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Faculty of Commerce
Department of Business Administration

The University of British Columbia
1956 Main Mall
Vancouver, Canada
V6T 1Y3

Date October 15, 1985
Abstract

This thesis examines some of the relationships between the market structure of public auditing, auditor independence, and the rate of auditor changes over time. The first section of this thesis examines the relationship between market structure and auditor independence with a summary and extension of a recent paper written in collaboration with two other researchers. We concluded that competitive pricing will lead to auditor independence, whereas the existence of economic rents resulting from non-competitive pricing allows for the possibility of nonindependence. We also concluded that if a non-competitive market for audits changes to a more competitive state, then a period of disequilibrium occurs where independence may be compromised until the competitive equilibrium is achieved.

The second section of this thesis examines the effects of such a disequilibrium period on auditor independence, auditor fees, and in particular, the rate of auditor turnover. During the disequilibrium, price rivalry should drive auditor fees down to the competitive equilibrium. Incumbent auditors will either reduce fees to match the lower bids of their competitors, or client companies will change to nonincumbent auditors offering identical audit services at a lower price. A third possibility is that independence may be compromised if incumbents maintain higher fee structures in exchange for nonindependent actions. However, as not all auditors will be willing to risk
nonindependent action, an empirical implication would be that price rivalry not only lowers fees but, ceteris paribus, also increases auditor turnover.

The empirical portion of this thesis examines the effect of increased rivalry on auditor turnover. After a review of the existing literature on auditor changes, an empirical study of auditor changes between 1969 and 1983 was performed for a random sample of OTC firms. Assuming that the recent removal of AICPA prohibitions on competitive bidding, advertising and direct solicitation have acted as invitations for increased price rivalry, then we would expect to observe an increase in auditor turnover during the period examined. Annual turnover rates were computed, and a series of regression tests were performed using the Michigan Data Analysis System (MIDAS). The results of these tests failed to reject the hypothesis of no change in auditor turnover over the fifteen year period examined. Further market segmentation for changes within Big Eight auditors and for changes within non-Big Eight auditors did not alter the basic result of relatively constant auditor changes over time. Only the changes from non-Big Eight to Big Eight auditors indicated any statistically significant relationship to time. A number of potential explanations as to why this study did not produce the expected results of increased auditor turnover are examined, and areas for future research are discussed.
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Acknowledgement

I wish to thank the members of my committee, Patricia Hughes, Bill Stanbury and especially Dan Simunic, who acted as Chairman and who gave guidance and support throughout the project. Additional thanks are owing to Gordon Richardson and Mike Stein for their helpful comments, and to my family, Jim and Kate Fraser.
Chapter One
INTRODUCTION

Issues in Public Auditing

Over the past twenty years, considerable attention has been directed toward the organization and composition of the public auditing industry in the United States. Issues such as the apparent lack of auditor competition, an alleged erosion of auditor independence and continuing trends of market concentration are examples of such general scrutiny. And while the academic research on the industrial organization of auditing has been extensive, interest in such issues by no means has been limited to the academic community. Since the early 1970's, numerous other parties have indicated either a concern or interest in both the structure and behavior of the public auditing industry.

For example, the perceived anti-competitive nature of the auditing industry was challenged by the U.S. Federal Justice Department in 1972. In that year, the Justice Department charged that the Institute's Code of Professional Ethics Rule 3.03 prohibiting competitive bidding violated antitrust legislation. A consent judgment between the AICPA and the Justice Department settled the suit, and the bidding prohibition was removed. Another example of general public concern regarding the market structure of public auditors was the U.S. Senate's examination of market concentration in public auditing. In their 1977 report entitled "The Report of the Subcommittee on
Reports, Accounting and Management of the Committee on Government Operations" (commonly known as the Metcalf Report), they concluded that there was insufficient competition in audit markets, particularly among the largest national firms. Their conclusion reflected an attitude, still prevalent after the elimination of the bidding prohibition, that the national accounting firms (or the so-called Big Eight firms) represented an almost cartel-like oligopoly which still displayed little or no price competition in auditing.

At approximately the same time, the AICPA also examined the levels of competitiveness in auditing. The 1978 report of their investigation by the Commission on Auditor's Responsibilities (Cohen Commission) strongly disagreed with the conclusions of the Senate Subcommittee. Instead of finding evidence of insufficient price competition, the AICPA commissioners asserted that excessive price competition in auditing jeopardized audit quality.

