STOCK MARKET REACTION TO AUDITOR CHANGES BY OTC FIRMS

by

VALERIE ANN KINNEAR

B.S.W., The University of Calgary, 1978

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF

THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE

IN

BUSINESS ADMINISTRATION

in

THE FACULTY OF GRADUATE STUDIES

The Faculty of Commerce and Business Administration

We accept this thesis as conforming

to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA

April 1986

In presenting this thesis in partial fulfilment of the requirements for an advanced degree at the The University of British Columbia, I agree that the Library shall make it freely available for reference and study. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by the Head of my Department or by his or her representatives. It is understood that copying or publication of this thesis for financial gain shall not be allowed without my written permission.

The Faculty of Commerce and Business Administration

The University of British Columbia
2075 Wesbrook Place
Vancouver, Canada
V6T 1W5

Date: April 1986

ABSTRACT

This thesis examines the stock market reaction to auditor change announcement by OTC firms. The general motivation stemmed from previous research on this topic that 1) failed to adequately motivate the empirical investigation and 2) found insignificant results. The theoretical justification for expecting a market reaction is based on the existence of product differentiation in the market for audit services in terms of the level of credibility an auditor can offer. It is conjectured that client firms will demand more credibility as the proportion of external ownership in the firm increases. Management's re-evaluation of their optimal residual firm value and perquisite consumption combination after a change in the ownership structure is suggested as a possible reason for an auditor change. The auditor change signals information about the manager and causes a market reaction.

A sample of 44 non-Big Eight to Big Eight and 15 Big Eight to non-Big Eight auditor changes are examined. The standard event study method of abnormal residual analysis is replaced with a new method in which cross-sectional market model regressions in the announcement and a control period on the same firms are compared.

Results provide strong evidence that the increase in firm value from an auditor change announcement is greater for non-Big Eight to Big Eight changes than Big Eight to non-Big Eight changes. Evidence is also found that firms

changing auditors experience greater variability in returns during an announcment period than during a control period prior to the change.

Table of Contents

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGEMENTS

I am grateful to the members of my thesis committee, Patrica Hughes, Dan Simunic and Rex Thompson who all provided valuable feedback and encouragement. In particular I am indebted to Dan Simunic, who acted as chairman and supplied the motivation for this thesis, and Rex Thompson, who provided the insight required for the empirical analyses. Financial support from Deloitte Haskins & Sells is also acknowledged. Finally, special thanks go to Wilfred Zerbe and his drafting skills for the preparation of Figures 1, 2 and 3.

I. INTRODUCTION

A. BACKGROUND

The Financial Accounting Standards Board (FASB) [1978] has defined the function of financial reporting by business enterprises to be the provision of information that is useful to those making economic decisions about business enterprises, such as investors and creditors. The FASB further notes that both those who provide the information and those who use it often view an independent auditor's opinion as enhancing the credibility and reliability of the information. Traditionally, the identity of the firm performing the audit has been considered irrelevant. For example, in the Cohen Report [1978], it is stated that:

> there is little effective product differentiation from the view point of the present buyer of the (audit) service,... A "clean opinion" obtained from one reputable firm is about as valuable to the competent, honest financial manager as one from another firm. (AICPA [1978], p.111)

Since audits must be conducted according to generally accepted auditing standards (GAAS) and auditors must be professionally qualified, corporate financial statement audits may be considered homogeneous.

Several recent studies (Simunic [1980]; DeAngelo [1981(a)] and [1981(b)]; Dopuch and Simunic [1982]; Simunic and Stein [1986]) have taken a view contrary to that of the Cohen Commission. They have suggested that audit services are likely to be differentiated across auditors. Basically,

it is argued that Big Eight auditors[1] supply higher quality audits than medium sized or local auditing firms.

There have also been attempts (for example see Simunic [1980]; Nichols & Smith [1983]; Shockley & Holt [1983]) to empirically test the validity of the hypothesized audit service differentiation. Although largely inconclusive, the results of these studies are not inconsistent with the existence of product differentiation in the market for audit services.

B. PURPOSE

An implication of audit services product differentiation is that an auditor change may impact on an investors' valuation of a firm. This thesis extends earlier research by Nichols & Smith [1983] and Fried & Schiff [1981] on stock market reactions to auditor changes in three ways. First, based on the work of DeAngelo, Dopuch and Simunic, and Simunic and Stein on audit services product differentiation, reasons for and implications of an auditor change are developed. Second, understanding the market impact of auditor changes is investigated by using a sample of Over The Counter (OTC) firms, which have not been previously examined. The Nichols & Smith and Fried & Schiff studies used New York Stock Exchange (NYSE) and American Stock Exchange (AMEX) firms and found statisically

---

[1]The Big Eight auditing firms are Arthur Anderson, Arthur Young, Coopers & Lybrand, Deloitte Haskins & Sells, Ernst & Whinney, Peat Marwick Mitchell, Price Waterhouse and Touche Ross.

insignificant results. However, recent studies of market reaction to earnings announcements (Atiase [1980] and Grant [1980]) have found that smaller firms experience a larger reaction to the information. Hence it is conjectured that information about a change in auditor will have a greater impact on OTC firms than it has on the larger NYSE and AMEX firms.

Third, this thesis employs a new method for event studies. Research on OTC companies requires manual collection of stock prices as these firms are not included in the CRSP tapes. Essentially, our analysis consists of comparing a cross-sectional regression of firm returns in an auditor change announcement period to a similar regression on the same firms in a control period. The method used provides a test of positive or negative stock price reaction to auditor changes while minimizing data collection.

C. OUTLINE OF THESIS

In order to identify the issues involved in this study, we begin by examining the issue of product differentiation in the market for audit services in Chapter II. In Chapter III factors involved in the selection of audit services, reasons for auditor changes, and market reactions to these changes are discussed. A description of the sample selection and data collection procedures are in Chapter IV. The test method and hypotheses are developed in Chapter V. Chapter VI presents and discusses the results of the statisical

analyses, and Chapter VII summarizes and concludes.

II. PRODUCT DIFFERENTIATION IN THE MARKET FOR AUDIT SERVICES

If auditing is a homogeneous product across suppliers, the auditor choice problem is largely irrelevant. Since the quality of the product received from all auditors would be identical, all firms would engage the auditor quoting the lowest fees, and auditor choice would be purely a function of production function/cost differences across auditors. However, as mentioned in the introduction, several researchers believe that the market for audit services *is* characterized by product differentiation, and hence the auditor choice problem is not irrelevant. Therefore in order to understand the auditor choice problem it is necessary to examine how audit services can be differentiated and what factors will motivate client firms in their selection of auditors. In this chapter we review some of the arguments for and evidence on product differentiation in the market for audit services.

DeAngelo [1981(a), 1981(b)] argues for the existence of product differentiation in the following sense. She proposes an audit technology in which auditors earn client-specific quasi-rents. She assumes if auditor malfeasance in order to retain a specific client is subsequently discovered, the auditor is less likely to be retained by its set of existing clients. A large audit firm earns large aggregate client-specific quasi-rents and therefore faces a higher potential opportunity loss from "cheating" than a small audit firm. Hence, she argues audit quality will be

positively correlated with audit firm size.

DeAngelo's arguments focus on the supply side of the market for audit services. She ignores the demand for differentiated audit services, except in the narrow sense that a client is not willing to pay the cost of an independent audit to an auditor who is not perceived as supplying such an audit. Although she demonstrates how audit services can be differentiated, she does not attempt to explain or justify why client firms will select different levels of audit quality.

Dopuch and Simunic [1980; 1982] propose a demand based model of product differentiation. They conjecture that audit services have two characteristics valued by top management- a contribution to organizational control and credibility with financial statement users.[2] The demand for organizational control depends on the degree to which top managers can personally monitor the various activities of their subordinates. The less personal control management has over the firm the more likely an outside audit will be valuable to management. As Simunic and Stein [1986] later note, the demand for organizational control can exist in firms of sufficient size or complexity even if they do not have outside debt or equity.

---

[2]It has been suggested in the economics literature (Lancaster [1966,1971]) that products are not desirable in and of themselves, but rather for the bundle of utility bearing characteristics they contain. This implies products can be differentiated according to both the types and quantities of the characteristics they possess.

When outside debt and/or equity are introduced into the capital structure the demand for credibility arises because of the agency relationship between management and outside shareholders and creditors.[3] There is now an asymmetry of information, or moral hazard problem, between top management and outsiders about the actions of top management. A credible audit can both reduce agency costs by limiting management's ability to conceal improper actions (shirking) in the financial statements and also signal management's honesty to investors. Since managements' utility functions and opportunity sets for shirking will vary across managers, the level of credibility demanded will vary across firms.

In their later study Simunic and Stein [1986] add the scope of the product offered by an audit firm as a third characteristic demanded by top management. This characteristic refers to the availability of various management consulting type services from the audit supplier. It is often claimed that a knowledge externality is created during the auditing process which reduces the cost of consulting services supplied by the auditor. Therefore, Simunic and Stein state that the audit service purchased by a particular client from a given audit firm can be described by specification of a vector of quantities of the three service characteristics: {control, credibility, product

---

[3]Jensen and Meckling [1976] define an agency relationship as "a contract under which one or more persons (the principal) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent" (p.308).

line}.

Simunic and Stein also point out that the demand for audit services is derived from the objective function of the top management of the audited company. Therefore they question if these decisions will also satisfy investors' demands. They argue that the demand for control and product line scope will be the same for management and investors. But the demand for credibility could potentially differ if the sole purpose of credibility is to ameliorate the agency problem between management and investors.

The existence of an agency relationship implies that the purpose of errors or omissions in the financial statements caused by management will be to induce financial statement users to overestimate cash flows. Rational creditors and shareholders are aware of this possibility and will therefore appropriately adjust the terms of transactions with management. Simunic and Stein refer to this as "price protection" and note that in the extreme, investors and creditors may even refuse to transact with the firm. Thus Simunic and Stein argue that, under the rational user assumption, it is the interests of top management to demand credible auditing. Later, in Chapter III, we discuss factors involved in management's selection of a particular level of credibility.

Simunic and Stein also discuss what audit service designs will be offered for sale, and whether a given audit firm will supply a single service vector or simultaneously

supply a variety of characteristic vectors. Audit firms desiring to maximize economic rents will choose vectors in response to demand from client firms and vector choices of other auditors. However, an auditor's ability to simultaneously supply a variety of characteristic vectors will be limited by their ability to differentially "package" these vectors. Rational purchasers of audit services will not be willing to select higher and more costly levels of a characteristic unless they can observe the characteristics.

