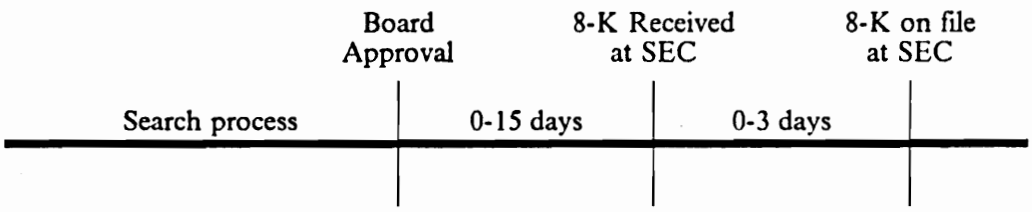

Figure 4. Events Pertaining to Disclosure of Auditor Change.

test the second and third hypotheses. This is because news of the change in auditors may be communicated to the market at or around any of the dates. For example, it is conceivable that news of the auditor change may leak out to the market when the agendas for the board meetings are distributed just prior to the actual board meeting. News of the meeting may leak to the market for a short period of time after the board meeting in some cases. It is possible also that once the company transmits the 8-K to the SEC, it starts communicating the news to the market. Of course, if the news has not be communicated to the market before, the news should reach the market immediately upon the 8-K being place on-file. Hence, excess returns were aggregated for short periods of time around each of the three event dates to form a cumulative abnormal return (CAR) for each company. The CAR is computed as:

$$CAR_i = \sum_{t=1}^{L} e_{it} \tag{4.10}$$

where e_{it} is the excess return for company i in period t (prediction)
t is the time period being aggregated, for days of the accumulation period, $t = 1...L$.

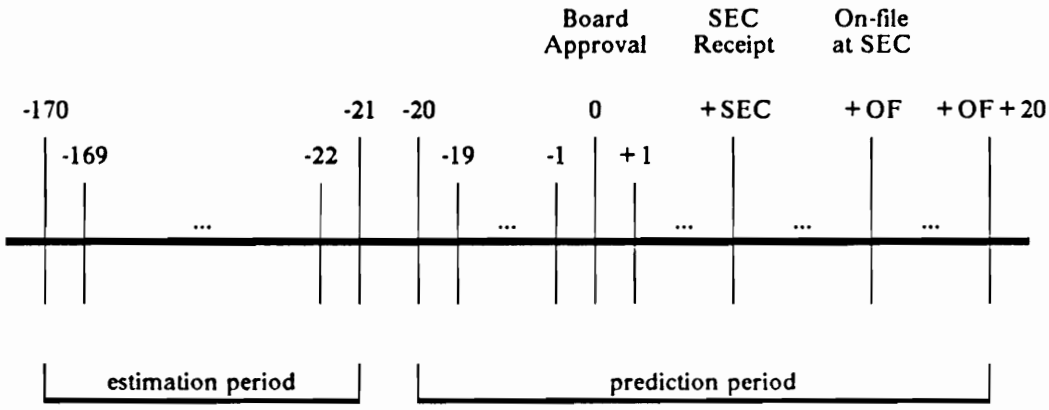

Figure 5. Estimation and Prediction Periods for Excess Market Returns.

Five aggregation periods were considered for the CARs. First, excess returns were aggregated for five days around the board date, starting two days before the board date and extending through two days after. The purpose of this aggregation is to focus on disclosures made around the board date, which is the first date of interest. An aggregation period of five days was chosen because of the uncertainty of the exact timing of information release associated with the board meeting. It is possible for information to be released as early as when the meeting agenda is distributed, which occurs one or two days before the meeting. It is also possible for information concerning the board meeting to reach the market after the board meeting. Second, excess returns were aggregated for five days around the SEC receipt date, starting two days before and extending through two days after. The purpose of this aggregation is to focus on disclosures made around the date of the SEC filing. This period has been used in prior studies (Johnson and Lys, 1988; Teoh, 1989). Third, excess returns were aggregated for seven days around the SEC receipt date, starting two days before and extending through four days after. The purpose for using this period is to capture the information released from the SEC

filing; the period is longest because it is uncertain when the news of the change becomes publicly available. The auditor change may be discussed by the company as soon as it makes the announcement. Alternatively, the market may not learn of the change until the SEC makes the 8-K publicly available a few days later. Fourth, excess returns were aggregated for both the board date and the SEC receipt date, using the 5-day aggregation period for the board date and the 7-day period around SEC receipt date described above. The periods may overlap for some companies if the 8-K is filed within three days of the event date. In this case, duplicate excess returns were deleted. Finally, excess returns were aggregated for three days around the Disclosure, Inc., date, starting the day before and ending the day after.

Alternative event date: proxy mailing date.

As noted earlier, prior studies that examined the market reaction to an 8-K disclosure of a change in auditors generally do not report a statistically significant mean reaction. One possible reason for this is that news of the change is communicated to the market in an alternative fashion *before* the 8-K disclosure. Wilson (1987) suggests that companies may sometimes disclose a change in the relationship with the auditor on a proxy statement mailed before the 8-K, although he did not look for prior proxy disclosure for companies in his sample. For all companies selected for this study, the proxy statements accompanying shareholder reports for the three fiscal year ends before the auditor change, as well as the proxy statement for the fiscal year end after the auditor change, were examined. Of particular interest was the section describing the company's relationship with its auditor.

It appears that companies usually use the same wording when they describe the relationship with their auditor. For example, some companies state, year after year, that the board has picked auditor X to serve as the company's auditor for the current fiscal

year. Other companies ask the shareholders, year after year, to ratify the selection of auditor X as the company's auditor for the current fiscal year. Of particular interest to this study are proxies, mailed before the 8-K disclosure, in which there is a change in wording in the section describing the relationship with the auditor. Wording of prior proxies may indicate an impending change in auditors, allowing the market to react long before the 8-K disclosure is made public.

For example, AAR Corp. held a board meeting on December 14, 1984 in which it ratified the change from Arthur Andersen & Company to Peat, Marwick, Mitchell & Company. This disclosure was filed with the SEC on December 26, 1984. AAR had established a pattern of wording its relationship with its auditor; for example, it announced that the Board had selected Arthur Andersen to be the company's auditor, on September 2, 1982, and September 16, 1983. But in a proxy mailed September 12, 1984, the company did not include a section describing its relationship with its auditor. On September 3, 1985, the company reverted back to its pattern, disclosing on its proxy that the Board had selected Peat Marwick as its new auditor for the current year. The company "hinted" of a change in the relationship with its auditor on the proxy mailed on September 12, 1984. Because proxy statements are widely disseminated, it appears reasonable that the market was aware of the increased potential for a change in auditor and had incorporated this potential into the security price.

Acton Corporation had established a pattern of wording on its proxy statements with respect to its relationship with its auditor, Arthur Young & Company. On April 6, 1978, and April 2, 1979, the company asked its shareholders to ratify Arthur Young as the company's auditor for the upcoming fiscal year. On May 1, 1980, the company announced that it might be appropriate for the company to switch from Arthur Young. On October 7, 1980, the Board met to ratify the change from Arthur Young to Pannell, Kerr, Forster. The 8-K was filed on November 17, 1980. The May 1 proxy

"suggested" to the market that the company was searching for a new auditor and that a change might be made. Again, it appears that the market had ample opportunity to incorporate this into the security price long before the 8-K disclosure.

Castle and Cooke, Inc., asked its shareholders on proxies mailed on September 12, 1983, and September 6, 1984, to ratify Peat, Marwick, and Mitchell & Company as the company's auditor for the upcoming fiscal year. On the proxy mailed on June 7, 1985, the company asked the shareholders to ratify Arthur Andersen as the company's auditor. The shareholders voted on this on August 23, 1985, and an 8-K was filed on October 4, months after the change was "announced" to the public via the proxy.

Prior studies have systematically included companies with similar disclosures in their samples when examining the market reaction to an 8-K disclosure of a change of auditors, which could have contributed to their weak and inconclusive results. To preclude such a bias, companies that "hint," "suggest," or "announce" a change in the relationship with their auditor (on a proxy statement mailed before the SEC receipt date of the 8-K) were deleted from Part 2 of the present study.

4.3.2.3 Statistical procedures.

The purpose of this section is to describe the statistical procedures used to analyze the relationship between the unanticipated market reaction (measured by excess returns and standardized returns) and changes in auditor quality, changes in agency costs, disagreements, and qualified opinions.[58]

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[58] Understanding the nature of the market reaction on a daily basis around the three possible event dates is also important in order to determine which period of market reaction should be used for the dependent variable above. Hence, statistical procedures for examining the strength of the daily market reaction are described in Appendix B.

Multiple regression was used to examine the above relationship. Its purpose was threefold. The first was to determine if the excess market reaction, e_{it}, is related to changes in auditor quality, changes in agency costs, *and*, disagreements and qualified opinions. This was tested through the regression F test, equation (A.1). The second purpose was to examine the strength of association between e_{it} and auditor quality in the presence of the other variables; the strength of association between the market reaction and the agency cost variables in the presence of the other variables; and the strength of association between the market reaction and disagreements and qualified opinions in the presence of the other variables. These relationships were tested using a series of restricted and unrestricted equations and a standard F test (equation A.4). The third purpose was to examine the strength of association between the individual regressor variables and the market reaction variable. This was tested with a t-test of the estimated coefficients (equation A.2).

All tests of assumptions were performed using procedures discussed in Appendix A. Collinearity was addressed by using the same reduced set of agency cost variables that was used Part 1 of the dissertation.

4.4 Data Collection Procedures.

4.4.1 Experimental group selection.

The experimental group was drawn from the population of NYSE and AMEX listed corporations that changed auditors from 1980 to 1986. Concentrating on listed

corporations instead of the entire population of corporations reporting to the SEC avoids including OTC traded securities that differ in several respects from the listed corporations.[59] Concentrating on the period from 1980 to 1986 allows the study to focus on auditor changes reported under the same SEC disclosure requirements. The U.S. economy was emerging from a recession and entering a period of steady growth during this period. In addition, auditor competition for clients had become an accepted practice by this time (Berton, 1985). Therefore, an auditor change in 1986 may likely have been influenced by the same approximate set of factors as an auditor change in 1980.

An auditor change had to meet the following requirements to be included in the sample:

1. It was identified as an auditor change in volumes 6-16 of *Who Audits America* (Harris, 1980-1986).

2. The company changing its auditor had sufficient security price data available on the Daily Return Tape of the Center for Research on Security Prices (CRSP) in order to compute excess returns.

3. A form 8-K reporting the auditor change was available.

4. The date that the 8-K was received by the SEC was plainly stamped on the document or was available at the SEC office in Washington, D.C.

5. The change in auditor was for the corporation's principal auditor.[60]

6. The 8-K announced both the disengagement of the predecessor auditor and the engagement of a successor auditor.[61]

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[59] For example, the NYSE and AMEX companies, forming one group, differ from OTC companies in percentage use of BE and NBE auditors (Dopuch and Simunic, 1980; McConnell, 1984b), the rate of unresolved disagreement between auditor and management (McConnell, 1985), and the rate of qualified opinions (Chow and Rice, 1982).

[60] This study is only concerned with changes in the principle auditor. Companies often change the auditor for a subsidiary if expert service is needed by the subsidiary.

[61] This study is concerned with the market reaction to a change in auditor quality. In cases where the successor auditor is not named, the ultimate change in auditor quality is not known at the time of the initial 8-K filing.

7. The company changing auditors was not acquired by merger within one year of the reported change in auditors.[62]

8. The reported change in auditor was not due to a merger in audit firms, as identified by *Who Audits America*, *Public Accounting Report*, or the 8-K.

9. The change in auditor was not for a company currently in bankruptcy status or for a company that would go into bankruptcy status within one year.[63]

10. The company changing auditors was not either a public utility or engaged in a banking, insurance, or diversified financial services industry. This means that all companies with SIC codes of 4900-4999 and 6000-6499 were deleted.[64]

Identification of the experimental group was conducted in the following manner. Three data banks were considered as the source from which to identify companies that changed auditors during the 1980-1986 period: (1) *Who Audits America*, (2) *SEC News Digest*, and (3) Standard and Poor's Compustat Service. *Who Audits America* is a semi-annual publication that contains a section identifying individual auditor changes for SEC reporting companies. It is readily available in many libraries and has been used as a source of auditor changes in many studies. The *SEC News Digest* is a daily publication of the SEC that also identifies individual auditor changes and is probably the most complete of the three sources considered here. Unfortunately, it is available only in a few libraries. Compustat contains a field identifying the auditor, and by comparing the code from year to year, it is possible to identify auditor changes. Its limitation is that

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[62] Companies in the process of being acquired by merger may change auditors in order to be more compatible with the acquiring company, and hence were systematically excluded from the study.

[63] Schwartz and Menon (1985) present evidence indicating that an auditor change for a financially distressed company (operationally defined as a company ultimately going bankrupt) results from different reasons than those motivating an auditor change for a healthy company. They suggest several alternative reasons, such as opinion shopping, desiring greater auditing services, desiring cheaper fees, and desiring an auditor with deeper pockets. Financial distress is defined in this study by a company already being in bankruptcy status or else entering into bankruptcy status within one year of the auditor change.

[64] Some industries, such as regulated utilities, banks, finance, and insurance, face heavy regulation that may reduce the need for auditors to serve as monitors (Dopuch, 1984) and thus were excluded. SIC codes of 4900-4999 refer to electric, gas, and water utilities. SIC codes of 6000-6099 refer to banks, 6100-6199 to savings and loan and other credit institutions, 6200-6299 to securities brokers, 6300-6399 to insurance carriers, and 6400-6499 to insurance agents and brokers.

while it has a separate code for all BE auditors, it has only one code for all NBE auditors. Hence, it will not identify a change from NBE to NBE.

Volumes 6-16 of *Who Audits America* were used as the source for auditor changes because of their availability. These volumes contain the listing of changes for 1981 through 1985, with overlap into 1980 and 1986 because of their semi-annual nature. 4,743 auditor changes were identified from these volumes. *Who Audits America* includes additional key information necessary to identify each change: the name of the company at the time of the auditor change, the date of the change, the old auditor, and the new auditor. The first of these fields is always complete, but there is substantial variation in the completeness of the information reported for the latter three fields. The date of change refers to the board approval date on the 8-K, and can be listed by month and year, year only, *Who Audits America* volume in which the change is first presented, or it can be left blank. The fields for identification of the old and new auditor are also sometimes left blank.

The 4,743 auditor changes were alphabetically ordered and compared to the master list of companies on the 1987 version of the CRSP daily returns tape. The CRSP daily returns tape contains a field that lists all official names for a company. 4,094 auditor changes were eliminated because the company did not have any CRSP data or because CRSP data availability fields indicated that there were no returns data within one year of the date of auditor change.

This left 649 possible auditor changes that had to be individually investigated in order to determine their eligibility for this study. The 8-Ks for 47 of these changes could not be located.[65] Concurrent examination of company 10-Ks revealed there was no change in the parent's auditor for 35 of the changes and that the 8-K was not available

[65] 8-Ks were obtained from the University of Georgia Library collection of microforms, the SEC public reference room in Washington, D. C., and Disclosure, Inc.

for the other 12 changes. The SEC receipt date was not stamped on the 8-K or available on the SEC computerized data base for 6 changes, making the change unsuitable for inclusion in an event study. Concurrent examination of company 10-Ks revealed that 62 changes duplicated listings in *Who Audits America.* Once the precise dates were known for 534 auditor changes, 136 were deleted because of insufficient returns data on CRSP. This left a group of 398 auditor changes.

Information about company mergers was gathered from several sources: a CRSP field listing reasons for a halt in trading of a company's securities, 8-Ks reporting the company merger with another company, proxy statements, and *The Wall Street Journal* articles. Information concerning auditor mergers was gathered from 8-Ks and the *Public Accounting Report.* Company SIC codes were gathered from Compustat and CRSP fields. If there was a discrepancy, the company's 10-Ks were examined in order to classify it by industry. Information concerning bankruptcy status was collected from *The Wall Street Journal* articles and discussions on subsequent 10-Ks and proxy statements. This information resulted in another 181 auditor changes being deleted, resulting in a final sample of 217 auditor changes meeting all criteria. Table 4 summarizes the sample selection process. Appendix C lists the old and new auditors for the 217 auditor changes used in this dissertation.

These 217 auditor changes were not for mergers or bankruptcy, or for companies in heavily regulated industries. On the other hand, the 217 changes exhibited sufficient returns data for estimating market model parameters and calculating excess returns for the dates of interest. Sufficient data to calculate values for the operational variables were not available for 16 of these changes. This left 201 auditor changes for use in testing whether changes in agency costs are related to changes in auditor quality.

News of the auditor change was disclosed in proxy statements mailed before the SEC received the 8-K or was reported in *The Wall Street Journal* for 64 of these com-

panies. This left a group of 137 auditor changes for which tests could be conducted on the relationship between changes in agency costs and auditor quality with the market reaction to the disclosure of the auditor change.[66] The composition of the groups used for parts one and parts two of the analysis is disclosed in Appendix D.

4.4.2 Data collection for operational variables.

4.4.2.1 Auditor quality variables.

ALEV, SPEC, and INDEP were computed using data collected from 8-Ks, *Who Audits America*, and Compustat.

ALEV is the change in auditor level. As described, in Section 4.2.2, auditors are classified into three levels. The names of the old and the new auditor were taken from the 8-K disclosing the change in auditor, and each firm was designated as Big Eight (BE),[67] other national firm (NATL), [68] or nonnational, small firm (SNBE). A BE designation carried a value of 2, NATL carried a value of 1, and SNBE carried a value of 0.

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[66] Prior disclosure of the change occurred on 73 of the 217 auditor changes. Of the remaining 144 changes with no prior disclosure, 7 were for companies for which sufficient data could not be collected for the operational variables of auditor quality and agency costs.

[67] The auditing firms known as the Big Eight (BE) first emerged as industry leaders in the mid-1950s (Wootton, Tonge, and Wolk, 1990). For thirty years, the BE have audited most of the clients on the NYSE. BE market share was 80% in 1956 and increased to 96% by 1989, with no individual firm auditing more than 20% of the total clientele. In 1956 there was a small difference in numbers of clients but a large difference in the size of the clients between number 8 Touche, Niven, Bailey, and number 9 S. D. Leidesdorf. By 1971 the gap between them on both numbers and size of clients had widened considerably. The names of BE for the period of this dissertation were Arthur Andersen & Company (AA), Arthur Young & Company (AY), Coopers & Lybrand (CL), Deloitte Haskins & Sells (DHS), Ernst & Whinney (EW), Peat, Marwick, Mitchell & Company (PMM), Price Waterhouse & Company (PW), and Touche Ross & Company (TR).

[68] The auditors classified (by *Who Audits America*) as other national firms (NATL) that were involved in auditor changes during this period of time were Grant Thornton (Alexander Grant & Company), A.M. Pullen & Company, Fox & Company, Laventhol & Horwath, KMG Main Hurdman (Main Hurdman, Main Hurdman & Cranstoun), McGladrey, Hendrickson & Pullen Moss Adams & Company, Pannell Kerr Forster & Company,and Seidman & Seidman.

Table 5. Sample Selection Process.

Process	Auditor Changes
Auditor changes listed in *Who Audits America*, volumes 6-16	4,743
Obviously not CRSP companies	4,094
Total possible auditor changes with CRSP returns	649
Duplicate listings in *Who Audits America*	62
10-K reveals no change for parent	35
8-K not located or SEC receipt date not available	18
Not currently traded on NYSE or AMEX, or less than 170 days of prior returns	136
Auditor changes with CRSP returns	398
Merger: company merged out within one year	79
Merger: 8-K filed for auditor merger	2
SIC: Bank or S&L	32
SIC: Utility	19
Subsidiary changes auditor, parent files 8-K	11
Subsidiary changes auditor, subsidiary files 8-K	13
Successor not named on 8-K	16
Bankruptcy status	7
Other	2
Auditor changes with CRSP returns meeting selection criteria	217
Auditor changes with CRSP returns meeting selection criteria	217
Insufficient data over three year period	16
Experimental group for first leg of model	201
Auditor changes with CRSP returns meeting selection criteria	217
Proxy discloses change before 8-K event date	59
Proxy discloses change before SEC receipt date	11
WSJ report before SEC receipt date	3
	144
Insufficient data over three year period	7
Experimental group for second leg of model	137

The level of the old auditor was subtracted from the new, producing possible values of +2, +1, 0, -1, and -2. Positive values represent an increase in auditor level.

Data to compute auditor market share within an industry were collected from *Who Audits America* and the April, 1990, version of the full service annual Compustat financial data tapes.[69] The variable used to measure size of the industry was defined to be the audit fees that the industry generates. Simunic (1980) suggests that an auditor's fees from a particular client can be estimated by taking the square root of the client's sales revenues. Danos and Eichenseher (1982) propose a surrogate measure of an auditor's industry market share. They estimate the auditor's revenues from that industry to be the sum of its estimated fees from individual clients. This total is divided by the total estimated fees that an industry generates in order to determine the market share of that auditor. The total clients and estimated fees in an industry were computed from Compustat data. Industries were classified by two-digit Standard Industry Classification (SIC) codes, and the composition of those industries came from Compustat. Sales data for the Compustat listed companies for the fiscal year preceding the change were used as the source data to calculate estimated company fees. The Compustat record for each company includes a field that identifies individual BE auditors, making it a simple matter to identify the clientele of individual BE auditors within a given industry. The clientele for NATL and SNBE auditors are listed only in *Who Audits America.* These clientele were cross-referenced against the SIC codes supplied by *Who Audits America* in order to identify the industry of each client and the sales of that client in the preceding fiscal year. The market share of the auditor was then computed by dividing the firm's estimated fees from an industry by the total estimated auditor fees from that industry. SPEC was computed for each company in the sample as the difference between the

[69] Three versions of the tape were used to determine the total population of SEC reporting companies. The versions were the Primary-Secondary-Tertiary tape, the Full Coverage tape, and the Research tape.

market share of the old auditor and the market share of the new one. Positive values represent an increase in the share of the market for that company's auditor as a result of the auditor change.

Total estimated audit fees were used to surrogate auditor size in the computation of the degree of auditor independence from company influence, INDEP. Base data for BE auditors were collected from Compustat, and base data for NBE auditors from *Who Audits America.* The share an auditor's total fees provided by the company is a ratio that was computed by taking the square root of the company's sales for the fiscal year preceding the change and dividing it by the square root of the total estimated auditor fees. INDEP was then computed by subtracting the ratio of the new auditor from the ratio of the old.

4.4.2.2 Agency cost variables.

The goal of the following data collection procedures was to collect sufficient data to reflect change over three years, two years before the change and one year after. Two factors complicated this. First, some of the data were available only once a year, including that from 10-Ks and proxy statements. This created a problem because companies change their auditors throughout the fiscal year and many changes are not close to a fiscal year end. Second, 10-Ks and proxy statements, needed to compute change over three years, were not available for all companies.

The first problem was addressed in the following manner. The board approval date was compared to the date preceding fiscal year end. If the date of the board ratification of the auditor change was within eight months of the prior fiscal year end, then data were gathered from three preceding year ends and one succeeding year end. If the change occurred more than eight months from the prior fiscal year end, then data were

gathered from two preceding year ends and two succeeding year ends. This meant that there were approximately two years of data before the change and approximately one year of data after the change. The second problem was addressed in the following manner. If data were only available for two years of change (three fiscal year ends, then the company was included if there was more than one year of data before the change. If both years of change data were before the change, then the company was included in sample if the change was within four months of the preceding year end.

The financial statement data that were needed to compute DEBT, ACCR, DIV, and GROWTH were taken from company records on Compustat. Missing data values were completed by referring to company 10-Ks and annual reports. Several fields for companies in two-digit SIC codes 65 and 67 were left blank. SIC codes 65 and 67 are the classifications for real estate development, real estate management, and real estate investment trusts. The real estate industry has special industry reporting standards that differ from the vast majority of companies. 10-Ks for these companies were consulted in order to compute receivables, inventories, and long term debt. DEBT is the difference in the long term debt to total assets ratio from the start of the measurement period to the end of the measurement period. ACCR is the difference in the ratio of receivables plus inventories minus current liabilities to total assets from the start to the end of the measurement period. Sales revenues, net of returns and discounts, were adjusted for inflation during the last year of the measurement period using the average index for the fiscal year. These revenues were discounted by three years to be restated in terms of average dollars for the fiscal year preceding the measurement period. GROWTH is the percentage growth in inflation adjusted sales. Ratios of dividends per share to primary

earnings per share after extraordinary items were computed for the first and last year of the measurement period. DIV is the difference in these ratios.[70]

Data for MSTK and LGOWN were gathered primarily from proxy statements. 10-Ks were consulted for missing data. The SEC requirements for disclosure of management, board, and large-holder stock holdings were constant over the period of this dissertation. 10-Ks and proxy statements contain a section listing the beneficial stock ownership for key officers and all board members that exceeded one percent of the total stock outstanding.[71] In addition, these statements list all owners with at least five percent beneficial ownership that had been made public on SEC schedule 13-G. Consistent with Shleifer and Vishny (1986), management stock ownership is defined as holdings by top management and inside board members (board members holding executive offices in the corporation). The percentage of management stock ownership was computed by taking the percentage ownership of all officers and board members (available on the proxy) and subtracting from that amount the ownership of all board members without executive offices. If the holdings were at least five percent, but less than 25 percent, then a value of 1 was assigned. If not, a value of 0 was assigned. MSTK was the difference in this value from the start of the measurement period to the end. The percentage ownership of the largest owner was used to compute LGOWN.[72] LGOWN is the difference, from start to end of the measurement period, of the largest percentage holding.

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[70] Specific fields used in the July, 1989, Standard and Poor's Compustat Annual Primary-Secondary-Tertiary, Full Coverage, and Research tapes were #2 - Receivables (total), #3 Inventories (total), #5 Current Liabilities (total), #6 Total Assets, #9 Long Term Debt (total), #12 Sales (net), #26 Dividends Per Share - Ex-Date, and #54 Earnings Per Share (Primary) - Including Extraordinary Items.

[71] Beneficial stock ownership includes all stock that is owned and directly controlled by the individual, plus additional stock for which the individual can conceivably influence the vote (such as stock held by a close family member or stock held by a trust for which the individual can vote), plus shares that could be owned if the individual exercised all stock options. For purposes of the one percent threshold, commons stock outstanding was increased for all stock options held by the key officers and board members.

[72] The company is unable to report the holdings of the largest holder when there are no holdings greater than five percent (available on schedule 13-G). In this case, a value of 5 percent was assigned to the large holder.

MGMT is a dichotomous variable measuring whether there was a change in the chief executive officer during the measurement period. Management changes were identified from the *Wall Street Journal Index*. A few companies did not designate a single chief executive officer, but rather used an executive committee of two or more officers. In this case, a management change was recorded if there was any change in the composition of this committee. ISSUE is a dichotomous variable measuring whether there was a new firm-commitment issue of common stock or long term debt during the measurement period. Data for issues were gathered from the *Directory of Corporate Financing*. The existence of a long term compensation plan was identified from the executive compensation section on the company proxy statement or 10-K. The existence of a plan was defined by a dichotomous variable: 1 if the company had one, 0 if it did not. LTCOMP is the difference in this dichotomous variable from the start of the measurement period to the end.

4.4.3 Calculation of abnormal returns.

Daily return data for the companies and the market as a whole were taken from the 1987 version of the Daily Return Tape of the Center for Research on Security Prices (CRSP). Several indices are available for the daily return for the market. The equally weighted index was selected because it measures the breadth of the overall market return. The principle alternative, the value weighted index, emphasizes the securities with the largest equity. In order to be included in the study, companies were required to have returns available for at least 75 days of the 150 day estimation period. In addition, the companies were required to have returns until at least 50 days after the date that Disclosure, Inc. made a copy of the 8-K.

4.5 Description of the Sample.

The sample selection procedures identified 217 auditor changes for NYSE and AMEX companies. Hypothesis one was tested with the 201 auditor changes for which data were available to calculate values for the agency cost variables. Hypotheses two and three were tested using the 137 auditor changes for which data were available for all variables and for which the change was initially disclosed on form 8-K. This section describes the two experimental groups.

The sample was selected from all auditor changes from 1981 through 1985 that were disclosed in *Who Audits America.* Some, but not all, of the 1980 and 1986 were also identified in this process. The *Public Accounting Report* (1988a, 1988c) notes an increasing trend for auditor changes throughout this period for the entire population of SEC reporting companies.[73] No trend is evident in this sample of NYSE and AMEX companies, however. Table 6 shows a constant number of auditor changes per year from 1981 through 1985 for the entire sample of 217 changes (mean of 33 per year) as well as the groups of 201 and 137 changes (means of 31 per year and 22 per year, respectively) for parts one and two of this study.[74]

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[73] It is also possible to discern a large increase throughout this period by examining the lists of auditor changes in *Who Audits America*, a semi-annual publication.

[74] The Pearson (1900) Chi-square, X^2, is used to test the null hypothesis that the number of changes in every year is equal to the average number of changes per year (see Appendix A for a description of this technique). The X^2 test statistics are sufficiently low to fail to reject the null for each group. The Pearson chi-square, X^2 and the maximum likelihood ratio chi-square, G^2 were used to determine if there was a difference in the yearly number of auditor changes for the 137 changes from the group of Part 1 changes used for Part 2 and the 64 changes that were not used for Part 2. The test statistics are $X^2 = 8.443$ ($p = .077$) and $G^2 = 8.310$ ($p = .081$). These tests support a conclusion of failure to reject the null hypothesis of homogeneity of group percentages. In other words, there is no significant difference in the yearly pattern of auditor changes between the two groups, and neither group has a statistically significant trend in the number of auditor changes per year. Although there are occasions when the test statistics will differ, they are similar in this case because (1) the sample sizes are large, (2) the expected cell values are large, and (3) the computed statistics are not extremely large.

There are at least three reasons why the increasing trend noted by the *Public Accounting Report* was not evident in this sample. First, the increasing trend was due in part to more OTC companies changing their auditors. Kauffman and Yardley (1990) used *Who Audits America* and Compustat to identify the population of corporations that changed auditors from 1981-1985. They report an increasing trend by OTC companies to change auditors: 1981 - 113, 1982 - 152, 1983 - 224, 1984 - 249, and 1985 - 241. Second, there was an increasing number of mergers during this period that affected NYSE and AMEX companies. Mergers during the first half of the period were responsible for 24 of the auditor changes that involved NYSE and AMEX companies, and mergers during the second half of the period contributed to 50 changes.[75] Third, there was an increasing trend, as a result of deregulation, for companies in regulated industries to change their auditors. Eleven of the auditor changes deleted for industry regulation changed auditor during the first half of the period, and 40 deletions occurred during the second half.

Data on the number of companies making auditor changes and their exchange membership are also reported on Table 6. The 217 auditor changes were made by 203 companies. No company changed auditors more than two times during the period of study. Ninety-eight (45%) of the 217 auditor changes were made by companies then listed on the NYSE. This percentage of NYSE companies was also observed in the samples used for both parts of the dissertation.[76]

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[75] Precise data on changes by year is not available. 8-Ks were not collected for all auditor changes involving mergers. *Who Audits America* identifies the date by month, year, or sometimes only by volume number. Volume number is available for all changes and is used here. Volumes 6-10 of *Who Audits America* identified auditor changes over 34 months. Volumes 11-16 covered 36 months.

[76] NYSE companies comprised 47% of the 201 auditor changes used in Part 1 of the study, and 44% of the 137 auditor changes used in Part 2 of the dissertation. The Pearson chi-square, X^2, the maximum likelihood ratio chi-square, G^2, and the Fisher exact test (see Appendix A for a description of this technique) were used to determine if there was an equal percentage of NYSE companies in each subgroup of the companies in the sample 201 auditor changes. All three test statistics ($X^2 = 1.525$ ($p = .217$), $G^2 = 1.524$ ($p = .217$), and $p = .229$ for the Fisher exact test) support a conclusion of failure to reject the null hypothesis. This means that the subgroup of 137 auditor changes used in Part 2 of the dissertation

Table 6. Auditor Changes by Year.

Year	All Changes	Part 1 Changes	Part 2 Changes	Early Disclosure
1980	25	18	14	4
1981	35	32	21	11
1982	31	29	22	7
1983	29	29	24	5
1984	36	36	27	9
1985	35	31	16	15
1986	26	26	13	13
	217	201	137	64
Changes/year (1981-1985) equal: Pearson Chi-Square	$X^2 = 1.12$ ($p > 0.99$)	$X^2 = 1.05$ ($p > 0.99$)	$X^2 = 3.01$ ($p > 0.95$)	$X^2 = 6.30$ ($p > 0.10$)
Companies	203	187	129	64
NYSE	98	94	60	34
AMEX	119	107	77	30

The sample of 217 auditor changes reflects a general movement toward BE auditors, as shown in Table 7. The disengaged auditor was a BE firm in 71% of the changes, and the newly engaged auditor was BE in 85% of the changes. The adoption rate for BE auditors did not depend upon the level of the disengaged auditor. 85% of the companies with a BE auditor changed to another BE auditor, and 85% of the companies with a NBE auditor switched to a BE auditor.[77] This trend was evident for both groups of 201 and 137 auditor changes.

has a similar composition of NYSE companies when compared to the group of auditor changes used in Part 1 of the dissertation. Although there are occasions when the test statistics will differ, they are similar in this case because (1) the sample sizes are large, (2) the expected cell values are large, and (3) the computed statistics are not extremely large.

[77] The Pearson chi-square, the likelihood ratio chi-share, and Fisher's exact test were used to test whether the adoption rate of BE firms differed depending on whether the old auditor was a BE firm or a NBE firm. The test statistics are sufficiently low to lead to a conclusion of failure to reject the null hypothesis of homogeneity of proportions. The test statistics are similar in this case because (1) the sample sizes are large, (2) the expected cell values are large, and (3) the computed statistics are not extremely large.

Table 7. Auditor Change Patterns–Two-Level Analysis.

A) Total group of 217 companies.

OLD: \ NEW:	BE	NBE	
BE	132	23	155 (71%)
NBE	52	10	62 (29%)
	184 (85%)	33 (15%)	217

Test of homogeneity:		
Pearson Chi-Square	$X^2 =$ 0.057	(p = 0.811)
Likelihood Ratio Chi-Square	$G^2 =$ 0.057	(p = 0.812)
Fisher's Exact Test		(p = 0.836)

B) 201 companies with sufficient data.

OLD: \ NEW:	BE	NBE	
BE	122	22	144 (72%)
NBE	48	9	57 (28%)
	170 (85%)	31 (15%)	201

Test of homogeneity:		
Pearson Chi-Square	$X^2 =$ 0.008	(p = 0.928)
Likelihood Ratio Chi-Square	$G^2 =$ 0.008	(p = 0.929)
Fisher's Exact Test		(p = 1.000)

C) 137 companies with sufficient data and no prior disclosure.

OLD: \ NEW:	BE	NBE	
BE	84	16	100 (73%)
NBE	31	6	37 (27%)
	115 (84%)	22 (16%)	137

Test of homogeneity:		
Pearson Chi-Square	$X^2 =$ 0.001	(p = 0.976)
Likelihood Ratio Chi-Square	$G^2 =$ 0.001	(p = 0.976)
Fisher's Exact Test		(p = 1.000)

This analysis was repeated with a three-level classification of auditor size, as shown in Table 8. That is, the NBE auditor firm classification was broken into national-NBE (NATL) and nonnational-NBE (SNBE). The results are similar to those reported for the two-level classification. The adoption rate of a BE, NATL, or SNBE auditor does not differ significantly depending on whether the disengaged auditor was classified as BE, NATL, or SNBE.[78]

The auditor change patterns were compared to the auditor change patterns in earlier studies. Sufficient data were disclosed in these studies to permit a comparison based on a two-level analysis. The change patterns reported in this dissertation are similar to those reported in earlier studies. The patterns are reported in Table 9.