The federal antitrust suit and the Metcalf and Cohen Commissions are notable examples of non-academic concern regarding the U.S. auditing industry. However, the general interest in the organization of public auditing did not end in the 1970's. In fact, the continuing success of the privately produced publication *Who Audits America* (first published in 1976), reflects the on-going interest in both the current composition and continuing changes in the public auditing industry. Additionally, the current uproar over "opinion-
shopping" now under review by the House Subcommittee on Oversight and Investigations of the Committee on Energy and Commerce, illustrates the continuing public concern over the behavior of auditors.2

**Auditor Independence**

The academic research into the structure and conduct of public auditors has been extensive.3 Of particular interest has been the potential erosion of auditor independence. An auditor is deemed to be "independent" of a given client if he is not influenced by the preferences of his client in the execution of his auditing and attest function. Thus an "independent" auditor is expected to be willing to report any breaches discovered in his client's financial reports, and be unwilling to "collude" with the client regarding any possible misrepresentation. On the other hand, an auditor who chooses to be "nonindependent" may alter his auditing actions or opinion based on the preferences of his client. Given the recognized societal value of the attest function of an independent auditor, breaches of independence are generally viewed with great concern. But certainly not all auditors are always perfectly independent. Thus the conditions leading to auditor nonindependence are of interest, not only to academic researchers, but such conditions are of consequence to the users of audited financial statements.4
The Role of the Independent Auditor

The role of the public auditor is well established in the modern business community. As a professional hired from outside of the firm, the auditor is expected to examine the accounting methods and procedures of the client company (audit) and submit a written statement (opinion) as to whether the financial statements accurately reflect the financial position of the firm. Such reports from "independent" outside auditors provide credibility as to the accuracy of the firm's financial reporting. Therefore audited financial statements are of interest to the owners of companies, especially where there is a separation between ownership and effective management, and are of particular interest to third parties, such as current and potential investors, creditors, employees, and governmental agencies.

However, there are a number of potential conflicts confronting the public auditor that may impede his ability to behave independently. Auditors are engaged and paid by the client firm; however, the owners of the firm are concerned about the impact that any negative information transmitted to third parties might have upon their profitability. Thus owners (and managers) may put pressure on their auditors to ensure suitable financial reporting. Whereas the third party users of financial statements demand impartial financial reporting, these users have limited leverage over auditors to ensure this result.
Furthermore, the outside auditor may get caught between the conflicting interests of owners (shareholders) and management. Although the owners' and managers' interests may directly correspond regarding the reporting to outside users, shareholders may use audited financial information in their evaluation and compensation of hired management. Thus, management may apply pressure on auditors to misrepresent their performance to the owners of the firm.

The most obvious method of pressuring auditors is through the threat of termination and/or the reduction of audit fees. And while auditors can either resign or qualify their audit opinions, the public auditor also confronts his own conflict of self-interest. The rationale auditor may choose to be "nonindependent" and maintain the client account rather than refusing client requests for misrepresentation and risk client defection. Such a choice would be based on the expected costs and benefits associated with either choice of action. Thus the institutional environment faced by the public auditor provides for potential "nonindependent" action.  

Market Structure and Auditor Independence

How the market structure of public auditing affects auditor independence has not been well addressed in the existing literature. To put it simply, does competition in auditing foster more or less auditor independence? At the present time, the literature provides, at best, only spotty and rather anecdotal evidence indicating that increased levels of
competition are often perceived to impede the independence of public auditors.

As actual independence versus nonindependent activity is difficult to gauge, empirical studies have generally examined users' perceptions of auditor independence. Whereas Shockley [1981] found evidence of users assessing a risk to auditor independence with increasing levels of competition, a recent study by Knapp [1985] found no conclusive evidence that the perceived independence of auditors is undermined in highly competitive auditing markets. Thus the existing literature on the perceived effect of market structure on auditor independence provides only a mixed response. Nonetheless, assertions of diminished auditor independence with higher levels of competition can still be found in various accounting periodicals.

Theoretical research on the underlying relationship between market structure and auditor independence is virtually non-existent. The sole exception is the unpublished paper of Gonenes and Kihlstrom [1982] that examined the effect of market structure on audit quality. As has been well demonstrated, auditor independence is a significant ingredient of audit quality. However, the concept of audit quality presented by Gonenes and Kihlstrom is largely undefined, and thus their analysis cannot be directly applied to the issue of auditor independence.
The research contained in this thesis addresses this issue of how the market structure of public auditing may affect auditor independence. For the first segment of this thesis work, the author recently collaborated with two other researchers on the construction of a model demonstrating how various market conditions provide incentives for either auditor independence or nonindependence. The result of this research effort is a paper by Stein, Nielsen and Simunic [1985] entitled "Market Structure and Auditor Independence." The entire text of that paper is included in Appendix A, but will be discussed and extended within this thesis. However, two main conclusions of that paper should be mentioned here. First, we concluded that a sufficient condition for auditor independence is the attainment of the competitive price in the market for public audits.\(^9\) This in itself is significant in that it generally refutes those arguments which claim that "competition" will lead to diminished auditor independence. We also made the distinction between rivalry, as the act of competing, and competition, as the attainment of the competitive equilibrium. Thus, we showed that when price rivalry is introduced into the auditing market, auditor independence may be compromised until fee competition drives the price to the competitive equilibrium. At that time, auditor independence is restored.\(^10\)