Since the details of an audit cannot be observed by investors (and only imperfectly by management) an asymmetric information problem arises. This problem presumably has little impact on the auditor's ability to simultaneously provide different levels of internal control or product line. Since management will be able to observe the auditors, there will be no problem for management to ensure that the auditor has correctly fulfilled their contractual responsibilities. Investors will also be satisfied because management and investors agree on the level of internal control and product line to be purchased.

However, an auditor's ability to simultaneously provide different levels of credibility will be limited due to its unobservability. We argued earlier that investors and creditors can ensure management will demand credibility in managements' own interest because investors and creditors can "price protect" themselves. Furthermore, as argued in Chapter III, investors require a clear indication of the

level of credibility management has purchased in order to value their investment. Dopuch and Simunic [1982] therefore argue that auditor credibility must be associated with an observable characteristic, such as the brand name of the auditor. Since auditors cannot directly communicate in any meaningful way the power of their tests, each audit firm is restricted to a single brand. Hence, Simunic and Stein [1986] argue that auditors will specialize in the delivery of audit credibility levels as opposed to simultaneously offering a variety of levels.

An implication of the above is that if conditions in a client firm change so they require more or less internal control or product line, they will not necessarily have to change auditors. However, if conditions change so more or less credibility is now optimal, an auditor change *will* be necessary. These facts are significant in our analysis of auditor changes in the next chapter.

If different levels of credibility are demanded, which audit firms supply more credibility? DeAngelo's [1981(a),1981(b)] argument that large audit firms will suffer more from "cheating" is consistent with the implication that large auditors are more credible. Additionally, given the dominance of the Big Eight auditing firms in the market for audits of publicly held companies, Dopuch and Simunic [1982] also infer that an audit by a Big Eight firm is more credible than an audit by a smaller firm. But, if Big Eight firms deliver a higher quality of service

than non-Big Eight firms, then other things held constant, audit prices should likewise vary between the two groups.

Present empirical evidence on this point is mixed. Simunic [1980] examined a cross section of audits of U.S. companies ranging in size from $500,000 to about $10 billion in assets. He found that prices charged by the Big Eight firms were not significantly different and possibly somewhat lower than non-Big Eight firms. Conversely, Francis [1984] using a pooled cross section of Australian companies found that prices charged by Big Eight firms were significantly higher than prices charged by non-Big Eight firms. Toffler and Ramalinggam [1982], using United Kingdom data, report results consistent with Francis. However, later Francis and Stokes [1985] report that the difference between Big Eight and non-Big Eight firm prices appears largely confined to the very smallest companies in their sample.

Simunic and Stein [1986] argue that the inconsistencies in this evidence may be partly due to the difficulties of inferring audit prices from the observed audit fee data. They suggest an audit fee can be thought of as the product of the price times the quantity of the audit characteristics purchased. Additionally, Francis & Stokes [1985] and Simunic & Stein [1986] speculate that in Big Eight audits of large companies, scale economies exist. This allows Big Eight firms to offset the price effects of product differentiation with lower production costs. In the audits of smaller companies it is speculated that scale economies are less

likely to exist and therefore Big Eight audit firms would not have a production advantage over non-Big Eight firms. This explanation is consistent with the above studies since Simunic, who found no differential, was looking at firms approximately 10 times larger than the others, who did find a differential. Thus it is quite possible there are systematic differences in audit prices relating to differences in service when other factors are held constant.

To summarize, the existence of product differentiation in the market for audit services appears highly plausible. We have proposed that client firms may demand different levels of audit service characteristics. The most interesting audit service characteristic is credibility because auditors must specialize in the amount of credibility they offer due to the asymmetric information problem in observing audit service production. We hypothesize that Big Eight firms are more credible or supply higher quality audits than non-Big Eight firms.[4] As stated earlier it is important that differentiation exists, else the auditor choice problem is purely cost driven and largely an empty issue. Furthermore, we would not expect to observe a stock market reaction to an auditor change if audit services were homogeneous. In the next chapter we examine in

---

[4]Simunic [1986] notes that any grouping of suppliers in broad classes such as Big Eight vs. non-Big Eight is necessarily arbitrary and should be tested for within group homogeneity. Although we have not performed such a test, following Dopuch & Simunic [1982], Nichols & Smith [1983], we simply distinguish between Big Eight and non-Big Eight auditors for purposes of this study.

more detail how management selects an initial level of audit credibility (quality). We then suggest a reason why management would change the level of audit credibility and how this will affect firm value.

III. THE AUDITOR CHOICE ISSUE

A. INITIAL AUDITOR SELECTION

In the preceding chapter we suggested that although an auditor may simultaneously offer several levels of internal control or product line, they must specialize in the level of credibility offered, since the level of credibility must be inferred from a brand name. This implies that the selection of an auditor depends primarily on the level of credibility demanded. To further our understanding of the potential effect of a credible audit, and thus the amount of credibility demanded, it is useful to examine how users of financial statements determine their expected wealth after an audit.[5]

Simunic and Stein [1986] suggest a model where given no audit, users will calculate for each firm the prior probability the financial statements will be materially in error, and the loss from such financial statement errors. An audit of a given level of credibility will cause users to reassess their beliefs and calculate the posterior probability of material errors and the new expected loss from the errors. As Simunic and Stein further explain, the probability of error is reassessed because an audit may reduce the moral hazard problem between management and users of financial statements. In addition, the perceived loss from errors will be reduced because users know that a

---

[5]Positing an effect on expected wealth will be relevant for both risk adverse and risk neutral investors.

credible audit will reduce managements ability to conceal actions and thus management will be less likely to shirk.[6] Users can calculate their expected wealth as the posterior probability of no errors times the wealth of the user if there are no errors plus the posterior probability of errors times wealth of the user if errors are present less the cost of the audit.

We can expect for a given firm, the greater the credibility level of the audit, the larger the differences between the prior and posterior probability of errors and also the greater the decrease in the perceived loss from errors. Thus for a given firm, the greater the credibility level, the greater the increase in investors' expected wealth. However, since investors can price protect themselves they will be indifferent to the level of credibility initially selected.

Management will not be indifferent to the level of credibility selected. We assume that management enjoys two types of benefits from their position in the firm-perquisites and the value of their residual ownership in the firm. Management will select the auditor, and hence the credibility level, that maximizes management's utility over

---

[6]For this to be true we must have reasonable assurance management is unable to subvert the auditor. We assume that auditors earn rents and/or quasi-rents at their chosen credibility level. Then, as DeAngelo [1981(a),1981(b)] argued, auditors will suffer opportunity costs if they fail to deliver the amount of credibility associated with their "brand" name. Thus a manager could subvert an auditor if the manager offered a sufficiently large bribe. However, the rent streams will reduce the probability of this occurring.

these two benefits.

There are several possible reasons why the manager of a given firm would prefer a particular level of credibility. We believe the capital structure of the firm is one factor that can strongly influence the auditor selection. As external ownership increases investors will expect management's consumption of perquisites to increase. Therefore, management is motivated to shirk more and use the financial statements to conceal their actions. As stated earlier, rational investors realize this and price their investment accordingly. However, management may prefer to consume less perquisites and increase the value of the firm. Therefore, management will select the particular level of credibility that causes them to reduce their consumption and results in the firm value-perquisite combination that maximizes management's utility. The greater the external ownership the greater the credibility investors will require to be assured that management's ability to both shirk and conceal their actions in the financial statements have been reduced.

Given these incentives, we expect managers of firms with more external ownership to select higher quality auditors and managers of firms with less external ownership to select lower quality auditors. Thus based on our analysis in Chapter II, we expect that in general, firms with a greater proportion of external ownership will utilize the services of a Big Eight auditor and firms with less external

ownership will use non-Big Eight firms. This implies the audit selected will cost more in firms with a larger percentage of external ownership.

To demonstrate that management in firms with larger external ownership will select a higher credibility (and therefore more costly) auditor than firms with smaller external ownership, consider Figure 1, adapted from Jensen and Meckling [1976]. Line EF is the manager's budget constraint in a 100 percent owner managed firm. Since one dollar of perquisites withdrawn from the firm by the manager reduces the value of the firm by one dollar, the slope of EF is -1. If the manager sells part of the firm the slope of the budget constraint will become $-a$, where a represents the percentage of the firm retained by the manager. Figure 1 shows possible budget constraints and firm values for two otherwise identical firms whose managers elected in the past to select low or high proportions of external ownership. Without auditing, firm value in a market where investors hold rational expectations, would be OC for firms with low external ownership and OA for firms with high external ownership.

Following Jensen and Meckling, the purchase of costly auditing to monitor management's behavior allows the manager in a firm with low external ownership to make trade-offs between firm value and perquisites along the concave line segment emanating from point H.[7] By incurring auditing costs

---

[7]An assumption of diminishing returns to more intensive auditing will ensure the concavity of this line segment.

M, the manager can increase firm value to an optimum level OD. Similarily, the manager in a firm with high external ownership can increase firm value to OB by purchasing auditing services costing N. The net benefits of auditing to management are CD and AB, respectively, in the two cases. Since N is greater than M it can be seen that firms with a higher external ownership capital structure will pay more for auditing than firms with lower external ownership.

In summary, we assume the existence of an equilibrium where different audit firms will offer different levels of credibility in response to clients' demands. A distribution of auditor/client pairs can be determined by the ownership structure of the client firms, where managers of firms with low external ownership select low quality or non-Big Eight auditors and managers of firms with high external ownership select high quality or Big Eight auditors.

B. AUDITOR CHANGES

1. LITERATURE REVIEW OF RESEARCH ON AUDITOR CHANGES

Given the above framework on initial auditor selection, we can also speculate on the factors that will induce management to change auditors. However, before doing so it is useful to review other studies on auditor changes.

The earliest research on auditor changes was produced by Burton & Roberts [1967]. Their objective was to see if any evidence could be found that firms were seeking to

exploit the economic relationship with their auditors in such a way as to threaten the independence of the auditor's attestation. Their sample consisted of the 83 company-initiated auditor changes they found in the *Fortune 500* industrial firms between 1952 and 1965. Through inquiries to both the corporations and their auditors, Burton & Roberts determined the most common reasons for auditor changes were, respectively, changes in management and the need for additional services. They concluded that their examination offered no evidence that any threat to the proper exercise of the attest function existed.

Carpenter & Strawser [1971] examined the extent of displacement of smaller auditing firms with national firms by corporations that are going public. They sent questionnaires to corporations which went public in either the final quarter of 1969 or the first quarter of 1970. From this data Carpenter & Strawser concluded that smaller auditing firms were likely to be replaced when a corporation goes public.