BE auditing firms were involved in 207 (95%) of the 217 auditor changes studied in this dissertation. These 207 changes were analyzed to determine if any BE auditing firm was either gaining or losing clients at a different rate than the other BE auditing firms. The results are shown in Table 10. The firms with the largest net gains were Coopers & Lybrand with a net gain of +14 clients and Ernst & Whinney with +13. Three firms had net losses--Arthur Andersen with -2, Price Waterhouse with -3, and Touche Ross with -3. These differences, however, are not statistically significant. This pattern of gain or loss appears to be consistent in the groups of 201 and 137. The two firms with the largest net gains appear to have had different marketing strategies during this period. Ernst and Whinney's net gain of +13 came mostly from other BE firms (+11). Coopers & Lybrand's net gain of +14 came mostly from NATL firms (+3) and SNBE firms (+ 7).

The SEC (1974), as discussed before, is concerned with the perception that companies are opinion shopping when they change auditors. As a result, the SEC requires

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[78] The likelihood ratio chi-square test statistics are different from the Pearson chi-square statistics. The Pearson chi-square is more reliable for interpreting this table because the data are concentrated in a few cells, leaving few observations in several cells (see Appendix A for a discussion of this problem).

Table 8. Auditor Change Patterns–Three-Level Analysis.

A) Total group of 217 companies.

OLD: \ NEW:	BE	NATL(a)	SNBE(b)	
BE	132	18	5	155 (71%)
NATL	31	4	2	37 (17%)
SNBE	21	1	3	25 (12%)
	184 (85%)	23 (10%)	10 (5%)	217

Test of homogeneity:

Pearson Chi-Square	$X^2 =$	4.846	(p = 0.303)
Likelihood Ratio Chi-Square	$G^2 =$	4.320	(p = 0.364)
Number of cells $E(x_{ij}) < 5$		4.0	(44%)

B) 201 companies with sufficient data.

OLD: \ NEW:	BE	NATL	SNBE	
BE	122	17	5	144 (72%)
NATL	29	4	2	35 (17%)
SNBE	19	0	3	22 (11%)
	170 (85%)	21 (10%)	10 (5%)	201

Test of homogeneity:

Pearson Chi-Square	$X^2 =$	6.615	(p = 0.158)
Likelihood Ratio Chi-Square	$G^2 =$	7.900	(p = 0.095)
Number of cells $E(x_{ij}) < 5$		4.0	(44%)

C) 137 companies with sufficient data and no prior disclosure.

OLD: \ NEW:	BE	NATL	SNBE	
BE	84	14	2	100 (73%)
NATL	17	2	2	21 (15%)
SNBE	14	0	2	16 (12%)
	115 (84%)	16 (12%)	6 (4%)	137

Test of homogeneity:

Pearson Chi-Square	$X^2 =$	7.431	(p = 0.115)
Likelihood Ratio Chi-Square	$G^2 =$	8.474	(p = 0.076)
Number of cells $E(x_{ij}) < 5$		5.0	(56%)

(a) NBE auditors that have national practices are labeled NATL.
(b) NBE auditors that do not have national practices are labeled SNBE.

Table 9. Comparison of Auditor Change Patterns to Earlier Studies.

Author	Sample: Exchanges Years Size	BE to NBE	NBE to BE	Same	BE to BE	NBE to NBE
This dissertation (1991)	NYSE, AMEX 1980-1986 217	10.6%	24.0%	65.4%	60.8%	4.6%
Francis & Wilson (1988)	NYSE,AMEX,OTC 1978-1985 196	10.7%	29.1%	60.2%	--------	--------
Fried & Schiff (1981)	NYSE, AMEX 1972-1975 48	4.2%	14.6%	81.2%	77.1%	4.2%
Johnson & Lys (1988)	NYSE, AMEX 1973-1982 194	12.9%	26.2%	60.9%	52.9%	8.0%
Eichenseher, Hagigi, & Shields (1989)	OTC 1980-1982 87	12.6%	26.4%	60.0%	--------	--------
Wilson (1987)	NYSE, AMEX 1977-1981 79	19.0%	20.3%	60.7%	49.4%	11.4%
Teoh (1989)	NYSE, AMEX 1973-1985 440	13.0%	21.1%	65.9%	58.2%	7.7%

that companies changing auditors must disclose on form 8-K company-auditor disagreements and prior receipt of a qualified opinion. In the present study, 5% of auditor changes contained a disclosure of a disagreement, 20% of the companies changing auditors had received a qualified opinion from the disengaged auditor during at least one of the two preceding fiscal years, and 23% of the changes disclosed a disagreement or had a prior qualified opinion. An analysis of this pattern by level of auditor change is presented in Table 11. There is a statistically significant difference in the rate of disagreements and qualified opinions when comparing BE to NBE changes to the other types of changes.[79] Thirteen (57%) of the 23 changes from BE to NBE contained dis-

[79] The reported test results are for the combination of disagreements and qualified opinions. The tests were

Table 10. Net Gains (Losses) by Individual BE Auditors.

A) Net gains (losses) for entire group of 217 auditor changes.

				From:		
Gains to:	Gains	Losses	Net Change	BE	NATL	SNBE
AA	27	29	-2	-7	+4	+1
AY	13	12	+1	+3	-3	+1
CL	32	18	+14	+4	+3	+7
DHS	17	11	+6	-1	+5	+2
EW	36	23	+13	+11	+1	+1
PMM	24	21	+3	+1	+1	+1
PW	20	23	-3	-6	+1	+2
TR	15	18	-3	-5	+1	+1
BE	184	155	+29	0	+13	+16

Test of independence:
Pearson Chi-Square $X^2 = 6.43$ ($p = 0.491$)
Likelihood Ratio Chi-Square $G^2 = 6.47$ ($p = 0.486$)

B) Net gains (losses) for entire group of 201 auditor changes.

				From:		
Gains to:	Gains	Losses	Net Change	BE	NATL	SNBE
AA	24	27	-3	-7	+4	0
AY	13	12	+1	+3	-3	+1
CL	32	18	+14	+4	+3	+7
DHS	14	10	+4	-1	+3	+2
EW	34	21	+13	+10	+2	+1
PMM	20	20	0	-2	+1	+1
PW	19	19	0	-2	+1	+1
TR	14	17	-3	-5	+1	+1
BE	170	144	+26	0	+12	+14

Test of independence:
Pearson Chi-Square $X^2 = 6.06$ ($p = 0.533$)
Likelihood Ratio Chi-Square $G^2 = 6.10$ ($p = 0.529$)

C) Net gains (losses) for entire group of 137 auditor changes.

				From:		
Gains to:	Gains	Losses	Net Change	BE	NATL	SNBE
AA	14	17	-3	-5	+1	+1
AY	7	7	0	+1	-2	+1
CL	20	11	+9	+5	0	+4
DHS	9	8	+1	-3	+2	+2
EW	25	18	+7	+5	+1	+1
PMM	14	12	+2	+2	-1	+1
PW	14	14	0	-2	+1	+1
TR	12	13	-1	-3	+1	+1
BE	115	100	+15	0	+5	+10

Test of independence:
Pearson Chi-Square $X^2 = 3.27$ ($p = 0.859$)
Likelihood Ratio Chi-Square $G^2 = 3.29$ ($p = 0.857$)

closure of a disagreement or had a prior qualified opinion, compared to 36 (16%) of the 194 other changes.

The rate of qualified opinions (20%) for companies that changed auditors is higher than the rate Chow and Rice (1982) reported (11%) for companies not changing auditing firms. The rate of auditor changes with qualified opinions and the rate with disagreements (5%) are both lower than those reported in other studies. Four studies reported higher rates of qualified opinions: Chow and Rice (1982), 34%; Smith (1988), 34%; Johnson and Lys (1988), 26%; and Teoh (1989), 22%. Four studies reported higher rates of disagreements: McConnell (1984a), 20%; Wilson (1987), 9%; Johnson and Lys (1988), 6%; and Smith (1988), 21%.

A comparison of company characteristics for companies with auditor changes compared to a population of NYSE and AMEX companies not changing auditors is presented in Table 12. Company financial data for the fiscal year preceding the auditor change were gathered for each auditor change in the sample. These data were gathered from the Compustat tapes, forms 10-K, and annual reports as described in Section 4.4.2.2. The comparison group was composed of companies listed on the June, 1990, version of the Compustat Primary-Secondary-Tertiary tape and excluded all companies in the sample. Companies on the Compustat Primary-Secondary-Tertiary tape are primarily listed on the NYSE and the AMEX. Companies compared in a particular year had to have data for all variables. The sample and the comparison group were compared on a yearly basis. That is, auditor changes in 1981 were compared to Compustat companies for the 1980 fiscal year, auditor changes in 1982 were compared to Compustat companies for the 1981 fiscal year, and so on. The attributes compared were size (as measured by total assets and total sales), profitability (as measured by return on invest-

performed on qualified opinions only with similar results. The tests were not performed on disagreements because of the small number of disagreements.

Table 11. Auditor Changes After Disagreements or Qualified Opinions.

Type of Change	Number of Changes	Disagreement (D)	Qualifed Opinion (Q)	Either D or Q	Neither D nor Q
NBE to BE	52	1 (2%)	7 (13%)	8 (15%)	44 (85%)
NBE to NBE	10	0 (0%)	1 (10%)	1 (10%)	9 (90%)
BE to BE	132	6 (5%)	24 (18%)	27 (20%)	105 (80%)
BE to NBE	23	4 (17%)	11 (48%)	13 (57%)	10 (43%)
Total	217	11 (5%)	43 (20%)	49 (23%)	168 (77%)

Test of independence:
Pearson Chi-Square $X^2 = 17.90$ ($p = 0.000$)
Likelihood Ratio Chi-Square $G^2 = 15.43$ ($p = 0.001$)

ment (ROI) and EPS), capital structure (as measured by longterm debt to total assets), and accruals ((receivables + inventories - current liabilities) / total assets).[80]

Panel A of Table 12 compares groups based on measures of size. The companies that changed auditors were much smaller than the typical company listed on the major exchanges. Focusing on the median total assets and median net sales, companies that did not change auditors were about three times larger than companies that did change auditors. The mean total assets and mean net sales show a larger difference, due to the skewed nature of financial data.[81] The differences are extremely significant for both the parametric Student t-test and the nonparametric Wilcoxon rank sums test.[82]

Panel B displays comparison statistics based on measures of profitability. The companies that changed auditors were much less profitable than the typical company.

[80] Data fields on the Compustat Primary-Secondary-Tertiary tape were #2 - Receivables (total), #3 Inventories (total), #5 Current Liabilities (total), #6 Total Assets, #9 Long Term Debt (total), #12 Sales (net), and #54 Earnings Per Share (Primary) - Including Extraordinary Items.

[81] The differences are also evident in the variances. The standard deviation of the size variables is much larger for companies not changing than for companies that do change.

[82] The two sample t-test and the Wilcoxon rank sums test are described in Appendix A.

Table 12. Comparison of Sample to Population of NYSE and AMEX Companies.

A) Size measured by total assets and by sales.

	1981	1982	1983	1984	1985
Total assets (a) of companies changing auditors during:					
Mean	629	105	188	255	258
Std Dev	1,673	138	285	511	467
Median	53	46	84	67	86
75 %-tile	161	165	188	316	203
25 %-tile	16	16	38	25	25
n	35	31	26	36	35
Total assets of Compustat companies (b):					
Mean	1,338	1,450	1,567	1,576	1,655
Std Dev	5,339	5,768	6,373	6,352	5,369
Median	179	191	187	189	207
75 %-tile	779	893	922	941	990
25 %-tile	49	50	46	47	46
n	1,129	1,145	1,195	1,258	1,308
T-test, t=	2.1868	7.8104	7.1924	6.6584	8.3066
p-value	0.0328	0.0001	0.0001	0.0001	0.0001
Wilcoxon rank sums, Z=	2.8591	4.1455	2.3968	2.7088	2.8266
p-value	0.0042	0.0000	0.0165	0.0068	0.0047

	1981	1982	1983	1984	1985
Sales revenues of companies changing auditors during:					
Mean	604	200	197	347	330
Std Dev	1,526	406	256	676	638
Median	66	76	101	88	91
75 %-tile	397	182	197	427	264
25 %-tile	15	23	52	36	27
n	35	31	26	36	35
Sales revenues of Compustat companies:					
Mean	1,717	1,834	1,833	1,796	1,904
Std Dev	5,889	6,255	6,403	6,250	6,414
Median	253	263	241	230	263
75 %-tile	1,093	1,144	1,114	1,101	1,226
25 %-tile	65	67	60	55	59
n	1,129	1,145	1,195	1,258	1,308
T-test, t=	3.5697	8.2263	8.5550	6.9267	7.5822
p-value	0.0006	0.0001	0.0001	0.0001	0.0001
Wilcoxon rank sums, Z=	2.9761	3.9810	2.7583	2.4148	3.1238
p-value	0.0029	0.0001	0.0058	0.0157	0.0018

(a) For companies changing auditors, data is selected from financial statements of the preceding year end. For Compustat companies, data is for the preceding fiscal year. For example, a 1981 change would have 1980 data.

(b) Compustat data is from the full Annual Primary-Secondary-Tertiary data tape (May, 1990 version).

Table 12 continued.

B) Profitability measured by return on investment (ROI) and earnings per share (EPS).

	1981	1982	1983	1984	1985
ROI (net income / total assets) of companies changing auditors during:					
Mean	0.0284	0.0171	0.0198	0.0286	0.0070
Std Dev	0.1066	0.0946	0.0941	0.0697	0.3409
Median	0.0423	0.0306	0.0100	0.0457	-0.0110
75 %-tile	0.0733	0.0813	0.0728	0.0654	0.0643
25 %-tile	0.0074	-0.0368	-0.0290	0.0101	-0.0808
n	35	31	26	36	35
ROI of Compustat companies:					
Mean	0.0786	0.0681	0.0507	0.0483	0.0523
Std Dev	0.2196	0.1938	0.2130	0.1585	0.1868
Median	0.0692	0.0654	0.0532	0.0549	0.0583
75 %-tile	0.1001	0.0991	0.0882	0.0886	0.0941
25 %-tile	0.0392	0.0368	0.0210	0.0228	0.0277
n	1,129	1,145	1,195	1,258	1,308
T-test, t=	2.6143	2.8404	1.6673	1.5852	0.7819
p-value	0.0122	0.0073	0.1043	0.1198	0.4396
Wilcoxon rank sums, Z=	2.7810	3.0254	2.5254	1.7426	4.1683
p-value	0.0054	0.0025	0.0116	0.0814	0.0000

	1981	1982	1983	1984	1985
Primary EPS of companies changing auditors during:					
Mean	1.27	0.32	0.52	0.83	-0.79
Std Dev	2.58	2.52	2.35	1.30	3.58
Median	0.93	0.45	0.37	0.86	-0.16
75 %-tile	1.97	2.00	1.61	1.39	0.71
25 %-tile	0.06	-0.52	-0.49	0.25	-1.47
n	35	31	26	36	35
Primary EPS of Compustat companies:					
Mean	2.49	2.31	1.48	1.46	2.15
Std Dev	2.88	3.13	3.30	2.98	16.12
Median	2.11	1.90	1.37	1.29	1.40
75 %-tile	3.77	3.55	2.85	2.52	2.77
25 %-tile	0.91	0.78	0.33	0.36	0.45
n	1,129	1,145	1,195	1,258	1,308
T-test, t=	2.4805	3.5115	2.1610	2.7239	3.9109
p-value	0.0133	0.0005	0.0386	0.0091	0.0002
Wilcoxon rank sums, Z=	3.2191	4.1729	3.0741	2.2095	5.3686
p-value	0.0013	0.0000	0.0021	0.0271	0.0000

Table 12 continued.

C) Longterm debt to total assets and accruals to total assets.

	1981	1982	1983	1984	1985
Long term debt to total assets of companies changing auditors during:					
Mean	0.2349	0.1998	0.2316	0.2127	0.2257
Std Dev	0.2036	0.1973	0.1580	0.1163	0.1687
Median	0.2169	0.1005	0.2139	0.2034	0.2393
75 %-tile	0.3366	0.3926	0.3474	0.2824	0.3005
25 %-tile	0.0568	0.0276	0.0771	0.1323	0.0982
n	31	31	26	36	35
Long term debt to total assets of Compustat companies:					
Mean	0.1846	0.1840	0.1908	0.1796	0.1832
Std Dev	0.1397	0.1432	0.1566	0.1583	0.1785
Median	0.1734	0.1624	0.1634	0.1468	0.1486
75 %-tile	0.2674	0.2705	0.2768	0.2534	0.2693
25 %-tile	0.0764	0.0737	0.0726	0.0598	0.0570
n	1,129	1,145	1,195	1,258	1,308
T-test, t=	1.4509	0.4417	0.1387	1.6666	1.3939
p-value	0.1557	0.6618	0.1657	0.1037	0.1636
Wilcoxon rank sums, Z=	1.2337	0.2541	1.5745	2.2828	1.7733
p-value	0.2173	0.7994	0.1154	0.0224	0.0762

	1981	*1982*	*1983*	*1984*	*1985*
Accruals (c) of companies changing auditors during:					
Mean	0.2091	0.1331	0.1358	0.1390	0.1299
Std Dev	0.1962	0.1640	0.1704	0.1618	0.1861
Median	0.2303	0.2540	0.1030	0.1802	0.0620
75 %-tile	0.3396	0.1300	0.2934	0.2583	0.2634
25 %-tile	0.0642	0.0081	0.0086	-0.0126	-0.0093
n	35	31	26	36	35
Accruals of Compustat companies:					
Mean	0.1727	0.1629	0.1477	0.1338	0.1368
Std Dev	0.2013	0.1899	0.1986	0.2030	0.1921
Median	0.1767	0.1671	0.1438	0.1329	0.1295
75 %-tile	0.3036	0.2949	0.2743	0.2676	0.2643
25 %-tile	0.0432	0.0349	0.0209	0.0105	0.0043
n	1,129	1,145	1,195	1,258	1,308
T-test, t=	1.0531	0.8665	0.3203	0.1516	0.2108
p-value	0.2925	0.3864	0.7488	0.8795	0.8331
Wilcoxon rank sums, Z=	1.1615	1.1405	0.4450	0.1545	0.5982
p-value	0.2454	0.2541	0.6563	0.8772	0.5497

(c) Accruals are calculated as (receivables + inventories - current liabilities) / total assets.

The comparison group had a larger average and median primary EPS than the sample for every year compared. These differences were statistically significant at the 0.05 level based on both the parametric Student t-test and the nonparametric Wilcoxon rank sums test. The comparison group also had a larger return on investment (ROI) than the sample for every year compared.[83] Based on the nonparametric Wilcoxon rank sums test, this difference was significant at the 0.01 level for every year except 1984, when the difference was only significant at the 0.08 level. Based on the parametric Student t-test, this difference was significant only in 1981 and 1982. From 1983 on, the difference was not statistically significant. The nonparametric test is more reliable in this instance because the ROI data are not normally distributed, which is an assumption of the Student t-test. The Wilcoxon rank sums test does not assume any particular distribution. Its principle assumption is symmetry, which is met here.[84]

There was little difference in capital structure between the two groups. Panel C of Table 12 shows that the debt to asset ratio was somewhat larger for the companies that changed auditors. This difference was not significant for the years 1981, 1982, and 1983. The median difference was significantly different for 1984 and 1985 according to the Wilcoxon rank sums test. The mean difference for 1984 was marginally significant according to the Student t-test, and the 1985 difference was not significant according to the t-test. In this case, the Wilcoxon test results are more reliable due to the non-normality of the underlying data. The data are skewed and there are fat tails in the distributions.

The number of days from the fiscal year-end to the event date reported on the 8-K (usually identified as the date of board ratification) is reported in Table 13. The mean

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[83] Return on investment was calculated as net income divided by total assets.

[84] The distribution of the ROI data for the control group is not Gaussian primarily because of relatively large numbers of observations with extreme values. The Jarque and Bera (1980) test statistics by year are 1981 - 4,333,317; 1982 - 4,559,918; 1983 - 6,849,315; 1984 - 3,052,536; and 1985 - 5,491,309. A critical value of 10.60 is required to reject at the 0.005 level. The Kolmogorov-Smirnov test leads to a similar conclusion that the data are not normally distributed.

(median) number of days was 198 (213). The distribution throughout the year can be described as plateaus and valleys. The first two months after the year end were valleys (10 changes per month). Months 3-5 were plateaus (21 per month). Months 6 and 7 were valleys (12 per month), and months 8-12 were plateaus (22 per month). Prior market reaction studies have focused on the SEC receipt date. 73 of the 217 auditor changes (34%) in this study had earlier disclosure (on either proxy statements or *Wall Street Journal*). Early disclosure peaked in months 4 and 5, when many stockholders meetings are held. The auditor changes with no prior disclosure are primarily bunched in months 8-12. The difference in days from year end to event date between two groups was statistically significant. Smith (1988) reports that the mean (median) number of days from the previous year-end to the date of disclosure (SEC receipt or *Wall Street Journal* announcement) of the auditor change is 215 (229). The mean for a comparable period for the sample of the present study is 224.

The SEC required 8-Ks to be filed within 15 days of the change for the period under study. Table 14 reports the timeliness of this disclosure for the entire sample of 217 changes and for the market reaction group of 137 changes. The 8-K was received on time for only 65% of the entire sample (66% of the group of 137). Ninety percent compliance was not achieved until day 24 for the entire sample. The median (mean) number of days to file was 15.0 (16.8). An analysis of the median (mean) and inner quartile range (standard deviation) reveals that this tardy practice did not change from the start to the end of the period under study. The results were similar for the group of 137.

Table 15 shows the days from SEC receipt to date of receipt by Disclosure, Inc. The median number of days for the entire sample was 3.0. The time average to process the 8-K appears to have decreased during the period.

Table 13. Days From Fiscal Year-end to Event Date on 8-K.

Days	Total Changes	No Prior Disclosure	Prior Disclosure
1-030	9	7	2
31-060	10	10	0
61-090	20	13	7
91-120	21	8	13
121-150	23	6	17
151-180	12	7	5
181-210	12	6	6
211-240	24	21	3
241-270	24	17	7
271-300	17	16	1
301-330	23	21	2
331-365	22	12	10
	217	144	73
Changes/month equal: Pearson Chi-Square	$X^2 = 18.41$ ($p < 0.050$)	$X^2 = 28.82$ ($p < 0.005$)	$X^2 = 47.27$ ($p < 0.001$)
Mean in days	198	207	179
Standard deviation	100	102	93
Subgroup means equal: Pearson 2-sample t test		$t = 1.9910$ ($p = 0.0477$)	
Median in days	213	233	137
75 percentile	284	312	254
25 percentile	116	114	117
Subgroup medians equal: Wilcoxon 2-sample rank sums test		$Z = 1.8685$ ($p = 0.0617$)	

Table 14. Days From Event Date on 8-K to SEC Receipt.

	n = 217			n = 137		
Days	Number	Accum.	Percent	Number	Accum.	Percent
1	2	2	1%	1	1	1%
2	1	3	1%	0	1	1%
3	1	4	2%	1	2	1%
4	0	4	2%	0	2	1%
5	2	6	3%	1	3	2%
6	5	11	5%	1	4	3%
7	4	15	7%	2	6	4%
8	4	19	9%	3	9	7%
9	7	26	12%	6	15	11%
10	5	31	14%	4	19	14%
11	6	37	17%	1	20	15%
12	10	47	22%	6	26	19%
13	12	59	27%	10	36	26%
14	26	85	39%	16	52	38%
15	55	140	65%	39	91	66%
16	14	154	71%	7	98	72%
17	17	171	79%	14	112	82%
18	11	182	84%	6	118	86%
19	6	188	87%	5	123	90%
20	4	192	88%	2	125	91%
21	1	193	89%	0	125	91%
22	1	194	89%	1	126	92%
23	0	194	89%	0	126	92%
24	5	199	92%	4	130	95%
25	2	201	93%	0	130	95%
26	1	202	93%	1	131	96%
27	1	203	94%	0	131	96%
28	0	203	94%	0	131	96%
29	0	203	94%	0	131	96%
30	1	204	94%	1	132	96%
Above	13	217	100%	5	137	100%

Means (medians) of subgroups (137, 80) equal:
Pearson 2-sample t test $t = 1.265$ $(p = 0.2089)$
Wilcoxon 2-sample rank sums test $Z = 0.131$ $(p = 0.8956)$

	Total	1980	1981	1982	1983	1984	1985	1986
Mean	16.8	18.2	17.6	15.9	16.3	15.0	16.6	18.3
S.D.	11.3	11.5	17.7	12.1	9.5	5.8	8.9	10.1
Median	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.5
75 %-tile	17.0	18.5	16.0	16.0	17.0	17.0	17.0	17.0
25 %-tile	13.0	12.0	14.0	13.0	13.0	13.0	14.0	14.0
Number	217	25	35	31	29	36	35	26
Mean	15.9	18.8	15.1	13.9	17.8	15.2	14.8	16.7
S.D.	7.6	13.5	5.3	4.5	9.4	5.9	2.5	9.5
Median	15.0	16.0	15.0	14.5	15.0	15.0	15.0	15.0
75 %-tile	17.0	19.3	16.5	16.0	18.5	17.0	17.0	16.5
25 %-tile	13.0	12.3	13.5	12.0	14.3	13.0	14.0	12.5
Number	137	14	21	22	24	27	16	13

Table 15. Days From SEC Receipt to Disclosure Receipt.

	n = 217			n = 137		
Days	Number	Accum.	Percent	Number	Accum.	Percent
0	4	4	2%	2	2	1%
1	59	63	29%	36	38	28%
2	33	96	44%	22	60	44%
3	30	126	58%	23	83	61%
4	35	161	74%	24	107	78%
5	23	184	85%	15	122	89%
6	3	187	86%	2	124	91%
7	10	197	91%	5	129	94%
8	2	199	92%	2	131	96%
9	3	202	93%	1	132	96%
10	5	207	95%	3	135	99%
Above	10	217	100%	2	137	100%

Means (medians) of subgroups (137, 80) equal:
Pearson 2-sample t test $t = 1.675$ $(p = 0.0976)$
Wilcoxon 2-sample rank sums test $Z = 0.804$ $(p = 0.4214)$

	Total	1980	1981	1982	1983	1984	1985	1986
Mean	4.0	8.1	3.5	2.4	3.6	2.7	2.5	7.1
S.D.	6.3	4.6	2.8	2.0	2.6	1.7	1.7	16.1
Median	3.0	7.0	3.0	2.0	3.0	2.0	2.0	2.0
75 %-tile	5.0	11.5	4.0	4.0	5.0	4.0	4.0	4.0
25 %-tile	1.0	4.0	1.0	1.0	1.5	1.0	1.0	1.0
Number	217	25	35	31	29	36	35	26
Mean	3.3	7.1	3.3	2.3	3.5	2.7	2.6	2.8
S.D.	2.6	4.6	2.3	1.3	2.3	1.7	2.1	1.5
Median	3.0	6.5	3.0	2.0	3.0	2.0	1.0	3.0
75 %-tile	4.0	9.3	4.0	3.3	4.8	4.0	5.0	4.0
25 %-tile	1.0	3.0	1.5	1.0	2.0	1.0	1.0	1.0
Number	137	14	21	22	24	27	16	13

Tables 16 and 17 show the correlations among the auditor quality and agency cost variables for the group of 201 used in Part 1 of the study and the group of 137 used in Part 2 of the study. The two correlation tables are very similar. Both show that the correlations among the auditor quality variables were positive and extremely significant. The correlation between ALEV and INDEP was +.6684 for the group of 201 and +.7245 for the group of 137. Both correlations were significant at the alpha = 0.0001 level. These correlations appear reasonable, because the denominator of INDEP is auditor size. The lowest correlation among the group of auditor quality variables was between SPEC and INDEP (although still extremely significant), implying that two characteristics are being captured in these two variables. Because of the high correlation between ALEV and INDEP, the multivariate analysis in Part 1 of the study was not performed with both variables in the model. The analysis was first performed with SPEC and ALEV, and was then repeated with SPEC and INDEP.

The correlation between DISAGREE and QUAL was +0.1770 (extremely significant: $p < .001$). The Pearson correlation coefficient is based upon an assumption of normally distributed variables. Because DISAGREE and QUAL are both dichotomous variables, the Pearson correlation coefficient gives a biased measure of the strength of the relationship between DISAGREE and QUAL. A combination variable, D&Q, was therefore formed. D&Q equals one if the auditor change 8-K revealed a disagreement or there was an earlier qualified opinion. D&Q was highly correlated with both DISAGREE (+0.4322) and QUAL (+0.9268). These correlations were significant at the 0.0001 level. D&Q was used in Part 2 of the study instead of both DISAGREE and QUAL because of (1) the high correlation between DISAGREE and QUAL, (2) the common occurrence of both disagreements and qualified opinions, and (3) the association between D&Q and both DISAGREE and QUAL.

The largest correlations among the agency cost variables were between LGOWN and MSTK (-0.3992), ACCR and DEBT (+0.3069), and GROWTH and ISSUE (+.2684). These correlations were significant at the 0.0001 level. After examining the data, it appears reasonable for LGOWN and MSTK to have been closely associated because the largest owner often holds a management office or is on the board. Therefore, the change in largest holding will be reflected in a change in board holdings.[85] The implication of this relationship for this dissertation was to drop the MSTK variable from the model. Both were closely associated and highly correlated. LGOWN was retained because it is continuous.

The close association between GROWTH and ISSUE also appears reasonable. Companies often issue stocks and bonds for expansion. Hence, GROWTH should lag closely behind ISSUE. The implication of this for the current study was to delete the ISSUE variable from the model. GROWTH was retained because it is a continuous variable.

ACCR and DEBT were highly correlated. This association does not appear to be caused by redundancy or overlap in the variables. Because of this, both variables were retained in the model.

Descriptive statistics for the variables are presented in Table 18.

In summary, the sample is composed of NYSE and AMEX traded companies with a continuous existence for at least a four year period. The number of changes per year was constant, in contrast to the sharp increase in the number of auditor changes per year involving OTC companies. 85% of the auditor changes were to BE auditing firms, regardless of the size of the previous auditing firm. Changes from a BE auditor to a NBE auditor were more likely to have been preceded by a disagreement or a qualified opinion

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[85] The correlation is negative because LGOWN values depend upon movement into the 5%-25% range of holdings. An alternative formulation of LGOWN, in which LGOWN is defined as the simple difference in the largest holding, has a correlation of 0.96 with MSTK.

Table 16. Correlations Among Auditor Quality and Agency Cost Variables, n = 201.

	ALEV	INDEP	SPEC	ACCR	DEBT	GROWTH	MGMT
ALEV	1.0000						
INDEP	0.6684****	1.0000					
SPEC	0.4671****	0.2892****	1.0000				
ACCR	-0.0908	-0.0223	-0.0543	1.0000			
DEBT	0.0869	0.0029	0.0812	0.3069****	1.0000		
GROWTH	-0.0169	0.0257	0.1274*	0.0574	0.0768	1.0000	
MGMT	0.1052	0.0776	0.0443	0.0217	0.1479**	-0.0862	1.0000
MSTK	-0.0578	-0.0632	0.0167	-0.0538	-0.0549	0.1020	-0.1081
LTCOMP	0.1096	0.0015	0.2068***	-0.0204	0.1231*	-0.0148	-0.0337
ISSUE	0.0414	0.1542**	0.0683	-0.0834	-0.0013	0.2684****	0.0240
DIV	0.0217	0.0109	0.1038	0.0691	0.0220	0.0843	-0.1222*
LGOWN	0.0188	-0.0414	0.0050	-0.0871	-0.0496	-0.0359	-0.0121
DISAGREE	-0.1356*	-0.0340	-0.1272*	0.0296	0.0764	0.1866***	-0.0560
QUAL	-0.2039***	-0.1109	-0.1407**	0.0401	-0.0944	0.0158	0.0482
D&Q	-0.2239***	-0.1109*	-0.1517**	0.0372	-0.0658	0.0248	0.0314

	MSTK	LTCOMP	ISSUE	DIV	LGOWN	DISAGREE	QUAL
MSTK	1.0000						
LTCOMP	-0.0954	1.0000					
ISSUE	-0.0590	0.0306	1.0000				
DIV	0.0087	-0.1438**	-0.0041	1.0000			
LGOWN	-0.3922****	0.0361	-0.0428	-0.0018	1.0000		
DISAGREE	0.0135	-0.1263*	0.0328	-0.0196	-0.0219	1.0000	
QUAL	-0.1198*	-0.0876	-0.0978	-0.0127	0.0513	0.1770***	1.0000
D&Q	-0.1111	-0.0868	-0.0708	-0.0154	0.0558	0.4322****	0.9268****

* $p < .100$
** $p < .050$
*** $p < .010$
**** $p < .001$

Table 17. Correlations Among Auditor Quality and Agency Cost Variables, n = 137.

	ALEV	INDEP	SPEC	ACCR	DEBT	GROWTH	MGMT
ALEV	1.0000						
INDEP	0.7245****	1.0000					
SPEC	0.5342****	0.3384****	1.0000				
ACCR	-0.0570	-0.0338	-0.0258	1.0000			
DEBT	0.0505	-0.0186	0.0645	0.3131****	1.0000		
GROWTH	0.0485	0.0282	0.1112	0.0165	0.0512	1.0000	
MGMT	0.0946	0.0811	-0.0036	0.0275	0.1252	-0.0876	1.0000
MSTK	-0.1416*	-0.0757	-0.0586	0.0078	-0.0673	0.1484*	-0.1283
LTCOMP	0.1777**	0.0040	0.3228****	-0.0319	0.0985	-0.0273	-0.0263
ISSUE	0.1204	0.1789**	0.0974	-0.1770**	-0.0654	0.2455***	0.0279
DIV	0.0172	0.0135	0.1323	0.0568	0.0374	0.0489	-0.1943**
LGOWN	0.1258	-0.0368	0.0462	-0.0672	0.0261	-0.0516	-0.0099
DISAGREE	-0.1778**	-0.0327	-0.1054	0.0280	0.0696	0.2100**	0.0056
QUAL	-0.1528*	-0.0696	-0.1795**	0.0122	-0.0966	0.0122	0.1056
D&Q	-0.1787**	-0.0732	-0.1579*	0.0118	-0.0787	-0.0007	0.1166

	MSTK	LTCOMP	ISSUE	DIV	LGOWN	DISAGREE	QUAL
MSTK	1.0000						
LTCOMP	-0.0737	1.0000					
ISSUE	-0.0439	-0.0237	1.0000				
DIV	0.0106	0.0172	-0.0863	1.0000			
LGOWN	-0.4455****	0.0569	-0.0108	0.0388	1.0000		
DISAGREE	0.0189	-0.1950**	-0.0529	0.0222	-0.0435	1.0000	
QUAL	-0.0698	-0.1160	-0.1335	-0.0143	-0.0330	0.2603***	1.0000
D&Q	-0.0647	-0.1142	-0.1523*	-0.0095	-0.0253	0.4223****	0.9549****

* $p < .100$
** $p < .050$
*** $p < .010$
**** $p < .001$

Table 18. Descriptive Statistics.

Descriptive statistics for auditor quality sample (n = 201).