Empirical Effects of Price Rivalry

The second major component of this thesis extends the abovementioned research work of Stein, Nielsen and Simunic (hereafter referred to as SNS). Using the analyses of SNS as a
starting point, there are certain empirical ramifications that can be tested. One such empirical implication results from the second conclusion indicated above. The introduction of price rivalry into non-competitive auditing markets presumably would have the following three consequences. First, auditor independence may be compromised if incumbent auditors attempt to maintain clients at existing fee rates, by acquiescing to clients' demands for nonindependent action, rather than lose those clients to competitors offering identical audit services at a lower price. However, as not all auditors are willing to risk nonindependence (in other words, the costs of nonindependence outweigh any expected benefits), we would also expect to see rivalry driving down auditors' fees. Either the incumbent auditor will lower his price, or the client will switch to another competing auditor. Auditor switching would occur if the incumbent auditor does not match his competitors' lower bids, due to imperfect information regarding the lower bid amounts or if the auditor rationally chooses to maintain higher fees for certain clients. Such auditor behavior is plausible if the incumbent believes that lowering some current clients' fees may trigger similar demands for fee reductions from his remaining stock of clients (again, some level of information asymmetry is implied). Hence, in an audit market with perfect substitutes, an empirical implication would be that price rivalry not only lowers fees but, ceteris paribus, also increases auditor turnover.
Research Methods and Hypotheses

This question of auditor turnover is addressed in the second phase of this thesis research. Assuming that the extant audit markets can be successfully subdivided into groups of auditors providing substitutable products, and further assuming that the recent removal of restrictions on competitive bidding, auditor advertising and solicitation constituted an invitation for increased price rivalry, we examine whether the rate of auditor changes over time has, or has not, remained constant. Auditor information was procured for a stable set of companies reporting in Moody's OTC Industrial Manuals over the fifteen year period of 1969 - 1983. All firms which indicated auditor changes were then recorded by year, and further examined in an effort to distill only those changes apparently motivated by price considerations (that is, where fee levels changed because of a change in market structure) and not by other identifiable exogenous causes. Thus any auditor change resulting from an auditor merger or from a significant financial or structural event affecting the OTC firm was not considered as an "auditor change," as defined in this study.

The intent of this research was to determine whether we could observe an increase in the rate of auditor turnover during the fifteen year period examined. Thus the total auditor changes recorded from this sample were regressed over time. Additionally, in an attempt to further subdivide the existing audit markets to approximate markets with highly substitutable
products, we also performed regressions on the following sub-sectors of auditor changes:

[1] all auditor changes within the Big Eight auditing firms;
[2] all auditor changes within the non-Big Eight auditing firms;
[3] the sum of all auditor changes within the Big Eight and non-Big Eight auditing firms.

Our hypothesis predicts that increased auditor turnover should confirm that price rivalry occurred during the period examined, and that not all auditors chose nonindependence over the possible loss of client accounts.

Organization of this Thesis

The organization of this thesis is as follows. Chapter Two summarizes and discusses the main implications of the SNS paper. The major assumptions are specified and the empirical implications are noted. Chapter Three provides a review of the recent literature on auditor turnover, and the relevance of these earlier works to the tests performed herein. Chapter Four describes the research procedures followed, the statistical tests and major conclusions of the time series analyses performed. Chapter Five summarizes the results of Chapter Four and provides suggestions for further research. Chapter Six concludes.
Chapter Two

REVIEW OF THE STEIN, NIELSEN AND SIMUNIC ARTICLE

In this chapter, a brief summary and overview of the paper entitled "Market Structure and Auditor Independence" by Stein, Nielsen and Simunic [1985] (hereafter referred to as SNS) is presented. The main conclusions and major assumptions are reviewed, and the relevant empirical implications are discussed. One such empirical ramification is identified as the motivation for the additional research reported later in this thesis.

The SNS paper resulted not only from the apparent lack of theoretical research on the effect of market structure on auditor independence, but from what we saw as a common misunderstanding of the inherent relationship between these two factors. A recurring assertion in auditing literature has been that there is some inherent trade-off between competition and independence. This argument is well summarized by Shockley [1981, p.787]:

As competition for audit clients increases, clients' opportunities and incentives to replace incumbent auditors also increase. Reasons for the change may range from minimization of audit fees to a search for a more compliant auditor. Regardless, auditors' dependence on their clients may increase if they believe that other auditing firms would be happy to accept the engagement should a client become displeased.

As a result of such arguments, the question as to whether competition affects auditor independence has been included in at least two empirical studies examining users' perceptions of the
independence of public auditors. As indicated in Chapter One, the results of such tests have been mixed (Shockley [1981], and Knapp [1985]).

On the other hand, another set of authors have stated that there is basically no relationship between market structure and auditor independence. In their conclusion, Kay and Lavin [1979] asserted that while auditor independence is critical, "In our view, competition has very little to do with professional independence. . . ." [p.37] In fact, the authors continued that even the issue of independence is not a major problem in public auditing.

Given this lack of understanding and even consensus on the relationship between auditor independence and market structure, we felt that a general theoretical model was in order. Hence, in the SNS article we not only devised an operational definition of auditor independence, but we showed how independence may be compromised under various market conditions."  