The third study on auditor changes by Bedingfield & Loeb [1974] used the newly mandated auditor change information reported on the Securities and Exchange Commission (SEC) Form 8-K.[8] Their sample consisted of 250

---

[8]Effective October 31,1971 the SEC Release #34-9344 required the reporting of changes in the registrant's auditor on a Form 8-K within 10 days of the month of change. This release required the registrant to disclose whether in the eighteen months preceding the change there were any disagreements with their former auditor on any significant accounting or auditing matters, which if not resolved would have caused the former auditor to note this in the audit opinion.

auditor changes between November 1 1971 and February 1973. To obtain additional information on reasons for the changes they also sent questionnaires to the firms. In contrast to the work of Burton & Roberts and Carpenter & Strawser, Bedingfield & Loeb did not find an overwhelming tendency for companies to select a national firm as the new auditor. Furthermore, whereas Burton & Roberts concluded that fee competition seldom motivated auditor changes, Bedingfield & Loeb reported 47 percent of their respondents indicated fee competition as contributing to the auditor change decision. Bedingfield & Loeb conclude that the differences are likely caused by examining different populations; Burton & Roberts' study included only large firms, Carpenter and Strawser studied only firms that had issued securities for the first time, whereas Bedingfield & Loeb included all companies registered with the SEC that changed auditors.

Fried & Schiff [1981] performed the first study on the existence and degree of market reaction to auditor changes. They analyzed stock prices for both a sample of 48 publicly listed companies that switched auditors between 1972 and 1975 and a matched set of control companies that did not change auditors. Their analysis was restricted to firms that had price information available on the CRSP tapes. Fried & Schiff assumed that the general motivation for a change in

---

[8](cont'd) Subsequent amendments to this requirement included an extension of the disagreement period to twenty-four months, the mandatory disclosure as to whether the auditor change was recommended or approved by the firm's board of directors, and a recommendation that firms voluntarily disclose reasons for the auditor change.

auditors was to secure a more flexible interpretation and application of accounting standards and therefore hypothesized the effect of auditor changes on market values would be negative. Fried & Schiff's only exception to this was if the firm changed from a non-Big Eight to a Big Eight auditor and there was no reported auditor-firm disagreement. They argued that this type of change could result in a positive market reaction as the market would perceive the change as resulting in improved auditing service. They found some evidence of a negative market reaction at time of announcement for all auditor changes. However, partly as a result of insufficient sample sizes, there were no significant results.

In the next study on auditor changes, Chow & Rice [1982] focused on the influence of qualified audit opinions on auditor changes. All companies that had a qualified opinion (excluding consistency exceptions) in 1973 and all companies that changed auditors between the 1973 and 1974 fiscal year ends were examined. Their results support the contention that firms switch auditors more frequently after receiving qualified opinions. However, it was not found that firms that have received qualified opinions switch systematically to audit firms with a history of rendering proportionally fewer qualified opinions.[9] Finally Chow & Rice found no evidence that a company is more likely to

---

[9]Using logit analysis Chow & Rice identified Arthur Young, Coopers & Lybrand and Touche Ross as having a greater tendency to qualify opinions.

receive an unqualified opinion after an auditor change.

Danos & Eichenseher [1982] attempt to explain shifts in market shares of audit firms within the context of generalized economies of scale. They examine changes in audit firm market shares in 33 client industries over a seven year period (1972-1979). They posit that the existence of competition, equal operating efficiencies and scale economies will create an environment in which survival of audit service suppliers is primarily a function of audit firm size. Their findings indicate larger audit firms appeared to gain market shares overall; but in "non-regulated" industries, large industry specific market shares tended to erode. Danos & Eichenseher's results could imply, given that benefits of scale economies accrue only to the largest firms, that any positive market share held by non-Big Eight firms represents a continual disequilibrium in the market for audit services. However, we argue that product differentiation exists and this will confound the relationship between cost advantages and changes in market shares. Danos & Eichenseher admit this is a possibility, but did not know how to include direct controls for this condition in their tests.

A second examination of market reaction to auditor changes was performed by Nichols & Smith [1983]. Their sample consisted of NYSE & AMEX firms changing auditors during 1973 to 1979; 22 from Big Eight to non-Big Eight auditors and 29 from non-Big Eight to Big Eight auditors.

Using the Dopuch and Simunic [1982] framework discussed earlier, they hypothesized that a change from non-Big Eight to Big Eight auditor should impact positively on share price and a change from a Big Eight to non-Big Eight auditor should produce a negative market reaction. Their results are consistent with their predictions, however, they are not statistically significant. Additionally, their results fail to support the general Fried & Schiff [1981] argument, since a pervasive significant negative reaction was not observed.

The most extensive work on auditor changes was performed by McConnell [1983, 1984(a), 1984(b)]. He examined a large set of auditor changes for NYSE, AMEX and OTC firms occuring between January 1 1974, and December 31 1978, which was later extended to include the four years ending December 31 1982. McConnell's primary interest was in exploring the relationship between auditor changes and client-auditor disagreements, and market shares of Big Eight and non-Big Eight firms. He examined these issues for NYSE, AMEX and OTC firms separately and then compared the results. Of particular interest to this study, McConnell's results indicate statistically significant Big Eight audit client gains from non-Big Eight firms in NYSE and AMEX audit markets, but not in the OTC audit market. These results add further evidence that more factors are involved (possibly product differentiation) in auditor selection for OTC firms than economies of scale, as the above Danos & Eishenseher [1982] article posited.

The most recent study on auditor turnover, by Schwartz & Menon [1985], examined auditor changes by failing firms. Their sample consisted of 132 NYSE and AMEX companies that declared bankruptcy during the years 1974 to 1982. They also examined a set of non-bankrupt firms matched on industry and size. Their results indicated that failing firms had a greater tendency to switch auditors than did healthier firms. They also found that failing firms did display a preference to move to a different class of audit firms. Schwartz & Menon find a substantially greater proportion of formerly Big Eight audited companies selecting non-Big Eight auditors (48 percent) than existed in McConnell's study (17 percent).

The preceding review of major research on audit changes indicates there has been considerable interest in this topic. The work has been primarily empirical with little attention directed towards the development of underlying theoretical models. Additionally, we note that many of the results appear to be affected by the particular sample selected. The SEC's requirement that companies must report auditor changes on Form 8-K has brought additional information on these changes into the public domain. However, a complete and truthful reporting of management's rationale in auditor changes is unavailable (and would continue to be even if the SEC mandates that firms must report reasons for the change). Thus, based on our analysis of initial auditor choice, we develop a theoretical

framework which can potentially explain auditor changes.

2. THEORETICAL FRAMEWORK AND PREDICTIONS ON AUDITOR CHANGES

Over our partition of auditors there are four types of auditor changes that can occur. Firms using a Big Eight auditor can switch to another Big Eight firm or to a non-Big Eight firm. Similarily, firms using a non-Big Eight auditor can switch to another non-Big Eight auditor or to a Big Eight auditor.

We assume all auditor changes are executed due to a desire by management to maximize their utility. Changes within groups (Big Eight to Big Eight and non-Big Eight to non-Big Eight), may impact on the shareholders' expected wealth if the credibility of the audit changes. However, since it would be impossible to determine an exact distribution of all auditors from most credible to least credible, we are unable to predict how a given within group change would impact on shareholders' expected wealth. We assume that only in intergroup changes is it possible to observe the direction of the change in credibility and thus predict a potential impact on firm value. Furthermore, it is likely that an within group change will result in a only a marginal change in credibility, and thus a marginal change in expected wealth. Other reasons for such changes could include personality conflicts between auditors and management or new management may prefer to engage the auditors they utilized in a previous job. As noted earlier,

Burton & Roberts [1967] found one of the most common reasons for auditor changes was a change in management. Changing auditors for these reasons should not impact on investors' expected wealth. Consequently, we have not performed tests on these two intra-group auditor changes.

However, we do argue that when management changes auditors from a Big Eight to a non-Big Eight firm or vice versa, this change should produce an observable impact on stock market prices. As noted earlier, Nichols and Smith [1983] have hypothesized that a change from a non-Big Eight to a Big Eight auditor should impact positively on share prices and a change from a Big Eight to a non-Big Eight auditor should produce a negative market reaction. They argue that "a more credible audit should increase the market value of the firm (net of audit costs)" (p.535). Although we agree with their predictions we don't believe their rationale is adequate.

We believe that merely an increase in credibility should not be sufficient to cause a positive market reaction. If we assume that management had previously selected the auditor with the optimal level of credibility, given the structure of the firm, then an increase in credibility will result in additional costs with no offsetting benefits. This would result in a *negative* stock market reaction. Therefore, we must assume that an exogenous event has occured which caused management to change auditors. Since we have argued that management's selection

of the optimum credibility of an audit can depend on the firm's capital structure, we further argue that a change in capital structure *may* cause a change in auditor class.

To demonstrate the impact of an increase in external ownership on auditor choice, consider Figure 2, an extension of Figure 1. We assume that the firm initially has low external ownership and thus engages a low quality (non-Big Eight) auditor. As stated earlier the manager's optimization process will result in a firm of value OD with audit costs of M. A sale of stock externally will cause a drop in firm value as management will now make trade-offs between firm value and perquisites along the concave line segment emanating from point G.[10] After the change management will select the quantity of audit credibility that maximizes management's utility given the new ownership structure. The more costly and credible the auditor whom management selects, the greater the increase in firm value after the initial drop caused by the ownership change.

Management realizes that the increase in external ownership, other things remaining equal, increases the value of their perquisites and decreases the value of their residual ownership in the firm. We categorize managers into two basic types- those who obtain greater utility from perquisites and those who obtain greater utility from firm value. Furthermore, we assume that management alone knows

---

[10]Other researchers, including Myers and Majluf [1984], have demonstrated than an increase in external ownership will cause a decrease in firm value.

whether they obtain greater utility from perquisites or their residual ownership.

In terms of Figure 2, this means the manager may have a utility function which can be represented by the indifference curve labeled U^{FV} or by the indifference curve labeled U^{P}. If they are of type U^{P} they prefer perquisites, and hence will maintain a low credibility auditor with audit costs of P. Auditing costs of P with a low quality auditor may be greater than the original M if the proportion of external ownerhip change was sufficient to cause management to select a marginal increase in credibility. But if they are type U^{FV} and prefer firm value, they will increase firm value to OB by incurring auditing costs of N. Hence, if the desired increase in credibility is sufficient, this will require management to change from a non-Big Eight auditor to a Big Eight auditor. Thus an increase in external ownership may or may not cause an auditor class change. Certainly, there is evidence that an increase in external ownership can cause an auditor change. Often when firms first go public they switch from a non-Big Eight to a Big Eight auditor (see Carpenter & Strawser [1971]).

In order for a market reaction to occur on the day an auditor change is announced it is critical that investors cannot predict in advance management's type and preferences. We argue that management's previous selection of a non-Big Eight auditor did not necessarily signal that management is the type who prefer perquisites. It merely meant that given

management's utility function, the firms previous capital structure, and the costs and benefits of various levels of auditor credibility, that a non-Big Eight auditor was the optimal choice. Thus, a switch to a Big Eight auditor cannot be anticipated by investors even after they observe an increase in external ownership. Therefore, if management announces a switch from a non-Big Eight to a Big Eight auditor, we predict a positive stock market reaction in the announcement period.