Variable	Type	Mean	Median	Std. Dev.	Maximum	Minimum
ALEV	Discrete	0.1891	0.0000	0.8271	2.0000	-2.0000
SPEC	Continuous	-0.0061	-0.0036	0.1249	0.4414	-0.4977
INDEP	Continuous	0.0270	0.0001	0.2453	0.9996	-0.9995
ACCR	Continuous	-0.0574	-0.0248	0.2127	0.5650	-1.3882
DEBT	Continuous	0.0093	-0.0120	0.2077	1.3465	-0.6096
GROWTH	Continuous	0.4120	-0.0429	2.0241	17.2068	-0.8698
DIV	Continuous	-0.1472	0.0000	1.1545	4.2857	-9.8572
MSTK	Discrete	-0.0299	0.0000	0.5090	1.0000	-1.0000
LGOWN	Continuous	0.0365	0.0000	0.1675	0.7024	-0.6310
LTCOMP	Discrete	0.0010	0.0000	0.1998	1.0000	-1.0000
ISSUE	Discrete	0.2388	0.0000	0.4274	1.0000	0.0000
MGMT	Discrete	0.3134	0.0000	0.4650	1.0000	0.0000
DISAGREE	Discrete	0.0498	0.0000	0.2180	1.0000	0.0000
QUAL	Discrete	0.1940	0.0000	0.3964	1.0000	0.0000

Descriptive statistics for market reaction sample (n = 137).

Variable	Type	Mean	Median	Std. Dev.	Maximum	Minimum
ALEV	Discrete	0.1825	0.0000	0.8244	2.0000	-2.0000
SPEC	Continuous	-0.0074	-0.0036	0.1266	0.4414	-0.4629
INDEP	Continuous	0.0405	0.0000	0.2805	0.9996	-0.9993
ACCR	Continuous	-0.0578	-0.0301	0.2236	0.5650	-1.3882
DEBT	Continuous	0.0212	-0.0047	0.2138	1.3465	-0.5007
GROWTH	Continuous	0.4546	-0.0383	2.3281	17.2068	-0.8698
DIV	Continuous	-0.1266	0.0000	1.0631	3.7143	-9.8572
MSTK	Discrete	-0.0438	0.0000	0.4981	1.0000	-1.0000
LGOWN	Continuous	0.0298	0.0000	0.1716	0.7024	-0.6310
LTCOMP	Discrete	0.0073	0.0000	0.1916	1.0000	-1.0000
ISSUE	Discrete	0.2774	0.0000	0.4493	1.0000	0.0000
MGMT	Discrete	0.3212	0.0000	0.4686	1.0000	0.0000
DISAGREE	Discrete	0.0438	0.0000	0.2054	1.0000	0.0000
QUAL	Discrete	0.1898	0.0000	0.3936	1.0000	0.0000

than other types of changes. Companies that changed auditors were much smaller and less profitable than other NYSE and AMEX companies that did not change auditors during this period. Auditor changes examined in Part 1 of the study occurred throughout the fiscal year, but changes examined in Part 2 of the study occurred primarily in the last five months of the fiscal year.

5.0 Analysis and Interpretation of the Results of the Experiment

The results of Part 1 of the study are reported in Section 5.1 of this chapter. Variables that serve as proxies for changes in net agency costs are found to be related to a variable that serves as a proxy for change in auditor quality--i.e., change in auditor market share of audit fees in the client's industry. Changes in net agency costs are not found to be related to two other surrogates of change in auditor quality--i.e., change in auditor size and and change in an independence measure.

The results of Part 2 of the study are reported in Section 5.2 of this chapter. A significant negative unexpected market reaction for a seven day trading period is found for the SEC receipt of an 8-K disclosure of a change in auditors. This negative market reaction is found only for companies that had not previously disclosed intentions to change auditors or had not disclosed the actual change itself. Moreover, the cross-sectional variation of this unexpected market reaction is significantly related to variables that serve as proxies for changes in agency costs. This cross-sectional variation is not related to variables that serve as proxies for change in auditor quality as measured by industry concentration or size of the auditor, nor is it related to prior receipt of a qualified opinion.

No significant mean unexpected market reaction is found for trading periods surrounding the board of directors meeting at which the auditor change is ratified, or for the receipt of the 8-K by Disclosure, Inc. Further analysis reveals that the unexpected

market reaction surrounding the board of directors meeting at which the auditor change is ratified is significantly related to variables that serve as proxies for changes in agency costs and to prior receipt of a qualified opinion, but it is not related to variables that proxy for change in auditor quality. The unexpected market reaction surrounding the Disclosure, Inc. receipt of the 8-K is not explained by variables that serve as proxies for change in auditor quality or change in net agency costs, nor is it related to prior receipt of a qualified opinion.

5.1 Part 1: Auditor Quality and Agency Costs.

The relationship between changes in auditor quality and changes in net agency costs when an auditor change occurs is examined under two approaches. The first approach is univariate: three surrogates of auditor quality are separately regressed on variables that serve as proxies for changes in agency costs. The results of this approach are presented in Section 5.1.1. The second approach is multivariate: the combined relationship between the three surrogates for auditor quality and changes in net agency costs is examined. The results of this approach are presented in Section 5.1.2. An interpretation is presented in Section 5.1.3.

5.1.1 Univariate analysis.

Each of the three variables measuring change in auditor quality were separately regressed against the variables representing changes in agency costs for the 201 cases of

auditor change that meet the criteria listed in Chapter 4. The results of these regressions are reported in Table 19. The model with SPEC (change in the audit firm market share in the client's 2-digit SIC industry from old auditor to the new) as the dependent variable is statistically significant (F = 2.691; p-value = 0.011). In other words, changes in agency costs are related to changes in auditor quality as measured by auditor market share of audit fees within the client's industry. The models with ALEV and INDEP (variables measuring change in the size of the auditor and change in the auditor's independence from the old auditor to the new) as the dependent variables are not statistically significant (p-values are 0.272 and 0.961, respectively). These results contradict the reported results of DeFond (1988) and Francis and Wilson (1988), in which change in auditor size *is* related changes in agency costs. This anomaly is discussed below in Section 5.1.3.

An analysis of the SPEC model reveals an R-squared of 0.089 and an adjusted R-squared of 0.056.[86] The SPEC model tested has two independent variables significant at the alpha = 0.05 level--GROWTH and DIV--and has one variable significant at the 0.001 level--LTCOMP.

The results of this dissertation's SPEC model are similar to those reported by Francis and Wilson (1988) and DeFond (1988) for their change in size models (reported in Table 20). Francis and Wilson regressed a relative size variable (ratio of size of new auditor to size of old) against agency cost change variables for all auditor changes identified in their sample (model (a) in Table 20). They report an adjusted R-squared

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[86] The coefficient of multiple determination, R-squared, is defined as the percentage of the variation of the dependent variable that is explained by the independent variables in the model. R-squared increases as independent variables are added, but a point can be reached where additional variables only increase R-squared by a small amount, and the additional variables are not considered useful (Montgomery and Peck, 1982). The adjusted R-squared decreases the R-squared as additional variables are added, thereby increasing the interpretability of the measure. The adjusted R-squared is computed as:

$$\bar{R}_p^2 = 1 - \left(\frac{n-1}{n-p}\right)(1 - R_p^2)$$

where, p = number of regressors in model.

Table 19. Univariate Analysis: OLS Regressions of Auditor Quality on Agency Costs.

	Expected Sign	MODELS: ALEV *Coeff.*	ALEV *t-stats.*	SPEC *Coeff.*	SPEC *t-stats.*	INDEP *Coeff.*	INDEP *t-stats.*
Intercept		0.102	(1.363)	-0.018	(-1.612)	0.012	(0.551)
ACCR	+	- 0.478	(- 1.650)	- 0.050	(- 1.179)	- 0.033	(- 0.381)
DEBT	+	0.383	(1.269)	0.034	(0.763)	- 0.008	(- 0.381)
GROWTH	+	- 0.005	(- 0.157)	0.008	(1.810)**	0.004	(0.441)
MGMT	+	0.184	(1.429)*	0.020	(1.036)	0.045	(1.150)
LTCOMP	+	0.441	(1.476)*	0.139	(3.162)****	0.012	(0.133)
DIV	+	0.041	(0.789)	0.015	(1.971)**	0.005	(0.299)
LGOWN	-	0.049	(0.141)	- 0.002	(- 0.030)	- 0.062	(- 0.588)
F-stat.		1.258		2.691		0.279	
p-value		.272		.011		.961	
R^2		.044		.089		.010	
Adj. R^2		.009		.056		- .026	
Homoscedasticity		Not violated		Violated		Not violated	
τ =		28.506		50.316		15.885	
p-value		.734		.035		.997	
Linearity		Not violated		Not violated		Not violated	
F_0 =		0.045		0.573		0.724	
p-value		> .250		> .250		> .250	
Normality		Violated		Violated		Violated	
τ^2 =		31.633		28.056		433.248	
p-value		< .005		< .005		< .005	
D =		0.228		0.071		0.340	
p-value		< .010		.014		< .010	

The p-values are based on 1-tail probabilities of the reported t-test statistics for all coefficients except for the intercept, which is based on 2-tail probabilities.

* p < .100
** p < .050
*** p < .010
**** p < .001

of 0.045 (p-value < 0.05), and significant variables including growth, change in short-term bonus plan, and new equity issues. Except for the choice of dependent variable, their results are very similar to this dissertation's. That is, Francis and Wilson's BONUS and this dissertation's LTCOMP both deal with compensation and are both significant.[87] Also, Francis and Wilson's ISSUE and this dissertation's DIV are significant. ISSUE represents the presence of firm-commitment offerings. Equity issues are related to the reason for including DIV. That is, companies that increase their dividend payout ratio presumably do so because it will force them into the capital markets in a process that is under the scrutiny of investment bankers (Rozeff, 1982). An important difference between Francis and Wilson, and DeFond, and this dissertation is the significance of DEBT. DEBT was not found to be significant in this dissertation's analysis of the model, but was found to be significant by Francis and Wilson and by DeFond.

The results of Francis and Wilson and DeFond differ from this dissertation's in the models ((b) and (c) in Table 20) in which they exclude all auditor changes from BE to BE and from NBE to NBE. Change in auditor level (model (b) in Table 20) was substituted for the measure of change in auditor size in Francis and Wilson's second model. Their probit analysis yielded a pseudo R-squared of 0.517, and significant variables of growth, change in short-term bonus plan, and change in holdings of largest owner. This last variable is not significant in the SPEC model. DeFond used a combination variable of auditor quality and regressed it against agency cost change variables. His adjusted R-squared of 0.225 is much higher than the SPEC model's, and he reports four significant variables--change in debt, company growth, change in managerial stock holdings, and new issues. DEBT and LGOWN (related to change in managerial stockholdings)

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[87] BONUS deals with management's success in achieving shortterm goals, and LTCOMP with longterm goals.

are not significant in the SPEC model. An explanation of these contradictory results is presented in Section 5.1.3.

Four of the variables in the SPEC model--ACCR, DEBT, GROWTH, MGMT--serve as proxies for aspects of the residual loss part of net agency costs. Three of the variables--LTCOMP, DIV, and LGOWN--serve as proxies for aspects of the measures of control part of net agency costs. The three measures of control add a significant amount of explanation ($F = 4.10$; p-value < 0.01) to the four residual loss variables already in the model. The four residual loss variables, on the other hand, do not add a significant amount of explanation ($F = 1.48$; $0.10 <$ p-value < 0.25) to the three measures of control variables already in the model.

Further analysis of the SPEC model (Table 19) reveals that model assumptions are violated. Diagnostic tests, as described in Appendix A, were performed to test the assumptions of homoscedasticity, linearity, and normality of the regression error terms.[88] The results indicate departures from homoscedasticity and normality. The White test is $\tau = 50.316$ (p-value = 0.035), which leads to a conclusion to reject the null. That is, it is quite probable that a significant amount of heteroscedasticity exists. Both tests of normality--Jarque and Bera, and Kolmogorov-Smirnov--lead to a conclusion that the residuals are not normally distributed. The normality test results appear to be driven by thick-tails in the distribution of the residuals (more than expected cases of extreme values). Spanos (1990) notes that such a condition (heterogeneity of variance and thick-tails) indicates that the residuals may follow some other elliptical symmetric distribution, such as the Student's t distribution. In such a case, Spanos argues that a Student's t linear regression should be used instead of the ordinary least squares (OLS)

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[88] Spanos (1986) cautions that great care should be taken when interpreting the results of diagnostic tests of assumptions. That is, a diagnostic test that produces a low p-value does not necessarily mean that an assumption has definitely been violated, but only that a problem *may* exist. Moreover, he argues that diagnostic tests should not be interpreted in isolation because a problem that leads to the conclusion that one assumption is violated will also affect the other assumptions.

Table 20. Results of Earlier Auditor Quality Studies.

Variable	Francis & Wilson (1988) (a)	Francis & Wilson (1988) (b)	DeFond (1988) (c)
ACCR			-
DEBT	+	+	+ **
GROWTH	+ ***	+ **	+ ***
MSTK	+	+	- ** (d)
BONUS (e)	+ **	+ **	
ISSUE	+ *	+	+ *
LGOWN	-	- **	
Adj. R sq.	0.045 (f)	0.515	.225
F stat.	2.520 **	15.400 **(g)	6.180 ***

* $p < .10$
** $p < .05$
*** $p < .01$

(a) OLS analysis: Dependent variable = relative size of new to old auditors = square root of ratio of new auditor size to old auditor size. Size defined as sum of all client revenues.

(b) Probit analysis: Dependent variable = change in auditor level = 1 if change from NBE to BE, 0 if BE to NBE.

(c) OLS analysis: Dependent variable = combination variable of change in auditor quality = linear combination of change in level, change in auditor size, change in auditor's share of client's industry, and change in measure of independence.

(d) DeFond used a continuous variable measure of managerial stock ownership which is not comparable to the method used in Francis and Wilson or used here. He predicted a significant negative relationship between his measure and change in auditor quality.

(e) Francis and Wilson used BONUS to represent change in short term bonus plans that are tied to accounting numbers.

(f) Probit pseudo R^2.

(g) Chi-square statistic.

regression. To rely upon the results of OLS, without taking into account heteroscedasticity, results in a biased variance for the individual coefficients. Further, it is not possible to determine if the variance is under- or over-estimated (Gujarati, 1988). Hence, coefficients that appear to be significant may really be insignificant, and coefficients that appear to be insignificant may really be significant. Re-estimation of the models under alternative distributional assumptions, such as Student's t, was not pursued as these techniques are still being perfected (see Spanos, 1990).

Given that White's test statistic is not significant at the 0.01 level, it is not clear that heteroscedasticity is a real problem. It is hoped that the sign, magnitude, and significance of the model coefficients are reasonable.

5.1.2 Multivariate analysis.

The relationship between the set of three variables that serve as proxies for change in auditor quality (ALEV, SPEC, and INDEP) to the set of variables that serve as proxies for changes in net agency costs was analyzed using canonical correlation. The analysis was performed on the same group of 201 auditor changes that was used in the univariate analysis of this Part 1. Because of the strong correlation between ALEV and INDEP ($r = 0.6684$; p-value = 0.0001), a model including both variables may be affected by multicollinearity. Hence, the analysis was performed with ALEV and SPEC (model 1) and SPEC and INDEP (model 2), as well as ALEV, SPEC, and INDEP (model 3). The results are presented in Table 21.

As discussed in Appendix A, the first step of canonical correlation analysis is to determine the strength of association, *Rc*, between the two sets of variates, i.e., between the set of auditor quality variable and the set of agency cost variables. Although Model

Table 21. Multivariate Analysis: Canonical Correlation.

	Model 1		Model 2		Model 3	
Canonical Correlation, *Rc*	0.2987		0.3019		0.3105	
Significance (Wilks' Λ)	0.0552		0.1201		0.1275	
Squared Canonical Corr., Rc^2	0.0892		0.0911		0.0964	
Redundancy	0.0569		0.0451		0.0389	
Significance (Williams)	0.0550		> 0.1000		> 0.2500	
	Corr.	**p-value**	**Corr.**	**p-value**	**Corr.**	**p-value**
Canonical Loadings						
Criterion (Agency Costs)						
ALEV	0.5303	0.0001	---------		0.5542	0.0001
SPEC	0.9973	0.0001	0.9864	0.0001	0.9428	0.0001
INDEP	---------		0.1278	0.0707	0.1218	0.0850
Predictor (Agency Costs)						
ACCR	- 0.1993	0.0046	- 0.1736	0.0137	- 0.2463	0.0004
DEBT	0.2847	0.0001	0.2771	0.0001	0.3415	0.0001
GROWTH	0.4043	0.0001	0.4226	0.0001	0.2966	0.0001
MGMT	0.1712	0.0151	0.1079	0.1275	0.1646	0.0195
LTCOMP	0.6940	0.0001	0.7089	0.0001	0.7237	0.0001
DIV	0.3390	0.0001	0.3499	0.0001	0.3037	0.0001
LGOWN	0.0212	0.7654	0.0406	0.5668	0.0948	0.1807
Canonical Cross-Loadings						
Predictor (Agency Costs)						
ACCR	- 0.0595	0.9290	- 0.0524	0.8752	- 0.0764	0.9424
DEBT	0.0850	0.3157	0.0837	0.2100	0.1060	0.1048
GROWTH	0.1208	0.0472	0.1276	0.0368	0.0921	0.0962
MGMT	0.0511	0.1892	0.0326	0.1931	0.0511	0.1524
LTCOMP	0.2073	0.0006	0.2140	0.0007	0.2247	0.0005
DIV	0.1013	0.0277	0.1056	0.0240	0.0943	0.0279
LGOWN	0.0063	0.5637	0.0123	0.5298	0.0294	0.6142

Note: Canonical correlation was performed on three models, n = 201. Although the total possible number of canonical variate pairs possible is equal to the number of auditor quality variables, only the pair with the highest correlation is presented. Canonical loadings measure the simple correlation between a variable and its variate. The p-value (2-tail) of the simple correlation is presented. Canonical cross-loadings measure the simple correlation between a variable and the other variate. The p-value (1-tail) presented is for a partial correlation between that variable and the other variate.

1 has the lowest canonical correlation between the two set of variates (Rc = 0.2987) of any of the three models, it is the only one that is even reasonably significant (p-value = 0.0552).[89] Only Model 1 receives further attention because model analysis ceases if canonical variates are significantly correlated. The squared canonical correlation, Rc^2, of model 1 is 0.0892. That is, 8.92% of the shared variation between the two sets of variates is explained by these two variates that are significantly correlated. A redundancy analysis of this variation reveals that 5.69% (p-value = 0.0550) of the variation (64% of the shared variation) is explained exclusively by the agency cost variables.

An examination of the canonical cross-loadings between the auditor quality variate and the individual agency cost variables shows that two variables (GROWTH and DIV) are significant at the 0.05 level, and that one variable is significant at the 0.001 level (LTCOMP). These results are consistent with the SPEC model in the univariate analysis.

Canonical correlation should meet the assumption of multivariate normality if it is used to draw inferences (Thompson, 1984). According to Spanos (1986), a distribution that is multivariate normal consists of variables and sets of variables that are each normally distributed. An analysis of univariate normality using the Jarque and Bera and the Kolmogorov-Smirnov tests results in rejecting the null of univariate normality for all three auditor quality change variables and seven agency cost change variables. It is therefore concluded that the assumption of multivariate normality is violated. Thompson (1984) notes, however, that canonical correlation appears to be robust to violations of this assumption. The results of canonical correlation are presented and interpreted here because of (1) its robustness, and (2) its correspondence with the results of the univariate analysis reported in Section 5.1.1.

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[89] Only one canonical correlation between sets of variates is reported here because in no case was the second correlation statistically significant.

5.1.3 Interpretation of the results.

The results of each analysis, univariate and multivariate, lead to a rejection of **H1** and the conclusion that changes in net agency costs are related to change in auditor quality. Both analyses agree that the agency cost variables that are most important in explaining this relationship (in the presence of all included agency cost variables) are GROWTH, LTCOMP, and DIV. The univariate analysis indicates that the changes in net agency costs are related to change in auditor quality, as measured by SPEC. SPEC is the change in the auditor's share of the auditor fees of the client's industry from the old auditor to the new. Changes in net agency costs do not affect ALEV (change in size of the auditor as measured by auditor level (BE, NATL, SNBE)) or INDEP (difference in measure of independence, from the old auditor to the new, computed as the ratio of fees from the client to total auditor fees). The multivariate analysis, in which both ALEV and SPEC are related to changes in net agency costs, does not conflict with the univariate analysis if SPEC is driving the multivariate results.

The results of Part 1 of this dissertation conflict with earlier studies that report change in auditor size to be related to changes in net agency costs (refer to Table 20 for the results of Francis and Wilson, 1988; and DeFond, 1988). In an effort to determine the source of the difference, the Francis and Wilson, and DeFond studies were replicated with data from the current study. Francis and Wilson analyzed two models. Their first model ((a) in Table 20) used the square root of the ratio of the sum of all client revenues for the new auditor to the sum of all client revenues for the old auditor as its measure of change in auditor size. They included the independent variables of change in managerial stock ownership, change in bonus plan, change in largest ownership holdings, change in the debt to total assets ratio, new issues of stock and debt, and growth in sales.

The second model (b), used change in auditor level as the measure of change in auditor size, along with the same independent variables in model (a). The first model was analyzed using all auditor changes for which data were available; the second was restricted to auditor changes across levels. DeFond analyzed a model (c) in which the dependent variable was a linear combination of four variables that serve as proxies for change in auditor level--change in auditor size, change in the level of the auditor level, change in auditor market share, and change in auditor independence. DeFond used principle components analysis to determine the coefficients of the linear combination. His sample included only changes between BE, NATL, and SNBE levels.

The 201 auditor changes used in Part 1 of this dissertation were used to replicate Francis and Wilson model (a). All variables were computed according to Francis and Wilson's precise definitions. The F statistic for the OLS regression is 0.793 (p-value = 0.5763). The adjusted R-squared is -0.0106. The 70 auditor changes in this group in which the auditor change was from BE to NBE or NBE to BE were then used to replicate the second Francis and Wilson model (b). Logistic regression produces a p-value of 0.6363.[90] Seventy-two of the auditor changes used in Part 1 of this dissertation were used to analyze DeFond's model (c). A linear combination variable of auditor quality was computed according to DeFond's precise definitions. The F statistic for the OLS analysis is 0.714 (p-value = 0.6170) and adjusted R-squared is -0.0205.

The source of the difference between this dissertation and the earlier studies may likely be a result of the manner in which the respective samples were drawn. All three prior analyses used change in auditor quality variables that emphasized large changes in size.[91] DeFond reported that in every instance of a change in auditor level (from NBE

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[90] Francis and Wilson (1988) analyzed their model using both probit and logistic regression. They only report the results of the probit analysis because of the similarity between the two sets of results. Logistic regression is used here because it is available on SAS, version 5. Probit is not.

[91] Wootton, Tonge, and Wolk (1990) note a large difference in size between auditor levels, but a small dif-

to BE or from BE to NBE), the higher level auditor had a larger share of clients in the client's industry than the lower level auditor. This phenomenon occurred in 67 (96%) of the 70 cross-level auditor changes in this dissertation. Because a change in auditor size varies so closely with a change in auditor market share, the Francis and Wilson (1988) and DeFond (1988) report of a significant relationship between change in auditor quality could have been based on change in auditor market share. Following such an analysis, their reported results are not inconsistent with this dissertation's finding.

A strong relationship between change in auditor level and change in auditor market share of the audit fees in the client's industry is found in this dissertation's sample. A significant correlation of 0.4671 is reported in Table 16 between ALEV and SPEC for the 201 auditor changes used in Part 1 of this dissertation. The correlation rises to 0.6931 when examining all auditor changes except the 122 BE to BE changes. When size is measured as the relative size (RS) of the old auditor to the new auditor (using the sum of square roots of client sales as a surrogate of the size of the auditor), the correlation between RS and SPEC is 0.2172 (p-value = 0.0163) for the 122 auditor changes between BE auditing firms. This correlation rises to 0.3759 (p-value = 0.0001) for the 79 auditor changes other than those between BE auditing firms.

On the other hand, a significant finding of this dissertation's research is that change in auditor level is not related to change in net agency costs. Again, sample composition can explain this anomaly. Of the 201 auditor changes used in this dissertation's analysis, 122 (61%) were from BE to BE auditors. This is much higher percentage of change be-

ference in size within auditor levels. The samples used in the second Francis and Wilson model (b) and the DeFond analysis (c) both excluded companies in which there was no change in level of auditor. The first Francis and Wilson model (a) was constructed in a manner to increase the inclusion of auditor changes from NBE to NBE auditor. There is a large variation in the size of NBE auditors. Hence a change from one NBE auditor to another means that there is likely a large change in auditor size. Also, the DeFond analysis emphasized change in size in the composition of its linear combination of four auditor quality variables. This is because (based on the evidence of this study) the variable measuring change in auditor level had a larger magnitude and variance than the other variables and swamped the other variables in the linear combination.

tween auditors of similar size than the earlier studies.[92] This allows the change in auditor market share to be less related to the change in auditor size for a much larger portion of the sample that that used in the earlier studies. This lesser correlation between change in auditor size and change in auditor market share demonstrates that change in auditor market share of industry audit fees is a more important measure of auditor quality than change in auditor size in the context of voluntary auditor change. There are many aspects of auditor quality, and the relative importance of each characteristic depends up particular decision being considered, and the decision maker.

5.2 Part 2: Market Reaction, Auditor Quality and Agency Costs.

The relationships between change in auditor quality and investor reaction to disclosure of a change in auditor, and between change in net agency costs and investor reaction, are examined in this section. Earlier studies that examine the mean market reaction to a change in auditors are replicated for various possible disclosure events, and are reported in Section 5.2.1. It is important to study the characteristics of the unexpected market reaction about various dates because there is uncertainty as to which disclosure event, if any, the market reacts (Section 2.3.2, Section 4.3.2.2). The results of the tests of Hypotheses **H2** and **H3** are reported in Section 5.2.2, and are interpreted in Section 5.2.3.

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[92] Francis and Wilson's second analysis (b) and DeFond's analysis (c) included no changes from BE to BE auditors, and Francis and Wilson's first analysis included 118 (60%) auditor changes from either BE to BE auditors, or NBE to NBE auditors, and was weighted toward including NBE to NBE changes.

5.2.1 Market sensitivity to alternative disclosures of a change in auditors.

The sample selection process described in Section 4.4 identified 217 auditor changes that satisfied all selection criteria and that had sufficient CRSP returns for a 150-day estimation period. The prediction period started 20 days before the ratification of the auditor on the board of directors date and ended 20 days after receipt of the 8-K by Disclosure, Inc. A series of standard event studies were performed for these 217 auditor changes and various subgroups at the three dates that the news of the auditor change could possibly have reached the market.[93] The results of the event study on the date that the SEC receives form 8-K are reported in Section 5.2.1.1. The results of the event study on the event date listed on form 8-K (the date of board ratification of the auditor change) are reported in Section 5.2.1.2. The results of the event study on the date that Disclosure, Inc., receives the form 8-K are reported in Section 5.2.1.3. Finally, the CARs for the five accumulation periods of interest are reported in Section 5.2.1.4.

5.2.1.1 The market reaction at the SEC receipt date.

Earlier studies (Johnson and Lys, 1988; Smith, 1988; and Teoh, 1989) have examined the market reaction, for all companies changing auditors, on the date that the SEC receives the 8-K disclosure. Johnson and Lys (1988) and Smith (1988) do not report a mean unexpected market reaction significantly different from zero, but Teoh (1989) reports a mean negative unexpected market reaction. The first analysis reported in this section directly replicates this aspect of the earlier studies.

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[93] The event study methodology used in this dissertation is explained in Appendix B.

The unexpected market reaction to the SEC receipt of an 8-K disclosure was computed for all 217 companies, using standard event study methodology, and the results are reported in Table 22.[94] An examination of the excess returns, e_t, reveals marginally significant positive mean excess returns on days -13, + 10, and + 14 relative to the SEC receipt, and a marginally significant negative mean excess return on day -2. Four significant mean excess returns are expected (at the alpha = 0.10 level) during this period,[95] however, so these observed reactions do not necessarily imply an overall market response at, or around, the date of SEC receipt of form 8-K. The significant negative mean excess return two days before the SEC receipt date could be related, though, because of its closeness to the SEC receipt date. An analysis of the standardized excess returns, v_t, does not reveal a recognizable pattern of reaction at, or around, the SEC receipt date, either. There is a marginally significant negative mean standardized excess return three days before the SEC receipt, however. The signs test, B^0, shows seven days with significant numbers of negative excess returns in the 17 day period from day -7 to day + 9. The squared standardized excess return, U_t, shows significant reactions (focusing on $U_t > 1$) throughout the period on days -17, -14, -8, -6, -5, + 1, + 5, + 9, + 11, and + 19. The results of all analyses do not support a conclusion that there is an obvious market reaction to the SEC receipt of form 8-K disclosing a change in auditors. This conclusion agrees with those of Johnson and Lys (1988), and Smith (1988), but contradicts that of Teoh (1989). The results may be driven, however, by a subgroup of companies based on earlier disclosure of pending auditor changes.

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[94] The market reaction was analyzed for all companies changing auditors that met selection criteria and that had sufficient returns.

[95] An alpha level of 0.10 means that ten times out of 100, the test statistics could be large enough to appear significant when the null hypothesis is not false. This implies that the expected number of significant t-statistics that could appear by chance is the number of t-statistics times 10 percent. In this case, 41 event dates times 10 percent results in an expectation of four significant t-statistics where the null hypothesis is not false.

Table 22. Event Study Results: Market Reaction to Auditor Change Disclosures at SEC Receipt Date–All Sample Group.

Day 0 = SEC Receipt Date, N = 217.

Event Day	Daily e_t	t(e)		CAR_{e_t}	t(CAR_e)	n	Percent Neg.	B^0		Daily v_t	t(v)		Daily U_t	t(U)	
-20	0.04	0.12		0.04	0.12	217	56.2%	1.83	*	0.07	0.97		0.97	-0.28	
-19	0.04	0.12		0.07	0.17	216	55.1%	1.50		0.01	0.14		0.87	-1.37	
-18	0.01	0.02		0.08	0.15	216	49.5%	-0.15		0.03	0.44		0.83	-1.77	*
-17	0.05	0.18		0.13	0.22	217	50.7%	0.21		-0.01	-0.10		1.16	1.70	*
-16	-0.19	-0.65		-0.06	-0.09	216	55.6%	1.65	*	-0.00	-0.03		0.77	-2.44	***
-15	0.00	0.01		-0.06	-0.08	217	54.4%	1.30		0.09	-1.32		1.09	0.93	
-14	-0.36	-1.20		-0.41	-0.52	216	56.9%	2.03	**	0.19	2.84	****	1.33	3.48	****
-13	0.51	1.71	*	0.10	0.12	217	47.9%	-0.62		0.20	0.29		0.82	-1.89	*
-12	-0.03	-0.10		0.07	0.07	216	53.2%	0.94		0.01	0.13		0.91	-0.98	
-11	0.09	0.30		0.16	0.17	216	54.6%	1.35		0.01	0.07		1.05	0.51	
-10	-0.04	-0.12		0.12	0.12	217	53.5%	1.03		0.05	0.80		1.02	0.18	
-9	0.18	0.61		0.30	0.29	217	51.2%	0.35		0.04	0.60		0.90	-1.05	
-8	0.24	0.79		0.54	0.50	217	51.2%	0.35		-0.04	-0.64		1.50	5.24	****
-7	-0.39	-1.30		0.15	0.14	217	59.9%	2.92	****	0.07	1.10		1.05	0.53	
-6	0.16	0.55		0.32	0.27	217	50.7%	0.21		-0.05	-0.68		1.24	2.52	***
-5	0.01	0.04		0.33	0.27	216	58.8%	2.59	***	0.08	1.18		1.29	2.98	****
-4	0.25	0.82		0.57	0.47	216	54.2%	1.23		0.07	1.08		0.96	-0.41	
-3	0.24	0.80		0.81	0.64	216	49.5%	-0.15		-0.15	-2.24	**	1.02	0.17	
-2	-0.58	-1.93	*	0.23	0.18	216	61.6%	3.41	****	-0.04	-0.54		0.97	-0.36	
-1	0.07	0.23		0.30	0.23	216	53.2%	0.94		-0.10	-1.42		0.83	-1.81	*
0	-0.23	-0.76		0.08	0.06	217	53.9%	1.15		0.03	0.51		0.91	-0.96	
1	0.21	0.70		0.29	0.20	216	52.3%	0.68		0.10	1.47		1.21	2.14	**
2	0.20	0.66		0.48	0.34	216	50.9%	0.26		-0.04	-0.59		1.10	1.06	
3	-0.16	-0.52		0.33	0.22	216	61.1%	3.26	****	-0.10	-1.54		0.91	-0.98	
4	-0.29	-0.98		0.03	0.02	217	59.9%	2.92	****	-0.01	-0.11		0.99	-0.14	
5	-0.04	-0.14		-0.01	-0.01	217	53.5%	1.03		-0.03	-0.39		1.20	2.06	**
6	0.00	-0.01		-0.01	-0.01	217	55.3%	1.56		-0.04	-0.65		0.94	-0.66	
7	-0.15	-0.51		-0.16	-0.10	217	56.2%	1.83	*	-0.03	-0.49		0.77	-2.37	***
8	-0.19	-0.64		-0.36	-0.22	217	54.4%	1.30		-0.07	-1.10		0.84	-1.70	*
9	0.08	-0.28		-0.44	-0.27	217	58.1%	2.39	***	0.21	3.06	****	1.76	7.87	****
10	0.59	1.97	**	0.15	0.09	217	44.2%	-1.71	*	0.04	0.63		0.99	-0.15	
11	0.07	0.25		0.22	0.13	217	47.9%	-0.62		0.09	1.26		1.17	1.81	*
12	0.08	0.27		0.30	0.18	217	52.1%	0.62		0.03	0.41		0.89	-1.18	
13	-0.17	-0.56		0.14	0.08	217	46.5%	-1.03		0.10	1.47		0.85	-1.59	
14	0.52	1.74	*	0.66	0.37	217	50.7%	0.21		0.06	0.86		0.86	-1.47	
15	0.03	0.09		0.68	0.38	217	49.3%	-0.21		0.09	1.36		1.03	0.28	
16	0.20	0.67		0.89	0.49	217	49.3%	-0.21		0.01	0.09		0.80	-2.06	**
17	0.08	0.28		0.97	0.53	217	54.8%	1.41		0.18	2.60	****	1.09	0.90	
18	0.44	1.48		1.41	0.76	217	51.2%	0.35		-0.03	-0.41		1.04	0.42	
19	0.11	0.37		1.52	0.81	216	52.8%	0.82		0.05	0.68		1.32	3.29	****
20	0.14	0.47		1.66	0.87	217	52.1%	0.62		-0.01	-0.20		0.93	-0.69	

*	$p < .100$
**	$p < .050$
***	$p < .010$
****	$p < .001$

Disclosure of an auditor change or an intention to change on a proxy statement or a *Wall Street Journal* article prior to the 8-K filing was found for 73 (34%) of the 217 auditor changes (see Table 13 in Chapter 4). It was argued in Section 4.3.2.2 that the market should not react to the 8-K disclosure for these companies because they could have reacted when they first learned of the auditor change. Event studies are therefore separately performed on the group of 144 with no prior disclosure (Table 23) and the group of 73 with prior disclosure (Table 24), and a differential market reaction is reported.

As shown in Table 23, there are a number of significant returns in the period from 5 days before to five days after the SEC receipt date for companies with no prior disclosure of the auditor change. Significant negative mean excess returns are found for days -2 and +4 relative to the SEC receipt date. Significant negative mean standardized excess returns are found on days -3 and +3 relative to the SEC receipt date. Significant numbers of negative reactions are found on days -5, -2, +3, and +4 relative to the SEC receipt date. Significant squared standardized excess returns are found on days -5, +1, and +5 relative to the SEC receipt date. These patterns of returns are vastly different from those reflected on Table 24 for the group of companies with prior disclosure. There does not appear to be any discernible pattern of reaction relative to the SEC receipt date for this second group.