**Definition of Auditor Independence**

As stated in the SNS article, "an auditor is independent of his client if the auditor's actions are not influenced by the preferences of the client." [p.3] However, while such a definition may be sufficiently broad to encompass virtually all issues of independence, it is not particularly useful in the construction of a theoretical model. Hence, in the SNS article, we "operationalized" the above definition in the following manner. First, we used the common assumption that auditors are
utility maximizers over wealth. Then we asked the question, when is it in the auditor's economic interest to be independent of his client? First, an auditor is deemed to be "incentive independent" when nonindependent action will make him worse off. Such an assessment is made by the individual auditor based on a simple examination of the expected costs and benefits of the nonindependent action with respect to his utility over wealth. The benefits of nonindependence include maintaining the client account and any accompanying current and future client-specific economic rents. The auditor's costs of nonindependence may include possible fines or legal costs if the nonindependent action is detected, and also the potential loss of other clients' rents caused by any damage to reputation and/or the loss of professional auditor status.\(^{15}\)

The second form of independence occurs when the auditor has sufficient bargaining power to resist client pressure for nonindependent action. This is termed "bargaining independence." In this case, the incumbent auditor not only examines his own costs and benefits, but also considers (or estimates) the client's expected benefits and costs of changing auditors. Thus the auditor will be "bargaining independent" if he judges the threat of termination to be not credible if, for example, the client faces significant transactions costs associated with changing auditors. These two operational definitions can then be translated into the simple mathematical model used by SNS.\(^{16}\)
Market Structure Effects on Auditor Independence

With an operational definition of auditor independence constructed, the issue of how market structure may affect independence can be analyzed. In the SNS article, we examined the paradigm cases of competition and monopoly, with also a brief review of collusive oligopoly. The intent was to determine under which market conditions incentive and/or bargaining independence exist. We concluded that competitive pricing (with the absence of economic rents) leads to incentive independence, whereas the existence of rents resulting from non-competitive pricing allows for the possibility of nonindependence. Nonindependent auditor action will result if the costs of nonindependence are considered "small" and client costs of defection are deemed "large." In this case, bargaining independence will not hold as the auditor knows that the client's threat of termination is credible. In summary, a major result of the SNS research is that "outside of the monopoly, mandatory audit case we conclude[d] that competitive pricing is sufficient to ensure independence and [economic] rents are necessary for nonindependence." [p.10]

Assumptions Employed by SNS

The above conclusions are predicated on a number of assumptions, several of which must be highlighted here. A central assumption used in the SNS paper stated that all audits were accomplished by a homogeneous technology. This assumption was useful in that we could then limit the discussion to a
single auditing market and thereby avoid the issues of product differentiation and scale economies. Obviously, this assumption must be relaxed before any extension of this research is applied empirically. An important example of the heterogenous nature of the auditing product is that in some areas, accounting standards are sufficiently vague to allow legitimate differences of opinions between auditors regarding reporting methods. Thus one auditor may perceive a potential action as "nonindependent," whereas another auditor may view the same action (such as the use of a particular reporting method) as an acceptable, independent action. Furthermore, it is commonly accepted in the actual auditing markets, that some amount of product differentiation exists between the services offered by the national and smaller, non-national auditing firms.

Finally, all of the modelling in the SNS article was based on a single period only. This assumption is too restrictive, especially when examining the issue of auditor turnover, where auditor selection may be motivated, at least in part, by multi-period considerations.

**The Costs of Nonindependence**

As indicated earlier, the size of the costs of nonindependence is crucial in the auditor's choice of action. If the costs of nonindependent action are deemed to be "large" (and therefore exceed the expected benefits), then incentive independence will ensure the auditor's independence. On the other hand, if the auditor assesses these costs as "small," then
there are two possible outcomes. If client defection is costly (to the client), then bargaining independence will occur. However, if the transactions costs faced by the client are not significant, then the auditor may be nonindependent if the client so requires.

This issue of the nature and magnitude of the costs faced by a nonindependent auditor is of some interest. In the SNS paper, we referred to DeAngelo's [1981b] argument that a primary cost of nonindependence is the resulting loss of rents from other clients. According to DeAngelo, the sum of these lost rents act as a collateral bond ensuring that auditors collecting large rents will not jeopardize them with nonindependent activity. Thus DeAngelo's argument would lead to the result that while individual rents create the possibility of nonindependence, the aggregate loss of rents will ensure incentive independence.

In the SNS article, we indicated a number of possible problems with the collateral bond argument. Nevertheless, the magnitude of these costs of nonindependent action remain unclear. This is left as an empirical issue that should be addressed in future research.

The Effects of Increased Rivalry

The final section of the SNS article returned to the central question of whether increased levels of competition promotes or limits auditor independence. To do this, we made the distinction between competition and rivalry. Rivalry is
competing; that is, rivalry is the set of competitive actions that takes place between firms as they try to increase their profit levels at the expense of rivals. Such actions can include both price and non-price competition through product differentiation. On the other hand, competition refers to the state of competitive equilibrium characterized by, among other things, the absence of economic profits.