Now we examine the impact of a decrease in external ownership of the firm. Figure 3 demonstrates the effect of the ownership change on management's auditor selection. We now assume the firm initially has high external ownership and thus engages a high quality auditor. The initial firm value is OB with audit costs of N. A repurchase of externally held stock will cause an increase in firm value, as management will now make trade-offs between firm value and perquisites along the concave line segment emanating from point H. Furthermore, the potential of a credible audit to increase firm value will be reduced since agency costs are reduced. Management realize that the decrease in external ownership has the effect of increasing the value of management's residual ownership relative to the value of their perquisites. Since all shareholders (including management) are harmed, in the sense that firm value decreases by management's consumption of perquisites, the manager will be motivated to consume less perquisites as

their ownership in the firm increases.

Nevertheless, as previously argued there are two types of managers, type U^{P}, who prefer perquisites, and type U^{FV}, who prefer firm value. In Figure 3 it can be seen that type U^{FV} manager will prefer to maintain a Big Eight (high cost) auditor despite the ownership structure change. But type U^{P} managers will maximize their utility by switching to a non-Big Eight auditor and paying auditing costs of M. The change in auditor class will reduce firm value from OD' to OD. Furthermore, consistent with increases in external ownership, we argue that investors will be unable to predict management's actions and preferences prior to the announcement of the auditor change. Thus we predict a negative market reaction will occur when a Big Eight to non-Big Eight auditor change is announced.

From above arguments it can be seen that not every change in capital structure will be accompanied by an change in auditor class. Management will have to evaluate the following: 1) the costs and benefits to the firm of engaging an auditor with a different credibility level than the one presently employed; 2) the impact the change in capital structure will have on managements ability to consume perquisites and conceal this fact in the financial statements; 3) the impact the change in capital structure will have on managements residual ownership in the firm; and 4) the impact of an auditor change on the managers utility function given the effects of 1), 2), and 3) above.

Management evaluates each of these factors then makes the auditor class change decision.

Thus the announcement of a change in auditor class provides a signal to the market about the manager type. But, given that firms have different streams of agency costs we expect for a change from Big Eight to non-Big Eight or vice versa, that some firms will react more positively (negatively) that others. Thus we expect a greater variance in the returns during the period of change than would exist in a control period prior to the change.

Given the above theoretical structure of the impact of auditor changes on the stock market we now empirically test our predictions on non-Big Eight to Big Eight and Big Eight to non-Big Eight auditor changes.

IV. SAMPLE SELECTION AND DATA COLLECTION

In order to select a sample of auditor changes a number of alternative information sources were considered. After a review of previous empirical literature on auditor changes and discussions with Donald McConnell[11] it was determined that the *SEC Daily News Digest* provides the most complete and accurate record of auditor changes by publicly traded firms.

As noted earlier, Securities and Exchange Commission (SEC) regulations require public companies to report auditor changes on Form 8-K within 10 days after the month of action. The *SEC Daily News Digest* publishes weekly a list of all such 8-K filings made with the Commission. The *Digest* was reviewed from January 1 1984 to December 31 1984, and all firms filing an 8-K for a change in their certifying accountant (auditor) were noted.

Standard and Poors' *Daily Stock Price Records* were then examined to determine which companies were both traded Over The Counter (OTC) and had available security price information. OTC firms were selected for several reasons. First, data from OTC firms allows us to exploit recent findings on size-dependent differential price reactions to information releases. Atiase [1980] shows that price reaction to annual earnings reports is, on average, greater for smaller stocks than for larger stocks. Grant [1980] also

---

[11]McConnell [1983, 1984(a), 1984(b)], an associate professor of accounting at the University of Texas at Arlington, has developed the most extensive data base of auditor changes, as discussed in the previous chapter.

shows that price reaction to annual earnings reports is, on average, greater for OTC stocks than for listed stocks. Atiase's and Grant's results are consistent since OTC stocks tend to be smaller than listed stocks. Richardson [1985] argues that a possible explanation for this phenomenon is that since small firms are less likely to be as closely followed by financial analysts as larger firms, the number of sources of information relevant to the valuation of small companies is limited. We believe that the release of information other than annual earnings may also evoke a size-dependent differential price reaction. Specifically, we argue that the announcement of a change in auditor class may have a greater impact on the valuation of a small company than on a large company. Consistent with this reasoning, Nichols & Smith [1983] also suggest it is possible that auditor credibility may be more important for smaller client firms. Thus we anticipate the use of OTC firms will provide statistically significant results.

Second, OTC companies typically are not of sufficient size that a large multi-office audit firm is technologically necessary. As discussed earlier, scale economies are therefore less likely to exist in the audits of small companies. Thus, the market for audit services for OTC companies should include both Big Eight and non-Big Eight auditors as efficient suppliers.

Third, OTC firms have largely been ignored by researchers because security return information is not

available on computer readable tapes. We believe that an examination of OTC firms may enhance the overall understanding of security prices. The above reasons suggest the possibility of interesting results from an examination of OTC firms.

It is likely that the requirement that firms be included in Standard and Poors' *OTC Daily Stock Price Records* has removed some of the smallest firms from the sample. However, since no alternative price information source was available these firms were, of necessity, eliminated.

For each remaining firm, *Who Audits America* was consulted to determine the identity of both the old and the new auditors. All firms switching from a Big Eight to another Big Eight auditor or from a non-Big Eight to another non-Big Eight auditor were eliminated from the sample. The 8-K's for the remaining firms were obtained from either the firms or the SEC.

The 8-K's were scrutinized to determine the earliest date on which information about the auditor change became publicly available. This date was typically the day that the new auditor was hired, the date of a board of directors' meeting or the day the auditor change was announced at the shareholders' meeting. Our choice of event date is consistent with Nichols & Smith [1983]. Fried & Schiff [1981] used the date of the 8-K filing as their announcement date. From our review of the actual 8-K's we determined that

the 8-K filing date and the date the change became publicly available are not always identical. Often the announcement date precedes the 8-K filing date. This could partially account for the difference between Fried & Schiff's and Nichols & Smith's results. Nichols and Smith also searched the *Wall Street Journal (WSJ) Index* for a period of six months prior to the date identified in the Form 8-K to determine if the information was publicly reported at some previous time. They found that in no case was there a news report of the change that was reported earlier than the date in the Form 8-K. Therefore, a search of the *WSJ Index* for this study's sample was not considered necessary.

In certain cases there were two possible announcement dates. Five firms terminated with their previous auditor prior to engaging a new auditor. In these cases, we selected the day the new auditor was appointed as our announcement date. Prior to this day it was impossible to determine if the firm planned to hire the same class of auditor or if they planned to move to a different class of auditor. Thus we expect any potential market reaction to occur when information about the new class of auditor is released. If information about the date the new auditor was hired was unavailable the firm was removed from the sample. Also, the board of directors at two firms approved an auditor change on a holiday or a Saturday. In these two cases the first trading day following the meeting was selected as the event date.

After the firms and event dates were identified, stock prices were collected from the *Daily Stock Price Records OTC*. The *Daily Stock Price Records OTC* list two different types of price information; high, low and closing prices for NASDAQ National Market Issues and bid and asked prices for the remaining firms. We utilized closing prices when available to calculate firm returns. The average between the bid and asked prices was used when closing prices were not available. Price information was collected for each firm for the two days before, the day of, and the day after the event date. From the price information, returns were calculated for the day before, the day of, and the day following the announcement. This three day period is the announcement period in the analysis described in the next chapter.

Returns were also calculated in a non-announcement or control period exactly four weeks prior to the three day announcement period. The control period was chosen to ensure the difference between returns in announcement and non-announcement periods was not influenced by the "weekend effect" (French [1980]). Additionally, four weeks prior to the announcement period was considered long enough that possible information leakage about the auditor change is unlikely, but short enough to allow us to make stationarity assumptions about the firms across the non-announcement and announcement periods.[12]

---

[12]One of the firms changing from a non-Big Eight auditor to a Big Eight auditor was added to the *Daily Stock Price Record* a day after the control period for this firm started. Consequently, the control period for this firm starts three

The final sample contains 44 firms changing from a non-Big Eight auditor to a Big Eight auditor (N-B) and 15 firms changing from a Big Eight auditor to a non-Big Eight auditor (B-N). Therefore, there are 132 (44 x 3) return observations in both the announcement and non-announcement periods for the N-B sample and 45 (15 x 3) in both periods for the B-N sample. A list of firms and event dates in the samples is provided in Table 1.

The daily returns were also used to calculate a three-day return for each firm in both the announcement and non-announcement periods. Thus, there are 44 3-day return observations in the N-B sample and 15 3-day return observations in the B-N sample.

Market returns corresponding to the firms' announcement and control periods were collected from the CRSP (Centre for Research in Security Prices) daily returns tape. Daily returns on the equally weighted market index were used in the analysis. These returns were also used to calculate a three-day market return. In the following chapter our method and hypotheses are described.

---

[12](cont'd) weeks and six days, as opposed to four weeks, prior to the start of the announcement period.

V. EMPIRICAL TEST METHOD AND HYPOTHESES

The major concern of event studies has been to assess the extent to which security price performance around the time of a firm-specific event has been abnormal. The traditional method of measuring abnormal performance has been to compare observed security returns to those which would have been appropriate given a model of *ex ante* expected returns.

Typically the parameters of the *ex ante* return generating process are estimated for each firm from a time series of the firm's returns. For example, Nichols & Smith [1983] use a market and risk adjusted model of the return generating process. The returns for each sample security in weeks -57 through -5 prior to the announcement of the auditor change date were regressed against the returns on the market portfolio (the Equally Weighted CRSP Market Index) during the corresponding calender weeks. This procedure provided regression coefficients used to estimate the expected security return in each event related week t beginning with week -4. The expected return was subtracted from the actual security return in week t, and the resulting residual provided a measure of the security's abnormal performance in that week. The residuals were normalized, aggregated across firms and then analyzed. By examining abnormal returns for the period 4 weeks before the announcement, Nichols & Smith could test if the auditor change information appeared to have been anticipated by

investors prior to the date it became public information. Examining abnormal returns after the announcement provides a test of market efficiency.

While other event studies differ on such things as the period over which the parameters are estimated, the exact specification of the return generating process, the use of daily, weekly or monthly returns, etc., the basic procedures remain the same.

In this study we utilize a different method to determine abnormal returns. Essentially, our analysis consists of comparing a cross-sectional regression of firm returns on the market return in an auditor change announcement period to a similar regression in a control period. Parameterization and estimation procedures are as follows.