These results support a conclusion that there is a differential reaction to the SEC receipt of form 8-K depending upon the existence of prior disclosure of the auditor change. The analysis of the cross-sectional variation in the market reaction around the SEC receipt date is therefore based on the group of 144 auditor changes because of the apparent difference between the two groups. Sufficient data to conduct the cross-sectional analysis is not available for 7 auditor changes, leaving a group of 137. The

Table 23. Event Study Results: Market Reaction to Auditor Change Disclosures at SEC Receipt Date–No Early Disclosures.

Day 0 = SEC Receipt Date, N = 144.

Event Day	Daily e_t	t(e)		CAR_{e_t}	t(CAR_e)	n	Percent Neg.	B°		Daily v_t	t(v)		Daily U_t	t(U)	
-20	0.22	0.57		0.22	0.57	144	54.9%	1.18		0.14	1.63		0.88	-1.04	
-19	0.40	1.01		0.62	1.11	143	53.1%	0.74		-0.06	-0.75		0.96	-0.36	
-18	-0.32	-0.81		0.30	0.44	143	53.8%	0.91		0.01	0.13		0.88	-1.05	
-17	0.02	0.59		0.32	0.41	144	54.2%	1.01		0.02	0.28		1.16	1.34	
-16	-0.04	-0.12		0.28	0.32	143	54.5%	1.08		-0.03	-0.39		0.64	-3.05	****
-15	-0.06	-0.15		0.22	0.23	144	56.3%	1.51		-0.08	-0.99		0.70	-2.52	***
-14	-0.31	-0.80		-0.09	-0.09	143	54.5%	1.08		0.22	2.67	****	1.51	4.36	****
-13	0.52	1.32		0.42	0.38	144	46.5%	-0.84		0.03	0.40		0.86	-1.18	
-12	-0.15	-0.38		0.28	0.24	143	51.7%	0.41		0.05	0.65		0.95	-0.42	
-11	0.21	0.53		0.48	0.39	143	53.8%	0.91		-0.03	-0.34		1.20	1.68	*
-10	-0.26	-0.65		0.23	0.18	144	52.1%	0.50		-0.01	-0.16		0.87	-1.08	
-9	-0.02	-0.06		0.20	0.15	144	52.1%	0.50		0.07	0.82		0.80	-1.69	*
-8	0.18	0.46		0.39	0.27	144	51.4%	0.34		-0.07	-0.87		1.69	5.83	****
-7	-0.27	-0.69		0.12	0.08	144	62.5%	3.00	****	0.09	1.11		1.13	1.09	
-6	0.19	0.47		0.30	0.20	144	50.7%	0.17		-0.01	-0.11		1.46	3.90	****
-5	0.17	0.43		0.47	0.30	143	58.7%	2.08	**	0.08	0.96		1.44	3.69	****
-4	0.22	0.57		0.69	0.43	143	52.4%	0.57		0.11	1.34		1.06	0.50	
-3	0.50	1.28		1.19	0.72	143	47.6%	-0.57		-0.29	-3.51	****	1.00	0.01	
-2	-1.08	-2.77	****	0.11	0.07	143	65.7%	3.75	****	0.08	0.93		1.01	0.10	
-1	0.41	1.05		0.52	0.30	144	50.0%	0.00		-0.09	-1.10		0.82	-1.55	
0	-0.38	-0.98		0.14	0.08	144	50.7%	0.17		-0.03	-0.41		0.98	-0.20	
1	-0.01	-0.03		0.13	0.07	143	56.6%	1.58		0.07	0.84		1.22	1.88	*
2	0.32	0.82		0.45	0.24	143	53.1%	0.74		-0.07	-0.79		1.01	0.11	
3	-0.33	-0.85		0.12	0.06	143	63.6%	3.25	****	-0.23	-2.77	****	0.79	-1.82	*
4	-0.72	-1.83	*	-0.60	-0.31	144	63.9%	3.34	****	0.03	0.38		1.03	0.27	
5	-0.16	-0.41		-0.76	-0.38	144	52.1%	0.50		-0.06	-0.67		1.36	3.06	****
6	0.02	0.05		-0.74	-0.36	144	54.2%	1.01		-0.01	-0.18		0.74	-2.24	**
7	-0.09	-0.23		-0.83	-0.40	144	54.2%	1.01		-0.07	-0.87		0.69	-2.66	****
8	-0.21	-0.55		-1.04	-0.49	144	54.9%	1.18		-0.08	-1.00		0.78	-1.86	*
9	-0.23	-0.60		-1.28	-0.60	144	56.9%	1.66	*	0.22	2.67	****	1.87	7.42	****
10	0.52	1.32		-0.76	-0.35	144	43.1%	-1.66	*	0.07	0.82		0.94	-0.47	
11	0.18	0.47		-0.58	-0.26	144	44.4%	-1.34		-0.01	-0.12		1.10	0.81	
12	-0.08	-0.20		-0.65	-0.29	144	54.2%	1.01		-0.06	-0.67		0.70	-2.51	***
13	-0.25	-0.64		-0.91	-0.40	144	49.3%	-0.17		0.12	1.41		0.91	-0.79	
14	0.53	1.37		-0.37	-0.16	144	49.3%	-0.17		0.09	1.06		0.82	-1.57	
15	0.22	0.55		-0.16	-0.07	144	48.6%	-0.34		0.01	0.15		0.84	-1.32	
16	0.00	-0.00		-0.16	-0.07	144	50.7%	0.17		-0.12	-1.39		0.58	-3.59	****
17	-0.39	-1.01		-0.55	-0.23	144	59.0%	2.16	**	0.17	2.02	**	1.07	0.59	
18	0.34	0.87		-0.21	-0.09	144	53.5%	0.84		-0.11	-1.31		1.05	0.41	
19	-0.05	-0.12		-0.26	-0.10	144	56.9%	1.66	*	-0.01	-0.18		1.16	1.40	
20	0.00	0.01		-0.26	-0.10	144	53.5%	0.84		0.03	0.35		0.88	-1.02	

*	$p < .100$
**	$p < .050$
***	$p < .010$
****	$p < .001$

Table 24. Event Study Results: Market Reaction to Auditor Change Disclosures at SEC Receipt Date–Early Disclosures.

Day 0 = SEC Receipt Date, N = 73.

Event Day	Daily e_t	t(e)	CAR_{e_t}	t(CAR_e)	n	Percent Neg.	B°	Daily v_t	t(v)	Daily U_t	t(U)
-20	-0.33	-0.65	-0.33	-0.65	73	58.9%	1.52	-0.07	-0.62	1.16	0.98
-19	-0.66	-1.32	-0.99	-1.39	73	58.9%	1.52	0.15	1.29	0.69	-1.85 *
-18	0.63	1.26	-0.36	-0.41	73	41.1%	-1.52	0.07	0.57	0.74	-1.57
-17	0.12	0.23	-0.24	-0.24	73	43.8%	-1.06	-0.07	-0.56	1.17	1.05
-16	-0.48	-0.96	-0.72	-0.64	73	57.5%	1.28	0.06	0.49	1.01	0.08
-15	0.12	0.24	-0.60	-0.49	73	50.7%	0.12	-0.10	-0.89	1.85	5.13 ****
-14	-0.44	-0.88	-1.05	-0.78	73	61.6%	1.98 *	0.13	1.15	0.98	-0.13
-13	0.50	1.00	-0.54	-0.38	73	50.7%	0.12	-0.01	-0.07	0.73	-1.60
-12	0.20	0.39	-0.34	-0.23	73	56.2%	1.06	-0.08	-0.70	0.82	-1.09
-11	-0.14	-0.27	-0.48	-0.30	73	56.2%	1.06	0.07	0.60	0.75	-1.48
-10	0.40	0.79	-0.08	-0.05	73	56.2%	1.06	0.19	1.61	1.30	1.82 *
-9	0.59	1.17	0.51	0.29	73	49.3%	-0.12	-0.02	-0.13	1.09	0.56
-8	0.34	0.68	0.85	0.47	73	50.7%	0.12	0.02	0.13	1.14	0.85
-7	-0.62	-1.23	0.23	0.12	73	54.8%	0.82	0.04	0.33	0.90	-0.61
-6	0.12	0.24	0.35	0.18	73	50.7%	0.12	-0.12	-1.01	0.81	-1.14
-5	-0.29	-0.58	0.06	0.03	73	58.9%	1.52	0.08	0.68	0.99	-0.04
-4	0.29	0.57	0.34	0.17	73	57.5%	1.28	-0.00	-0.01	0.77	-1.41
-3	-0.28	-0.55	0.07	0.03	73	53.4%	0.58	0.12	1.06	1.05	0.28
-2	0.41	0.81	0.47	0.22	73	53.4%	0.58	-0.26	-2.23 **	0.87	-0.76
-1	-0.62	-1.22	-0.14	-0.06	72	59.7%	1.65	-0.11	-0.90	0.84	-0.94
0	0.08	0.17	-0.06	-0.02	73	60.3%	1.76 *	0.17	1.45	0.77	-1.37
1	0.65	1.29	0.59	0.25	73	43.8%	-1.06	0.16	1.35	1.17	1.04
2	-0.05	-0.09	0.55	0.23	73	46.6%	-0.58	0.01	0.10	1.28	1.67 *
3	0.19	0.37	0.73	0.30	73	56.2%	1.06	0.14	1.23	1.14	0.86
4	0.54	1.07	1.27	0.51	73	52.1%	0.36	-0.08	-0.72	0.90	-0.63
5	0.19	0.38	1.46	0.57	73	56.2%	1.06	0.03	0.27	0.88	-0.74
6	-0.05	-0.10	1.41	0.54	73	57.5%	1.28	-0.10	-0.88	1.33	2.01 **
7	-0.28	-0.55	1.14	0.43	73	60.3%	1.76 *	0.04	0.37	0.94	-0.35
8	-0.15	-0.29	0.99	0.36	73	53.4%	0.58	-0.06	-0.49	0.95	-0.33
9	0.22	0.43	1.20	0.44	73	60.3%	1.76 *	0.18	1.52	1.52	3.16 ****
10	0.73	1.45	1.93	0.69	73	46.6%	-0.58	-0.01	-0.07	1.07	0.39
11	-0.14	-0.28	1.79	0.63	73	54.8%	0.82	0.27	2.34 **	1.33	1.99 *
12	0.39	0.77	2.18	0.75	73	47.9%	-0.36	0.19	1.65	1.25	1.49
13	0.00	0.00	2.18	0.74	73	41.1%	-1.52	0.06	0.55	0.73	-1.63
14	0.49	0.97	2.67	0.90	73	53.4%	0.58	0.00	0.00	0.95	-0.33
15	-0.34	-0.68	2.33	0.77	73	50.7%	0.12	0.25	2.13 **	1.39	2.34 **
16	0.60	1.19	2.93	0.96	73	46.6%	-0.58	0.25	2.11 **	1.25	1.49
17	1.03	2.04 **	3.96	1.27	73	46.6%	-0.58	0.19	1.64	1.12	0.73
18	0.65	1.29	4.61	1.46	73	46.6%	-0.58	0.13	1.14	1.03	0.15
19	0.43	0.84	5.04	1.58	72	44.4%	-0.95	0.17	1.42	1.61	3.71 ****
20	0.41	0.80	5.44	1.69 *	73	49.3%	-0.12	-0.10	-0.84	1.04	0.24

* $p < .100$
** $p < .050$
*** $p < .010$
**** $p < .001$

market reaction for the 137 is virtually indistinguishable from the 144, as can be seen by comparing the event study results in Table 23 with those in Table 25.

5.2.1.2 The market reaction at the 8-K event date (Board ratification).

An argument is presented in Section 4.3.2.2 that it is possible for news of the auditor change to be disclosed in an informal fashion at the time the board meets to ratify the auditor change. Table 26 shows the results of a standard event study on all 217 auditor changes. There is a significant positive mean excess return of 0.65% on day -1 relative to the board date. A positive mean standardized excess return is also significant on this date. There are several days with significant numbers of negative returns, especially from day -2 to day -16, the period during which most 8-Ks would be received at the SEC. There are several days of significant mean squared standardized excess returns, concentrated from days -15 to -10 and on days -2, -1, and 0. It can be concluded that the market is reacting to some news disclosure at or around the board date. Significant reactions one and two days before the meeting are possible, because meeting agendas are distributed to directors prior to the meeting.

As before, this group of 217 auditor changes is segregated into two groups. The group with no disclosure of the auditor change prior to the board date contained 158 auditor changes, and the group with prior disclosure on proxy statements contained 59 auditor changes. Again, separate event studies were conducted on each group, the results of which are reported on Tables 27 and 28, respectively. There appears to be a large difference between the two groups with respect to the nature of the market reaction. The group of 158 (results in Table 27) shows significantly large numbers of negative market reactions during the period from day -4 to -16. There are many days of significant mean squared standardized returns, from -17 to -9, and from -2 to +6.

Table 25. Event Study Results: Market Reaction to Auditor Change Disclosures at SEC Receipt Date–No Early Disclosures and Additional Data Available.

Day 0 = SEC Receipt Date, N = 137.

Event Day	Daily e_t	t(e)		CAR_{e_t}	t(CAR_e)	n	Percent Neg.	B°		Daily v_t	t(v)		Daily U_t	t(U)	
-20	0.19	0.47		0.19	0.47	137	55.5%	1.29		0.14	1.58		0.88	-0.96	
-19	0.37	0.92		0.56	0.98	136	52.9%	0.68		-0.05	-0.60		0.99	-0.07	
-18	-0.28	-0.69		0.28	0.40	136	52.9%	0.68		0.03	0.34		0.89	-0.88	
-17	0.11	0.27		0.39	0.48	137	52.6%	0.61		0.02	0.28		1.19	1.59	
-16	-0.08	-0.19		0.32	0.35	136	54.4%	1.03		-0.03	-0.37		0.64	-2.99	****
-15	-0.05	-0.13		0.26	0.27	137	55.5%	1.29		-0.08	-0.89		0.71	-2.41	***
-14	-0.36	-0.88		-0.09	-0.09	136	53.7%	0.86		0.18	2.10	**	1.40	3.33	****
-13	0.41	1.01		0.32	0.28	137	47.4%	-0.61		0.03	0.36		0.84	-1.36	
-12	-0.17	-0.41		0.15	0.12	136	51.5%	0.35		0.02	0.21		0.88	-1.00	
-11	0.09	0.21		0.24	0.18	136	54.4%	1.03		-0.04	-0.43		1.13	1.12	
-10	-0.35	-0.85		-0.11	-0.08	137	51.8%	0.42		0.02	0.20		0.86	-1.18	
-9	0.08	0.19		-0.03	-0.02	137	51.1%	0.26		0.07	0.79		0.84	-1.33	
-8	0.17	0.42		0.14	0.10	137	52.6%	0.61		-0.06	-0.69		1.70	5.76	****
-7	-0.29	-0.72		-0.15	-0.10	137	62.8%	3.00	****	0.11	1.29		1.04	0.33	
-6	0.25	0.61		0.09	0.06	137	51.1%	0.26		0.00	0.02		1.52	4.28	****
-5	0.17	0.41		0.26	0.16	136	58.8%	2.05	**	0.10	1.15		1.50	4.12	****
-4	0.27	0.66		0.53	0.31	136	51.5%	0.35		0.12	1.40		1.09	0.76	
-3	0.52	1.27		1.04	0.60	136	48.5%	-0.35		-0.27	-3.17	****	1.00	0.04	
-2	-1.04	-2.56	***	0.00	0.00	136	64.7%	3.43	****	0.06	0.73		0.99	-0.08	
-1	0.37	0.91		0.37	0.20	137	50.4%	0.09		-0.09	-1.08		0.81	-1.60	
0	-0.36	-0.89		0.01	0.01	137	51.1%	0.26		-0.04	-0.46		1.00	0.03	
1	-0.04	-0.11		-0.03	-0.02	136	57.4%	1.73	*	0.56	0.66		1.20	1.64	
2	0.30	0.75		0.27	0.14	136	52.9%	0.68		-0.05	-0.59		1.02	0.15	
3	-0.26	-0.64		0.01	0.01	136	63.2%	3.08	****	-0.24	-2.85	****	0.78	-1.79	*
4	-0.79	-1.94	*	-0.77	-0.38	137	64.2%	3.32	****	0.03	0.33		1.00	0.01	
5	-0.19	-0.46		-0.96	-0.46	137	51.8%	0.42		-0.10	-1.13		1.31	2.56	***
6	-0.10	-0.26		-1.07	-0.51	137	55.5%	1.29		-0.01	-0.11		0.65	-2.93	****
7	-0.04	-0.09		-1.10	-0.51	137	54.7%	1.10		-0.10	-1.12		0.67	-2.73	****
8	-0.35	-0.87		-1.45	-0.67	137	54.7%	1.10		-0.11	-1.24		0.72	-2.32	**
9	-0.28	-0.70		-1.74	-0.78	137	56.9%	1.62		0.20	2.40	***	1.93	7.66	****
10	0.42	1.04		-1.31	-0.58	137	43.1%	-1.62		0.09	1.08		0.94	-0.48	
11	0.20	0.49		-1.11	-0.48	137	44.5%	-1.29		0.00	0.00		1.12	0.99	
12	0.01	0.03		-1.10	-0.47	137	53.3%	0.77		-0.05	-0.55		0.72	-2.32	**
13	-0.27	-0.67		-1.38	-0.58	137	48.2%	-0.42		0.12	1.44		0.92	-0.68	
14	0.51	1.25		-0.87	-0.36	137	49.6%	-0.09		0.11	1.25		0.83	-1.40	
15	0.29	0.72		-0.58	-0.24	137	47.4%	-0.61		0.01	0.12		0.87	-1.05	
16	-0.01	-0.03		-0.59	-0.24	137	50.4%	0.09		-0.12	-1.37		0.57	-3.55	****
17	-0.44	-1.09		-1.03	-0.41	137	59.1%	2.13	**	0.16	1.89	*	1.10	0.83	
18	0.31	0.77		-0.72	-0.28	137	54.0%	0.94		-0.11	-1.32		1.06	0.50	
19	-0.01	-0.03		-0.73	-0.28	137	57.7%	1.80	*	-0.07	-0.77		0.97	-0.27	
20	-0.19	-0.48		-0.93	-0.36	137	54.7%	1.10		0.05	0.54		0.91	-0.71	

*	p < .100
**	p < .050
***	p < .010
****	p < .001

Table 26. Event Study Results: Market Reaction to Auditor Change Disclosures at 8-K Event Date (Board)—All Sample Group.

Day 0 = 8-K Event Date (Board), N = 217.

Event Day	Daily e_t	t(e)		CAR_{e_t}	$t(CAR_e)$	n	Percent Neg.	B°		Daily v_t	t(v)		Daily U_t	t(U)	
-20	-0.27	-0.97		-0.27	-0.97	217	53.9%	1.15		-0.05	-0.78		1.22	2.29	**
-19	-0.02	-0.06		-0.28	-0.73	216	56.0%	1.76		-0.00	-0.00		1.10	1.01	
-18	-0.08	-0.31		-0.37	-0.77	217	53.9%	1.15		-0.02	-0.26		0.94	-0.66	
-17	-0.07	-0.27		-0.44	-0.81	216	50.0%	0.00		-0.03	-0.38		0.82	-1.91	
-16	-0.30	-1.09		-0.74	-1.21	216	50.9%	0.26		-0.06	-0.86		0.70	-3.14	
-15	0.60	2.19	**	-0.14	-0.21	217	48.8%	-0.35		0.15	2.25	**	1.31	3.26	****
-14	-0.41	-1.50		-0.55	-0.77	217	57.6%	2.24	**	-0.06	-0.81		1.14	1.46	
-13	-0.33	-1.20		-0.88	-1.14	217	57.6%	2.24	**	-0.06	-0.93		1.27	2.79	****
-12	0.16	0.60		-0.72	-0.87	217	49.8%	-0.06		0.06	0.95		1.06	0.68	
-11	-0.12	-0.44		-0.84	-0.97	216	54.6%	1.35		0.02	0.27		1.50	5.18	****
-10	0.49	1.80	*	-0.34	-0.38	216	47.2%	-0.82		0.17	2.55	***	1.33	3.40	****
-9	-0.27	-1.00		-0.62	-0.65	217	60.8%	3.18	****	-0.10	-1.40		1.38	3.99	****
-8	0.05	0.19		-0.57	-0.57	216	50.9%	0.26		0.01	0.08		0.84	-1.69	
-7	0.11	0.39		-0.46	-0.45	216	46.3%	-1.09		0.10	1.47		0.82	-1.85	
-6	0.34	1.25		-0.12	-0.11	217	50.2%	0.06		0.08	1.23		1.10	1.00	
-5	-0.54	-1.98	**	-0.66	-0.60	217	60.4%	3.06	****	-0.12	-1.73		0.98	-0.24	
-4	-0.17	-0.62		-0.83	-0.73	217	55.8%	1.71		-0.04	-0.56		0.81	-1.96	
-3	0.13	0.46		-0.70	-0.60	216	56.9%	2.03	**	0.09	1.28		1.11	1.16	
-2	-0.14	-0.50		-0.84	-0.70	216	51.9%	0.56		0.04	0.62		1.21	2.15	**
-1	0.65	2.36	***	-0.19	-0.16	217	51.2%	0.35		0.13	1.95	*	1.17	1.78	*
0	0.00	0.01		-0.19	-0.15	217	53.9%	1.15		0.06	0.91		1.16	1.68	*
1	-0.05	-0.18		-0.24	-0.18	217	53.5%	1.03		0.01	0.20		1.11	1.11	
2	-0.20	-0.72		-0.43	-0.33	217	56.7%	1.97	**	-0.08	-1.23		0.83	-1.73	
3	0.02	0.07		-0.42	-0.31	217	50.7%	0.21		0.03	0.41		1.06	0.58	
4	-0.06	-0.21		-0.47	-0.35	217	57.1%	2.09	**	-0.04	-0.60		0.93	-0.70	
5	0.00	0.01		-0.47	-0.34	217	52.1%	0.62		0.01	0.71		1.25	2.59	****
6	0.38	1.40		-0.09	-0.06	216	57.4%	2.18	**	0.09	1.33		1.09	0.90	
7	-0.32	-1.18		-0.41	-0.29	216	60.2%	3.00	****	-0.13	-1.93	*	0.78	-2.27	
8	0.13	0.49		-0.28	-0.19	215	51.6%	0.47		0.07	0.96		1.03	0.33	
9	0.08	0.28		-0.20	-0.13	215	53.0%	0.88		-0.01	-0.19		0.97	-0.33	
10	-0.31	-1.12		-0.51	-0.33	216	57.4%	2.18	**	-0.00	-0.04		0.99	-0.06	
11	-0.32	-1.16		-0.82	-0.53	217	57.1%	2.09	**	-0.09	-1.33		0.80	-2.06	
12	0.03	0.11		-0.79	-0.51	217	59.0%	2.65	****	0.03	0.37		0.87	-1.35	
13	-0.19	-0.69		-0.98	-0.62	217	60.4%	3.06	****	-0.08	-1.22		0.86	-1.46	
14	-0.13	-0.48		-1.11	-0.69	217	58.1%	2.39	***	-0.06	-0.83		1.15	1.56	
15	-0.16	-0.58		-1.27	-0.78	217	55.8%	1.71		-0.08	-1.21		1.37	3.81	****
16	-0.21	-0.77		-1.48	-0.89	217	57.6%	2.24	**	-0.03	-0.49		0.84	-1.69	
17	-0.06	-0.22		-1.54	-0.92	217	50.7%	0.21		0.01	0.10		1.14	1.41	
18	0.08	0.28		-1.47	-0.86	217	49.8%	-0.06		0.04	0.63		1.02	0.17	
19	-0.25	-0.90		-1.71	-0.99	217	56.7%	1.97		-0.07	-1.06		1.01	0.08	
20	0.11	0.42		-1.60	-0.91	217	53.0%	0.88		0.07	0.96		1.23	2.41	***

*	$p < .100$
**	$p < .050$
***	$p < .010$
****	$p < .001$

On the other hand, there is no obvious pattern of excess returns or standardized excess returns for this group around this date. The group of 59 (results in Table 28) has a marginally significant positive mean excess return on day -1, significant negative mean standardized excess returns on days -2 and -1, a few days of marginally significant numbers of negative excess returns from days -3 to +2 around the board date, and significant squared standardized excess returns on day -1 and several after day +5. The results of these event studies support a conclusion of differential market reactions around the board date for the two groups of auditor changes. The market demonstrates more reaction for the group of companies that had prior proxy disclosure of the auditor change than for the group of companies that had no prior disclosures. It is possible that these results reflect a general market response to issues discussed at the board meeting. If so, discussion of other events besides the auditor change contributes to a noisy market response on that date.

5.2.1.3 The market reaction at the Disclosure, Inc., receipt date.

The third day of interest, receipt of the 8-K by Disclosure, Inc., was also analyzed. An event study was performed on the entire group of 217 auditor changes (see Table 29 for the results). There are both a significant negative mean excess return and a significant number of negative returns on the second day following receipt of the 8-K by Disclosure, Inc. There are marginally significant negative mean standardized returns on days +1 and +3. The mean squared standardized return is significant on day +3.

The 217 auditor changes can be split into a group of 144 auditor changes with no prior disclosure and a group of 73 with prior disclosure. The results of standard event studies on these two groups are presented in Tables 30 and 31. The only significant market reactions for the group of 144 on the days immediately surrounding the Disclo-

Table 27. Event Study Results: Market Reaction to Auditor Change Disclosures at 8-K Event Date (Board)–No Prior Disclosure Group.

Day 0 = 8-K Event Date (Board), N = 158.

Event Day	Daily e_t	t(e)		CAR_{e_t}	t(CAR_e)	n	Percent Neg.	B°		Daily v_t	t(v)		Daily U_t	t(U)	
-20	-0.38	-1.22		-0.38	-1.22	158	53.8%	0.96		-0.09	-1.19		1.15	1.34	
-19	0.01	0.04		-0.37	-0.83	157	56.7%	1.68	*	-0.01	-0.15		1.18	1.62	
-18	-0.46	-1.48		-0.82	-1.53	158	56.3%	1.58		-0.06	-0.70		0.73	-2.36	***
-17	0.10	0.32		-0.73	-1.17	157	49.7%	-0.08		-0.01	-0.14		0.88	-1.07	
-16	-0.15	-0.48		-0.87	-1.26	157	50.3%	0.08		-0.03	-0.37		0.64	-3.16	****
-15	0.52	1.69	*	-0.35	-0.46	158	50.0%	0.00		0.15	1.88	*	1.45	4.02	****
-14	-0.40	-1.29		-0.75	-0.92	158	57.6%	1.91	*	-0.06	-0.80		1.20	1.77	*
-13	-0.30	-0.96		-1.05	-1.20	158	59.5%	2.39	***	-0.06	-0.79		1.50	4.40	****
-12	0.08	0.25		-0.97	-1.05	158	47.5%	-0.63		0.07	0.86		1.19	1.71	*
-11	-0.20	-0.65		-1.18	-1.20	157	54.8%	1.20		0.01	0.07		1.71	6.32	****
-10	0.61	1.97	*	-0.57	-0.55	157	45.2%	-1.20		0.20	2.54	***	1.49	4.37	****
-9	-0.18	-0.58		-0.75	-0.69	158	61.4%	2.87	****	-0.10	-1.23		1.48	4.27	****
-8	0.16	0.52		-0.59	-0.52	157	49.0%	-0.25		0.06	0.75		0.89	-0.96	
-7	0.27	0.86		-0.32	-0.28	157	46.5%	-0.88		0.09	1.17		0.78	-1.99	**
-6	0.27	0.87		-0.05	-0.04	158	53.2%	0.80		0.09	1.16		1.17	1.48	
-5	-0.65	-2.10	**	-0.70	-0.56	158	61.4%	2.87	****	-0.14	-1.73	*	1.01	0.06	
-4	-0.08	-0.26		-0.78	-0.61	158	54.4%	1.11		-0.03	-0.37		0.89	-0.94	
-3	0.24	0.78		-0.54	-0.41	157	54.8%	1.20		0.12	1.45		1.18	1.59	
-2	0.16	0.51		-0.38	-0.28	157	48.4%	-0.40		0.16	1.95	*	1.24	2.18	**
-1	0.46	1.48		0.08	0.06	158	55.1%	1.28		0.07	0.91		1.11	1.00	
0	0.11	0.35		0.19	0.13	158	51.3%	0.33		0.09	1.13		1.21	1.85	*
1	-0.18	-0.58		0.01	0.01	158	53.2%	0.80		0.01	0.09		1.10	0.86	
2	-0.21	-0.67		-0.20	-0.13	158	54.4%	1.11		-0.05	-0.58		0.75	-2.26	**
3	0.15	0.47		-0.05	-0.03	158	49.4%	-0.15		0.06	0.70		1.07	0.58	
4	-0.29	-0.93		-0.34	-0.22	158	58.2%	2.06	**	-0.05	-0.65		0.89	-0.94	
5	0.19	0.62		-0.15	-0.09	158	49.4%	-0.15		0.06	0.75		1.49	4.32	****
6	0.30	0.95		0.15	0.09	157	58.0%	2.00	**	0.09	1.19		1.26	2.34	**
7	-0.41	-1.31		-0.26	-0.16	157	60.5%	2.63	****	-0.16	-1.99	**	0.84	-1.46	
8	0.04	0.11		-0.22	-0.13	156	52.6%	0.65		0.01	0.16		0.99	-0.05	
9	-0.14	-0.44		-0.36	-0.21	156	55.8%	1.45		-0.04	-0.49		1.14	1.28	
10	-0.30	-0.98		-0.66	-0.38	157	58.6%	2.16	**	-0.04	-0.55		0.92	-0.73	
11	-0.23	-0.76		-0.90	-0.51	158	53.8%	0.96		-0.07	-0.87		0.83	-1.49	
12	-0.16	-0.51		-1.06	-0.59	158	61.4%	2.87	****	-0.02	-0.27		0.82	-1.57	
13	-0.14	-0.45		-1.20	-0.66	158	60.1%	2.54	***	-0.07	-0.86		1.00	0.02	
14	-0.23	-0.75		-1.43	-0.78	158	58.9%	2.24	**	-0.08	-0.95		1.15	1.32	
15	-0.10	-0.31		-1.53	-0.82	158	52.5%	0.63		-0.09	-1.08		1.17	1.50	
16	-0.32	-1.02		-1.84	-0.98	158	58.9%	2.24	**	-0.05	-0.61		0.75	-2.22	**
17	-0.09	-0.30		-1.93	-1.01	158	50.0%	0.00		-0.03	-0.36		1.19	1.73	*
18	-0.05	-0.16		-1.98	-1.02	158	48.7%	-0.33		0.05	0.62		0.92	-0.67	
19	-0.06	-0.21		-2.05	-1.04	158	55.7%	1.43		-0.04	-0.47		0.88	-1.10	
20	0.19	0.62		-1.86	-0.94	158	51.9%	0.48		0.04	0.55		1.14	1.21	

*	$p < .100$
**	$p < .050$
***	$p < .010$
****	$p < .001$

Table 28. Event Study Results: Market Reaction to Auditor Change Disclosures at 8-K Event Date (Board)—Prior Disclosure Group.

Day 0 = 8-K Event Date (Board), N = 59.

Event Day	Daily e_t	t(e)		CAR_{e_t}	t(CAR_e)	n	Percent Neg.	B^0		Daily v_t	t(v)		Daily U_t	t(U)	
-20	0.03	0.06		0.03	0.06	59	54.2%	0.65		0.06	0.45		1.40	2.20	**
-19	-0.09	-0.15		-0.06	-0.06	59	54.2%	0.65		0.03	0.25		0.87	-0.71	
-18	0.92	1.50		0.86	0.82	59	47.5%	-0.38		0.08	0.64		1.48	2.59	***
-17	-0.54	-0.88		0.33	0.27	59	50.8%	0.12		-0.06	-0.50		0.65	-1.92	*
-16	-0.70	-1.15		-0.37	-0.27	59	52.5%	0.38		-0.14	-1.04		0.84	-0.85	
-15	0.80	1.31		0.43	0.29	59	45.8%	-0.65		0.16	1.23		0.94	-0.31	
-14	-0.44	-0.72		-0.01	-0.01	59	57.6%	1.17		-0.03	-0.24		0.98	-0.11	
-13	-0.41	-0.67		-0.42	-0.25	59	52.5%	0.38		-0.06	-0.49		0.66	-1.86	*
-12	0.40	0.65		-0.03	-0.02	59	55.9%	0.91		0.05	0.41		0.72	-1.50	
-11	0.10	0.17		0.07	0.04	59	54.2%	0.65		0.05	0.41		0.92	-0.41	
-10	0.19	0.30		0.26	0.13	59	52.5%	0.38		0.10	0.74		0.88	-0.63	
-9	-0.52	-0.86		-0.26	-0.13	59	59.3%	1.43		-0.09	-0.67		1.12	0.66	
-8	-0.24	-0.39		-0.50	-0.23	59	55.9%	0.91		-0.14	-1.08		0.69	-1.67	*
-7	-0.32	-0.52		-0.82	-0.36	59	45.8%	-0.65		0.12	0.91		0.94	-0.30	
-6	0.54	0.88		-0.29	-0.12	59	42.4%	-1.17		0.06	0.46		0.91	-0.51	
-5	-0.25	-0.41		-0.54	-0.22	59	57.6%	1.17		-0.06	-0.49		0.90	-0.56	
-4	-0.41	-0.67		-0.95	-0.38	59	59.3%	1.43		-0.06	-0.48		0.59	-2.21	**
-3	-0.19	-0.30		-1.13	-0.44	59	62.7%	1.95	*	0.01	0.09		0.93	-0.38	
-2	-0.92	-1.51		-2.05	-0.77	59	61.0%	1.69	*	-0.26	-2.01	**	1.10	0.56	
-1	1.14	1.88	*	-0.91	-0.33	59	40.7%	-1.43		0.29	2.25	**	1.33	1.78	*
0	-0.28	-0.46		-1.19	-0.42	59	61.0%	1.69	*	-0.01	-0.11		1.04	0.20	
1	0.30	0.50		-0.88	-0.31	59	54.2%	0.65		0.03	0.23		1.13	0.71	
2	-0.17	-0.27		-1.05	-0.36	59	62.7%	1.95	*	-0.18	-1.40		1.07	0.38	
3	-0.32	-0.53		-1.37	-0.46	59	54.2%	0.65		-0.05	-0.37		1.03	0.16	
4	0.56	0.92		-0.81	-0.27	59	54.2%	0.65		-0.01	-0.10		1.04	0.19	
5	-0.51	-0.83		-1.32	-0.42	59	59.3%	1.43		-0.14	-1.08		0.61	-2.12	**
6	0.61	1.01		-0.70	-0.22	59	55.9%	0.91		0.08	0.61		0.61	-2.09	**
7	-0.11	-0.18		-0.81	-0.25	59	59.3%	1.43		-0.06	-0.46		0.64	-1.97	*
8	0.40	0.65		-0.42	-0.13	59	49.2%	-0.12		0.21	1.58		1.13	0.71	
9	0.64	1.06		0.23	0.07	59	45.8%	-0.65		0.06	0.45		0.50	-2.73	****
10	-0.31	-0.51		-0.08	-0.03	59	54.2%	0.65		0.11	0.82		1.20	1.09	
11	-0.54	-0.88		-0.62	-0.18	59	66.1%	2.47	***	-0.15	-1.12		0.72	-1.52	
12	0.53	0.88		-0.09	-0.03	59	52.5%	0.38		0.15	1.15		1.00	-0.02	
13	-0.32	-0.53		-0.41	-0.12	59	61.0%	1.69	*	-0.12	-0.93		0.48	-2.82	****
14	0.14	0.23		-0.27	-0.07	59	55.9%	0.91		-0.00	-0.02		1.15	0.82	
15	-0.32	-0.53		-0.59	-0.16	59	64.4%	2.21	**	-0.07	-0.55		1.89	4.85	****
16	0.07	0.12		-0.52	-0.14	59	54.2%	0.65		0.01	0.07		1.07	0.40	
17	0.03	0.04		-0.50	-0.13	59	52.5%	0.38		0.10	0.79		0.98	-0.12	
18	0.42	0.69		-0.08	-0.02	59	52.5%	0.38		0.02	0.18		1.26	1.42	
19	-0.74	-1.21		-0.81	-0.21	59	59.3%	1.43		-0.17	-1.27		1.36	1.94	*
20	-0.09	-0.15		-0.91	-0.23	59	55.9%	0.91		0.12	0.95		1.49	2.65	***

*	p < .100
**	p < .050
***	p < .010
****	p < .001

Table 29. Event Study Results: Market Reaction to Auditor Change Disclosures at Disclosure, Inc., Receipt Date–All Sample Group.