In the SNS study, we showed that the argument that competition (actually rivalry) impedes auditor independence is based on a disequilibrium situation where independence may be compromised until the competitive equilibrium has been achieved. The following example serves to illustrate this disequilibrium scenario. First, let us assume that a theoretical market for audits is organized oligopolistically. Secondly, let us assume that there is no rivalry among the auditors, and that the oligopolists have sufficient policing mechanisms to ensure that no cheating takes place.

Given these assumptions, and recalling the SNS assumption of homogeneous technology, then the fees of such collusively organized oligopolists would be identical. If we also assume positive transactions costs for client companies changing auditors, then bargaining independence will hold. With cheating disallowed, no oligopolist would consider non-independence, and incumbent auditors would also know that their clients' threats of defection are groundless. Therefore an oligopoly operating under such hypothetical conditions provides for the opportunity
where the lack of price rivalry ensures auditor independence. (Additionally, if we hold constant other exogenous reasons for changing auditors, we would expect limited auditor turnover with such a collusive oligopoly.)

Let us now relax some of the restrictive assumptions employed above, so that we can more closely approximate the "real-world market" for audits. The assumption of an oligopolistic market structure in auditing is not unreasonable, and would conform with much of the anecdotal evidence cited throughout the 1970's. Certainly market concentration existed (and continues to exist) through the dominance of the national, or Big Eight, auditing firms. And furthermore, price competition was prohibited until the antitrust suit in 1972, with allegations of the continued lack of price competitiveness extending into the mid-1970's.¹⁸

Our second assumption used above indicated no rivalry among the oligopolistic auditors. Such a scenario may have been approached when professional ethics codes prohibited activities such as competitive bidding, advertising and direct solicitation that promote rivalry. However, other methods of non-price competition must have been available to auditors preceding the AICPA rule changes. Thus while we may be unable to state that rivalry was non-existent prior to the rule changes, we can safely assume that such rivalry was minimal compared to the period following the removal of the professional prohibitions.
The next two assumptions of no cheating among oligopolists and common technology across all audits are obviously too restrictive to approximate the "real-world." Cheating does exist, and different auditors face differing costs, thus allowing for some dispersion in fees. Hence, bargaining independence may not necessarily hold in a "real-world" auditing oligopoly. Nevertheless, with even some collusion between auditors, we would expect a reasonably stable market for auditors under an oligopoly, with limited fee dispersion and therefore enhanced levels of independence and minimal auditor turnover.

Now, assume that price rivalry is introduced into the market (to either our theoretical market, or to a less restrictive oligopoly situation) such that nonincumbent audit firms have incentives to lower potential fees. Auditors can no longer prevent client defection, and they may be willing to compromise independence in order to retain their existing stock of clients (and the accompanying rents). However, if the incumbent auditor is willing to reduce his fee to meet the competitor's bid, independence can be maintained. Therefore, as stated in the SNS study:

Thus the introduction of rivalry could produce the appearance of nonindependence as those auditors attempting to maintain rents cannot also maintain independence. . . . However, once rivalry forces fees to the competitive price, there will be no further price cutting and auditor independence will be guaranteed. [p.14]
To summarize, in the SNS article we argued that the assertion that competition (which should be rivalry) inhibits auditor independence is based on a disequilibrium situation. During the period of disequilibrium, we would expect to find the following events occurring. Auditor independence may be at risk in that incumbent auditors may choose nonindependent actions over the possible loss of economic rents. However, as all auditors will not be willing to risk nonindependence (where the costs of nonindependent action are considered "large"), we would then expect to see decreasing fees as the rents are eroded; and, ceteris paribus, we would also expect an increase in auditor turnover, as client companies move to nonincumbent auditors offering identical (independent) audit services at a lower price. Such increased turnover would result when incumbents do not match their rivals' lower bids because of either imperfect information regarding the lower bid amounts, or that incumbent auditors choose not to reduce some fees because they fear that their other clients will then demand similar fee reductions. However, once rivalry has completely eroded all economic rents and the competitive price is achieved, auditor independence would be assured, and auditor turnover should remain relatively constant over time.

This then leads to the empirical portion of this thesis. If the SNS conclusions regarding price rivalry are correct, then the abovementioned results to fees and auditor turnover should be observable. As fee data is very difficult to obtain, in this thesis the empirical investigation is limited to the secondary
set of observable events, the rate of auditor change. If auditor appointment is primarily motivated by price considerations, and if we can successfully segment audit markets into subdivisions where auditors are offering substitutable products, then with price rivalry present, we would expect to find an increasing rate of auditor changes.