Define $$a_{na} = E(r_{it}|na) - \beta_{na}\ E(r_{mt}|na) \quad (1)$$

$$a_{a} = E(r_{it}|a) - \beta_{a}\ E(r_{mt}|a) \quad (2)$$

where

$E(r_{it}|na)$ = expected return on security i for period t given period t is a non-announcement period.

$E(r_{it}|a)$ = expected return on security i for period t given period t is an announcement period.

$E(r_{mt}|na)$ = expected market return in period t given period t is a non-announcement period.

$E(r_{mt}|a)$ = expected market return in period t given period t is an announcement period.

β_{na} = the cross-sectional market beta, in a

non-announcement period.

β_a = the cross-sectional market beta, in an announcement period.

a_{na} = economic impact on expected firm return of disturbances not related to market return in a non-announcement period.

a_a = economic impact on expected firm return of disturbances not related to market return in an announcement period.

It is typical in event studies to assume the stationarity of β across time for one firm. The above model holds β stationary across firms, and we assume that β is the same in non-announcement and announcement periods ($\beta_{na} = \beta_a$).

To derive a relationship between equations (1) and (2) the relationship between auditor change announcement dates and market returns is examined. Some events, such as stock splits or dividend increases, could be more likely to occur during a positive market return. Consistent with our conceptual analysis of auditor changes, we argue no relationship is expected to exist in theory between the day an auditor change is announced and the market return. Therefore we assume in equations (1) and (2) that $E(r_{mt}|na) = E(r_{mt}|a)$.

Given $\beta_{na} = \beta_a$ and $E(r_{mt}|na) = E(r_{mt}|a)$, the following relationship between equations (1) and (2) exists:

$$a_a - a_{na} = E(r_{it}|a) - E(r_{it}|na) = \gamma \qquad (3)$$

where γ is the event effect. That is, γ represents the economic value of the auditor change as a percentage of initial security value.

To estimate the parameters, a_a and a_{na}, we assume each firms' returns are independently and identically distributed (i.i.d.) in cross-section. In the following we utilize two different models to estimate the parameters.

In the first method two cross-sectional market model OLS regressions are utilized to estimate the parameters:

$$\tilde{r}_{it} = a_{na} + b_{na}\,\tilde{r}_{mt} + \tilde{u}_i \qquad i=1,2\ldots n \qquad (4)$$

$$\tilde{r}_{it} = a_a + b_a\,\tilde{r}_{mt} + \tilde{v}_i \qquad i=1,2\ldots n \qquad (5)$$

where (4) is in the non-announcement or control period across firms and (5) is in the announcement period. $\tilde{u}_i$ is a mean zero, indepentently and identically distributed disturbance term for security i in the non-announcement period; $\tilde{v}_i$ is the same in the announcement period. Since we have assumed each firms' returns are i.i.d., a_{na}, b_{na}, a_a and b_a are the same across all firms i.[13]

Solutions to the least squares normal equations provide estimates of the parameters in (4) and (5). Specifically:

---

[13]The assumption that the betas (b_a and b_{an}) are the same across all firms is unrealistic but does not affect the analysis. This is because the beta in a cross-sectional regression has expected value equal to the average beta of all firms. See Clarkson and Thompson [1986] for proof.

$$\hat{a}_{na} = \bar{r}_{na} - \hat{b}_{na}\bar{r}_{m,na} \quad (6)$$

$$\hat{a}_{a} = \bar{r}_{a} - \hat{b}_{a}\bar{r}_{m,a} \quad (7)$$

Comparison of equation (6) to (1) and of (7) to (2) indicates the OLS estimates of a_{na} and a_{a} are $\hat{a}_{na}$ and $\hat{a}_{a}$. Furthermore, given our assumptions about the error terms, $\tilde{u}_{i}$ and $\tilde{v}_{i}$ in (4) and (5), the Gauss-Markov theorem shows these estimates are unbiased and have minimum variance when compared to all other unbiased estimators that are linear combinations of r_{i}.

In the second estimation method we aggregate the two models into a pooled model of the following form:

$$\tilde{r}_{it} = a_{a}\delta_{a} + a_{an}\delta_{an} + b_{a}\tilde{r}_{m,a} + b_{an}\tilde{r}_{m,an} + \tilde{e}_{it} \quad (8)$$

where a_{na}, b_{na}, a_{a} and b_{a} are identical to equations (4) and (5) and:

$\tilde{r}_{it}$ = return on security i in both announcement and non-announcement periods.

δ_{a} = 1 in an announcement period and 0 in a non-announcement period.

δ_{an} = 1 in a non-announcement period and 0 in an announcement period.

$\tilde{r}_{m,a}$ = corresponding market return if period t is an announcement period and 0 otherwise.

$\tilde{r}_{m,an}$ = corresponding market return if period t is a non-announcement period and 0 otherwise.

$\tilde{e}_{it}$ = a mean zero, i.i.d. disturbance term for security i.

Our model predicts: 1) a change from a non-Big Eight auditor to a Big Eight auditor should produce a positive market reaction and 2) a change from a Big Eight auditor to a non-Big Eight auditor should produce a negative market reaction. Our hypotheses can be couched in terms of the parameters of equations (4), (5), and (8). The alternate form of the hypotheses are:

$$H_{A1}: a_{a,N-B} - a_{na,N-B} = \gamma_{N-B} > 0$$
$$H_{A2}: a_{a,B-N} - a_{na,B-N} = \gamma_{B-N} < 0$$

where N-B refers to a non-Big Eight to Big Eight change and B-N refers to a Big Eight to non-Big Eight change. The null form of these hypotheses are:

$$H_{O1}: a_{a,N-B} - a_{na,N-B} = \gamma_{N-B} = 0$$
$$H_{O2}: a_{a,B-N} - a_{na,B-N} = \gamma_{B-N} = 0$$

A stronger test of our model is to perform a joint test on the above two predictions. This leads to a third hypothesis of the following alternate and null forms:

$$H_{A3}: \gamma_{N-B} - \gamma_{B-N} > 0$$
$$H_{O3}: \gamma_{N-B} - \gamma_{B-N} = 0$$

In Chapter III we also predicted there would be a greater variance in stock returns during the announcement period than would exist in the non-announcement period for both types of auditor changes. Therefore, we test the null hypotheses:

$$H_{O4}: \sigma^2_{a,N-B} = \sigma^2_{na,N-B}$$

$$H_{O5}: \sigma^2_{a,B-N} = \sigma^2_{na,B-N}$$

against the alternatives:

$$H_{A4}: \sigma^2_{a,N-B} > \sigma^2_{na,N-B}$$

$$H_{A5}: \sigma^2_{a,B-N} > \sigma^2_{na,B-N}$$

We also examine the hypothesis of greater variance in stock returns during the announcement period than the non-announcement period across both samples. The joint null and alternate hypotheses are:

$$H_{O6}: \sigma^2_{a,N-B} = \sigma^2_{na,N-B} = \sigma^2_{a,B-N} = \sigma^2_{na,B-N}$$

$$H_{A6}: \sigma^2_{a,N-B} \neq \sigma^2_{na,N-B} \neq \sigma^2_{a,B-N} \neq \sigma^2_{na,B-N}$$

To perform the tests on market returns both the separate model (equations (4) and (5)) and and the pooled model (equation (8)) were run using the daily returns and the three-day returns discussed in Chapter IV. The variance tests were run on the separate model only using both daily and three-day returns. The results are presented in Chapter VI.

VI. RESULTS

A. TESTS OF HYPOTHESES 1 AND 2:

Tables 2 and 3 contain the results of tests on H_1 and H_2, respectively. The parameter estimates, and the standard errors and t-values of these estimates are presented for separate and pooled models and daily and three-day returns. The parameter estimates are identical for separate and pooled models. The standard errors and t-values of these estimates are slightly different in the separate and pooled models because $\hat{\sigma}^2$ is influenced by all observations in the pooled model.

Table 2 contains evidence of a positive market reaction to a non-Big Eight to Big Eight auditor change. The event effect γ_{N-B} is .008121 and .021193 for daily and three-day returns respectively. The test statistic on γ was calculated as follows:

$$t = \frac{a_a - a_{na}}{\sqrt{[(SE(a_a))^2 + (SE(a_{na}))^2]}}$$

where $(SE(a_a))^2$ and $(SE(a_{na}))^2$ are the squares of the standard error of the coefficients. However, the t-values for each model and returns group (ranging from 1.108 to 1.278) are not significant at the .05 level of confidence assuming a one-tailed test and the degrees of freedom as noted on Table 2.

The market return coefficients, b_a and b_{na}, were examined to test the reasonableness of our assumption in

Chapter V that the cross-sectional beta in the announcement and non-announcement periods are equal. The t-statistics on $b_a - b_{na}$, were calculated using the above t test, and range from -.039 to -.5295 as noted in Table 2. Since we cannot reject the assumption that the betas are the same in announcement and non-announcement periods the data are consistent with our model.

Table 3 contains evidence of a negative market reaction to a Big Eight to non-Big Eight auditor change. The event effect γ_{B-N} is -.015499 for daily returns and -.044902 for three-day returns. However, as in the non-Big Eight to Big Eight sample these results are not significant at the .05 level. The t-values range from -1.1697 to -1.266, indicating only weak support for our hypothesis. The cross-sectional betas were examined as in the N-B sample to test the assumption of equality in announcement and non-announcement periods. The t-statistics on $b_a - b_{na}$, ranging from -.480 to .047, indicate the evidence is consistent with our assumption in both samples.

These results are consistent with Nichols and Smith [1983]. Their standardized residuals in the announcement week are positive for the non-Big Eight to Big Eight group and negative for the Big Eight to non-Big Eight group.

B. TESTS OF HYPOTHESIS 3

The weak support of our predictions on the impact of stock returns generated by the testing of H_1 and H_2 indicate that the joint test, proposed in H_3 will be useful. In Table 4 results for separate and pooled models, and daily and three-day returns are presented. The test statistic was a comparative t-test calculated as follows:

$$t = \frac{\gamma_{N-B} - \gamma_{B-N}}{S_P \sqrt{[1/N_{N-B} + 1/N_{B-N}]}}$$

where

t is distributed with $N_{N-B} + N_{B-N} - 4$ degrees of freedom.

N_{N-B} and N_{B-N} are the number of firms in the N-B and B-N groups respectively.

$S_P = \sqrt{\{[(N_{N-B} - 2)S^2_{N-B} + (N_{B-N} - 2)S^2_{B-N}]/[N_{N-B} + N_{B-N} - 4]\}}$

$S_{N-B} = SE(\gamma_{N-B}) \sqrt{N_{N-B}}$

$S_{B-N} = SE(\gamma_{B-N}) \sqrt{N_{B-N}}$

S_{N-B} and S_{B-N} are the cross-sectional standard deviations of γ_{N-B} and γ_{B-N} respectively,

S_P is the pooled cross-sectional standard deviation (Larsen and Marx [1981]).[14]

---

[14]An assumption necessary to use this t-statistic is that the standard deviations of both populations, N-B and B-N, are equal. A priori there is no evidence contrary to this assumption and therefore this t-test is considered appropriate.