Day 0 = Disclosure, Inc. Receipt Date, N = 217.

Event Day	Daily e_t	t(e)		CAR_{e_t}	t(CAR_e)	n	Percent Neg.	B°		Daily v_t	t(v)		Daily U_t	t(U)	
-20	-0.43	-1.40		-0.43	-1.40	215	59.5%	2.79	****	0.03	0.51		0.89	-1.18	
-19	0.11	0.36		-0.32	-0.74	217	47.9%	-0.62		0.12	1.74	*	0.98	-0.23	
-18	0.39	1.27		0.07	0.13	216	48.1%	-0.56		-0.03	-0.45		0.97	-0.31	
-17	-0.22	-0.71		-0.15	-0.24	217	54.8%	1.41		-0.05	-0.70		0.86	-1.46	
-16	-0.37	-1.20		-0.52	-0.75	217	56.7%	1.97	**	0.16	2.40	***	1.40	4.21	****
-15	0.59	1.92	*	0.07	0.10	217	48.8%	-0.35		-0.03	-0.40		1.06	0.63	
-14	-0.30	-0.97		-0.23	-0.28	216	57.4%	2.18	**	0.03	0.38		0.94	-0.65	
-13	-0.09	-0.30		-0.32	-0.37	216	53.7%	1.09		0.07	0.98		1.20	2.09	**
-12	0.38	1.21		0.05	0.06	216	50.9%	0.26		-0.05	-0.78		1.01	0.06	
-11	-0.21	-0.69		-0.16	-0.16	217	54.8%	1.41		0.08	1.23		1.11	1.15	
-10	0.22	0.72		0.07	0.06	217	55.8%	1.71	*	0.05	0.77		1.31	3.18	****
-9	0.05	0.15		0.11	0.10	216	51.9%	0.56		-0.01	-0.14		1.13	1.40	
-8	0.00	-0.01		0.11	0.10	217	57.1%	2.09	**	-0.07	-1.06		1.07	0.69	
-7	-0.21	-0.68		-0.10	-0.09	217	55.3%	1.56		0.09	1.36		1.17	1.78	*
-6	0.37	1.20		0.27	0.23	217	52.1%	0.62		-0.02	-0.28		0.78	-2.33	***
-5	0.00	-0.01		0.27	0.22	216	53.2%	0.94		0.01	0.21		1.21	2.16	**
-4	-0.09	-0.30		0.18	0.14	216	52.8%	0.82		-0.05	-0.70		0.97	-0.29	
-3	-0.07	-0.23		0.10	0.08	216	56.0%	1.76	*	-0.04	-0.56		0.98	-0.22	
-2	0.17	0.56		0.28	0.21	216	55.6%	1.65	*	-0.02	-0.37		0.89	-1.10	
-1	-0.11	-0.37		0.17	0.12	216	54.6%	1.35		-0.03	-0.41		0.90	-1.05	
0	-0.20	-0.63		-0.03	-0.02	216	55.6%	1.65	*	0.08	1.11		1.08	0.86	
1	0.22	0.72		0.19	0.13	217	53.0%	0.88		-0.13	-1.88	*	1.13	1.36	
2	-0.73	-2.36	***	-0.54	-0.36	217	61.8%	3.48	****	0.05	0.75		0.98	-0.25	
3	0.43	1.38		-0.11	-0.07	216	53.2%	0.94		-0.12	-1.84	*	1.17	1.81	*
4	-0.34	-1.09		-0.45	-0.29	217	56.7%	1.97	**	-0.05	-0.80		0.89	-1.19	
5	-0.21	-0.67		-0.65	-0.41	217	53.5%	1.03		0.11	1.57		0.89	-1.19	
6	0.36	1.16		-0.30	-0.18	217	50.7%	0.21		-0.11	-1.63		0.80	-2.09	**
7	-0.37	-1.20		-0.67	-0.41	217	57.6%	2.24	**	0.14	2.02	**	1.21	2.20	**
8	0.60	1.95	*	-0.06	-0.04	217	47.5%	-0.74		0.10	1.46		1.48	5.01	****
9	0.09	0.28		0.02	0.01	217	51.2%	0.35		0.12	1.79	*	0.83	-1.78	*
10	0.36	1.15		0.38	0.22	217	47.9%	-0.62		0.09	1.26		1.05	0.48	
11	-0.12	-0.38		0.26	0.15	217	49.8%	-0.06		0.03	0.46		1.00	0.03	
12	0.20	0.64		0.46	0.26	217	47.9%	-0.62		0.12	1.74	*	0.92	-0.78	
13	0.20	0.64		0.66	0.36	217	47.9%	-0.62		0.02	0.25		0.90	-1.03	
14	0.19	0.60		0.84	0.46	217	53.0%	0.88		-0.09	-0.86		0.98	-0.25	
15	-0.29	-0.93		0.56	0.30	217	61.3%	3.33	****	0.04	0.64		1.15	1.61	
16	0.26	0.83		0.81	0.43	217	51.6%	0.47		0.16	2.31	**	1.54	5.59	****
17	0.24	0.78		1.06	0.55	216	50.0%	0.00		-0.01	-0.07		0.91	-0.92	
18	0.04	0.11		1.09	0.56	216	53.2%	0.94		0.01	0.11		1.14	1.47	
19	-0.16	-0.52		0.93	0.48	217	53.0%	0.88		-0.01	-0.17		1.08	0.88	
20	0.22	0.71		1.15	0.58	217	53.5%	1.03		0.05	0.73		0.96	-0.44	

*	$p < .100$
**	$p < .050$
***	$p < .010$
****	$p < .001$

sure, Inc. receipt include significant numbers of negative returns on days -2, 0, and +2. There is evidence of a significant mean market reaction during this period of time for the group of 73 on day -1 (squared standardized return) and day -2 (negative excess return and negative standardized return). These returns are only marginally significant, so a conclusion of a general market reaction this date cannot be strongly supported. Overall, there does not appear to be a significant amount of difference between the two groups.

5.2.1.4 CARs used in the cross-sectional analysis.

The mean cumulative abnormal returns (CAR) for the accumulation periods used in the cross-sectional analysis are presented in Table 32. The CARs are presented in Panel A for the group of 201 auditor changes possessing sufficient data, as well as for the subgroups based on prior disclosure of the change. The differences in CARs between the subgoups are tested using the two-sample t-test and the Wilcoxon rank sums test, and the results are presented in Panel B.

The first accumulation period presented is for five days around the Board date (-2 to +2) *and* seven days around the date that the SEC receives the 8-K (-2 to +4). There is a significant negative mean CAR (-2.17%) for the group of 137 auditor changes with no prior disclosure for any day of this accumulation period, and a mean CAR that is not significantly different from zero for the group of 64 changes with prior disclosure. The difference (2.82%) is marginally significant according to the two sample t-test ($t = 1.82$; p-value < 0.10), but not according to the Wilcoxon rank sums test ($Z = 1.58$; p-value > 0.10). The mean CAR for the five days surrounding the Board date is not significantly different from zero for either group, based up the true composition (150 auditor changes without prior disclosure and 51 with), or based upon the group composition used for the 12 day CAR (Board -2 to +2 and SEC -2 to +4). The mean CAR for the

Table 30. Event Study Results: Market Reaction to Auditor Change Disclosures at Disclosure, Inc., Receipt Date--No Prior Disclosure Group.

Day 0 = Disclosure, Inc. Receipt Date, N = 144.

Event Day	Daily e_t	t(e)		CAR_{e_t}	t(CAR_e)	n	Percent Neg.	B°		Daily v_t	t(v)		Daily U_t	t(U)	
-20	-0.37	-0.95		-0.37	-0.95	142	59.9%	2.36	***	0.07	0.89		1.02	0.15	
-19	0.05	0.13		-0.32	-0.58	144	51.4%	0.34		0.07	0.80		0.88	-1.04	
-18	0.40	1.01		0.07	0.11	143	49.7%	-0.07		-0.09	-1.06		0.84	-1.35	
-17	-0.29	-0.75		-0.22	-0.28	144	55.6%	1.34		-0.02	-0.26		0.89	-0.90	
-16	-0.34	-0.88		-0.56	-0.64	144	57.6%	1.82	*	0.16	1.97	*	1.24	2.03	**
-15	0.52	1.32		-0.04	-0.04	144	50.7%	0.17		0.03	0.38		1.06	0.53	
-14	-0.17	-0.43		-0.21	-0.20	143	53.1%	0.74		0.04	0.43		1.01	0.11	
-13	-0.10	-0.25		-0.31	-0.28	143	53.1%	0.74		0.08	0.95		1.09	0.77	
-12	0.17	0.42		-0.14	-0.12	143	50.3%	0.07		-0.06	-0.71		0.90	-0.86	
-11	-0.34	-0.86		-0.48	-0.39	144	54.2%	1.01		0.10	1.21		1.16	1.37	
-10	0.42	1.09		-0.06	-0.04	144	54.9%	1.18		0.03	0.38		1.41	3.47	****
-9	-0.11	-0.29		-0.17	-0.13	143	54.5%	1.08		-0.00	-0.03		1.19	1.58	
-8	0.13	0.33		-0.05	-0.03	144	58.3%	1.99	**	-0.17	-2.05	**	1.16	1.37	
-7	-0.51	-1.31		-0.56	-0.38	144	59.0%	2.16	**	0.24	2.84	****	1.42	3.57	****
-6	0.85	2.18	**	0.29	0.19	144	47.9%	-0.50		-0.07	-0.84		0.78	-1.88	*
-5	-0.16	-0.42		0.13	0.08	143	53.8%	0.91		-0.02	-0.29		1.25	2.16	**
-4	-0.07	-0.19		0.06	0.04	143	51.0%	0.24		-0.04	-0.44		1.12	1.06	
-3	-0.11	-0.27		-0.05	-0.03	143	55.2%	1.24		-0.03	-0.37		0.99	-0.06	
-2	0.06	0.16		0.01	0.01	144	56.9%	1.66	*	-0.07	-0.81		0.91	-0.78	
-1	-0.30	-0.76		-0.28	-0.16	143	55.2%	1.24		-0.09	-1.11		0.87	-1.11	
0	-0.39	-0.99		-0.67	-0.37	143	60.1%	2.42	***	0.06	0.70		1.07	0.62	
1	0.16	0.40		-0.51	-0.28	144	54.9%	1.18		-0.12	-1.38		1.03	0.25	
2	-0.60	-1.52		-1.11	-0.59	144	63.2%	3.17	****	-0.02	-0.28		1.04	0.36	
3	0.11	0.27		-1.00	-0.52	143	53.8%	0.91		-0.12	-1.43		1.24	2.03	**
4	-0.42	-1.08		-1.42	-0.73	144	54.2%	1.01		-0.08	-0.90		0.87	-1.10	
5	-0.16	-0.40		-1.58	-0.79	144	55.6%	1.34		0.07	0.78		0.81	-1.60	
6	0.22	0.56		-1.36	-0.67	144	48.6%	-0.34		-0.20	-2.36	***	0.73	-2.32	**
7	-0.54	-1.38		-1.90	-0.92	144	59.0%	2.16	**	0.12	1.46		1.01	0.05	
8	0.52	1.32		-1.39	-0.66	144	47.2%	-0.67		0.20	2.45	***	1.68	5.74	****
9	0.28	0.71		-1.11	-0.52	144	48.6%	-0.34		0.07	0.84		0.84	-1.39	
10	0.20	0.52		-0.91	-0.42	144	50.0%	0.00		0.03	0.34		0.93	-0.60	
11	-0.15	-0.40		-1.06	-0.48	144	49.3%	-0.17		-0.10	-1.21		0.74	-2.25	**
12	-0.19	-0.50		-1.25	-0.56	144	50.0%	0.00		0.15	1.81	*	0.89	-0.94	
13	0.37	0.95		-0.88	-0.39	144	44.4%	-1.34		0.04	0.47		0.95	-0.46	
14	0.30	0.77		-0.59	-0.25	144	51.4%	0.34		-0.20	-2.44	***	0.92	-0.68	
15	-0.72	-1.84	*	-1.31	-0.56	144	68.1%	4.34	****	0.03	0.36		0.98	-0.19	
16	0.04	0.10		-1.27	-0.53	144	52.1%	0.50		0.01	0.08		0.96	-0.33	
17	-0.13	-0.32		-1.39	-0.58	144	54.9%	1.18		0.08	0.98		0.85	-1.28	
18	0.35	0.89		-1.05	-0.43	144	50.7%	0.17		-0.02	-0.30		0.88	-0.98	
19	-0.21	-0.55		-1.26	-0.51	144	55.6%	1.34		-0.02	-0.27		1.20	1.66	*
20	0.11	0.29		-1.15	-0.46	144	54.2%	1.01		-0.03	-0.32		1.09	0.76	

*	$p < .100$
**	$p < .050$
***	$p < .010$
****	$p < .001$

Table 31. Event Study Results: Market Reaction to Auditor Change Disclosures at Disclosure, Inc., Receipt Date–Prior Disclosure Group.

Day 0 = Disclosure, Inc. Receipt Date, N = 73.

Event Day	Daily e_t	t(e)		CAR_{e_t}	t(CAR_e)		n	Percent Neg.	B°		Daily v_t	t(v)		Daily U_t	t(U)	
-20	-0.56	-1.08		-0.56	-1.08		73	58.9%	1.52		-0.04	-0.37		0.63	-2.25	**
-19	0.23	0.45		-0.32	-0.44		73	41.1%	-1.52		0.22	1.88	*	1.18	1.06	
-18	0.39	0.76		0.07	0.08		73	45.2%	-0.82		0.08	0.71		1.23	1.37	
-17	-0.08	-0.15		-0.01	-0.01		73	53.4%	0.58		-0.10	-0.84		0.79	-1.25	
-16	-0.43	-0.83		-0.44	-0.38		73	54.8%	0.82		0.16	1.38		1.73	4.41	****
-15	0.75	1.45		0.31	0.24		73	45.2%	-0.82		-0.14	-1.22		1.06	0.35	
-14	-0.56	-1.09		-0.25	-0.19		73	65.8%	2.70	****	0.01	0.06		0.79	-1.28	
-13	-0.09	-0.17		-0.34	-0.23		73	54.8%	0.82		0.04	0.36		1.42	2.53	***
-12	0.79	1.52		0.45	0.29		73	52.1%	0.36		-0.04	-0.34		1.22	1.31	
-11	0.04	0.07		0.48	0.29		73	56.2%	1.06		0.05	0.41		1.01	0.06	
-10	-0.17	-0.33		0.31	0.18		73	57.5%	1.28		0.09	0.78		1.10	0.61	
-9	0.37	0.71		0.67	0.38		73	46.6%	-0.58		-0.02	-0.20		1.03	0.21	
-8	-0.26	-0.51		0.41	0.22		73	54.8%	0.82		0.12	1.04		0.88	-0.72	
-7	0.39	0.75		0.80	0.41		73	47.9%	-0.36		-0.19	-1.65		0.68	-1.95	*
-6	-0.57	-1.10		0.23	0.12		73	60.3%	1.76	*	0.08	0.70		0.77	-1.38	
-5	0.31	0.60		0.54	0.26		73	52.1%	0.36		0.09	0.77		1.11	0.69	
-4	-0.13	-0.25		0.41	0.19		73	56.2%	1.06		-0.07	-0.59		0.67	-1.98	*
-3	0.00	-0.01		0.40	0.18		73	57.5%	1.28		-0.05	-0.45		0.95	-0.29	
-2	0.40	0.77		0.80	0.36		72	52.8%	0.48		0.06	0.50		0.87	-0.80	
-1	0.24	0.47		1.04	0.45		73	53.4%	0.58		0.10	0.86		0.96	-0.25	
0	0.18	0.34		1.22	0.52		73	46.6%	-0.58		0.11	0.94		1.10	0.62	
1	0.36	0.69		1.58	0.65		73	49.3%	-0.12		-0.15	-1.30		1.33	1.98	*
2	-1.00	-1.94	*	0.58	0.23		73	58.9%	1.52		0.20	1.68	*	0.85	-0.93	
3	1.05	2.04	**	1.63	0.65		73	52.1%	0.36		-0.14	-1.16		1.04	0.26	
4	-0.16	-0.32		1.47	0.57		73	61.6%	1.98	*	-0.01	-0.11		0.92	-0.51	
5	-0.30	-0.58		1.16	0.44		73	49.3%	-0.12		0.19	1.61		1.03	0.20	
6	0.64	1.23		1.80	0.67		73	54.8%	0.82		0.06	0.51		0.94	-0.35	
7	-0.05	-0.09		1.75	0.64		73	54.8%	0.82		0.17	1.44		1.62	3.73	****
8	0.78	1.51		2.54	0.91		73	47.9%	-0.36		-0.11	-0.91		1.09	0.57	
9	-0.29	-0.57		2.24	0.79		73	56.2%	1.06		0.22	1.90	*	0.82	-1.11	
10	0.66	1.27		2.90	1.01		73	43.8%	-1.06		0.20	1.70	*	1.28	1.68	*
11	-0.04	-0.08		2.86	0.98		73	50.7%	0.12		0.29	2.48	***	1.53	3.21	****
12	0.98	1.89	*	3.83	1.29		73	43.8%	-1.06		0.06	0.47		1.00	-0.03	
13	-0.14	-0.28		3.69	1.23		73	54.8%	0.82		-0.03	-0.24		0.81	-1.13	
14	-0.03	-0.07		3.66	1.20		73	56.2%	1.06		0.23	1.95	*	1.09	0.52	
15	0.57	1.10		4.22	1.36		73	47.9%	-0.36		0.07	0.60		1.50	3.04	****
16	0.68	1.32		4.91	1.56		73	50.7%	0.12		0.45	3.87	****	2.67	10.10	****
17	0.98	1.90	*	5.89	1.85	*	72	40.3%	-1.65		-0.18	-1.50		1.04	0.22	
18	-0.59	-1.14		5.30	1.65		72	58.3%	1.41		0.07	0.61		1.65	3.91	****
19	-0.05	-0.10		5.25	1.61		73	47.9%	-0.36		0.01	0.09		0.86	-0.82	
20	0.43	0.84		5.68	1.72	*	73	52.1%	0.36		0.20	1.70	*	0.70	-1.82	*

*	$p < .100$
**	$p < .050$
***	$p < .010$
****	$p < .001$

Table 32. Mean Cumulative Abnormal Returns (CAR) for Principle Accumulation Periods.

A) Mean (median) CARs by period.

Accumulation Period	n	Mean	Median	T-test	Signed Rank Test
Board -2 to +2, SEC -2 to +4	137	-2.17	-1.39	-2.15 **	-1138 **
	64	0.65	-0.13	0.55	24
	201	-1.27	-1.02	-1.62	-1614 *
Board -2 to +2	150	-0.01	0.03	-0.02	-185
	51	0.11	-0.20	0.13	-28
	201	0.02	-0.09	0.03	-382
Board -2 to +2	137	-0.06	0.02	-0.08	-209
	64	0.18	-0.19	0.23	-15
	201	0.02	-0.09	0.03	-382
SEC -2 to +4	137	-1.86	-2.34	-2.72 ***	-1592 ****
	64	0.49	0.19	0.53	-3
	201	-1.11	-1.48	-2.00 **	-2404 ***
SEC -2 to +2	137	-0.80	-1.23	-1.29	-1039 **
	64	0.27	-0.47	0.42	-52
	201	-0.46	-0.92	-0.98	-1729 **
Disclosure, Inc. -1 to +1	137	-0.40	-0.39	-0.89	-650
	64	1.08	-0.23	1.85 *	162
	201	0.07	-0.37	0.19	-524

B) Tests of differences between subgroups.
H^1_0: Means are not different. Tested by 2-sample t-test.
H^2_0: Medians are not different. Tested by Wilcoxon rank sums test.

Accumulation Period	n	Difference in Means	T-test t =	Difference in Medians	Wilcoxon Z =
Board -2 to +2, SEC -2 to +4	64 to 137	2.82	1.82 *	1.26	1.58
Board -2 to +2	51 to 150	0.12	0.12	0.23	-0.04
Board -2 to +2	64 to 137	0.24	0.23	0.21	0.13
SEC -2 to +4	64 to 137	2.35	1.99 **	2.44	2.02 **
SEC -2 to +2	64 to 137	1.07	1.20	0.76	1.31
Disclosure, Inc. -1 to +1	64 to 137	1.48	1.91 *	0.16	1.74 *

*	$p < .100$
**	$p < .050$
***	$p < .010$
****	$p < .001$

seven day period surrounding the SEC receipt is significantly negative (-1.86%) for the group with no prior disclosure and is not significantly different from zero for the group with prior disclosure. The difference in the mean CARs, 2.35% is significant according to both the two-sample t-test and the Wilcoxon rank sums test. The mean negative CAR around the Disclosure, Inc. receipt date for the 137 auditor changes with no prior disclosure is not significantly different from zero, but there is a marginally significant positive CAR for the group with prior disclosure. This difference is marginally significant.

5.2.1.5 Conclusions.

The preceding analysis leads to the following conclusions. There is a differential market reaction that is dependent on whether the auditor change was first disclosed on form 8-K, or earlier on the proxy statement or in a *Wall Street Journal* article. The cross-sectional analyses were therefore performed on the sample companies with no prior disclosure. For this group, the market appears to learn of the auditor change when the SEC receives form 8-K, and not on the date that the board ratifies the change. Moreover, it appears that there is no information transfer at the date of the Disclosure, Inc., receipt of form 8-K.

5.2.2 Cross-sectional analysis.

The relationships (1) between change in auditor quality and the market reaction to a change of auditor and (2) between change in net agency costs and the market reaction were examined in a joint analysis. OLS regression was used to examine five models of

cumulative abnormal returns (CAR). As discussed in Section 4.3.2.2, five accumulation periods were analyzed:

1. 12 days. Board date -2 to +2, plus SEC receipt date -2 to +4.
2. 5 days. Board date -2 to +2.
3. 5 days. SEC receipt date -2 to +2.
4. 7 days. SEC receipt date -2 to +4.
5. 3 days. Disclosure, Inc., receipt date -1 to +1.

The approach taken for each model was to regress the CAR against independent variables that proxy for change in auditor quality, change in net agency costs, and either receipt of a qualified opinion or a reported disagreement between the company and the auditor. The models were analyzed for the group of 137 auditor changes for which disclosure of the change was not made prior to receipt of form 8-K by the SEC.[96]

The first model analyzed was the CAR (Board -2 to +2 and SEC receipt -2 to +4) regressed against the change in auditor quality variables of ALEV and SPEC; the change in net agency cost variables ACCR, DEBT, GROWTH, MGMT, LTCOMP, DIV, and LGOWN; and the combination variable D&Q measuring existence of a prior qualified opinion or a reported disagreement between the company and the auditor on form 8-K. ALEV and SPEC were chosen for inclusion because they are the auditor quality variables in the only significant multivariate model reported in Section 5.1.2. MSTK and ISSUE were eliminated from the set of nine net agency cost variables nominated for analysis in Section 4.2.1 because they are strongly correlated with and are each related to other variables retained in the model, and a problem with multicollinearity could result. D&Q combines prior receipt of a qualified opinion with reported disagreement between the company and the manager because the high correlation between the two variables could cause a problem of collinearity.

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[96] The models were also analyzed for the group of 64 auditor changes for which disclosure was made prior to receipt of form 8-K by the SEC. The purpose of this analysis is to demonstrate the differential market reaction to the two groups. The models were also analyzed for the entire group of 201 auditor changes for comparison purposes.

The results of the analysis of the excess returns for first model using the group of 137 auditor changes with no prior disclosure are reported in Table 33. The model is significant (F = 4.461; p-value = 0.0001), and the adjusted R-squared is relatively strong (0.2029).[97] Significant variables in this model are DEBT, LGOWN, and D&Q. No auditor quality variable is significant in this model. The explanatory power of two auditor quality variables (taken together), in the presence of the other eight variables, is also not significant (F = 0.109; p-value > 0.25). The explanatory power of the seven agency cost variables (taken together), in the presence of the other three variables, is significant (F = 5.399; p-value < 0.01). The combined explanatory power of the four residual loss variables (ACCR, DEBT, GROWTH, and MGMT) is significant (F = 8.487; p-value < 0.01), but the three variables measuring control (LTCOMP, DIV, and LGOWN) are not significant (F = 1.088; p-value > 0.25). The diagnostic tests show no violations of the assumptions, so the results can be relied upon.

The model is not significant for the group of 64 auditor changes with prior disclosure. The model is significant for the overall group of 201 auditor changes, but the results appear to be driven by the group of 137 with no prior disclosure.

A model was constructed that only used SPEC to measure auditor quality. Recall that SPEC was in only significant univariate model in Section 5.1, and apparently drove the results of that model. As reported in Table 34, the results of the model with SPEC are virtually indistinguishable from the results of the model with both SPEC and ALEV. For example, the F statistic for the model including both ALEV and SPEC, performed on the group of 137 auditor changes, is 4.4610 (p-value = 0.0001), and is 4.9960 (p-value = 0.0001) for the model including only SPEC. The adjusted R-squares are similar (0.2029 to 0.2091), and the same independent variables are significant. Because the re-

[97] A survey of cross-sectional analyses reported in the *Journal of Financial Economics*, reveals adjusted R-squares that range from 0.05 to 0.10.

Table 33. Cross-sectional Analysis of Excess Returns: Board -2 to +2, SEC -2 to +4.

	MODELS:					
	n = 137		n = 64		n = 201	
	Coeff.	*t-stat.*	*Coeff.*	*t-stat.*	*Coeff.*	*t-stat.*
Intercept	-0.006	(-0.441)	-0.001	(-0.027)	-0.006	(-0.552)
ALEV	0.000	(0.008)	-0.001	(-0.087)	0.002	(0.177)
SPEC	-0.037	(-0.409)	-0.007	(-0.068)	-0.038	(-0.551)
ACCR	-0.061	(-1.408)	-0.020	(-0.296)	-0.048	(-1.284)
DEBT	-0.217	(-4.750)****	-0.042	(-0.600)	-0.166	(-4.280)****
GROWTH	0.005	(1.235)	-0.004	(-0.288)	0.005	(1.291)
MGMT	-0.003	(-0.156)	0.008	(0.295)	-0.005	(-0.275)
LTCOMP	-0.001	(-0.023)	0.090	(1.526)	0.034	(0.867)
DIV	-0.000	(-0.013)	0.012	(1.213)	0.002	(0.367)
LGOWN	-0.096	(-1.802)*	-0.225	(-2.879)***	-0.128	(-2.868)***
D&Q	-0.067	(-2.902)***	0.067	(2.332)**	-0.021	(-1.128)
F-stat	4.4610		1.4380		3.6000	
p-value	0.0001		0.1897		0.0002	
R^2	0.2615		0.2134		0.1593	
Adj. R^2	0.2029		0.0650		0.1150	
Homoscedasticity	Not violated		Violated		Not violated	
τ =	46.6791		532.7984		42.3987	
p-value	0.8336		0.0001		0.9587	
Linearity	Not violated		Not violated		Violated	
F_0 =	1.8462		1.6548		3.4953	
p-value	> .1000		> .1000		< .0500	
Normality	Not Violated		Not Violated		Violated	
τ^x =	23.4521		24.0988		19.2246	
p-value	< .0050		< .0050		< .0050	
D =	0.0628		0.0455		0.0721	
p-value	> .1500		> .1500		0.0120	

* p < .100
** p < .050
*** p < .010
**** p < .001

The p-values for the coefficient t-test statistics are based on a 2-tail probability for all coefficients.

sults for all models analyzed in this section are similar using SPEC by itself, or SPEC and ALEV in combination, only results for the SPEC model are henceforth presented.

As reported in Table 35, the results are also similar, albeit weaker, using the cumulative standardized excess returns, $CAR_{s,t}$, in place of the cumulative excess returns in place of the excess returns, $CAR_{s,t}$. For example, the F statistic = 4.9960 (p-value = 0.0001) for the regression on $CAR_{s,t}$ based on the group of 137, as reported in Table 34. The F statistic = 2.405 (p-value = 0.1050) for the regression on $CAR_{s,t}$, as reported in Table 35. The adjusted R-squared is lower for the $CAR_{s,t}$ model, 0.0851 compared to 0.2091. The group of significant variables is also similar (DEBT and D&Q for the $CAR_{s,t}$ model, DEBT, LGOWN, and D&Q for the other model). Because the results for all accumulation periods analyzed in this section are similar using either the $CAR_{s,t}$ models or the $CAR_{s,t}$ models, only results for the $CAR_{s,t}$ models are henceforth presented.

The results of the model analysis using a CAR accumulated around only the Board date (-2 to +2) are presented in Table 36. The model, analyzed on the group of 137, is extremely significant (F = 4.096; p-value = 0.0001). The adjusted R-squared is also very high (0.17). Significant variables are ACCR, DEBT, GROWTH, LGOWN, and D&Q. The auditor quality variable, SPEC, is not significant in this model. The combined explanatory power of the seven agency cost variables, in the presence of SPEC and D&Q, is significant (F = 3.971; p-value < 0.01). The combined explanatory power of the four residual loss variables is significant (F = 6.046; p-value < 0.01). The combined explanatory power of the three measures of control variables is not significant (F = 1.432; p-value > 0.25).

The diagnostic tests of assumptions show possible departures from linearity and normality. In order to get a feel for the problem with linearity, the residuals were plotted against the squares and the cubes of the predicted CAR values. No pattern was obvious in the plots, which supports a conclusion that the problem with linearity is not severe.

Table 34. Cross-sectional Analysis of Excess Returns: Board -2 to +2, SEC -2 to +4.

	MODELS:					
	n = 137		n = 64		n = 201	
	Coeff.	*t-stat.*	*Coeff.*	*t-stat.*	*Coeff.*	*t-stat.*
Intercept	-0.005	(-0.448)	-0.001	(-0.068)	-0.005	(-0.528)
SPEC	-0.036	(-0.469)	-0.011	(-0.107)	-0.033	(-0.527)
ACCR	-0.060	(-1.415)	-0.020	(-0.291)	-0.048	(-1.306)
DEBT	-0.217	(-4.769)****	-0.043	(-0.646)	-0.166	(-4.289)****
GROWTH	0.005	(1.240)	-0.003	(-0.278)	0.005	(1.285)
MGMT	-0.003	(-0.157)	0.008	(0.302)	-0.004	(-0.261)
LTCOMP	-0.001	(-0.023)	0.090	(1.541)	0.034	(0.868)
DIV	-0.000	(-0.013)	0.012	(1.222)	0.002	(0.366)
LGOWN	-0.096	(-1.821)*	-0.225	(-0.291)***	-0.128	(-2.872)***
D&Q	-0.067	(-2.937)***	0.067	(2.422)**	-0.021	(-1.179)
F-stat	4.9960		1.6270		4.0170	
(p-val)	0.0001		0.1304		0.0001	
R^2	0.2615		0.2133		0.1592	
Adj. R^2	0.2091		0.0822		0.1195	
Homoscedasticity	Not violated		Violated		Violated	
τ =	51.2053		63.4793		63.4793	
p-value	0.3121		0.0360		0.0360	
Linearity	Not violated		Not violated		Not violated	
F_0 =	0.1682		1.6403		1.6403	
p-value	> .2500		> .1000		> .1000	
Normality	Not Violated		Not Violated		Not Violated	
τ^z =	23.4701		24.0656		75.5085	
p-value	< .0050		< .0050		< .0050	
D =	0.0627		0.0505		0.0505	
p-value	> .1500		> .1500		> .1500	

* p < .100
** p < .050
*** p < .010
**** p < .001
The p-values for the coefficient t-test statistics are based on a 2-tail probability for all coefficients.

Table 35. Cross-sectional Analysis of Standardized Returns: Board -2 to +2, SEC -2 to +4.

	MODELS:					
	n = 137		n = 64		n = 201	
	Coeff.	*t-stat.*	*Coeff.*	*t-stat.*	*Coeff.*	*t-stat.*
Intercept	0.063	(0.164)	-0.384	(-0.684)	-0.106	(-0.326)
SPEC	0.711	(0.294)	-1.387	(-0.394)	-0.526	(-0.265)
ACCR	-0.852	(-0.638)	-0.438	(-0.197)	-0.659	(-0.563)
DEBT	-4.456	(-3.142)***	-0.233	(-0.105)	-3.141	(-2.575)**
GROWTH	0.091	(0.738)	-0.173	(-0.449)	0.199	(0.842)
MGMT	-0.363	(-0.579)	0.556	(0.644)	-0.209	(-0.403)
LTCOMP	-0.873	(-0.556)	5.309	(2.756)***	1.342	(1.089)
DIV	-0.156	(-0.570)	0.558	(1.759)*	0.023	(0.109)
LGOWN	-1.983	(-1.199)	-5.042	(-1.985)*	-2.718	(-1.931)*
D&Q	-1.631	(-2.283)**	2.480	(2.655)**	-0.307	(-0.532)
F-stat	2.4050		1.9370		1.5400	
p-value	0.0150		0.0657		0.1359	
R^2	0.1456		0.2440		0.0676	
Adj. R^2	0.0851		0.1180		0.0237	
Homoscedasticity	Not violated		Violated		Not violated	
τ =	46.6791		1402.4996		53.7444	
p-value	0.8336		0.0001		0.7022	
Linearity	Not violated		Not violated		Not violated	
F_0 =	0.2940		0.7225		0.2055	
p-value	> .2500		> .2500		> .2500	
Normality	Violated		Not violated		Violated	
τ^z =	15.5442		19.0900		21.0962	
p-value	< .0050		< .0050		< .0050	
D =	0.0873		0.0610		0.0814	
p-value	0.0110		> .1500		< .0100	

* p < .100
** p < .050
*** p < .010
**** p < .001

The p-values for the coefficient t-test statistics are based on a 2-tail probability for all coefficients.

Table 36. Cross-sectional Analysis of Excess Returns: Board -2 to +2.