In this chapter, we have provided a brief review of the Stein, Nielsen and Simunic article entitled "Market Structure and Auditor Independence." The main conclusions of the article were presented, and the empirical implications have been highlighted. One implication that results from increased fee competition, is that, ceteris paribus, the rate of auditor changes should increase while rivalry drives fees down to the equilibrium price. This then provides the theoretical framework that motivates the empirical portion of this thesis detailed in later chapters. However, before turning to that research endeavor, a review of the existing literature on auditor turnover is presented in Chapter Three.
Chapter Three

LITERATURE REVIEW OF RESEARCH ON AUDITOR CHANGES

The theoretical studies on auditor-client conflict by both Nichols and Price [1983] and Goldman and Barlev [1974] concluded that the asymmetry in power between the auditor and client may serve to compromise auditor independence in that the client's ability to terminate and replace an incumbent auditor increases the client's power over the auditor. Thus, the apparent relationship between auditor independence and auditor changes has been acknowledged in prior research. Furthermore, a number of empirical studies have been produced examining different aspects of auditor turnover. The most important of these studies regarding auditor changes are presented, in chronological order, in the remainder of this chapter.

The earliest research on auditor changes was produced by Burton and Roberts [1967]. Using a data base consisting of the Fortune 500 list of the largest industrial companies over the thirteen year period of 1952 - 1965, Burton and Roberts set out to accomplish two tasks. First, they wanted to systematically examine auditor changes, and they also sought evidence whether client companies were attempting to exploit the existing economic relationships to threaten auditor independence.

Burton and Roberts found 137 auditor changes occurring in the 620 companies listed in the Moody's Industrial Manuals during the thirteen year span. Of these 137 changes, 54 changes were due to CPA firm mergers, with the remaining 83 (non-merger)
changes broken down as follows: 70 companies moved to Big Eight auditors with 13 companies changing to non-Big Eight audit firms.

Burton and Roberts then attempted to determine the principal reason(s) for the 83 identified auditor changes. To accomplish this, their research consisted of the following three aspects: they analyzed the annual reports of the companies involved for the years both preceding and succeeding the change, they sent questionnaires to the companies asking for the principal reasons for the change, and lastly, they made inquiries to the auditing firms involved. From this research, they concluded that the most common reasons for auditor changes cited were, respectively, changes in management, and the need for additional services. Burton and Roberts found little empirical evidence that fee competition existed during the time period examined. As stated in their paper:

> It would appear, however, that fee competition was not a major factor in the switches. It is possible that auditor changes in small corporations are more affected by this factor. [p. 34]

Such a result is not unexpected, given that the AICPA prohibitions on competitive bidding were not officially removed until 1972.

The next study on auditor changes, by Carpenter and Strawser [1971], examined the extent of displacement of smaller auditing firms by national firms as a result of first time registration under the Securities Act of 1933 (a phenomenon
which is commonly known as "going public"). Carpenter and Strawser sent questionnaires to the chief financial officers of all companies which made initial filings in either the final quarter of 1969 or during the first quarter of 1970. They received 165 usable responses with 137 responses indicating national CPA firms as auditors. From this data, Carpenter and Strawser concluded that smaller auditing firms were likely to be replaced when a client company "goes public."

The third study on auditor changes was performed by Bedingfield and Loeb [1974] using the newly mandated auditor changes information reported on the SEC Forms 8-K. Their study, which examined 250 disclosures reported between November 1, 1971 and February 1973, sought to determine if national firms (defined as Big Eight plus other national auditing firms) were either gaining or losing clients. Additionally, they searched for evidence of auditor-client disagreements. Hence, beyond their examination of the Forms 8-K, they also sent questionnaires to each of the 250 listed companies.

The results of the Bedingfield and Loeb study can be contrasted to the earlier work of Burton and Roberts. Whereas Burton and Roberts found that the national firms had gained clients between 1952 and 1965, Bedingfield and Loeb found that while the national auditors had more clients (relative to the non-nationals) both before and after the reported changes, the nationals actually incurred a net loss of clients. Furthermore, whereas Burton and Roberts concluded that fee competition seldom
motivated auditor displacement, Bedingfield and Loeb reported that 47 percent of their respondents indicated fee competition as having to contributed to causing the reported auditor change. Again, such contrasting results are not surprising, in that the Burton and Roberts study was conducted prior to the removal of AICPA competitive bidding sanctions, whereas Bedingfield and Loeb examined auditor changes after the 1972 rule change.

Although the results of the Bedingfield and Loeb study were published in 1974, no other major papers pertaining to auditor changes were presented until 1979. This in itself is remarkable in that the mid-1970's represents a period when considerable attention was focused on the organization of public auditing. In particular, both the Metcalf and Cohen Commissions addressed the issue of whether auditors behaved competitively given the high levels of concentration attributed to the Big Eight firms.

The next study produced on auditor changes, prepared by Coe and Palmon [1979], presented an overview of empirical data on auditor changes. In their paper, Coe and Palmon examined two data bases for evidence of auditor turnover. The first data base consisted of large industrial companies (selected from the Standard and Poor's Compustat tape) which were listed over a twenty-four year period ending in 1976. The initial random sample included 500 NYSE, 200 AMEX and 300 OTC companies listed as of December 31, 1976. However, after their selection criteria was applied, the sample was reduced to 461 NYSE, 150 AMEX and only 115 OTC companies. These firms were then examined
in order to assess all auditor changes, plus those changes not resulting from CPA firm merger activity.