The t-values of 1.7709 and 1.7661 for daily returns and 1.7167 and 1.7069 for three-day returns are all significant at a .05 level assuming a one-sided test. Therefore we reject the null hypothesis that the impact on firm returns for a non-Big Eight to Big Eight auditor change is the same as the impact of a Big Eight to non-Big Eight auditor change. The tests provide strong evidence that the increase in firm value is greater for the N-B sample than the B-N sample.

Nichols and Smith [1983] also performed a joint test on the difference between the residuals in both auditor change groups. Consistent with our analysis, they found the increase in firm value was greater in the N-B sample than the B-N sample. However, their t-value for the difference was only 1.133, which is not significant at the .05 level of confidence.

C. TESTS OF HYPOTHESES 4, 5 AND 6

Hypotheses 4 and 5 were formed to determine if returns are homoscedastic across announcement and non-announcement periods within each of the N-B and B-N samples. A F-test for equality of variances was calculated as follows:

$$F = S_a^2 / S_{na}^2$$

where S_a^2 and S_{na}^2 are the residual variances from the cross-sectional market model and

F is distributed as an F-statistic with $N_a - 2$, $N_{na} - 2$

degrees of freedom if the null hypothesis of equal variances is true.

This test was performed on the separate model using both daily and three-day returns in the N-B and B-N samples. Results are contained in Table 5. F values of 3.3505 and 2.7437 for daily and three-day returns respectively in the N-B sample are significant at the .01 level. This allows us to reject the null of equal variances in the N-B sample. The evidence supports the alternate hypothesis of increased variance in the announcement period.

F values of 1.4638 and 1.0119 for daily and three-day returns respectively in the B-N sample are not significant at the .01 or the .05 level. Thus we cannot reject the null of equal variances in announcement and non-announcement periods for the B-N sample. The variance is only slightly larger in the announcement period than it is in the non-announcement period. This provides very weak support for the hypothesis of greater variance in the announcement period.

Hypothesis 6 was formed to determine if returns are jointly homoscedastic for both samples in the announcement period versus the non-announcement period. A joint test under the hypothesis that all the variances (σ^2) are equal is:

$$F = \frac{S^2_{a,N-B} + S^2_{a,B-N}}{S^2_{na,N-B} + S^2_{na,B-N}}$$

where F is distributed as an F statistic with N_{N-B} + N_{B-N} - 4, N_{N-B} + N_{B-N} - 4 degrees of freedom.

As with Hypotheses 4 and 5, this model was performed on the separate model using both daily and three-day returns. The results are in Table 5. The F value of 1.984 for daily returns when compared to a critical value of approximately 1.43 for 173,173 degrees of freedom is significant at a .01 level. However, when compared to a critical value of approximately 1.554 for 55,55 degrees of freedom, the F value of 1.547 for three-day returns is not significant at a .05 level.

Since daily returns provide better estimates and more degrees of freedom greater emphasis should be placed on these results. Thus, the results of tests on hypotheses 4, 5 and 6 generate support for the argument that the variance of returns is greater in the announcement period than in the non-announcement period.

VII. SUMMARY AND CONCLUSIONS

This thesis has examined the stock market reaction to auditor change announcements in OTC firms. The general motivation stemmed from previous research on this topic that 1) failed to adequately motivate the empirical investigation and 2) found insignificant results.

The theoretical justification for expecting a market reaction is based on the existence of product differentiation in the market for audit services. Auditors are characterized by the amount of credibility they provide financial statement users in their assessment of financial statements. It is conjectured that client firms will demand more credibility as the proportion of external ownership in the firm increases. Since an auditor's work cannot be observed by financial statement users, the auditor must specialize in the amount of credibility they offer. The Big Eight firms are considered high credibility auditors; the non-Big Eight firms are assumed to offer low credibility.

An equilibrium is posited in which the management of firms with high percentage external ownership utilize Big Eight auditors and those with low percentage external ownership select non-Big Eight auditors. An auditor change is assumed to be the result of management's re-evaluation of their optimal residual firm value and perquisite consumption combination after a change in the ownership structure. If the external ownership increases, and management prefer perquisite consumption, management will not change auditors.

However, if management prefers residual firm value they will change to a high credibility auditor. This will result in an increase in firm value. Hence, a positive market reaction for non-Big Eight to Big Eight auditor changes is predicted. Since the management "type" cannot be determined in advance, the market will not be able to anticipate the change prior to the announcement. Similar reasoning is utilized to predict a negative market reaction for Big Eight to non-Big Eight auditor changes.

These predictions are tested on a sample of 44 non-Big Eight to Big Eight auditor changes and 15 Big Eight to non-Big Eight auditor changes in OTC firms. The standard event study method of abnormal residual analysis is replaced with a new technique in which cross-sectional market model regressions in the announcement and a control period are compared. The event effect is calculated as the difference between the intercept in the announcement period cross-sectional market model and the intercept in the control period cross-sectional market model. Parameterization and estimation of the event effect is described in detail.

Our empirical analyses on the market reaction to auditor changes are consistent with the predictions of our model. Furthermore, the magnitude of the difference in the reactions was statistically significant at a .05 level. This provides strong support for the general hypothesis of product differentiation in the market for audit services.

It was also predicted that returns would be more variable in the announcement period than in the control period. In the non-Big Eight to Big Eight sample there was strong evidence of increased variance. In the Big Eight to non-Big Eight sample only weak evidence was found in support of the hypothesis. However, joints tests are consistent with the prediction of increased variance.

A possible limitation of this research is that none of the firms in the sample were examined for evidence of a capital structure change prior to the auditor change. However, the purpose of this paper was to present a potential descriptive model supporting our predictions on the impact of auditor changes. Further tests on this particular model could include partioning a sample of firms changing auditors into 1) firms experiencing a change in capital structure and 2) firms with no change in capital structure. The model could then be further refined to allow separate predictions about stock market reaction for each group.

A second limitation of this research is that alternate models for understanding and predicting the impact of auditor changes on firm values were not examined. For example, auditor changes may occur in *anticipation of* a change in captial structure, not in *response to* an earlier captial structure change. This and other possibilities could be modeled to determine if we would always expect a positive market reaction to non-Big Eight to Big Eight auditor

changes and vice versa.

It is also possible that attention to these limitations could provide further understanding of why the difference in the variance of returns between the announcement and non-announcement periods, was stronger in the non-Big Eight to Big Eight group than in the Big Eight to non-Big Eight group. For example, perhaps the non-Big Eight to Big Eight group consists of different types of firms and partitioning the group may allow us to explain the increased variance.

In conclusion, we believe this thesis provides a contribution to accounting research. Further evidence on market reactions to auditor changes is presented. Additionally, a new method for event studies is introduced. This method can be directly applied to many other studies allowing an examination of markets previously not considered because of data collection problems.

TABLE 1

Sample Firms and Event Dates

Panel A: Non-Big Eight to Big Eight Sample

Name	Event Date
ABM Computer Systems	May 01 1984
American Bloodpressure Centers, Inc.	Jan 31 1984
American Solar King Corporation	Mar 16 1984
Art Explosion, Inc.	Mar 12 1984
AW Computer Systems, Inc.	Aug 22 1984
Billings Corporation	Jan 03 1984
CACI, Inc.	Mar 20 1984
Cadmus Communications Corporation	Sep 25 1984
Casey's General Stores, Inc.	Feb 28 1984
Cincinmati Microwave, Inc.	Jan 24 1984
Codercard, Inc.	Apr 23 1984
Cogenic Energy Systems, Inc.	Jun 12 1984
Commonwealth Bancshares Corporation	Jun 27 1984
Comprehensive Care Corporation	Jul 03 1984
Creative Consulting Corporation	Dec 08 1983
Flexible Computer Corporation	Jun 04 1984
Frey Associates, Inc.	Apr 05 1984
Genetic Dynamics Corporation	Aug 17 1984
Holly's, Inc.	Oct 15 1984
Hydro Optics, Inc.	Apr 16 1984
Kreisler Manufacturing Corporation	Mar 21 1984
Lesco, Inc.	Sep 27 1984
Lincoln Income Life Insurance Company	Feb 14 1984
Lucky Chance Mining Company, Inc.	Jun 22 1984
Marquest Medical Products, Inc.	Nov 26 1984
Minerals Engineering Company	May 21 1984
Newport Pharmaceuticals International, Inc.	Jan 24 1984
Osmonics, Inc.	Sep 14 1984
Penn-Pacific Corp.	Oct 07 1983
Pettibone Corporation	Nov 08 1984
Polycast Technology Corporation	May 21 1984
Robeson Industries Corp.	Dec 05 1983
S.A.L. Cable Communications, Inc.	Aug 15 1984
Shoppers World Stores, Inc.	Oct 01 1984
Software Services of America Inc.	Jul 30 1984
Southern Atlantic Corporation	Mar 20 1984
Spectrum Microwave Corporation	Oct 05 1984
Union Bancorp Inc.	May 07 1984
U.S. Minerals Exploration Company	Dec 07 1984
Universal Security Instruments, Inc.	Jan 03 1984
V Band Systems, Inc.	May 07 1984
Verdix Corporation	Jan 13 1984
Vuebotics Corporation	Jan 05 1984
Xenerex Corp.	Aug 21 1984

TABLE 1 continued

Sample Firms and Event Dates

Panel B: Big Eight to Non-Big Eight Sample

Name	Event Date
Angstrom Technologies, Inc.	Sep 06 1984
Crime Control, Inc.	Nov 05 1984
Digital Products Corporation	Jan 25 1984
Heritage Financial Corporation	Jun 21 1984
Inacomp Computer Centers, Inc.	Nov 06 1984
Isramco, Inc.	Dec 16 1983
Kreisler Manufacturing Corporation	Oct 18 1984
Marquest Medical Products, Inc.	Mar 01 1984
J. Michaels, Inc.	Nov 08 1984
Space Microwave Laboratories, Inc.	Aug 14 1984
Teleram Communications Corporation	Sep 19 1984
Tesco American, Inc.	Dec 30 1983
Uintah Energy Corporation	Nov 14 1984
U.S. Energy Search, Inc.	Aug 05 1984
Valley Forge Corporation	Apr 13 1984