	MODELS:					
	n = 137		n = 64		n = 201	
	Coeff.	*t-stat.*	*Coeff.*	*t-stat.*	*Coeff.*	*t-stat.*
Intercept	0.001	(0.076)	0.011	(0.939)	0.002	(0.308)
SPEC	-0.075	(-1.342)	0.046	(0.653)	-0.049	(-1.127)
ACCR	-0.081	(-2.648)***	0.074	(1.607)	-0.046	(-1.797)*
DEBT	-0.088	(-2.707)***	-0.044	(-0.964)	-0.076	(-2.856)***
GROWTH	0.005	(1.853)*	-0.002	(-0.228)	0.005	(2.057)**
MGMT	0.020	(1.373)	-0.007	(-0.365)	0.010	(0.910)
LTCOMP	0.028	(0.786)	0.034	(0.852)	0.031	(1.152)
DIV	0.003	(0.555)	0.001	(0.226)	0.002	(0.366)
LGOWN	-0.072	(-1.887)*	-0.049	(-0.934)	-0.068	(-2.213)**
D&Q	-0.054	(-3.277)***	-0.003	(-0.166)	-0.033	(-2.633)***
F-stat	4.0960		0.5700		3.3610	
p-value	0.0001		0.8161		0.0008	
R^2	0.2250		0.0868		0.1367	
Adj. R^2	0.1700		-0.0654		0.0960	
Homoscedasticity	Not violated		Violated		Violated	
τ =	36.1415		67.9390		67.9390	
p-value	0.8749		0.0152		0.0152	
Linearity	Violated		Not violated		Not violated	
F_0 =	3.1775		0.1820		0.4205	
p-value	< .0500		> .2500		> .2500	
Normality	Violated		Not violated		Not violated	
τ^x =	339.7039		19.0515		59.8338	
p-value	< .0050		< .0050		< .0050	
D =	0.0932		0.0947		0.0947	
p-value	< .0100		> .1500		> .1500	

* $p < .100$
** $p < .050$
*** $p < .010$
**** $p < .001$

The p-values for the coefficient t-test statistics are based on a 2-tail probability for all coefficients.

If the distribution of residuals satisfy homoscedasticity and linearity, then normality is implied. The normality tests can be heavily influenced by outliers and thick-tails (Spanos, 1986), which apparently is the difficulty here. They can also be influenced by large samples (greater than 50), according to D'Agostino, Belanger, and D'Agostino (1990). The results of the this model are considered reliable because the difficulty with assumptions violations is not judged to be severe.

The sensitivity analysis conducted in Section 5.2.1 suggests that there may be a differential market reaction on the board date when comparing the two groups that differ on prior disclosure. Focusing on the group with prior disclosure, Table 28 reports a significant positive excess return on day -1 relative to the board date, a significant positive standardized return on day -2 and a significant negative standardized return on day -1, a significant squared standardized return on day -1, and four days of significant numbers of negative returns from days -3 to +2. Focusing on the group with no prior disclosure, Table 27 reports less volatility immediately around the board date (a significant positive standardized return on day -2, and significant squared standardized returns on days -2, 0, and +2), but considerably more volatility in the market reaction when considering a window from -20 to + 20. There is no difference in the mean CAR between the two groups (see Table 32), however. Further support for a conclusion of a differential market reaction between the two groups is evident here, because the model that was analyzed on the group of auditor changes with prior disclosure was not significant (F = 0.57; p-value = 0.8161),[98] and the model that was analyzed on the group of auditor changes with no prior disclosure was significant (F = 4.096; p-value = 0.0001).

[98] The analysis is reported on the group of 64 auditor changes with no disclosure prior to the SEC receipt date in order to be consistent with the longer aggregate period around both the board date *and* the SEC receipt date. The results differ little when conducted only on the 51 with no auditor changes prior to the board date.

The results of the model analysis using a CAR accumulated around the SEC receipt date (-2 to +4) are presented in Table 37. The model, based on the group of 137, is extremely significant (F = 3.927; p-value = 0.0002), and the adjusted R-squared is relatively high (0.1623). Significant variables are DEBT and MGMT. Neither SPEC nor D&Q is significant. The explanatory power of the seven agency cost variables (taken together), in the presence of SPEC and D&Q, is significant (F = 4.808; p-value < 0.01). The explanatory power of the four residual loss variables is significant (F = 7.686; p-value < 0.01). The explanatory power of the three measures of control variables is not significant (F = 0.825; p-value > 0.25).

The diagnostic tests of assumptions show a departure from normality, but no departures from homoscedasticity or linearity. The normality test statistics are not significant at the 0.01 level, which means that the problem with normality may not be severe. If the distribution of residuals exhibits homoscedasticity and linearity, then normality is implied. The normality tests can heavily influenced by thick-tails (Spanos, 1986), and by a large sample size (D'Agostino, Belanger, and D'Agostino, 1990). Both influences are present here. For these reasons, the results of this model are probably not severely affected by the violation of normality.

The model analysis performed on the group of 64 auditor changes (that had earlier disclosed the change) is disclosed in column two of Figure 37. Note that this model is also significant (F = 2.99; p-value = 0.0059). The pattern of response is different, however, than that for the group of 137 auditor changes. Different variables are significant: ACCR, LGOWN, and D&Q. The assumptions of homoscedasticity and linearity are violated, although the test statistics are not large. The normality test does not indicate a problem. The assumptions violations are not severe and probably do not have a serious impact on the reliability of the results. Because the response for the group of

Table 37. Cross-sectional Analysis of Excess Returns: SEC -2 to +4.

	MODELS:					
	n = 137		n = 64		n = 201	
	Coeff.	*t-stat.*	*Coeff.*	*t-stat.*	*Coeff.*	*t-stat.*
Intercept	-0.005	(-0.547)	-0.146	(-0.929)	-0.007	(-0.928)
SPEC	0.048	(0.896)	-0.060	(-0.814)	0.016	(0.357)
ACCR	-0.047	(-1.590)	-0.096	(-1.965)*	-0.055	(-2.066)**
DEBT	-0.125	(-3.940)****	0.007	(0.138)	-0.085	(-3.068)***
GROWTH	-0.001	(-0.195)	-0.004	(-0.503)	-0.001	(-0.232)
MGMT	-0.025	(-1.772)*	0.014	(0.730)	-0.017	(-1.413)
LTCOMP	-0.037	(-1.042)	0.058	(1.375)	0.001	(0.038)
DIV	-0.003	(-0.417)	0.011	(1.621)	0.002	(0.354)
LGOWN	-0.039	(-1.064)	-0.187	(-3.352)***	-0.074	(-2.309)**
D&Q	-0.021	(-1.335)	0.075	(3.768)****	0.008	(0.648)
F-stat	3.9270		2.9910		3.1280	
p-value	0.0002		0.0059		0.0016	
R^2	0.2177		0.3327		0.1284	
Adj. R^2	0.1623		0.2215		0.0874	
Homoscedasticity	Not violated		Violated		Violated	
τ =	43.0129		61.6641		61.6641	
p-value	0.6384		0.0499		0.0499	
Linearity	Not violated		Violated		Violated	
F_0 =	1.1857		3.6241		3.6240	
p-value	> .2500		< .0500		< .0500	
Normality	Violated		Not violated		Not violated	
τ^x =	8.6364		13.2036		135.5333	
p-value	< .0250		< .0050		< .0050	
D =	0.0780		0.0931		0.0931	
p-value	0.0410		> .1500		> .1500	

* p < .100
** p < .050
*** p < .010
**** p < .001

The p-values for the coefficient t-test statistics are based on a 2-tail probability for all coefficients.

64 differs greatly from the response for the group of 137, the results are to be interpreted separately.

The results of the model analysis using a CAR accumulated around only the SEC receipt date (-2 to +2) are presented in Table 38. The model, based on the group of 137, is extremely significant ($F = 3.847$; p-value = 0.0003), and the adjusted R-squared is relatively high (0.1585). Significant variables are ACCR, DEBT, and LTCOMP. Neither SPEC nor D&Q are significant. The combined explanatory power of the seven agency cost variables, in the presence of SPEC and D&Q, is significant ($F = 4.772$; p-value < 0.01). The explanatory power of the four residual loss variables is significant ($F = 7.865$; p-value < 0.01). The explanatory power of the three measures of control variables is not significant ($F = 1.197$; p-value > 0.25).

The diagnostics tests of assumptions show a departure from normality, but no departures from homoscedasticity or linearity. If the distribution of residuals are homoscedastic and near linear, then normality is implied. The test statistics for normality are marginally significant, which means that the problem with normality is probably not severe.

The model analysis performed on the group of 64 auditor changes that had earlier disclosed the change (shown in column two of Figure 38) is not significant ($F = 1.12$; p-value = 0.3145). This provides additional support for the earlier conclusion that there is a differential market response around the SEC receipt date.

Finally, the model was analyzed using a CAR accumulated around only the Disclosure, Inc., receipt date (-1 to +1). The results are reported in Table 39. The model, based on the group of 137, is not significant ($F = 1.607$; p-value = 0.1193). The adjusted R-squared is also low (0.0386).

Table 38. Cross-sectional Analysis of Excess Returns: SEC -2 to +2.

	MODELS:					
	n = 137		n = 64		n = 201	
	Coeff.	*t-stat.*	*Coeff.*	*t-stat.*	*Coeff.*	*t-stat.*
Intercept	-0.000	(-0.056)	0.000	(0.042)	-0.001	(-0.216)
SPEC	0.051	(1.032)	0.013	(0.230)	0.029	(0.763)
ACCR	-0.070	(-2.579)**	-0.061	(-1.617)	-0.068	(-3.048)***
DEBT	-0.092	(-3.176)***	0.002	(0.054)	-0.065	(-2.765)***
GROWTH	0.002	(0.687)	-0.005	(-0.762)	0.002	(0.686)
MGMT	-0.018	(-1.440)	-0.001	(-0.088)	-0.014	(-1.408)
LTCOMP	-0.055	(-1.726)*	0.045	(1.364)	-0.017	(-0.735)
DIV	-0.001	(-0.260)	0.007	(1.295)	0.000	(0.045)
LGOWN	-0.023	(-0.687)	-0.088	(-2.038)**	-0.044	(-1.634)
D&Q	-0.016	(-1.108)	0.024	(1.547)	-0.004	(-0.361)
F-stat	3.8470		1.1990		3.5600	
p-value	0.0003		0.3145		0.0004	
R^2	0.2142		0.1666		0.1436	
Adj. R^2	0.1585		0.0277		0.1033	
Homoscedasticity	Not violated		Not violated		Not violated	
τ =	36.8940		51.4215		60.9486	
p-value	0.8550		0.2368		0.1380	
Linearity	Not violated		Not violated		Violated	
F_0 =	1.5680		0.3428		4.2667	
p-value	< .2500		> .2500		< .0250	
Normality	Violated		Not violated		Violated	
τ^x =	5.9244		19.7692		8.1698	
p-value	< .1000		< .0050		< .0250	
D =	0.0775		0.0895		0.0714	
p-value	0.0430		> .1500		0.0140	

* p < .100
** p < .050
*** p < .010
**** p < .001
The p-values for the coefficient t-test statistics are based on a 2-tail probability for all coefficients.

The model analysis performed on the group of 64 auditor changes that had earlier disclosed the change is significant (F = 2.76; p-value = 0.0099). Significant variables are DEBT, DIV, LGOWN, and D&Q. Only D&Q is strongly significant.

5.2.3 Interpretation of the results.

The results reported in the preceding section (based on the group of auditor changes with no prior disclosure) lead to a conclusion to reject **H3** and to fail to reject **H2**. That is, change in net agency costs, in the presence of change in auditor quality variables and receipt of a qualified opinion, is related to the market reaction to a disclosure of a change in auditor. Change in auditor quality, in the presence of other variables, is not related to the market reaction to a disclosure of a change in auditor.

The change in net agency costs is related to the auditor change market reaction for two different periods--around the date the board of directors votes to ratify the auditor change, and around the date the SEC receives the 8-K disclosure. The four variables that serve as proxies for change in the residual loss aspect of net agency costs, and not the three variables that proxy for change in control, are driving the relationships to the market reactions for both periods.[99] This implies that the market is reacting to its perception of the change in the ability of the auditor to aid in controlling agency costs. The market reaction is not based on the interaction between the auditor and the other measures of control. Prior receipt of a qualified opinion and/or disclosure of a disa-

[99] DEBT was significant at the 0.01 level in the model with the CAR accumulated around (1) the Board date, (2) the SEC receipt date, and (3) both dates. ACCR was significant at the 0.01 level, and GROWTH was significant at the 0.10 level, in the model with the CAR accumulated around the Board date. MGMT was significant at the 0.10 level in the model with CAR accumulated around the SEC receipt date.

Table 39. Cross-sectional Analysis of Excess Returns: Disclosure, Inc. Receipt -1 to +1.

	MODELS:					
	n = 137		n = 64		n = 201	
	Coeff.	*t-stat.*	*Coeff.*	*t-stat.*	*Coeff.*	*t-stat.*
Intercept	0.003	(0.559)	-0.000	(-0.004)	0.002	(0.341)
SPEC	0.052	(1.356)	-0.001	(-0.025)	0.038	(1.244)
ACCR	0.027	(1.280)	-0.026	(-0.847)	0.015	(0.840)
DEBT	-0.070	(-3.081)***	0.053	(1.714)*	-0.036	(-1.900)*
GROWTH	0.001	(0.374)	-0.003	(-0.637)	0.001	(0.275)
MGMT	-0.011	(-1.148)	0.012	(0.974)	-0.005	(-0.658)
LTCOMP	-0.015	(-0.612)	0.026	(0.957)	0.000	(0.026)
DIV	-0.002	(-0.383)	0.008	(1.857)*	0.001	(0.450)
LGOWN	-0.010	(-0.392)	-0.068	(-1.904)*	-0.026	(-1.186)
D&Q	-0.002	(-0.199)	0.050	(3.884)****	0.014	(1.540)
F-stat	1.6070		2.7630		1.0970	
p-value	0.1193		0.0099		0.3666	
R^2	0.1022		0.3153		0.0492	
Adj. R^2	0.0386		0.2012		0.0044	
Homoscedasticity	Not violated		Not violated		Not violated	
τ =	51.2467		47.1827		46.6865	
p-value	0.3107		0.3834		0.6071	
Linearity	Not violated		Not violated		Not violated	
F_0 =	1.2171		1.1610		1.9715	
p-value	> .2500		> .2500		> .1000	
Normality	Violated		Not violated		Violated	
τ^z =	12.8537		1.3707		20.0059	
p-value	< .0050		> .1000		< .0050	
D =	0.0790		0.0949		0.1065	
p-value	0.0360		> .1500		< .01	

* p < .100
** p < .050
*** p < .010
**** p < .001

The p-values for the coefficient t-test statistics are based on a 2-tail probability for all coefficients.

greement between the company and the auditor (D&Q) also has a strong impact on the market reaction around the board date.

The event analysis in Section 5.2.1 indicates a material release of information change around the date the SEC receives an 8-K disclosure of an auditor change. The results of Section 5.2.2 also support a conclusion that the market reacts to an auditor change around the date the SEC receives the 8-K disclosure, and that the cross-sectional variation of this reaction can be explained by changes in net agency costs, as well as receipt of a qualified opinion and/or disclosure of a disagreement between the company and the auditor. The results of Section 5.2.2 also support a conclusion that the market reacts to an auditor change around the date the board votes to ratify the change.

Two questions come to mind concerning the finding of model significance on two separate event dates. First, is the market reacting to two news events, or just to one event that is disclosed at different times for different companies? Second, should the model that best explains the market reaction to an auditor disclosure be based on a joint accumulation of excess returns over both dates, or based on two separate dates?

It appears that the market is reacting to one news event disclosed at different times for different companies. There are several reasons for this conclusion. First, there is a significant negative mean excess return for the period immediately surrounding the SEC receipt of form 8-K if the auditor change had not been disclosed on prior proxy statements. This pattern holds when considering the market reaction around the board date for companies changing auditors. Table 28 shows a significant positive mean excess return ($+1.14\%$, p-value < 0.10) on the day before the board meeting for companies that had disclosed the change on earlier proxies, but Table 27 shows an insignificant positive mean excess return (0.46%, p-value > 0.10) for companies that had not previously disclosed the auditor change. Although the mean market reaction around the board date

for the latter group is not significantly negative, it is certainly less than the reaction for the former group. Thus, the same type of mean market reaction is shown for both dates.

Second, the ability of the modeled variables to explain the market reaction is consistent across both dates. This can be seen in the patterns of significant variables. The seven change-in-net-agency-cost variables are collectively significant on each date. Also, the four change in residual loss variables are collectively significant on each date. In addition, DEBT (change in the debt to total assets ratio) is significant in the analyses conducted on both dates. The pattern of other significant variables does differ, though. The ability of the modeled variables to explain the market reaction can also be seen in the consistency of the adjusted R-squares to the model analyses conducted on both dates. These reasons support a conclusion that the market is reacting to one event that reaches the market on the board date for some companies, and on the SEC receipt date for other companies. *If the market is reacting to one event, then the model that is analyzed should be based on summing the excess returns over both dates and conducting a joint analysis.*

Three additional issues need to be discussed. First, of what importance is the finding of model significance, at the SEC receipt date, for auditor changing companies that previously disclosed some aspect of the eventual change on an earlier proxy statement? Second, why is change in auditor quality apparently not important in explaining the market reaction to a change in auditors? Finally, does the model also provide support for the opinion shopping hypothesis?

First, it does appear that information concerning the change in auditors is being communicated on form 8-K for those companies that previously disclosed some aspect of the eventual change on an earlier proxy statement. This can be seen in the analysis of the cross-sectional model with CARs accumulated around the SEC receipt date ($F = 2.991$, p-value $= 0.0059$) for the group of companies with prior disclosure of the au-

ditor change (see Table 37).[100] The adjusted R-squared = 0.2215, which is relatively high. As reported in Table 32, the mean excess return is not significantly different from zero for this group, and is significantly different from the mean excess return for the group with no prior disclosure. These results support a conclusion that there is a market reaction around the SEC receipt date for the group of auditor changes with prior disclosure, but it is not strong in comparison to the group of auditor changes with no prior disclosure. Because many of the auditor changes for this group were preceded with hints of a possible change, or a declaration of intent to change, the market probably reacted to the expected auditor change at the earlier disclosure. The market reaction around the SEC date may be a fine tuning, when investors discover the precise details of the change.

Second, the conclusion from this model analysis is that focusing solely on the change in the perceived quality of the auditor will not explain the cross-sectional variation in the unexpected market reaction at the date of disclosure of a change in auditors. Rather, the market interprets the change in auditors in the context of changing net agency costs. Moreover, there appears to be interaction between change in net agency costs and change in auditor quality. This can be seen by examining the directions (positive or negative) of the relationships between the variables in the two models. The agency cost variables are directly related to change in auditor quality in the model analyzed in Part 1 of this dissertation. A similar analysis of the coefficients of the regressions in Part 2 reveals that change in auditor quality (although insignificant) appears to be positively related to the market reaction, but change in net agency costs is negatively related to the market reaction. In the absence of interaction, agency costs and auditor quality would have similar coefficient directions in Part 2 as they did in Part 1.

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[100] As reported earlier, the significant variables are D&Q (p-value < 0.001), LGOWN (p-value < 0.01), and ACCR (p-value < 0.10).

There are several reasons why auditor quality was not found to be important in explaining the cross-sectional market reaction to a disclosure of a change in auditors. One reason is that the measures of auditor quality included in this study are imperfect surrogates of auditor quality. Another reason may be that the theory of auditor change is incorrect in positing that the market is concerned about change in auditor quality implied by the auditor change. Another possible reason is that importance of auditor quality to explaining the market reaction to a change in auditors is reflected in the change in agency costs variables. A final reason may be that because the price of audit services is omitted, the aspect of unit of auditor quality per dollar of cost (Simunic and Stein, 1986, 1987) is not included in the model. Therefore, the model is misspecified and auditor quality may still be important. Support for the importance of a price variable can be seen in the difference between companies voluntarily changing auditors and companies that retain their auditors, as reported earlier in Table 12. Companies that voluntarily change auditors are smaller and less profitable. It may well be that larger companies face larger transactions costs than smaller companies in the event of a change in auditors. This would have a material impact on a cost-benefit analysis of any proposed change, and may result in inhibiting larger companies from voluntarily changing auditors.

Third, the model does provide weak support for the opinion shopping hypothesis. A variable, D&Q, measuring existence of a reported disagreement between the company and the previous auditor, and prior receipt of a qualified opinion, is significant in explaining the market reaction to a change in auditors. If a disagreement between the company and the auditor that is followed by a change in auditors implies opinion shopping, then the results support the opinion shopping hypothesis. D&Q was not originally included as a test of the opinion shopping hypothesis. Company-auditor disagreements and prior receipt of qualified opinions are required disclosures on form 8-K,

and were included in the model as environmental variables. A better test of the opinion shopping hypothesis, in retrospect, would have been to include a variable that measured the change in opinion resulting from the change in auditors. This would provide support for the opinion shopping hypothesis if it agreed that the realized change in opinion is a reasonable proxy of the market's expectation of the change.

6.0 Conclusions, Implications, Limitations, and Anticipated Extensions

This concluding chapter contains five sections. First, the results of this dissertation are summarized. Second, the contributions of these results for accountants, academia, regulatory bodies, companies changing auditors, and the investment community, are discussed. Third, the research limitations are summarized. Fourth, possible extensions are suggested. Concluding remarks then follow.

6.1 Summary of results.

The SEC (1974) is concerned that the corporate practice of changing auditors may be perceived as opinion shopping by the investment community. The SEC (1975) believes that an independent audit of corporate financial reports is a fundamental underpinning of its system of disclosure, and that opinion shopping threatens the reliability of corporate financial reports. Due to this perceived threat, the SEC has issued a series of regulations aimed at curtailing the practice of changing auditors.

Other reasons for the practice of changing auditors have been advanced, and have been alternatively described by the monitoring hypothesis, the insurance hypothesis, the signalling hypothesis, and the opinion shopping hypothesis. The monitoring hypothesis

postulates that (1) a company's management has incentives to keep net agency costs in check as they vary over time (possibly through a change in auditors), and (2) the market should react to the auditor change based on the new level of net agency costs after changing the auditor. There is some prior empirical support for the first contention (Francis and Wilson, 1988; DeFond, 1988), but none for the second. The insurance hypothesis posits that companies that are approaching or are experiencing financial distress may seek an auditor with deeper pockets. The market should incorporate this insurance into the price of the security at the time of the auditor change. As of yet, there is no empirical support for first part of this hypothesis, but Wilson (1987) reports a negative reaction for healthy companies that change auditors and a nonnegative reaction for distressed companies that change auditors. The signalling hypothesis theorizes that a company that anticipates favorable future results may attempt to signal this anticipation through changing to a more expensive or a higher quality auditor, and that the market should react positively to this signal. As of yet, there is no empirical support for this hypothesis. The opinion shopping hypothesis posits that company management prefers clean opinions to qualified opinions, and qualified opinions to adverse opinions, and that when a qualified or adverse opinion has been (or is about to be) given, a change in auditors and a more positive auditor opinion will result. The market should react negatively when it perceives that a company is changing its auditor solely for the purpose of securing a better opinion. As of yet, there is no empirical support for this hypothesis.

The monitoring hypothesis is justified for further study because of the empirical support that it has received. A sample of 217 auditor changes was identified in order to examine the implications of the monitoring hypothesis for companies listed on the NYSE and AMEX. Most companies that were audited by BE auditors before the switch changed to another BE auditor. Most companies that were audited by NBE auditors

before the switch changed to a BE auditor. The auditor change is as likely to be made to an auditor with a larger share of the audit fees generated within the company's industry as it is to an auditor with a smaller share. There was a higher incidence of reported disagreement between the company and the auditor and of prior receipt of a qualified opinion for the 23 (11%) auditor changes from BE to NBE auditors than for the other auditor changes. Companies that change auditors are smaller and less profitable than other NYSE and AMEX companies. The SEC requires that auditor changes be disclosed on form 8-K. In 73 (34%) of the sampled changes, prior disclosure is made on the proxy statement or through a news release.

A model is constructed to test **H1**, which posits that change in auditor quality is a function of change in net agency costs. The relationship between three variables that proxy for change in auditor quality--ALEV, SPEC, and INDEP--and variables that proxy for changes in net agency costs is examined. The modeled relationship between SPEC and the agency cost variables was significant, but the models with ALEV and INDEP were not significant. Francis and Wilson (1988) and DeFond (1988) reported that ALEV (and/or change in auditor size as measured by fees) was significantly related to changes in net agency costs. Their results do not deny a relationship between SPEC and the agency cost variables because their sample included more auditor changes with a large change in auditor size than this dissertation included. SPEC varies closely with change in auditor size when change in auditor size is large. But when change in auditor size is small, as is the case with the sample in this dissertation, the relationship between SPEC and ALEV is not as strong. Therefore, this study is able to discriminate between SPEC and ALEV as measures of auditor quality, and reports that SPEC, not ALEV, is significantly related to change in agency costs.

There is a differential market reaction to the 8-K disclosure of a change, depending upon whether the change was disclosed earlier on a proxy statement or news release, or

not disclosed. There is a positive mean market reaction on the day before the board meeting that ratifies the auditor change that does not significantly differ in strength between the two groups classified on the basis of prior disclosure. There is a negative mean market reaction for a window around the SEC receipt of form 8-K for the group with no prior disclosure of the auditor change. The market reaction on both dates supports conclusions of failure to reject the null **H2**, but rejection of the null **H3**. That is, the market reaction to a change in auditors is related to changes in net agency costs, but is not related to the change in auditor quality implied by the change. The market reaction at the SEC receipt date is not related to a variable measuring either company-auditor disagreement or prior receipt of a qualified opinion, but the market reaction at the board date is related.

The results reported in this dissertation are consistent with that which be expected if the monitoring hypothesis were true.

6.2 Implications.

The implications of the results for each several interested parties are discussed in this section.

6.2.1 Implications to accountants.

Auditor attempts to differentiate among themselves appear to be successful. A company that voluntarily changes auditors appears to differentiate among auditors on

the basis of auditor market share of the company's industry. In addition, the investing market considers a change in auditors to important enough to revalue the company. Therefore, auditors may have more incentive to continue differentiation because of possible paybacks.

6.2.2 Implications to academia.

This study provides important support to the monitoring hypothesis of Jensen and Meckling (1976). Jensen and Meckling assert that the relationship between management (the agent) and stockholders (the principles) can be explained by shifting net agency costs and the incentives for management to control (and not control) them. Jensen and Meckling argue that management, not stockholders, has the incentive to hire an auditor (monitor) because it desires to control net agency costs. The monitoring hypothesis of auditor change posits a similar incentive to change auditors in the face of changing net agency costs. The monitoring hypothesis also describes the implications of this auditor change on the market. This dissertation provides strong empirical support for these basic relationships. This empirical support provides additional justification for continued use of agency theory to explain a myriad of corporate events.

6.2.3 Implications to regulatory bodies.

The SEC appears to have been successful in allaying the alleged market perception that companies change auditor for opinion shopping purposes. If the market was preoccupied with the notion that all auditor changes were for opinion shopping purposes,

then no relationship would have been found between the market reaction and changes in net agency costs. An average excess return difference of 1.6% between auditor changes for which there are no apparent company-auditor disagreements (either reported disagreements or prior receipt of a qualified opinion) and auditor changes for which there are, implies that the market is still skeptical of some auditor changes.

Investors consider the change in auditors to be an important event. Mandatory disclosure via form 8-K is not necessary for the market to learn of an auditor change (and consider the increasing/decreasing agency costs), because a change in auditors will become apparent when the next set of financial statements are accompanied by an opinion by a different auditor. Investors do incorporate the information disclosed on form 8-K, though, and likely appreciate the timeliness of the disclosure.

6.2.4 Implications to companies considering a change in auditors.

Companies that are about to voluntarily change auditors should be aware that investors consider the change in auditors to be an important event, and there is an average negative unexpected market reaction to the disclosure of a change in auditors. Most companies that change auditors appear to discriminate on the basis of the auditor market share within the client's industry.

6.3 Limitations.

This study faces several limitations. First, the surrogate explanatory variables imperfectly capture the nature of agency costs. The collection of variables that are analyzed here are an ad hoc attempt to capture the essence of net agency costs. The low adjusted R-squared in the SPEC model of Part 1 illustrates, in part, how imperfectly net agency costs have been captured. Second, the surrogate variables measuring auditor quality imperfectly capture the nature of auditor quality. This limitation could also contribute to the large error term in the SPEC model of Part 1, and may be the reason why no auditor quality variables were significant in the models of Part 2. Third, failure to include a price variable introduces bias and inconsistency in the OLS estimators of the remaining variables in both parts of the study.

Fourth, the sample was not randomly selected, and the analysis was conducted on a population. The sample selection process started with auditor changes identified in *Who Audits America.* Companies that did not file 8-Ks for the auditor change event would not have been included. In addition, several criteria had to be met in order for an auditor change to be included in the sample. Although these criteria were enacted to reach a desired level of experimental control, they nonetheless constrain the generalizability of the results. Fifth, the lack of data availability that further restricted the sample results in a possible survivorship bias being introduced. Ball and Watts (1978) demonstrate that the effects of survivorship bias are minimal with respect to income-related variables. Hence, this limitation may not seriously affect the conclusions of this dissertation.

Sixth, the Disclosure, Inc., receipt date may be later than the true date that the 8-K becomes available to the investing public in the SEC public reference room. The event

study analyses and the model analysis that focused on this date may have produced insignificant results because the true 8-K availability date was incorrectly identified, and not because the information had presumably been released on earlier event dates. This limitation may not seriously affect this dissertation's overall conclusions, because the seven day window around the SEC receipt date probably captures the true date of 8-K availability for most of the auditor changes identified. It does affect conclusions about the information transfers at the precise date of 8-K availability.

Seventh, other events often occurred simultaneously with the SEC receipt date used in the cross-sectional analysis. Many topics are discussed during meetings of the board of directors, such as a review of financial statements, merger and acquisition issues, personnel, and strategy. Announcements of such topics were often published in *The Wall Street Journal* for companies analyzed in this dissertation during the accumulation period surrounding the SEC receipt date. These other simultaneous events have the potential to confound the results because the market reaction also incorporates the disclosure effect of the other event. The potential effect of these simultaneous events is judged to be minimal because the positive reactions should be negated by negative reactions on a cross-sectional basis. That is, there is no a priori reason to expect the market reaction to be consistently positive or consistently negative for the group of auditor changes chosen for study, and hence, believe that a bias has been introduced. A major effect of including auditor changes with simultaneous events would be to reduce the adjusted R-square of the cross-sectional models. Because the adjusted R-squares were found to be relatively high, the effect of simultaneous events was probably minimal.

Finally, because no comprehensive theory of auditor change exists, focusing only on the monitoring hypothesis may result in important factors being omitted from the analysis. Models that are underspecified are biased and inconsistent, and may lack interpretability.

6.4 Extensions.

There are several avenues for future research. Some possibilities are described below.

The narrow research area that focuses on voluntary auditor change is but one part of a larger area of audit markets. Market strategies of the various audit firms, fee strategies, limitations on auditor competition as a result of geographical constraints, and involuntary auditor change are other aspects of audit markets. As of yet, no theory attempts to relate all these aspects of audit markets. One avenue for future research would be to attempt to develop a comprehensive theory of audit markets. A good first step would be to review and summarize all prior development.

For a carefully selected sample of auditor changes, this dissertation reports that changes in net agency costs can explain both the difference between the old and the new auditor, and the market reaction to a disclosure of the change. This dissertation does not examine whether changes in net agency costs can explain why the auditor is changed in the first place. That is, it should be worthwhile to examine whether knowledge of agency cost changes is useful in distinguishing between companies that change auditors and companies that do not. After developing an explanatory model of auditor change, the next step would be to develop a predictive model of auditor change.

As noted above, this dissertation reports that changes in net agency costs can explain both the difference between the old and the new auditor, and the market reaction to disclosure of the auditor change, for companies on the NYSE and AMEX that voluntarily change auditors. Companies traded through NASDAQ differ in many ways from the larger listed companies. This study could be repeated with a different sample, drawn this time from OTC companies.

It was argued in Chapter 2 that the series of SEC regulations dealing with auditor change disclosures have had an impact on the practice of companies voluntarily changing their auditors. Little is known of the impact of the SEC regulations, other than (1) Smith (1988) found differential market reaction after passage of ASR 165 (SEC, 1975), and (2) there were large numbers of auditor changes for the entire SEC-reporting population from 1971-1975, relatively low numbers of auditor changes from 1976-1980, and a trend for increasing numbers of auditor changes starting in 1981. The true efficiency and effectiveness of the regulations are unknown. Study into this area would be worthwhile.

It was hypothesized in Chapter 3 that investors incorporated auditor quality in its model of company value. However, this was not directly examined. One means of studying this contention would be to examine the change in security valuation for all companies audited by a given auditor. That is, if auditor quality is involved in the valuation of the company, then sudden changes in the auditor's perceived credibility (e.g., serious charges of audit failure) should provoke a market response as the market revalues all securities for which the auditor is involved.

Finally, this dissertation has found evidence of information transfer from the company to the market around the time that the board of directors meets. This warrants a more extensive investigation of the formal and informal information transfers, and the types of topics with which the information transfer is concerned.

6.5 Conclusion.

This dissertation has been concerned with the issue of voluntary auditor changes and the question of why changes are made. No general theory exists to describe the auditor change phenomenon, but several presumptive hypotheses describe parts of the auditor change phenomenon. Substantial evidence is presented in this dissertation to support the monitoring hypothesis as descriptive of part of the process of auditor change.

This dissertation also demonstrates that the market considers the auditor change event to be important in establishing security values. This supports the SEC efforts to force timely disclosure of the auditor change event.

Insofar as these findings provide a sharper perspective from which to view the phenomenon of auditor change, attainment of the desired level of understanding is closer to be being attained.

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Appendix A. Statistical Procedures

The objective of this appendix is to describe the statistical techniques that were used in this dissertation. Multiple regression is presented in the first section of this appendix. Canonical correlation is presented in the second section. The Pearson chi-square and the maximum likelihood chi-square are presented in the third section. The two-sample t-test and Wilcoxon rank sums test are presented in the fourth section. A description of the procedure, the test significance, assumptions, and tests of those assumptions are provided below.

A.1 Multiple Regression.

The objective of multiple regression is to predict a single dependent variable from two or more independent variables.[101] Multiple regression uses an ordinary least squares (OLS) approach to determine the best linear relationship between the independent variables and the dependent variable. It does this through forming the linear combination of the independent variables that maximizes the squared multiple correlation between

[101] Several texts provide excellent descriptions of multiple regression. Younger (1979) and Pedhazur (1982) are applied approaches. Montgomery and Peck (1982) is a more theoretical approach. Gujarati (1988) provides a basic description of econometrics. Spanos (1986) is more advanced.

the linear combination and the dependent variable.[102] The squared multiple correlation, or R^2, measures the percentage variation in the dependent variable that is predicted (or explained) by the independent variables.

Multiple regression has two uses. The first is to determine a prediction model. The second is to examine the strength of the association between the single dependent variable and individual independent variables. The strength of the relationship between the dependent variable and the independent variables is tested with an F-test. This is called a test of the goodness of fit (Montgomery and Peck, 1982). Formally, the null hypothesis being tested is that all estimated coefficients are equal to zero. The F test statistic is computed as:

$$F = \frac{SSR \div k}{SSE \div (n-k-1)} \sim F(k, n-k-1) \qquad \text{(A.1)}$$

where,
- SSR = sum of squares regression (model) $= \sum_{i=1}^{n} (\hat{y}_i - \bar{y})^2$
- $\hat{y}_i$ = predicted value of dependent variable for i^{th} observation
- $\bar{y}$ = average value of dependent variable
- SSE = sum of squares error $= \sum_{i=1}^{n} (y_i - \hat{y})^2$
- y_i = observed value of dependent variable for i^{th} observation
- k = number of independent variables
- n = number of observations

The strength of association between individual regressor variables and the dependent variable is tested with t-tests of the individual equation coefficients. Formally, the null hypothesis being tested is that an estimated coefficient for a single independent variable is equal to zero. This is really a test of the marginal contribution of that independent variable given the other independent variables in the model. The t statistic is computed as:

---

[102] An alternative explanation of multiple linear regression is that it finds that linear combination of the independent variables which minimizes the sum of the squared errors of prediction.

$$t = \frac{\hat{\beta}_j}{se(\hat{\beta}_j)} \sim T(n-2) \qquad \text{(A.2)}$$

where, $\hat{\beta}_j$ = estimated regression coefficient for regressor x_j

$se(\hat{\beta}_j)$ = standard error of $\hat{\beta}_j$

The preceding statistical procedures and tests were performed in this study using version 5 of the SAS statistical package.[103]

The assumptions of OLS multiple regression that must be met for the conclusions to be relied upon are (Pedhazur, 1982; Montgomery and Peck, 1982):

1. The model is correctly specified. There are three types of specification errors:
   a. Relevant variables have been omitted from the equation.
   b. Irrelevant variables have been included in the equation.
   c. The regression is specified as being linear when it truly is nonlinear.
2. The independent variables are measured without error.
3. The error term has a zero mean.
4. The variance of error terms is constant across the independent variables. This is called homoscedasticity.
5. The relationship between the dependent variable and the independent variables is linear.
6. The error terms are normally distributed.