Coe and Palmon's findings indicated that Big Eight dominance generally increased over the twenty-four year period, and that auditor change rates over time could not be shown to be statistically related to macroeconomic variables such as the prime or inflation rates. Furthermore, the authors found no statistically significant relationship between auditor turnover rates and time, except that the rate of change for the Big Eight auditors was statistically related to time. And although Coe and Palmon asserted that the rate of Big Eight changes increased significantly during the last six years of the sample period, careful analysis of their data cannot substantiate this claim.

The second data base examined by Coe and Palmon contained all SEC publicly-listed companies changing auditors during the years of 1974 and 1975. Their results indicated that for the two years examined, this cross-section of SEC firms exhibited a higher turnover rate than was the case with the large company data that was examined over the twenty-four year period. Additionally, the Big Eight firms lost clients to smaller auditing firms during the two-year period. A second Coe and Palmon paper [1980] sought to obtain evidence regarding the linkage between auditor independence and auditor turnover. The two issues that they addressed were as follows: whether an auditor dismissal is more probable after the issuance of an unfavorable opinion; and, whether or not management is
successful in hiring a more compliant auditor after the termination of a predecessor who issued an unfavorable opinion.

The study was conducted by analyzing the audit opinions on financial statements for samples of both large and small industrial companies between 1973 and 1977. Coe and Palmon found that in the large company sample, where all of the companies were audited by Big Eight firms, dismissal of the Big Eight auditors was not significantly more likely as a result of issuing an unfavorable opinion. On the other hand, they found that the small industrial firms were more likely to dismiss both Big Eight and smaller auditors following the issuance of unfavorable opinions. Results for the second, subjective research question pertaining to clients' search for a more compliant successor auditor could not be analyzed statistically. Nevertheless, Coe and Palmon tentatively concluded that such attempts by auditees are not successful.

In the following year, Fried and Schiff [1981] examined empirical evidence on the existence and degree of market impact of the SEC disclosure requirements concerning auditor changes (as reported in the SEC Forms 8-K). In particular they sought to determine if the disclosure requirement of reporting auditor-client conflicts preceding auditor changes provided an information signal to the market. For their study, Fried and Schiff analyzed stock prices for both a sample of 48 publicly-listed companies that switched auditors between 1972 and 1975, and for a matched set of control companies that did not change
auditors. Of the 48 companies that did change auditors, 25 firms stated no auditor-client conflict existed prior to the auditor dismissal, whereas 13 companies reported disagreements with their previous auditors.\textsuperscript{22}

Using a series of multivariate tests, the authors found some evidence of a negative market reaction around the time of the announcement of the auditor change for those companies that did switch auditors. However, in specific tests for size and reported conflicts preceding the auditor change, Fried and Schiff found no relationships of statistical significance. Thus, they acknowledged that interpretation of their general result was difficult as the motivation for the negative market reaction remained unclear.

The next study on auditor changes, by Chow and Rice [1982], returned to the possible relationship between auditor turnover and the issuance of qualified auditor opinions. The authors sought empirical evidence on whether companies tend to change auditors resulting from the issuance of a qualified opinion. They also hoped to determine whether auditing firms differ in their propensity to issue qualified reports. Finally, they examined whether, after an auditor change, a client company was more likely to receive an unqualified opinion from the succeeding auditor.

For their research, Chow and Rice collected data on all SEC companies listed in the Disclosure Journal between the 1973 and 1974 fiscal year-ends. The resulting 9,460 company reports were
then categorized by qualified and unqualified audit opinions, and by auditor changes and non-changes. From the results of their chi-square test for independence, they concluded that changing auditors is not independent of receiving a qualified audit opinion. Furthermore, using a logit analysis they found that audit qualification was the only significant variable in audit switching, when compared with such variables as a management change, merger activity, new financing, an accounting policy dispute, or any other item identified by management as a reason for changing auditors. Fee disputes, as a potential reason for auditor changes, was not examined.

To address the question as to whether auditors differed in their propensity to issue qualified reports, Chow and Rice again used a logit analysis, with the results that three auditors were identified as being more likely to issue qualified reports. Finally, the authors used a chi-square test to determine if successor auditors tend to issue more unqualified opinions. Chow and Rice found no evidence that a company is more likely to receive an unqualified opinion after an auditor change.

The most extensive research study on auditor changes was published by McConnell [1983]. Based on his doctoral thesis, McConnell sought to extend much of the research work discussed above, by closely examining a large set of auditor changes occurring between January 1, 1974 and December 31, 1978. The data sets examined by McConnell over the five year period included all NYSE and AMEX auditor changes, and a large sample
of OTC changes. The actual number of auditor changes that were subsequently analyzed via the financial statements and SEC Forms 8-K and 10-K were as follows: 205 NYSE auditor changes, 277 AMEX changes, and 406 OTC changes (or approximately 20 percent of the total OTC changes population.)