TABLE 2

Tests of Hypothesis 1
Event Effect in the Non-Big Eight to Big Eight Sample

Panel A: Daily Returns

		Separate Model		Pooled Model	
Parameter	Parameter Estimate	Standard Error	t-value*	Standard Error	t-value*
a_a	.006078	.005561	1.093	.004481	1.3565
a_{na}	-.002043	.003077	-.6642	.004538	-.45035
$a_a - a_{na} = \gamma$	.008121	.006355	1.278	.006377	1.274
b_a	.30009	.95574	.31399	.77009	.38968
b_{na}	.34802	.64083	.54308	.94512	.36822
$b_a - b_{na}$	-.04793	1.1507	-.04165	1.2191	-.039

Panel B: Three-day Returns

		Separate Model		Pooled Model	
Parameter	Parameter Estimate	Standard Error	t-value†	Standard Error	t-value†
a_a	.017640	.016138	1.093	.013329	1.3234
a_{na}	-.003553	.010022	-.3545	.013712	-.25909
$a_a - a_{na} = \gamma$	.021193	.018997	1.1156	.019123	1.108
b_a	.36337	1.3135	.27664	1.0849	.33492
b_{na}	1.2478	1.0317	1.2094	1.4116	.88398
$b_a - b_{na}$	-.88443	1.67024	-.5295	1.7804	-.497

* 264-4=160 degrees of freedom
† 88-4=84 degrees of freedom

TABLE 3

Tests of Hypothesis 2
Event Effect in the Big Eight to non-Big Eight Sample

Panel A: Daily Returns

		Separate Model		Pooled Model	
Parameter	Parameter Estimate	Standard Error	t-value*	Standard Error	t-value*
a_a	-.006281	.010238	-.6136	.009392	-.6688
a_{na}	.009218	.008416	1.0954	.009341	.9869
$a_a - a_{na} = \gamma$	-.015499	.01325	-1.1697	.013246	-1.170
b_a	.95860	2.1384	.44828	1.9617	.48865
b_{na}	.83070	1.6644	.49910	1.8473	.44968
$b_a - b_{na}$	.1279	2.7098	.047	2.6946	.047

Panel B: Three-day Returns

		Separate Model		Pooled Model	
Parameter	Parameter Estimate	Standard Error	t-value†	Standard Error	t-value†
a_a	-.017636	.025266	-.698	.025192	-.70004
a_{na}	.027266	.024892	1.0954	.024965	1.0921
$a_a - a_{na} = \gamma$	-.044902	.035468	-1.266	.035467	-1.266
b_a	-1.1769	2.3993	-.49050	2.3923	-.49195
b_{na}	.60398	2.8234	.21392	2.8317	.21329
$b_a - b_{na}$	-1.78088	3.70516	-.48065	3.707	-.480

* 90-4=86 degrees of freedom
† 30-4=26 degrees of freedom

TABLE 4

Tests of Hypothesis 3
Joint Tests on the Difference Between the Market Reaction to an Auditor Change on N-B Sample v. B-N Sample

Panel A: Daily Returns

	Separate Model	Pooled Model
$\gamma_{N-B} - \gamma_{B-N}$	.02362	.02362
$S_P \sqrt{[1/N_{N-B} + 1/N_{B-N}]}$	.0133468	.0133788
t-value	1.7709*	1.7661*
degrees of freedom	173	350

Panel B: Three-day Returns

	Separate Model	Pooled Model
$\gamma_{N-B} - \gamma_{B-N}$	.066095	.066095
$S_P \sqrt{[1/N_{N-B} + 1/N_{B-N}]}$	.038534	.0387357
t-value	1.7167*	1.7069*
degrees of freedom	55	114

* significant at a .05 level assuming a one-sided test

TABLE 5

Variance of Stock Returns in
Announcement vs Non-announcement Periods

Panel A: Tests of Hypotheses 4 and 5

	N-B Sample		B-N Sample	
	Daily Returns	Three-day Returns	Daily Returns	Three-day Returns
S^2_a	.0040568	.011310	.0046520	.0093267
S^2_{na}	.0012108	.0041221	.0031781	.0092173
F	3.3505*	2.7437*	1.4638	1.0119
degrees of freedom	130,130	42,42	43,43	13,13

Panel B: Tests of Hypothesis 6

	Daily Returns	Three-day Returns
$S^2_{a,N-B} + S^2_{a,B-N}$	.0087088	.0206367
$S^2_{na,N-B} + S^2_{na,B-N}$	.0043889	.0133394
F	1.984*	1.547
degrees of freedom	173,173	55,55