The first assumption, that the model is correctly specified with respect to included and excluded variables, cannot be statistically tested. Omitting an important variable results in inaccurate estimates of the remaining coefficients and an overstated mean

---

[103] The SAS routine used to perform a regression analysis and to perform the above statistical tests is:

```
DATA FIRST;
 INPUT Y X1 X2 ... Xn;
 CARDS;
PROC REG;
 MODEL Y = X1 X2 ... Xn / SS2;
```

The estimated regression coefficients, analysis of variance, and F statistic are automatically provided in the output from the model statement. The t statistics for the estimated coefficient of each independent variable are provided from the SS2 option (SAS, 1985b).

squared error. Overstating the mean squared error makes it more difficult to reject the null hypothesis.

The second assumption, that the independent variables are measured without error, is equally untestable. One can only take great care in collecting the data.

The third assumption, that the error terms have an expected value of zero, can be not tested because OLS regression forces the error terms to sum to zero.[104]

The fourth assumption, homoscedasticity of error terms, was tested using a test statistic suggested by White (1980). This test focuses on departures from homoscedasticity by testing for significant numbers of observations where the error term squared is much above or below the average variance of the error terms. The test statistic, $\tau_T(y)$, is computed as:

$$\tau_n(y) = \left(\frac{1}{n}\sum_{i=1}^{n}(\hat{\varepsilon}_i^2 - \hat{\sigma}^2)\psi'_i\right)\hat{D}_n^{-1}\left(\frac{1}{n}\sum_{i=1}^{n}(\hat{\varepsilon}^2{}_i - \hat{\sigma}^2)\psi_i\right) \sim \chi^2(n) \qquad \text{(A.3)}$$

where,

$$\hat{D}_n = \frac{1}{n}\sum_{i=1}^{n}(\hat{\varepsilon}_i^2 - \hat{\sigma}^2)^2(\psi_i - \bar{\psi}_n)(\psi_i - \bar{\psi}_n)'$$

$$\bar{\psi}_n = \frac{1}{n}\sum_{i=1}^{n}\psi_i$$

$$\psi_i = (\psi_{1i}, \psi_{2i}, \ldots, \psi_{ei})', \quad \psi_{di} = x_{ai}x_{bi},$$

$$a \geq b, \quad a,b = 2, \ldots, c, \quad d = 1,2, \ldots, e, \quad e = \frac{1}{2}c(c-1)$$

$$\hat{\varepsilon}_i^2 = (y_i - \hat{y})^2$$

$$\hat{\sigma}^2 = \left(\sum_{i=1}^{n}\hat{\varepsilon}_i^2\right) \div (n - k - 1)$$

Version 5 of SAS was used to test this assumption.[105]

---

[104] This can be observed using the following SAS routine:

```
DATA FIRST;
  INPUT Y X1 X2 ... Xn;
  CARDS;
PROC REG;
  MODEL Y = X1 X2 ... Xn / SS2;
  OUTPUT OUT=SECOND RESIDUAL=R;
DATA SECOND; SET FIRST;
PROC UNIVARIATE;
  VAR R;
```

The PROC UNIVARIATE output shows that the sum of the regression error terms (R) is zero. Hence, the Student-t test that the mean of the error terms is equal to zero that is automatically provided by PROC UNIVARIATE is unnecessary.

[105] The White (1980) test of homoscedasticity can be generated by the SPEC option:

The fifth assumption, linearity, was tested using a standard F test (Spanos, 1986). The test statistic is based on the auxiliary regression (Spanos, 1986):

$$\hat{\varepsilon}_i = \alpha_i + \beta_{1i} + \ldots + \beta_{ki} + \gamma_2 \hat{y}_i^2 + \gamma_3 \hat{y}_i^3 + \varepsilon_i \qquad \text{(A.4)}$$

The F test tests the null hypotheses that $\gamma_2 = \gamma_3 = 0$. The test statistic is computed as (Spanos, 1986):

$$F_0 = \left(\frac{n-k-q-1}{q}\right)\left(\frac{RSSE - USSE}{RSSE}\right) \sim F(q, n-k-q-1) \qquad \text{(A.5)}$$

where, RSSE = restricted sum of squares, error
USSE = unrestricted sum of squares, error
q = number of restrictions

The test statistic was computed from output provided by SAS version 5.[106]

The sixth assumption, normality, was tested using a parametric skewness-kurtosis test derived by Jarque and Bera (1980) and a nonparametric Kolmogorov-Smirnov test (Kolmogorov, 1933; Smirnov, 1939). The Jarque and Bera test is a joint test of skewness and kurtosis. Using the standard skewness and kurtosis tests, they developed a Lagrange multiplier test:

$$\tau_M(y) = \left[\frac{n}{6}\hat{\alpha}_3^2 + \frac{n}{24}(\hat{\alpha}_4 - 3)^2\right] \sim \chi^2(2) \qquad \text{(A.6)}$$

where $\hat{\alpha}_3 = \left[\left(\frac{1}{n}\sum_{i=1}^{n}\hat{\varepsilon}_i^3\right) \div \left(\frac{1}{n}\sum_{i=1}^{n}\hat{\varepsilon}_i^2\right)^{\frac{3}{2}}\right]$

$\hat{\alpha}_4 = \left[\left(\frac{1}{n}\sum_{i=1}^{n}\hat{\varepsilon}_i^4\right) \div \left(\frac{1}{n}\sum_{i=1}^{n}\hat{u}^2\right)^2\right]$

```
PROC REG;
  MODEL Y = X1 X2 ... Xn / SPEC;
```

The output provides the computed value of the test statistic, degrees of freedom, and associated p-value.

[106] The following SAS routine can be used to generate output for RSSE and USSE. The F statistic is then computed by hand.

```
PROC REG;
  MODEL Y = X1 X2 ... Xn;
  OUTPUT OUT=SECOND RESIDUAL=R PREDICTED=YHAT;
DATA SECOND; SET FIRST;
  YHATSQR=YHAT*YHAT; YHATCUBE=YHATSQR*YHAT;
PROC REG;
  MODEL R = X1 X2 ... Xn YHATSQR YHATCUBE;
  MODEL R = X1 X2 ... Xn;
```

The test statistic was computed from output provided by SAS version 5.[107] According to Spanos (1986), there are several things to note about this test. First, it is an asymptotic test (designed for large samples). Spanos notes that caution should be used when the sample size is small. Second, the test is extremely sensitive to outliers. Third, when the MSE of the regression is large, it will dominate the test statistic. Finally, rejection of the null hypotheses, $\hat{\alpha}_3 = 0$ and $\hat{\alpha}_4 = 0$ gives no information concerning the nature of the departure from normality.

The Kolmogorov-Smirnov test is a distribution-free test comparing the distribution of a set of sample values to a particular theoretical distribution. The null hypothesis is that the sample cumulative distribution frequency (CDF) is equal to the theoretical CDF, which is Gaussian (or normal) in this case. The Kolmogorov-Smirnov test ranks the observations of the sample, and determines the point of greatest divergence between the sample CDF and the Gaussian CDF. The null is rejected if the divergence is large enough. SAS, version 5, was used to test the whether the regression error terms are normally distributed.[108]

---

[107] The following SAS routine can be used to generate output for the skewness coefficient and kurtosis coefficient. The joint test statistic is then computed by hand.

```
PROC REG;
  MODEL Y = X1 X2 ... Xn;
  OUTPUT OUT=SECOND RESIDUAL=R;
DATA SECOND; SET FIRST;
PROC UNIVARIATE; VAR R;
```

[108] SAS computes the Kolmogorov-Smirnov test statistic directly in the NORMAL option of PROC UNIVARIATE (SAS, 1985a):

```
PROC REG;
  MODEL Y = X1 X2 ... Xn;
  OUTPUT OUT=SECOND RESIDUAL=R;
DATA SECOND; SET FIRST;
PROC UNIVARIATE NORMAL; VAR R;
```

A.2 Canonical Correlation.

The procedure that is appropriate for examining the relationship between a set of multiple dependent variables and a set of multiple independent variables is Hotelling's (1936) canonical correlation (Hair, Anderson, and Tatham, 1987). Canonical correlation is the most general case of the general linear model (Thompson, 1984). It is a test of association, not of causality.[109] That is, it only determines if two sets of variables are related. It does this through forming the linear combination of the dependent variables and the linear combination of the independent variables in which the correlation between the two linear combinations (variates) is maximized.

Canonical correlation is used for three purposes in the current study. The first is to test the strength of association between the two sets of variables, changes in auditor quality and changes in agency costs. The second is to test the ability of the agency cost variables to explain the auditor quality variables. The third is to test the partial correlation between individual agency cost variables and the auditor quality variate.

The first step of the canonical correlation analysis is to develop a number of pairs of linear combinations. The first pair of linear combinations of each variable set is developed in a manner that maximizes the correlation between the two variates. The second pair of linear combinations is orthogonal to the first, because the set of linear combinations is developed from the remaining variation. The number of pairs developed is equal to the number of variables in the smaller variable set, which in this case is three variables in the auditor quality variable set. In effect, a variate is a single composite variable based on the variable values in that set; and the canonical correlation coefficient

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[109] Because canonical correlation is only associative, one set of variables does not have to depend on the other.

for a pair is a simple correlation between the two variates.[110] SAS, version 5, was used to compute the canonical variate coefficients.[111]

The most widely used test of significance of the variate correlations is Bartlett's (1941) test of Wilks'Λ (Pedhazur, 1982). The test statistic that is used here is based on Rao's (1951) alternative presentation as improved by Tatsuoka (1971). The null hypothesis being tested is whether there are any significant correlations among the variate pairs. The test statistic is computed as:

$$F_0 = \frac{\frac{1 - V^{\frac{1}{t}}}{V^{\frac{1}{t}}}}{t} \cdot \left(\frac{mt - \frac{pq}{2} + 1}{pq} \right) \sim F(pq, mt - \frac{pq}{2} + 1) \qquad \text{(A.7)}$$

where,

$V = \prod_{i=1}^{t} (1 - Rc_i^2)$

Rc_i^2 = square of the canonical correlation (Rc_i)

p = number of criterion (dependent) variables

q = number of predictor (independent) variables

s = minimum of (p,q)

m = $[N - .5(p + q + 1)]$

t = $\left[\frac{(p^2q^2 - 4)}{(p^2 + q^2 - 5)} \right]^{\frac{1}{2}}$

N = number of observations.

---

[110] See Hair, Anderson, and Tatham (1987) for a good nontechnical discussion of canonical correlation. Levine (1977) and Thompson (1984) provide more technical discussions. Fornell and Larcker (1980) demonstrate accounting applications of canonical correlation.

[111] The SAS procedure that provides the information on the canonical correlation analysis is PROC CANCORR. It provides information concerning the simple correlations between variables, the canonical correlations and related coefficients, and tests of significance of the canonical correlations. The following information is commonly provided: composition of variable sets, canonical correlation, canonical weights, and canonical loadings. Canonical weights are the coefficients of the variates. Canonical loadings are the correlation between the variable and its variate.

```
DATA FIRST;
 INPUT Y1 Y2 ... Yp X1 X2 ... Xq;
 CARDS;
PROC CANCORR
 VPREFIX=AUDQ VNAME='AUDITOR QUALITY'
 WPREFIX=AGENCY WNAME='AGENCY COST CHANGES';
 VAR Y1 Y2 ... Yp;
 WITH X1 X2 ... Xq;
```

A rejection of the null hypothesis on the first iteration of the test means that there is at least one pair of variates with a statistically significant canonical correlation. To find out if there are more pairs with significant correlations, the test must be run again with the first pair of variates set aside. The iterations continue until q iterations have been performed. SAS, version 5, automatically performs this test as part of PROC CANCORR.[112]

The second step in canonical correlation analysis is to measure the between-variate overlap. The square of the canonical correlation between two variates, Rc^2, is the percent of the total multivariate variance that is shared by the pair of variates. This does not mean, however, that one variate explains the variance of the other variate. Each variate is composed of several variables and is an imperfect composite of the total variance of that set of variables. Rc^2 is the shared variance of the *variates*. Individual variables within each set can explain some of the joint variance of the variates. Hence, some of the joint variance is explained twice--once by the other variate and once by the underlying variables of the variate. This double accounting for the variance is called redundancy. Redundancy is a problem because the objective of the analysis in the present study is to determine how much of the auditor quality variance is explained by agency cost variables. The existence of redundancy makes the results of the Wilks' Λ test unreliable as a test of the association between auditor quality variables and agency cost variables.

Stewart and Love (1968) developed a measure of the explained variation that accounts for the redundancy. According to Hair, Anderson, and Tatham (1987, p. 195):

> The redundancy index is the equivalent of computing the squared multiple correlation coefficient between the total predictor set and each variable in the criterion set, and then averaging these squared coefficients to arrive at an average R^2. It provides a summary measure of the ability of a set of predictor variables (taken as a set) to explain variation in the criterion variables (taken one at a time).

---

[112] The test statistic is automatically provided by PROC CANCORR, and is labeled as Wilks' Lambda on the SAS output.

As such, the redundancy measure is perfectly analogous to multiple regression's R^2 statistic, and its value as an index is similar.

The redundancy index and the R^2 may be *analogous*, but are not *identical* (Fornell, 1979). In multiple regression, the relationship between the dependent variable and the independent variables is directly examined. The interrelationships between the independent variables are considered, but there is no need to consider interrelationships among the dependent variables because there is only one. The redundancy index is the average of the multiple correlations of several multiple regressions (Stewart and Love, 1968).[113] There is no joint analysis simultaneously considering the direct relationship between multiple dependent variables and multiple independent variables, which means that the interrelationships among the dependent variables are ignored (Thompson, 1984). This means that the redundancy analysis is not truly multivariate (Cramer and Nicewander, 1979). The redundancy index is a good measure of the relationship between the variable sets only when there is a high correlation between the dependent variables and their variate. The redundancy index is used here in the absence of a canonical or multivariate regression that directly examines the relationship between sets of multiple variables.

The Stewart-Love redundancy index is calculated by:

[113] Nicewander and Wood (1974) disagree.

$$\overline{R}^2_{c|p,i} = R^2_{ci}\left\{\sum_{j=1}^{p}\frac{L^2_{ji}}{p}\right\} \qquad \text{(A.8)}$$

where, $\overline{R}^2_{c|p,i}$ = redundancy for the i-th canonical pair
p = number of criterion variables
L^2_{ji} = squared variable loading for the j-th criterion variable in the i-th canonical pair
R^2_{ci} = squared canonical correlation coefficient for the i-th canonical pair

The index is computed from information available on SAS, version 5 printout.[114] The variable loading, L_{ji}, is simply the correlation between the dependent variable j and the criterion variate.

The statistical significance of the redundancy index for each significant pair of variates is computed through a test suggested by Miller (1975). The test statistic is computed as:

$$F_0 = \left(\frac{\overline{R}^2_{c|p,i}}{1-\overline{R}^2_{c|p,i}}\right)\cdot\left(\frac{q(N-p-1)}{pq}\right) \sim F(pq, q(n-p-1)) \qquad \text{(A.9)}$$

where, p = variate with largest number of variables
q = variate with smallest number of variables

The third step in canonical correlation analysis is to test the relationship between individual agency cost (predictor) variables and the auditor quality (criterion) variables. This is commonly accomplished by comparing the correlation of the agency cost variables with the auditor quality variate. These correlations are called cross-loadings. These cross-loadings provide a measure, albeit nonoptimal, of the relationship between

---

[114] SAS provides a redundancy analysis when the REDUNDANCY option is specified in PROC CANCORR:

```
PROC CANCORR REDUNDANCY
  VPREFIX=AUDQ VNAME='AUDITOR QUALITY'
  WPREFIX=AGENCY WNAME='AGENCY COST CHANGES';
  VAR Y1 Y2 ... Yp;
  WITH X1 X2 ... Xq;
```

the agency cost variables and the auditor quality variate. The cross-loadings are computed independently of the joint relationship between agency cost variables and the auditor quality variate, making it possible for two correlated agency cost variables to have high cross-loadings. In testing the contribution of individual agency cost variables, it is preferable to compute the cross-loading (correlation) with the other variables held constant (Stevens, 1986). This, of course, is a partial correlation. Two methods of testing the significance level of the partial correlations are (1) a t-test of the partial correlation between a predictor variable and the criterion variate, and (2) a t-test of the regression coefficient, regressing the criterion variate on the predictor variables (Stevens, 1986; Cohen and Cohen, 1983). The latter approach was used here.[115]

Canonical correlation has three basic assumptions (Thompson, 1984). The first is that there is minimal measurement error in the variables. Second, the variances of the variables are not restricted. Third, "... the magnitudes of the coefficients in the correlation matrix [as variables are considered in pairs] must not be attenuated by large differences in the shapes of the distributions for the variables" (Thompson, 1984, p. 17). This assumption does not imply multivariate normality. It permits the use of noncontinuous (e.g., dichotomous) variables, which are not normally distributed, as long as these variables do not cause large differences in the multivariate distribution (Thompson, 1984; Hair, Anderson, and Tatham, 1987). What constitutes large differences remains unspecified.

When canonical correlation is used for inference, a fourth assumption--multivariate normality--must be met (Thompson, 1984). If a distribution is multivariate normal, then any combination of components (even one variable) will be normally distributed (Spanos, 1986). Therefore, if any single variable is is not normally distributed, then the

---

[115] A t-test of regression coefficients was set forth in equation (A.1).

multivariate distribution is not normally distributed. The first test of multivariate normality, then, should be the testing of univariate normality for all variables in the group. The parametric skewness-kurtosis test (Jarque and Bera, 1980) and the nonparametric Kolmogorov-Smirnov test (Kolmogorov, 1933; Smirnov, 1939) were presented earlier in equations (A.5) and (A.6) and were used to test the normality of individual variables. In the event that any variable is not normally distributed, canonical correlation can still be used through application of the multivariate central limit theorem (Thompson, 1984). That is, as the sample size gets large, indices derived from the variables will be normally distributed even when the variables themselves are not. Canonical correlation is considered to be robust to violations of assumptions (Thompson, 1984; Hair, Anderson, and Tatham, 1987).

A.3 Pearson Chi-square and Maximum Likelihood Ratio Chi-Square.

The statistical procedures that are appropriate for examining the relationship between sets of classification variables are the Pearson chi-square and the maximum likelihood ratio chi-square. One common setting is the problem of homogeneity--when it is unknown if two (or more) groups are from the same population with respect to an attribute measured on a noncontinuous scale. Tests of the problem of homogeneity compare the groups to see if the probabilities of a set of categories are the same for all groups.

The Pearson (1900) chi-square technique is based on the assumptions that the underlying variables are continuous and that the data are multivariate normal. Pearson assumes that the variables can be conveniently partitioned into groups or classifications.[116] Let I equal the number of groups (i = 1, 2, ... , I) and J equal the number of categories (j = 1, 2, ... , J). The X^2 test statistic is computed as follows:

$$X^2 = \sigma \frac{(\text{Observed} - \text{Expected})^2}{\text{Expected}} \tag{A.10}$$

$$= \sum_{i=1}^{I} \sum_{j=1}^{J} \frac{(x_{ij} - \frac{x_{i+}x_{+j}}{N})^2}{(\frac{x_{i+}x_{+j}}{N})} \sim \chi^2((I-1)(J-1)) \tag{A.11}$$

where, x_{ij} = number of observations of group i for category j
N = total number of all observations

$$x_{i+} = \sum_{j=1}^{J} x_{ij}$$

$$x_{+j} = \sum_{i=1}^{I} x_{ij}$$

The maximum likelihood ratio chi-square (Lancaster, 1951; Bock, 1970; and Kastenbaum, 1974) is based on the early work by Yule (1900). Yule chose to view the categories in the cross-classification as fixed. That is, he assumed that the underlying variables (in a 2 by 2 table) were dichotomous. The G^2 is computed as follows:

$$G^2 = 2\sum(\text{Observed}) \log(\frac{\text{Observed}}{\text{Expected}}) \sim \chi^2((I-1)(J-1)) \tag{A.12}$$

The two statistical procedures, X^2 and G^2, are asymptotically equivalent (Fienberg, 1980). That is, they produce similar results when sample sizes are large (greater than 10 time the number of cells) and the null hypothesis is true. For small sample sizes, X^2 is preferable to G^2 when there are small observed cell counts or when the minimum expected cell value is between 1 and 5 (Larntz, 1978). The X^2 performs adequately for large

[116] An example of a variable that has values spread over a continuum is temperature. Temperature can be partitioned into two categories--hot and cold. Not all variables are continuous, however. An example of a truly dichotomous variable is existence--either alive or dead.

and small samples and for samples where the minimum expected cell values are approximately 1.0; and the G^2 performs adequately for large samples where the minimum expected cell values are approximately 1.0 or larger (Odoroff, 1970; Larntz, 1978; and Fienberg, 1980). For large samples, G^2 is preferable to X^2 when both are large and are far out in the tail of the corresponding χ^2 distributions.

Fisher (1950) proposed an exact test for 2 x 2 tables that is based on a hypergeometric distribution. This test is commonly used, and results are reported for analyses of 2 x 2 tables.

All tests were performed on SAS version 5.[117]

A.4 Two-sample T-test and Wilcoxon Rank Sums Test.

The statistical procedures that are appropriate for examining the difference in typical values between two groups are the two-sample t-test and the Wilcoxon rank sums test.

The two-sample t-test tests the null hypothesis that the difference in sample means, between two groups, is zero. The test statistic is computed as follows (Ott, 1984):

---

[117] SAS computes all three test statistics directly in PROC FREQ. The SAS routine that generates these test statistics is:

```
DATA CONTABLE;
 INPUT A B COUNT;
PROC FREQ;
 WEIGHT COUNT;
 TABLES A*B / ALL;
```

$$t = \frac{\bar{y}_1 - \bar{y}_2}{s_p\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \sim t(n_1 + n_2 - 2) \qquad \text{(A.12)}$$

where, $\bar{y}_i$ = mean of group i,

n_i = number of observations in group i

$$s_p = \sqrt{(n_1 - 1)s_1^2 + \frac{(n_2 - 1)s^2{}_1}{n_1 + n_2 - 2}}$$

s_i = sample standard deviation for group i

There are several assumptions (Ott, 1984). First, the two samples are drawn from different populations. If this assumption is violated, then the t-tests will likely be in error. Second, the samples are drawn from normal populations. A violation of this assumption can lead to incorrect conclusions. Third, the two population variances are equal. The t-test is reasonably robust to large differences in population variances (Welch, 1956), but an alternative t-test can be used when the difference in variances is large:

$$t' = \frac{\bar{y}_1 - \bar{y}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_1^2}{n_2}}} \sim t(df) \qquad \text{(A.13)}$$

where, $df = \frac{(n_1 - 1)(n_2 - 1)}{(n_2 - 1)c^2 + (1 - c)^2(n_1 - 1)}$

$$c = \frac{\frac{s_1^2}{n_1}}{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$$

The t-test was performed on SAS version 5.[118]

---

[118] SAS computes both t-tests (equal and nonequal variances) directly in PROC TTEST. The SAS routine that generates these test statistics (SAS, 1985a) is:

```
DATA GROUPS;
  INPUT GROUP A;
PROC TTEST;
  CLASS GROUP;
  VAR A;
```

The Wilcoxon (1945) rank sum test is used as an alternative to the two-sample t-test. The Wilcoxon rank sum test tests the null hypothesis that the difference in sample medians, between two groups, is zero. The test statistic is computed as follows:

$$Z = \frac{W - \left(\frac{n(m+n+1)}{2}\right)}{\left(\frac{mn(m+n+1)}{12}\right)^{0.5}} \sim N(0,1) \qquad \text{(A.14)}$$

where, n = number of observations in group i
m = number of observations in group j
R_j = rank of group j observation in ranking of m + n observations

$$W = \sum_{j=1}^{m} R_j$$

The Mann-Whitney U test (Mann and Whitney, 1947) is a commonly used modification of the Wilcoxon rank sums test. The Mann-Whitney U adjusts for ties in the rankings. When there are no ties, both tests give the same results. The Wilcoxon rank sums test is used here because (1) there are few (if any) ties in the data, and (2) the Wilcoxon rank sums test is available on SAS, version 5, but the Mann-Whitney U is not.[119]

[119] The SAS routine that generates this test statistic is:

```
DATA GROUPS;
  INPUT GROUP A;
PROC NPAR1WAY;
  CLASS GROUP;
  VAR A;
```

Appendix B. Market Study Methodology

The objective of a market (or event) study is to examine the stock market reaction to a particular event. Standard market study methodology is designed to isolate the unexpected market reaction and then use this unexpected market reaction as the key variable in testable hypotheses. Bowman (1983) suggests that standard market study methodology has five steps:

1. Identify the event of interest,
2. Model the security price reaction,
3. Estimate the excess returns,
4. Organize and group the excess returns, and
5. Analyze the results.

An examination of the research literature on market studies reveals that there is considerable variation in standard methodology. The purpose of this appendix is to describe the methodology used in this dissertation.

B.1 The Event of Interest.

As described in Chapter 4, the three times when news of the auditor change can potentially be released to the market--the date the board of directors ratifies the change, the date the SEC receives the 8-K, and the date of public access to the 8-K--are easily identifiable. All three events can be examined for each company, but not every company changes auditors on the same date in time. Therefore, the objective of this study is to examine the market reaction to a type of event. Although all three dates were analyzed in this dissertation, for the remainder of this appendix, a methodology is presented for calculating and analyzing the unexpected market reaction to the first event (the board ratification of the change).

B.2 Risk Adjusted Market Model.

A risk adjusted model is used in this dissertation to calculate the expected return of a given security. A risk adjusted model describes the return of a given security as having three components. The first component, $\tilde{R}_{mt}$, includes factors that affect the entire economy. The second component, β_i, is related to the risk of the security relative to all the other securities in the security's market. The third component, ε_{it}, is composed of other factors and error. If one assumes that investors have the capability of holding a portfolio of securities and therefore can diversify away some of the firm specific risk, then the relative risk of a given security can be summarized by the covariance of the company's return with that of the market.

The market model, depicted by Fama, Fisher, Jensen, and Roll (1969), asserts that the relationship between the return of a single security and the return of the market is linear:

$$\tilde{R}_{it} = \alpha_i + \beta_i \tilde{R}_{mt} + \varepsilon_{it} \qquad \text{(D.1)}$$

where,

$\tilde{R}_{it}$	is the return on security i in period t,
$\tilde{R}_{mt}$	is the return on the market portfolio in period t,
α_i, β_i	are parameters for security i,
ε_{it}	is the error term in period t,
$E(\varepsilon_{it})$	$= 0$,
$\sigma(\tilde{R}_{it}, \varepsilon_{it})$	$= 0$,
$\sigma(\tilde{R}_{mt}, \tilde{R}_{mt+1})$	$= 0$,
$\sigma(\varepsilon_{it}, \varepsilon_{jt})$	$= 0$.

The only assumption of this model is that investors are risk averse, expected-utility-of-wealth maximizers who select holdings based on the mean and variance of the distribution of returns (Dyckman and Morse, 1986).

B.3 Calculating the Unexpected Market Reaction.

In the present study, the market reaction to an auditor change was presumed to be measurable by the unexpected, or excess, return for a security on a given day. This excess return, e_{it}, is the difference between the actual return for a security and the return expected for that security (Bowman, 1983; Brown and Warner, 1980, 1985). Ordinary least squares (OLS) regression was used to estimate the parameters of equation (D.1) over this estimation period. The resulting model was then used to calculate the excess returns during the prediction period according to:

$$e_{it} = R_{it} - (a_i + b_i R_{mt}) \qquad \text{(D.2)}$$

where,

R_{it}	is the observed return on security i in period t,
R_{mt}	is the observed return on the market portfolio in period t,
e_{it}	is the excess return of security i in period t,
a_i, b_i	are estimated constants for security i,

which are observed to have the properties

$$\begin{aligned} E(e_{it}) &= 0, \\ Cov(e_{it}, e_{jt}) &= 0. \end{aligned}$$

This unexpected market reaction was calculated from the CRSP daily returns tape for NYSE and AMEX companies. Daily returns for the company were regressed against an index of daily average market return during an estimation period in order to estimate parameters of the market return model. The index used was the equally weighted market index.

The estimation period for this study was defined relative to the initial event pertaining to the disclosure of the change in auditor--i.e., the date that the board and/or audit committee approved the change. The estimation period began 170 days before this date (-170), and proceeded until 21 days before (-21). This resulted in an estimation period of 150 days. The prediction period began 20 days (-20) before each of the three event dates, extended through the event date (date 0), and ended 20 days later.

The analysis was also be performed using standardized returns in place of excess returns. Standardized returns were investigated because of the potential for the return generating function to be more variable for some companies than for others. Standardized returns are essentially Z-scores, where the excess return for a given company is divided by the mean squared error derived from the estimation period regression. When the variance of the return generating function is constant across all companies, standardized returns are equivalent to the excess returns. Standardized returns (squared) are used to test for the significance of the market reaction when it is anticipated that the

market reaction is positive for some companies and negative for others (Foster, 1978). According to Patell (1976), excess returns can be standardized in the following manner:

$$v_{it} = \frac{e_{it}}{s_i\sqrt{C_{it}}} \qquad \text{(D.3)}$$

where,
- v_{it} = standardized return for company i at time t (prediction)
- e_{it} = excess return for company i at time t
- $\hat{e}_{i\tau}$ = error term for company i at time τ (prediction)
- $s_i = \sum_{\tau=1}^{T} \frac{\hat{e}_{i\tau}}{(T-2)}$, for the estimation period $\tau = 1...T$
- T = number of days in estimation period
- C_{it} = variance correction for predicting outside estimation period.
  $= 1 + \frac{1}{T} + \frac{(R_{mt} - \bar{R}_m)^2}{\sum_{\tau=1}^{T}(R_{m\tau} - \bar{R}_m)^2}$
- $\bar{R}_m = \frac{1}{T}\sum_{\tau=1}^{T} R_{m\tau}$

B.4 Aggregation of Excess and Standardized Returns.

Excess returns were aggregated for short periods of time around the event date to form a cumulative abnormal return (CAR) for each company. The CAR was computed as:

$$CAR_i = \sum_{t=1}^{L} e_{it} \qquad \text{(D.4)}$$

where
- e_{it} is the excess return for company i in period t (prediction)
- t is the time period being aggregated, for days of the accumulation period, $t = 1...L$.

For example, excess returns were aggregated for five days around the board date, starting two days before the board date and extending through two days after. The purpose of this aggregation was to focus on disclosures made around the board date, which is the first date of interest. An aggregation period of five days is chosen because of the uncertainty of the exact timing of information release associated with the board meeting.

It is possible that information was released as early as when the meeting agenda was distributed, which occurred one or two days before the meeting. It is also possible that information concerning the board meeting reached the market after the board meeting.

B.5 Statistical Procedures for Analyzing the Results.

The purpose of this section is to describe the appropriate statistical procedures for examining the strength of the daily market reaction to each of the events. Understanding the nature of the market reaction on a daily basis around the three possible event dates is important in order to determine which period of market reaction should be used for the dependent variable in part 2 of the study.

Event studies typically test four types of hypotheses. The first is whether the mean reaction (excess or standardized) on a particular day is different from zero. The second is whether the proportion of companies with negative returns on a particular day is different from the proportion of companies with positive returns.[120] The third is whether the mean return aggregation (excess returns or standardized returns) over a short period of time is different from zero. The fourth is whether the squared standardized market reaction for a particular day is significant. The objective of testing the first three hypotheses is to determine if the market moves in a consistent direction as a result of an information disclosure on a particular date. The objective of testing the fourth hypothesis is to determine if the market reacts to a disclosure, without testing the directionality of the movement. That is, if some companies experience a positive reaction and others

[120] Since standardized returns are based on excess returns, the test for proportion of companies with negative excess returns is the same as for standardized returns.

a negative, then squaring the reaction permits examination of the reaction without specifying the direction. The specific testable hypotheses and appropriate statistical procedures are discussed below.

B.5.1 H1o: Mean excess return equal to zero equal to zero.

The first testable hypothesis in null form is that the mean return (excess or standardized) on a given date is equal to zero. It is a nondirectional hypothesis in this application because of the possibility of both positive and negative returns. The mean excess return across all companies in the sample on a particular day t is computed by:

$$\bar{e}_t = \sum_{i=1}^{n} e_{it} \qquad \text{(D.5)}$$

where e_{it} = the excess return for company i in period t

Two statistical procedures are commonly used to determine if the mean reaction is different from zero. The first test, a t-test, is parametric. The following t statistic is computed (Patell, 1976):

$$t_0 = \frac{\bar{e}_t}{\frac{\sqrt{\frac{\sum_{i=1}^{n}(e_{it} - \bar{e}_t)^2}{n-1}}}{\sqrt{n}}} \sim t(n-2). \qquad \text{(D.6)}$$

This test relies on the assumption that the cross-sectional distribution of excess returns is normally distributed. Brown and Warner (1980) report that although mean excess returns are close to zero, distributions tend to be leptokurtic and positively skewed. After lengthy analysis, they report that the t-test appears to be robust to this violation and rejects the null the correct percentage of the time.

The second test, the Wilcoxon (1945) signed rank test, is nonparametric. It is also used to test if the mean reaction is different from zero. It tests whether there is an un-

usually large number of positive scores (observed - expected) above the mean. A test statistic is formed:

$$T_i^+ = \sum_{i=1}^{n} R_{it}\psi_{it} \sim T^+(n) \qquad \text{(D.7)}$$

where
R_{it} = rank of $|(e_{it} - 0)|$
$\psi_{it} = 1$ if $(e_{it} - 0) > 0$
$\psi_{it} = 0$ if $(e_{it} - 0) < 0$

The null distribution of $T^+ = \sum_{i=1}^{B} R_{it}$ where B = number of positive ψ_{it} (Hollander and Wolfe, 1973).

The Wilcoxon signed rank test is based on the assumption that the excess returns are symmetric about the mean. Brown and Warner (1980) report that this test tends to be sensitive to the skewed nature of excess returns and does not reject the null hypothesis as often as alpha levels imply. The t-test statistic is computed concurrently with the computation of the excess (standardized) returns. The Wilcoxon signed rank test is available on version 5 of SAS, and the test statistic is automatically provided by PROC UNIVARIATE.

B.5.2 H2o: Positive returns equal to 50%.

The second hypothesis in null form states that the percentage of negative excess returns is equal to the percentage of positive returns, or 50% of total returns. The large-sample test statistic for the nonparametric sign test (Fisher, 1925) is:

$$B^* = \frac{B - \frac{2}{n}}{\sqrt{\frac{n}{4}}} \sim N(0,1) \qquad \text{(D.8)}$$

where B = number of positive returns in n observations.

Brown and Warner (1980) conclude that this test is sensitive to the natural skewed distribution of excess returns (positive) and rejects the null hypothesis "'too often' (compared to the significance level of the test) when testing for negative abnormal performance and 'not often enough' when testing for positive abnormal performance" (Brown and Warner, p. 222).