* Significant at a .01 level

FIGURE 1

Costs and Benefits of Auditing in Firms
with Low and High External Ownership

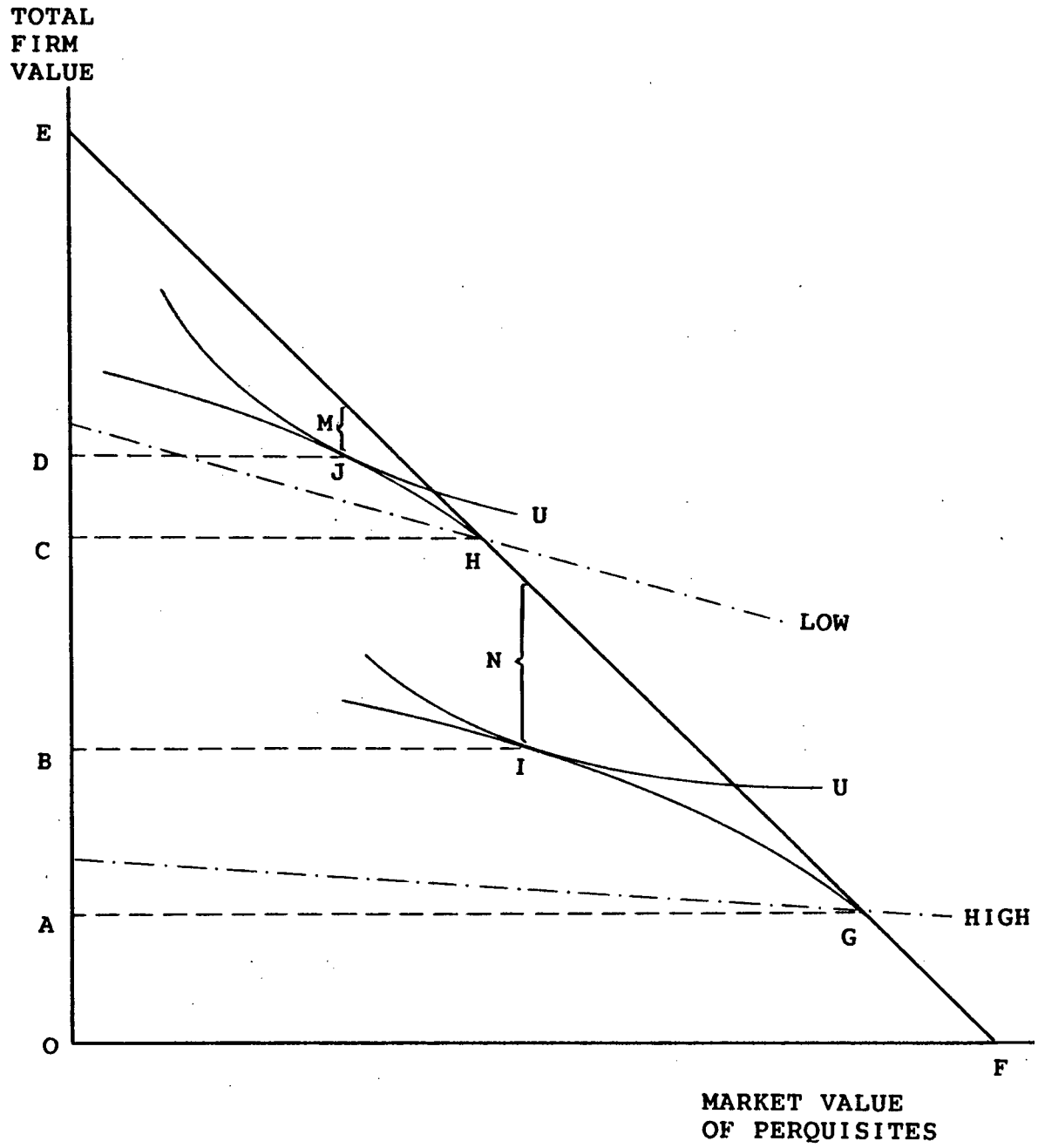


FIGURE 2

Impact of an Increase in the External Ownership of a Firm

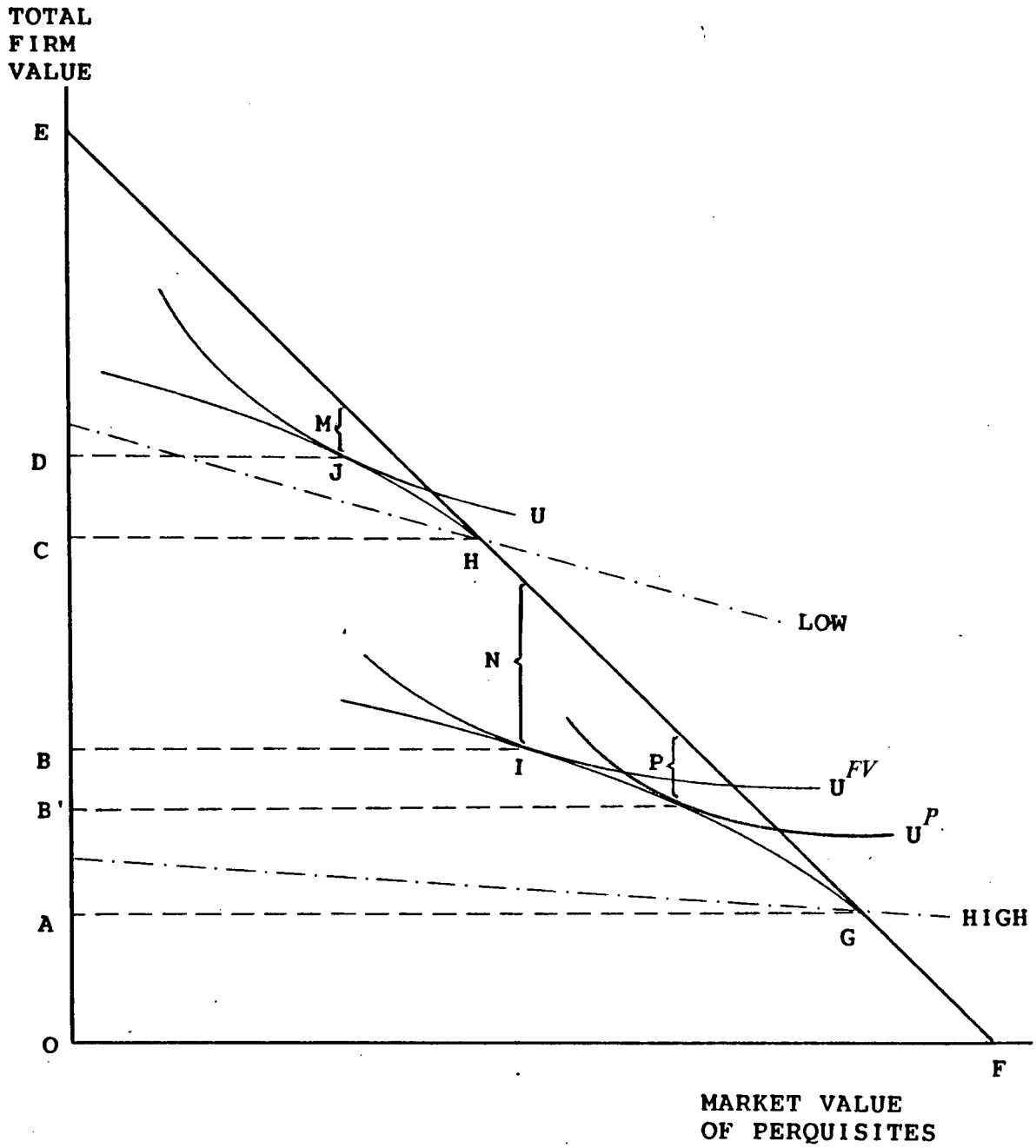
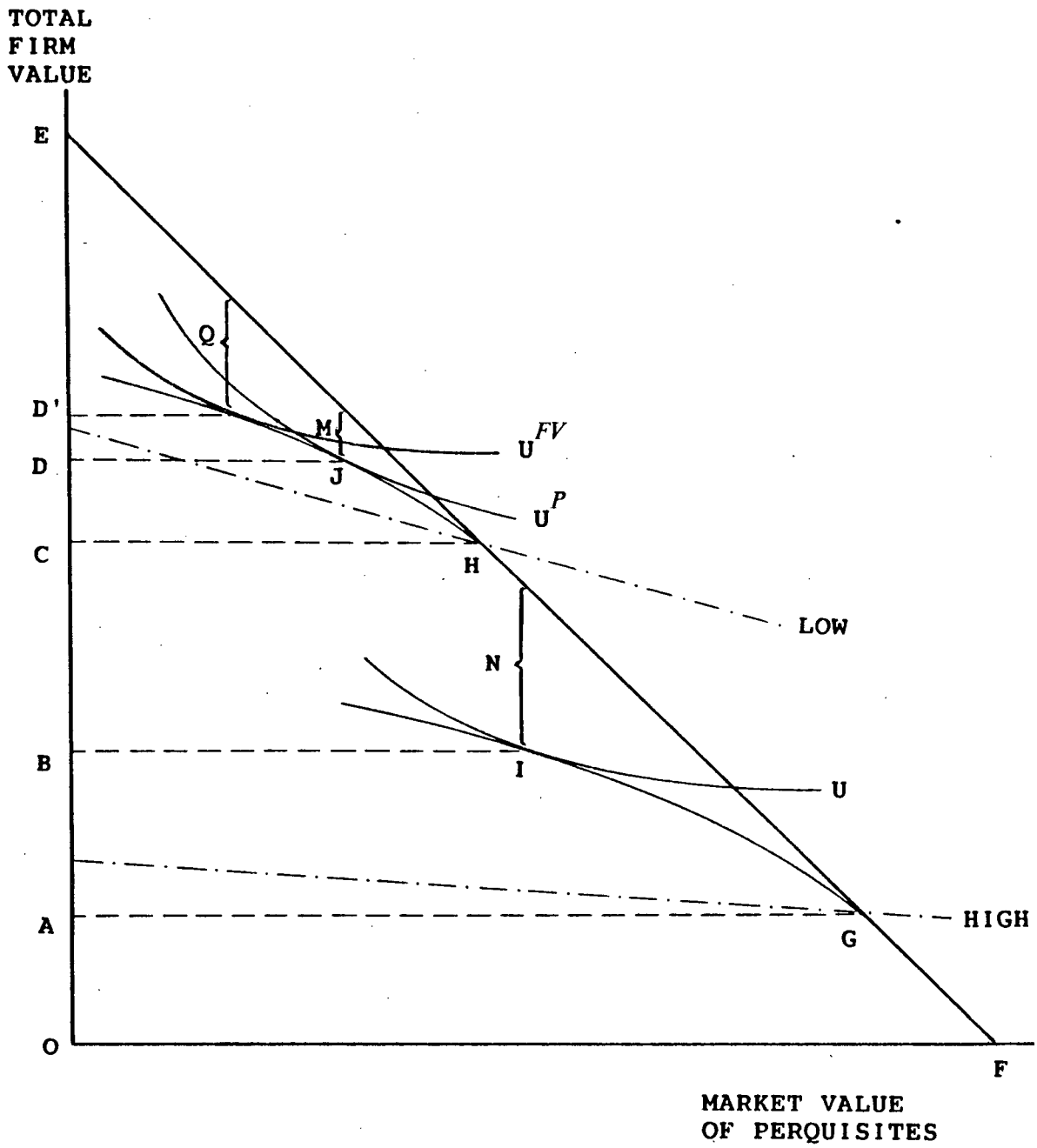


FIGURE 3

Impact of a Decrease in the External Ownership of a Firm



BIBLIOGRAPHY

Atiase, R., 1980, "Predisclosure Informational Asymetries, Firm Capitalization, Financial Reports and Security Price Behavior", Unpublished Ph.D. dissertation, University of California, Berkely.

Bedingfield, J. and Loeb, S.E., 1974, "Auditor Changes -- An Examination", *Journal of Accountancy* 137: 66-69.

Burton, J.C. and Roberts, W., 1967, "A Study of Audit Changes", *Journal of Accountancy* 123: 31-36.

Carpenter, C.G. and Strawser, R.H., 1971, "Displacement of Auditors when Clients go Public", *Journal of Accountancy* 131: 55-58.

Chow, C. and Rice, S., 1982, "Qualified Audit Opinions and Auditor Switching", *Accounting Review* 57: 326-335.

Clarkson, P. and Thompson, R., 1986, "The Security Market Implications of Differential Information", Unpublished working paper, University of British Columbia, Vancouver.

Commission on Auditors' Responsibilities (Cohen Commission), 1978, *Report, Conclusions and Recommendations* ,. New York: The Commission on Auditors' Responsibilites.

Danos, P. and Eichenseher, J.W., 1982, "Audit Industry Dynamics: Factors Affecting Changes in Client-Industry Market Shares", *Journal of Accounting Research* 20: 604-616.

DeAngelo, L.E., 1981a, "Auditor Independence, 'Low Balling', and Disclosure Regulation", *Journal of Accounting and Economics* 3: 113-127.

DeAngelo, L.E., 1981b, "Auditor Size and Audit Quality", *Journal of Accounting and Economics* 3: 183-199.

Dopuch,N. and Simunic, D., 1980, "The Nature of Competition in the Auditing Profession: A Desriptive and Normative View", from *Regulation and the Accounting Profession*, edited by J. Buckley and F. Weston, Lifetime Learning Publications, Belmont, California.

Dopuch, N. and Simunic, D., 1982, "Competition in Auditing: An Assessment", *Forth Symposium on Auditing Research* , University of Illinois.

Financial Accounting Standards Board, 1978, *Statement of Financial Accounting Concepts No.1* , Stamford,

Connecticut.

Francis, J.R., 1984, "The Effect of Audit Firm Size on Audit Prices", *Journal of Accounting and Economics* 6: 133-151.

Francis, J.R. and Stokes, D.J., 1985, "Audit Prices, Product Differentiation and Scale Economies: Evidence from the Australian Market", Unpublished working paper, University of Iowa.

French, K., 1980, "Stock Returns and the Weekend Effect", *Journal of Financial Economics* : 55-69.

Fried, D. and Schiff, A., 1981, "CPA Switches and Associated Market Reactions", *Accounting Review* 56: 326-341.

Grant, E., 1980, "Market Implications of Differential Amounts of Interim Information", *Journal of Accounting Research* 255-268.

Harris, S.P. (Ed.), 1985, *Who Audits America,* Data Financial Press.

Jensen, M.C. and Meckling, W.H., 1976, "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure", *Journal of Financial Economics* 3: 305-360.

Lancaster, K., 1966, "A New Approach to Consumer Theory", *Journal of Political Economy* 74: 132-157.

Lancaster, K., 1971, *Consumer Demand: A New Approach,* New York: Columbia University Press.

Larsen, R.J. and Marx, M.L., 1981, *An Introduction to Mathematical Statistics and Its Applications,* New Jersey: Prentice-Hall.

McConnell, D.K., Jr., 1983, *Public Company Auditor Changes and Big Eight Firms,* UMI Research Press.

McConnell, D.K., Jr, 1984a, "Auditor Changes and Related Disagreements", *Auditing: A Journal of Theory and Practice* 3: 44-56.

McConnell, D.K., Jr., 1984b, "Are the Big 8 Increasing Their Share of the NYSE, AMEX and OTC Audit Markets?" *Journal of Accountancy,* 178-181.

Myers, S.C. and Majluf, N., 1984, Corporate Financing and Investment Decisions when Firms have Information Investors do not Have", *Journal of Financial Economics* 13: 187-221.

Nichols, D.R. and Smith, D.B., 1983, "Auditor Credibility and Auditor Changes", *Journal of Accounting Research* 21:

534-544.

Richardson, G., 1985, "The Information Content of Annual Earnings for Large and Small Firms: Further Empirical Evidence", Unpublished working paper, University of British Columbia, Vancouver.

Schockley, R.A. and Holt, R., 1983, "A Behavioral Investigation of Supplier Differentation in the Market for Audit Services", *Journal of Accounting Research* 21: 545-564.

Schwartz, K.B. and Menon, K., 1985, "Auditor Switches by Failing Firms", *Accounting Review* 60: 248-261.

Simunic, D.A., 1980, "The Pricing of Audit Services: Theory and Evidence", *Journal of Accounting Research* 18: 161-190.

Simunic, D.A. and Stein, M., 1986, *Product Differentiation in Auditing: A Study of Auditor Choice in the Market for New Issues*, Vancouver: The Canadian Certified General Accountant's Research Foundation.

Standard & Poor's Corporation, 1983 and 1984, *Daily Stock Price Record: Over-The-Counter*, New York.

Taffler, R. and Ramalinggam, K., 1982, "The Determinants of the Audit Fee in the UK: An Exploratory Study". Unpublished manuscript, City University Business School, London.

Thompson, R., 1985, "Conditioning the Return-Generating Process on Firm-Specific Events: A Discussion of Event Study Methods", *Journal of Financial and Quantitative Analysis* 20: 151-168.

White, K., 1984, *UBC-SHAZAM* , University of British Columbia, Vancouver.