B.5.3 H3o: Mean CAR equal to zero.

The third testable hypothesis in null form is that the mean cumulative abnormal return (CAR), excess or standardized, is equal to zero. It is a nondirectional test in this application because of the possibility of both positive and negative returns. A CAR_i is an accumulation of returns, $\sum_{t=1}^{L} e_{it}$, over some accumulation period of time L. The t-test and the Wilcoxon signed rank test, as described above, are used to test the null. When using standardized returns in place of excess returns, Patell (1976) suggests a slightly modified t-test for the CAR. A test statistic is formed:

$$W_{iL} = \sum_{t=1}^{L} \frac{e_{it}}{s_i\sqrt{LC_{it}}} \sim t(n-2) \qquad \text{(D.9)}$$

where L = number of days in the accumulation period.

This hypothesis is also tested with the Wilcoxon signed ranks test.

B.5.4 H4o: Mean squared standardized return equal to one.

The fourth testable hypothesis deals with the square of the standardized returns, which has an expected value of one. Patell (1976) forms a variable:

$$U_{it} = v_{it}^2 \left(\frac{T_i - 4}{T_i - 2} \right) \tag{D.11}$$

where $E(U_{it}) = 1$

$Var(U_{it}) = \dfrac{2(T_i - 3)}{(T_i - 6)}$

T_i = number of days in the estimation period for company i.

The hypothesis in null form that is associated with this squared standardized return is that the mean standardized return is equal to one. Patell uses the following test statistic, which is unit normal through application of the central limit theorem:

$$Z_{Ut} = \frac{\sum_{i=1}^{n} (U_{it} - 1)}{\left\{ \sum_{i=1}^{n} \frac{2(T_i - 3)}{(T_i - 6)} \right\}^{\frac{1}{2}}} \sim N(0,1) \tag{D.12}$$

Rohrbach and Chandra (1989) note that this test is based on the assumption that the daily excess returns are normally distributed. They also note that daily excess returns are not normally distributed, but have heavy tails and are skewed. They argue that this assumption violation results in test statistics that reject the null 'too often' compared to the significance level of the test. Results from this test should be conservatively interpreted, therefore.

Appendix C. Companies Changing Auditors

This appendix contains a list of the 217 companies that meet the requirements (see Chapter 4) for inclusion in the experimental group. Appendix D contains a list of all companies and the data group to which they belong to.

Changes ratified by board during 1980

Company name on 8-K	Old Auditor	New Auditor
Acton Corporation	Arthur Young & Company	Pannell Kerr Forster & Company
American Building Maintenance Industries	John F. Forbes & Company	Peat, Marwick, Mitchell & Company
Chicago Milwaukee Corporation	Peat, Marwick, Mitchell & Company	Arthur Andersen & Company
Chicago Rivet & Machine Co.	Burke & Company	Price Waterhouse & Company
Damson Oil Corporation	Arthur Andersen & Company	Touche Ross & Company
Fair-Tex Mills, Inc.	Concannon, Gallagher, Miller & Company	Deloitte Haskins & Sells
Gearhart-Owen Industries, Inc.	Weaver & Tidwell	Arthur Young & Company
General Employment Enterprises, Inc.	Ernst & Whinney	Price Waterhouse & Company
Genovese Drug Stores, Inc.	A.M. Pullen & Company	Deloitte Haskins & Sells
Goldblatt Bros., Inc.	Arthur Andersen & Company	Coopers & Lybrand
Hawaiian Airlines, Inc.	Deloitte Haskins & Sells	Peat, Marwick, Mitchell & Company
Heinz (H. J.) Company	Peat, Marwick, Mitchell & Company	Coopers & Lybrand
Key Pharmaceuticals, Inc.	Spear, Safer & Company	Arthur Andersen & Company
Leisure Technology Corp.	Arthur Andersen & Company	Kenneth Leventhal & Company
MacMillan, Inc.	Deloitte Haskins & Sells	Arthur Young & Company
Penn Traffic Company (The)	Mills & Kimlin	Price Waterhouse & Company
Pep Boys - Manny, Moe & Jack (The)	Seidman & Seidman	Touche Ross & Company
Playboy Enterprises, Inc.	Coopers & Lybrand	Price Waterhouse & Company
Ronson Corporation	Touche Ross & Company	Ernst & Whinney
Sta-Rite Industries, Inc.	Arthur Young & Company	Arthur Andersen & Company
Sterling Electronics Corporation	Arthur Andersen & Company	Ernst & Whinney
Tec, Incorporated	Peat, Marwick, Mitchell & Company	Ernst & Whinney
Texas International Company	Price Waterhouse & Company	Arthur Andersen & Company
Topps Chewing Gum, Incorporated	Seidman & Seidman	Ernst & Whinney
World Airways, Inc.	Coopers & Lybrand	Peat, Marwick, Mitchell & Company

Changes ratified by board during 1981

Company name on 8-K	Old Auditor	New Auditor
Allied Products Corporation	Arthur Andersen & Company	Laventhol & Horwath
Amrep Corporation	Touche Ross & Company	Arthur Andersen & Company
Burlington Northern Inc.	Deloitte Haskins & Sells	Coopers & Lybrand
Circle K Corporation (The)	Peat, Marwick, Mitchell & Company	Arthur Andersen & Company
Conroy, Inc.	Ernst & Whinney	Arthur Young & Company
CRS Group, Inc. (The)	Touche Ross & Company	Peat, Marwick, Mitchell & Company
Data Access Systems, Inc.	Touche Ross & Company	Deloitte Haskins & Sells
Diodes Incorporated	Ernst & Whinney	Alexander Grant & Company
Ero Industries, Inc.	Lester Witte & Company	Blackman, Kallick & Company, Ltd.
Essex Chemical Corporation	Arthur Andersen & Company	Arthur Young & Company
Fluke (John) Mfg Co., Inc.	Moss, Adams & Company	Ernst & Whinney
GI Export Corporation	Main Hurdman & Cranstoun	Friedman, Alpren & Green
Glosser Bros., Inc.	Alexander Grant & Company	Coopers & Lybrand
Hilton Hotels Corporation	Pannell Kerr Forster & Company	Arthur Andersen & Company
ICN Pharmaceuticals, Inc.	Peat, Marwick, Mitchell & Company	Arthur Andersen & Company
Kellwood Company	Touche Ross & Company	Price Waterhouse & Company
Killearn Properties, Inc.	Peat, Marwick, Mitchell & Company	Touche Ross & Company
Kroehler Mfg. Co.	Seidman & Seidman	Coopers & Lybrand
Manhattan Industries, Inc.	Coopers & Lybrand	Touche Ross & Company
National Kinney Corp.	Arthur Young & Company	Ernst & Whinney
Olla Industries, Inc.	Laventhol & Horwath	Yorkes, Ross & Company
Penobscot Shoe Company	Laventhol & Horwath	Seidman & Seidman
Pentron Industries, Inc.	Murphy, Hauser, O'Connor & Quinn	Coopers & Lybrand
Pueblo International, Inc.	Peat, Marwick, Mitchell & Company	Ernst & Whinney
RCA Corporation	Arthur Young & Company	Touche Ross & Company
RSC Industries, Inc.	Arthur Andersen & Company	Touche Ross & Company
Servo Corporation of America	Price Waterhouse & Company	Albrecht, Viggiano, Zureck and Company
Shapell Industries, Inc.	Kenneth Leventhal & Company	Price Waterhouse & Company
Southern Pacific Company	Deloitte Haskins & Sells	Price Waterhouse & Company
Southmark Properties	Coopers & Lybrand	Alexander Grant & Company
Tensor Corporation	Cornick, Garber & Sandler	Coopers & Lybrand
TIE/Communications, Inc.	Leonard Meyerson	Main Hurdman & Cranstoun
UMET Trust (The)	Peat, Marwick, Mitchell & Company	Touche Ross & Company
United Merchants and Manufacturers, Inc.	Ernst & Whinney	Main Hurdman & Cranstoun
Whittaker Corporation	Coopers & Lybrand	Ernst & Whinney

Changes ratified by board during 1982

Company name on 8-K	Old Auditor	New Auditor
Action Industries, Inc.	Arthur Andersen & Company	Ernst & Whinney
American Realty Trust	Coopers & Lybrand	Alexander Grant & Company
Anderson Jacobson., Inc. and Subsidiaries	Main Hurdman	Deloitte Haskins & Sells
Berkey Photo, Inc.	Brout & Company	Peat, Marwick, Mitchell & Company
Branch Industries Inc.	Touche Ross & Company	Alexander Grant & Company
Cardillo Travel Systems, Inc.	Ernst & Whinney	Touche Ross & Company
Centronics Data Computer Corp.	Laventhol & Horwath	Coopers & Lybrand
Conchemco, Incorporated	Arthur Andersen & Company	Ernst & Whinney
Connelly Containers, Inc.	Price Waterhouse & Company	Grossman & Company
Crown Crafts, Inc.	Arthur Andersen & Company	Touche Ross & Company
CTS Corporation	Alexander Grant & Company	Price Waterhouse & Company
Dougherty Brothers Company	Maurice M. August	Price Waterhouse & Company
Empire of Carolina, Inc.	Main Hurdman	Laventhol & Horwath
Engelhard Corporation	Arthur Andersen & Company	Coopers & Lybrand
Fairfield Communities, Inc.	Price Waterhouse & Company	Ernst & Whinney
Filmways, Inc.	Arthur Andersen & Company	Arthur Young & Company
Friendly Frost Inc.	Kalish, Rubinroit & Company	Touche Ross & Company
GI Export Corporation	Friedman, Alpren & Green	Coopers & Lybrand
Hannaford Bros. Co.	Peat, Marwick, Mitchell & Company	Coopers & Lybrand
Howell Corporation	Arthur Andersen & Company	Deloitte Haskins & Sells
Oneida Ltd.	Price Waterhouse & Company	Coopers & Lybrand
Opelika Manufacturing Corporation	Fox & Company	Ernst & Whinney
Pengo Industries, Inc.	Weaver & Tidwell	Deloitte Haskins & Sells
Ponderosa System, Inc.	Ernst & Whinney	Deloitte Haskins & Sells
Sikes Corporation	Ernst & Whinney	Price Waterhouse & Company
United Medical Corporation	Price Waterhouse & Company	Ernst & Whinney
USR Industries, Inc.	Peat, Marwick, Mitchell & Company	Coopers & Lybrand
Varo, Inc.	Peat, Marwick, Mitchell & Company	Deloitte Haskins & Sells
Weis Markets, Inc.	Coopers & Lybrand	Peat, Marwick, Mitchell & Company
XOil Energy Resources, Inc.	Touche Ross & Company	Ernst & Whinney
Zimmer Homes Corporation	Deloitte Haskins & Sells	Ernst & Whinney

Changes ratified by board during 1983

Company name on 8-K	Old Auditor	New Auditor
Adams-Russell Co., Inc.	Meahl, McNamara & Company	Coopers & Lybrand
Atlas Corporation	Coopers & Lybrand	Ernst & Whinney
Bolar Pharmaceutical Co., Inc.	Burger, Kurzman, Kaplin & Stuchin	Coopers & Lybrand
BRT Realty Trust	Kenneth Leventhal & Company	Buchbinder Stein Tunick & Platkin
BTK Industries, Inc.	Peat, Marwick, Mitchell & Company	Main Hurdman
BTK Industries, Inc.	Main Hurdman	Touche Ross & Company
Caesar's World, Inc.	Alexander Grant & Company	Arthur Andersen & Company
Cagle's, Inc.	Jack Frost & Company	Arthur Andersen & Company
Campbell Resources Inc.	Price Waterhouse & Company	Ernst & Whinney
Cullinane Database Systems, Inc.	Tonneson, Mela, Curtin & Company	Coopers & Lybrand
Empire of Carolina, Inc.	Laventhol & Horwath	Deloitte Haskins & Sells
Fairchild Industries, Inc.	Touche Ross & Company	Ernst & Whinney
Forest City Enterprises, Inc.	Touche Ross & Company	Ernst & Whinney
GF Business Equipment, Inc.	Ernst & Whinney	Arthur Young & Company
Heldor Industries, Inc.	Coopers & Lybrand	Main Hurdman
Informatics General Corporation	Deloitte Haskins & Sells	Arthur Young & Company
Ketchum & Co. Inc.	Ernst & Whinney	Arthur Andersen & Company
Kirby Exploration Company	Arthur Andersen & Company	Deloitte Haskins & Sells
Lumex, Inc.	Arthur Andersen & Company	Ernst & Whinney
Mayflower Corporation	Arthur Andersen & Company	Ernst & Whinney
North Canadian Oils Limited	Peat, Marwick, Mitchell & Company	Touche Ross & Company
NVF Company	Price Waterhouse & Company	Arthur Andersen & Company
Papercraft Corporation	Price Waterhouse & Company	Arthur Andersen & Company
Pearce Urstadt Mayer & Greer, Inc.	Price Waterhouse & Company	Pannell Kerr Forster & Company
Ply-Gem Industries, Inc.	Weinick, Sanders & Company	Price Waterhouse & Company
Ragan (Brad), Inc.	Ernst & Whinney	Arthur Andersen & Company
Raychem Corporation	Arthur Young & Company	Price Waterhouse & Company
Towner Petroleum Company	Arthur Young & Company	Peat, Marwick, Mitchell & Company
Trafalgar Industries, Inc.	Peat, Marwick, Mitchell & Company	Coopers & Lybrand

Changes ratified by board during 1984

Company name on 8-K	Old Auditor	New Auditor
AAR Corp.	Arthur Andersen & Company	Peat, Marwick, Mitchell & Company
Adams-Millis Corporation	Arthur Andersen & Company	McGladrey, Hendrickson & Pullen
Aeronca, Inc.	Touche Ross & Company	Price Waterhouse & Company
American Capital Corporation	Coopers & Lybrand	Peat, Marwick, Mitchell & Company
Bell & Howell Company	Arthur Andersen & Company	Ernst & Whinney
Best Products Co., Inc.	Touche Ross & Company	Peat, Marwick, Mitchell & Company
Development Corporation of America	Pannell Kerr Forster & Company	Arthur Andersen & Company
GAF Corporation	Deloitte Haskins & Sells	Arthur Andersen & Company
Gaylords National Corporation	Fox & Company	Main Hurdman
General Employment Enterprises, Inc.	Price Waterhouse & Company	Ernst & Whinney
Guardsman Chemicals, Inc.	Price Waterhouse & Company	Ernst & Whinney
Hillenbrand Industries, Inc.	Arthur Andersen & Company	Price Waterhouse & Company
Horn & Hardart Company (The)	Laventhol & Horwath	Arthur Andersen & Company
HRT Industries, Inc.	Main Hurdman	Coopers & Lybrand
Kaneb Services, Inc.	Peat, Marwick, Mitchell & Company	Ernst & Whinney
Key Company (The)	McGladrey, Hendrickson & Pullen	Price Waterhouse & Company
KinArk Corporation	Ernst & Whinney	Touche Ross & Company
Lee Pharmaceuticals	Price Waterhouse & Company	Laventhol & Horwath
Munsingwear, Inc.	Peat, Marwick, Mitchell & Company	Ernst & Whinney
Murphy Industries, Inc.	Arthur Andersen & Company	Peat, Marwick, Mitchell & Company
Newell Companies Inc.	Ernst & Whinney	Arthur Andersen & Company
Noel Industries, Inc.	Arthur Andersen & Company	Coopers & Lybrand
Pan American World Airways, Inc.	Coopers & Lybrand	Arthur Young & Company
Payless Cashways, Inc.	Ernst & Whinney	Peat, Marwick, Mitchell & Company
Ply-Gem Industries, Inc.	Price Waterhouse & Company	Alexander Grant & Company
RLC Corp.	Price Waterhouse & Company	Peat, Marwick, Mitchell & Company
Rollins Environmental Services, Inc.	Price Waterhouse & Company	Peat, Marwick, Mitchell & Company
Ruddick Corporation	Deloitte Haskins & Sells	Arthur Andersen & Company
Ryan Homes, Inc.	Coopers & Lybrand	Peat, Marwick, Mitchell & Company
Silvercrest Industries, Inc.	Touche Ross & Company	Ernst & Whinney
SPW Corporation	Arthur Young & Company	Ernst & Whinney
Sunshine Mining Company	Coopers & Lybrand	Arthur Young & Company
Timeplex, Inc.	Touche Ross & Company	Coopers & Lybrand
Unitel Video, Inc.	Touche Ross & Company	Arthur Young & Company
Watsco, Inc.	Arthur Young & Company	Arthur Andersen & Company
Wespercorp	Deloitte Haskins & Sells	Touche Ross & Company

Changes ratified by board during 1985

Company name on 8-K	Old Auditor	New Auditor
Amfac, Inc.	Deloitte Haskins & Sells	Coopers & Lybrand
Arlen Realty & Development Corp.	Coopers & Lybrand	Seidman & Seidman
Astrotech International Corporation	Ernst & Whinney	Coopers & Lybrand
Baxter Travenol Laboratories, Inc.	Alexander Grant & Company	Price Waterhouse & Company
Castle & Cooke, Inc.	Peat, Marwick, Mitchell & Company	Arthur Andersen & Company
Cenergy Corporation	Arthur Andersen & Company	Peat, Marwick, Mitchell & Company
Centennial Group, Inc. (The)	Ernst & Whinney	Arthur Andersen & Company
Chicago Pneumatic Tool Company	Price Waterhouse & Company	Deloitte Haskins & Sells
Cook United, Inc.	Arthur Andersen & Company	Ernst & Whinney
Echo Bay Mines Ltd.	Peat, Marwick, Mitchell & Company	Clarkson, Gordon & Company
Giant Portland & Masonry Cement Company	Ernst & Whinney	Coopers & Lybrand
Health-Chem Corporation	Touche Ross & Company	Deloitte Haskins & Sells
Heldor Industries, Inc.	KMG Main Hurdman	Peat, Marwick, Mitchell & Company
International Controls Corp.	Ernst & Whinney	Deloitte Haskins & Sells
McDowell Enterprises, Inc.	Peat, Marwick, Mitchell & Company	Arthur Andersen & Company
Mortronics, Inc.	Arthur Young & Company	Laventhol & Horwath
National Homes Corporation	Price Waterhouse & Company	Deloitte Haskins & Sells
National Intergroup, Inc.	Ernst & Whinney	Deloitte Haskins & Sells
Newhall Investment Properties	Price Waterhouse & Company	Peat, Marwick, Mitchell & Company
Newhall Land & Farming Company - Cal. (The)	Price Waterhouse & Company	Peat, Marwick, Mitchell & Company
Newhall Resources	Price Waterhouse & Company	Peat, Marwick, Mitchell & Company
Oak Industries Inc.	Arthur Andersen & Company	Coopers & Lybrand
Ormand Industries, Inc.	Arthur Andersen & Company	Ernst & Whinney
Raymark Corporation	Alexander Grant & Company	Coopers & Lybrand
RB Industries, Inc.	Main Hurdman	Ernst & Whinney
RMS Electronics, Inc.	Laventhol & Horwath	Alexander Grant & Company
Ronson Corporation	Ernst & Whinney	KMG Main Hurdman
Seaport Corporation	Price Waterhouse & Company	Den-Herder, Zante & Clare
Spencer Companies, Inc.	Wolf & Company of MA	Coopers & Lybrand
Standard Shares, Inc.	Arthur Young & Company	Price Waterhouse & Company
Texfi Industries, Inc.	Deloitte Haskins & Sells	Ernst & Whinney
Union Corporation (The)	Coopers & Lybrand	Arthur Young & Company
University Patents, Inc.	Arthur Young & Company	Coopers & Lybrand
Wayne-Gossard Corporation	Peat, Marwick, Mitchell & Company	Ernst & Whinney
Winnebago Industries, Inc.	McGladrey Hendrickson & Pullen	Deloitte Haskins & Sells

Changes ratified by board during 1986

Company name on 8-K	Old Auditor	New Auditor
Acton Corporation	Pannell Kerr Forster & Company	Ernst & Whinney
Alamco Inc.	KMG Main Hurdman	Coopers & Lybrand
Altex Industries, Inc.	Grant Thornton	Coopers & Lybrand
American Oil and Gas Corporation	Coopers & Lybrand	Arthur Andersen & Company
Anacomp, Inc.	Coopers & Lybrand	Laventhol & Horwath
Belo (A. H.) Corporation	Peat, Marwick, Mitchell & Company	Arthur Young & Company
BRT Realty Trust	Buchbinder, Stein, Tunik & Platkin	Kenneth Leventhal & Company
BSN Corp.	Grant Thornton	Arthur Andersen & Company
Consolidated Stores Corporation	KMG Main Hurdman	Arthur Andersen & Company
Dresser Industries, Inc.	Arthur Andersen & Company	Price Waterhouse & Company
Fairchild Industries, Inc.	Ernst & Whinney	Touche Ross & Company
Horizon Corporation	Ernst & Whinney	Arthur Andersen & Company
Intermark Corp.	Arthur Young & Company	KMG Main Hurdman
Murray Ohio Manufacturing Company (The)	Ernst & Whinney	Peat, Marwick, Mitchell & Company
Olla Industries, Inc.	Arthur Yorkes & Company	Ernst & Whinney
Pentron Industries, Inc.	Main Hurdman	Price Waterhouse & Company
Playboy Enterprises, Inc.	Price Waterhouse & Company	Coopers & Lybrand
RB Industries, Inc.	Ernst & Whinney	Coopers & Lybrand
Revlon Group Incorporated	Touche Ross & Company	Peat, Marwick, Mitchell & Company
Ryland Group, Inc. (The)	Touche Ross & Company	Ernst & Whinney
Safeguard Scientifics, Inc.	Touche Ross & Company	Peat, Marwick, Mitchell & Company
Sargent-Welch Scientific Company	Arthur Andersen & Company	Ernst & Whinney
Telesciences, Inc.	Seidman & Seidman	Coopers & Lybrand
Telesphere International, Inc.	KMG Main Hurdman	Peat, Marwick, Mitchell & Company
Tiger International, Inc.	Arthur Andersen & Company	Arthur Young & Company
Viacom International Inc.	Coopers & Lybrand	Price Waterhouse & Company

Appendix D. Composition of Experimental Groups

This appendix contains a list of the 217 companies that meet the requirements (see Chapter 4) for inclusion in the experimental group. Of this group, sufficient information to allow analysis of either changes in agency costs or changes in auditor quality is not available for sixteen companies. In addition, 74 companies announced the change in auditor on their proxy statement or through a press release prior to filing the 8-K with the SEC. The first leg of the model was tested with only those companies with sufficient change data, or 217-16 = 201. The second leg of the model was tested with those companies with no disclosure prior to the filing of the 8-K and with sufficient change data, or 217-74-6 = 137.

Company name on 8-K	Year of Change	Prior Disclosure	Change Data
AAR Corp.	1984	Yes	Yes
Action Industries, Inc.	1982	Yes	Yes
Acton Corporation	1980	Yes	Yes
Acton Corporation	1986	No	Yes
Adams-Millis Corporation	1984	No	Yes
Adams-Russell Co., Inc.	1983	No	Yes
Aeronca, Inc.	1984	No	Yes
Alamco Inc.	1986	Yes	Yes
Allied Products Corporation	1981	No	Yes
Altex Industries, Inc.	1986	Yes	Yes
American Building Maintenance Industries	1980	No	Yes
American Capital Corporation	1984	No	Yes
American Oil and Gas Corporation	1986	No	Yes
American Realty Trust	1982	Yes	Yes
Amfac, Inc.	1985	No	Yes
Amrep Corporation	1981	Yes	Yes
Anacomp, Inc.	1986	No	Yes
Anderson Jacobson., Inc. and Subsidiaries	1982	No	Yes
Arlen Realty & Development Corp.	1985	No	Yes
Astrotech International Corporation	1985	No	Yes
Atlas Corporation	1983	Yes	Yes
Baxter Travenol Laboratories, Inc.	1985	No	Yes
Bell & Howell Company	1984	Yes	Yes
Belo (A. H.) Corporation	1986	Yes	Yes
Berkey Photo, Inc.	1982	Yes	Yes
Best Products Co., Inc.	1984	No	Yes
Bolar Pharmaceutical Co., Inc.	1983	No	Yes
Branch Industries Inc.	1982	No	Yes
BRT Realty Trust	1983	Yes	Yes
BRT Realty Trust	1986	No	Yes
BSN Corp.	1986	Yes	Yes
BTK Industries, Inc.	1983	No	Yes
BTK Industries, Inc.	1983	No	Yes
Burlington Northern Inc.	1981	No	Yes
Caesar's World, Inc.	1983	No	Yes
Cagle's, Inc.	1983	No	Yes
Campbell Resources Inc.	1983	No	Yes
Cardillo Travel Systems, Inc.	1982	No	No
Castle & Cooke, Inc.	1985	Yes	Yes
Cenergy Corporation	1985	Yes	No
Centennial Group, Inc. (The)	1985	No	Yes
Centronics Data Computer Corp.	1982	No	Yes
Chicago Milwaukee Corporation	1980	No	Yes
Chicago Pneumatic Tool Company	1985	Yes	Yes
Chicago Rivet & Machine Co.	1980	Yes	No
Circle K Corporation (The)	1981	No	Yes
Conchemco, Incorporated	1982	No	Yes
Connelly Containers, Inc.	1982	No	Yes
Conroy, Inc.	1981	No	Yes
Consolidated Stores Corporation	1986	No	Yes
Cook United, Inc.	1985	No	Yes

Company name on 8-K	Year of Change	Prior Disclosure	Change Data
Crown Crafts, Inc.	1982	No	Yes
CRS Group, Inc. (The)	1981	Yes	Yes
CTS Corporation	1982	No	Yes
Cullinane Database Systems, Inc.	1983	No	Yes
Damson Oil Corporation	1980	No	Yes
Data Access Systems, Inc.	1981	Yes	No
Development Corporation of America	1984	No	Yes
Diodes Incorporated	1981	Yes	No
Dougherty Brothers Company	1982	No	Yes
Dresser Industries, Inc.	1986	Yes	Yes
Echo Bay Mines Ltd.	1985	Yes	Yes
Empire of Carolina, Inc.	1982	No	Yes
Empire of Carolina, Inc.	1983	No	Yes
Engelhard Corporation	1982	No	Yes
Ero Industries, Inc.	1981	No	Yes
Essex Chemical Corporation	1981	Yes	Yes
Fair-Tex Mills, Inc.	1980	No	Yes
Fairchild Industries, Inc.	1983	No	Yes
Fairchild Industries, Inc.	1986	No	Yes
Fairfield Communities, Inc.	1982	No	Yes
Filmways, Inc.	1982	Yes	Yes
Fluke (John) Mfg Co., Inc.	1981	No	Yes
Forest City Enterprises, Inc.	1983	Yes	Yes
Friendly Frost Inc.	1982	No	Yes
GAF Corporation	1984	Yes	Yes
Gaylords National Corporation	1984	Yes	Yes
Gearhart-Owen Industries, Inc.	1980	No	Yes
General Employment Enterprises, Inc.	1980	No	Yes
General Employment Enterprises, Inc.	1984	No	Yes
Genovese Drug Stores, Inc.	1980	Yes	No
GF Business Equipment, Inc.	1983	No	Yes
GI Export Corporation	1981	No	Yes
GI Export Corporation	1982	No	Yes
Giant Portland & Masonry Cement Company	1985	No	Yes
Glosser Bros., Inc.	1981	Yes	Yes
Goldblatt Bros., Inc.	1980	No	Yes
Guardsman Chemicals, Inc.	1984	No	Yes
Hannaford Bros. Co.	1982	No	Yes
Hawaiian Airlines, Inc.	1980	Yes	No
Health-Chem Corporation	1985	No	Yes
Heinz (H. J.) Company	1980	No	Yes
Heldor Industries, Inc.	1983	No	Yes
Heldor Industries, Inc.	1985	Yes	Yes
Hillenbrand Industries, Inc.	1984	No	Yes
Hilton Hotels Corporation	1981	Yes	Yes
Horizon Corporation	1986	Yes	Yes
Horn & Hardart Company (The)	1984	Yes	Yes
Howell Corporation	1982	Yes	Yes

Company name on 8-K	Year of Change	Prior Disclosure	Change Data
HRT Industries, Inc.	1984	No	Yes
ICN Pharmaceuticals, Inc.	1981	No	Yes
Informatics General Corporation	1983	No	Yes
Intermark Corp.	1986	No	Yes
International Controls Corp.	1985	No	Yes
Kaneb Services, Inc.	1984	No	Yes
Kellwood Company	1981	No	Yes
Ketchum & Co. Inc.	1983	No	Yes
Key Company (The)	1984	No	Yes
Key Pharmaceuticals, Inc.	1980	No	No
Killearn Properties, Inc.	1981	No	Yes
KinArk Corporation	1984	No	Yes
Kirby Exploration Company	1983	No	Yes
Krochler Mfg. Co.	1981	No	Yes
Lee Pharmaceuticals	1984	No	Yes
Leisure Technology Corp.	1980	Yes	Yes
Lumex, Inc.	1983	No	Yes
MacMillan, Inc.	1980	Yes	Yes
Manhattan Industries, Inc.	1981	No	Yes
Mayflower Corporation	1983	No	Yes
McDowell Enterprises, Inc.	1985	Yes	No
Mortronics, Inc.	1985	No	Yes
Munsingwear, Inc.	1984	Yes	Yes
Murphy Industries, Inc.	1984	No	Yes
Murray Ohio Manufacturing Company (The)	1986	No	Yes
National Homes Corporation	1985	No	Yes
National Intergroup, Inc.	1985	Yes	Yes
National Kinney Corp.	1981	No	Yes
Newell Companies Inc.	1984	No	Yes
Newhall Investment Properties	1985	No	No
Newhall Land & Farming Company - Cal. (The)	1985	No	Yes
Newhall Resources	1985	No	No
Noel Industries, Inc.	1984	No	Yes
North Canadian Oils Limited	1983	No	Yes
NVF Company	1983	No	Yes
Oak Industries Inc.	1985	Yes	Yes
Olla Industries, Inc.	1981	No	Yes
Olla Industries, Inc.	1986	No	Yes
Oneida Ltd.	1982	No	Yes
Opelika Manufacturing Corporation	1982	No	Yes
Ormand Industries, Inc.	1985	No	Yes
Pan American World Airways, Inc.	1984	No	Yes
Papercraft Corporation	1983	Yes	Yes
Payless Cashways, Inc.	1984	No	Yes
Pearce Urstadt Mayer & Greer, Inc.	1983	Yes	Yes
Pengo Industries, Inc.	1982	No	Yes

Company name on 8-K	Year of Change	Prior Disclosure	Change Data
Penn Traffic Company (The)	1980	No	Yes
Penobscot Shoe Company	1981	No	Yes
Pentron Industries, Inc.	1981	Yes	Yes
Pentron Industries, Inc.	1986	Yes	Yes
Pep Boys - Manny, Moe & Jack (The)	1980	No	Yes
Playboy Enterprises, Inc.	1980	No	Yes
Playboy Enterprises, Inc.	1986	Yes	Yes
Ply-Gem Industries, Inc.	1983	No	Yes
Ply-Gem Industries, Inc.	1984	No	Yes
Ponderosa System, Inc.	1982	No	Yes
Pueblo International, Inc.	1981	No	Yes
Ragan (Brad), Inc.	1983	No	Yes
Raychem Corporation	1983	No	Yes
Raymark Corporation	1985	No	Yes
RB Industries, Inc.	1985	Yes	Yes
RB Industries, Inc.	1986	Yes	Yes
RCA Corporation	1981	No	Yes
Revlon Group Incorporated	1986	No	Yes
RLC Corp.	1984	No	Yes
RMS Electronics, Inc.	1985	Yes	Yes
Rollins Environmental Services, Inc.	1984	No	Yes
Ronson Corporation	1980	No	Yes
Ronson Corporation	1985	No	Yes
RSC Industries, Inc.	1981	Yes	Yes
Ruddick Corporation	1984	No	Yes
Ryan Homes, Inc.	1984	Yes	Yes
Ryland Group, Inc. (The)	1986	Yes	Yes
Safeguard Scientifics, Inc.	1986	No	Yes
Sargent-Welch Scientific Company	1986	No	Yes
Seaport Corporation	1985	Yes	Yes
Servo Corporation of America	1981	No	Yes
Shapell Industries, Inc.	1981	Yes	Yes
Sikes Corporation	1982	No	Yes
Silvercrest Industries, Inc.	1984	No	Yes
Southern Pacific Company	1981	No	Yes
Southmark Properties	1981	No	Yes
Spencer Companies, Inc.	1985	Yes	Yes
SPW Corporation	1984	No	Yes
Sta-Rite Industries, Inc.	1980	Yes	Yes
Standard Shares, Inc.	1985	Yes	Yes
Sterling Electronics Corporation	1980	No	No
Sunshine Mining Company	1984	Yes	Yes
Tec, Incorporated	1980	No	Yes
Telesciences, Inc.	1986	Yes	Yes
Telesphere International, Inc.	1986	Yes	Yes
Tensor Corporation	1981	Yes	Yes
Texas International Company	1980	Yes	No
Texfi Industries, Inc.	1985	No	Yes
TIE/Communications, Inc.	1981	Yes	No
Tiger International, Inc.	1986	No	Yes

Company name on 8-K	Year of Change	Prior Disclosure	Change Data
Timeplex, Inc.	1984	No	Yes
Topps Chewing Gum, Incorporated	1980	No	No
Towner Petroleum Company	1983	No	Yes
Trafalgar Industries, Inc.	1983	No	Yes
UMET Trust (The)	1981	Yes	Yes
Union Corporation (The)	1985	Yes	Yes
United Medical Corporation	1982	No	No
United Merchants and Manufacturers, Inc.	1981	No	Yes
Unitel Video, Inc.	1984	No	Yes
University Patents, Inc.	1985	Yes	Yes
USR Industries, Inc.	1982	Yes	Yes
Varo, Inc.	1982	Yes	Yes
Viacom International Inc.	1986	Yes	Yes
Watsco, Inc.	1984	Yes	Yes
Wayne-Gossard Corporation	1985	Yes	Yes
Weis Markets, Inc.	1982	No	Yes
Wespercorp	1984	No	Yes
Whittaker Corporation	1981	Yes	Yes
Winnebago Industries, Inc.	1985	Yes	Yes
World Airways, Inc.	1980	No	Yes
XOil Energy Resources, Inc.	1982	No	Yes
Zimmer Homes Corporation	1982	No	Yes

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Vita

William David Albrecht

Education

Ph. D. in Business Administration, Virginia Polytechnic Institute and State University. Major: Accounting. Minors: Finance and Statistics. January, 1991.

Master of Arts, The University of Iowa. Major: Accounting. May, 1980.

Bachelor of Arts, The University of Iowa. Major: Political Science. Minor: History. December, 1976.

Experience

Assistant Professor, Bowling Green State University, 1990+.

Visiting Assistant Professor, University of North Carolina-Chapel Hill, 1989-1990.

Graduate Assistant, Virginia Polytechnic Institute and State University, 1985-1989.

Assistant Professor, Andrews University, 1980-1985.

Honors and Achievements

- Virginia Polytechnic Institute and State University Grade Point Average, 3.99.
- Full Academic Scholarship, Department of Accounting, Virginia Polytechnic Institute and State University, 1985-1988.
- Phi Kappa Phi, National Academic Honor Society, 1988.
- Fellow, Doctoral Consortium of the American Accounting Association, 1987.
- Outstanding Young Men of America, 1984.
- Certificate of Public Accountancy from Iowa, 1981.
- Dean's List of the College of Business at The University of Iowa, 1978, 1979.
- Senator, Liberal Arts Student Senate, The University of Iowa, 1971-1973.

Personal Data

Date of Birth:	June 3, 1949
Family:	Married, two sons
Health:	Excellent

William David Albrecht