McConnell separated his research into four phases. First, he prepared descriptive tabulations for each of the three data sets in terms of significant disagreements preceding the reported changes, and for the occurrences of unqualified and other-than-unqualified opinions. Secondly, McConnell performed statistical tests with the intention of examining and comparing each data set regarding the following areas: the existence of significant disagreements preceding the auditor changes, and whether these were disclosed by footnote by the successor auditor; whether an other-than-qualified opinion preceded the change; whether the auditor change was either recommended or approved by the client's Board of Directors; and, whether the reasons for the auditor change were voluntarily given. Each of these research issues were tested for statistical significance for each population examined, and also between the three populations. Thus a total of twenty-five chi-square tests were performed in order to determine whether or not statistically significant differences existed among the three data sets in terms of the issues indicated above.
In the third section of his research, McConnell sought evidence of increasing Big Eight dominance by examining each data set for auditor changes to and from Big Eight and non-Big Eight auditors. And lastly, McConnell examined and compared the extent of auditor-client conflict in each of the three data sets.

McConnell's major results indicate that the auditor changes by OTC firms reveal significantly lower disagreement rates than for either the NYSE or AMEX companies changing auditors. Additionally, from the auditors' perspective, Big Eight firms experienced significantly more disagreements prior to auditor termination than did the smaller auditing firms. Furthermore, McConnell found that the NYSE firms had the least number of other-than-unqualified audit opinions preceding auditor changes, with OTC firms experiencing the greatest number of other-than-unqualified opinions. No significant difference between Big Eight and non-Big Eight auditors was found regarding the incidence of other-than-unqualified opinions preceding an auditor change.

From the results of McConnell's third phase of research, he found that there was not a significant exodus from non-Big Eight to Big Eight auditors, or vice versa. Within the different populations, both the NYSE and OTC firms tended to engage a Big Eight firm if the predecessor was Big Eight, or hire a smaller firm if the predecessor was a non-Big Eight auditor. Only in the AMEX population was the choice of successor not conditional
on the position of the preceding auditor. Furthermore, McConnell found that the OTC companies seemed the most inclined to maintain the status quo. As stated in his monograph:

The lowest number of net changes between auditor tiers was observed among OTC registrants. Furthermore, whereas NYSE and AMEX auditor changes resulted in net gains for Big Eight auditors, the Big Eight lost a net of two OTC engagements. [p. 131]

McConnell's study on auditor changes represents the most ambitious empirical investigation to date. He used a very large data base and he carefully applied statistical methods to analyze a number of research areas. However, one issue that he did not examine was the rate of auditor changes over time. This omission is not surprising in that, similar to Coe and Palmon [1979], McConnell was not testing any general theories. Rather he has presented and organized a significant amount of empirical information including statistical analyses of certain issues of interest. Additionally, McConnell's time frame was constrained by the lack of data or by data errors prior to 1974, thus limiting the time range of his study to a five year period.

The most recent study on auditor turnover, by Schwartz and Menon [1985], examined auditor changes by failing firms. The authors collected a sample of 132 NYSE and AMEX companies that declared bankruptcy during the years 1974 to 1982. Utilizing information from annual reports, Forms 10-K's, and proxy statements, Schwartz and Menon used a matched-pairs test to compare the incidence of auditor switching between failing and
healthy firms. Their results indicated that failing firms had a significantly greater tendency to switch auditors than did the healthier firms. They also found that failing firms tended to choose a new auditor-type (that is, either Big Eight or non-Big Eight) in replacing a terminated auditor. This tendency was significantly more pronounced for companies changing from non-Big Eight to Big Eight auditors. Thus the authors concluded:

[T]he incentives behind auditor switching can vary depending upon the financial condition of the firm. This suggests a need to control for the presence of corporate financial distress while investigating the effect of other possible variables that may be associated with the phenomenon of auditor switching. Focusing attention on situational or contextual variables that may influence auditor switching should contribute to developing a theory of auditor switching. [p.260]

Finally, Schwartz and Menon found that neither audit qualifications nor management changes were statistically associated with auditor displacement. They conjectured that service and fee competition may become relatively more important in auditor selection for firms experiencing financial distress.

The preceding review of the major research studies on auditor changes indicates that there has been considerable interest in this topic over the past two decades. However, virtually all of the work has been empirical, with little attention directed toward the development of any underlying theoretical models. Furthermore, much of the attention has been focussed on either the dominance of the Big Eight auditing firms, or the probability of an auditor change following the
issuance of an other-than-unqualified auditor opinion. Only Coe and Palmon [1979] investigated auditor turnover rates where they found only limited evidence of increased auditor turnover over time for Big Eight auditors. Additionally, the evidence presented regarding audit fees motivating auditor changes has been inconclusive. Thus the empirical portion of this thesis refers to only a limited portion of the work cited above. Nevertheless, the empirical work described in Chapter Four must be seen as both a result of, and an extension to, the research efforts cited in this chapter.
Chapter Four

EMPIRICAL RESEARCH METHODS AND RESULTS

In this chapter, an empirical study of auditor turnover rates is presented. The study involved the collection and analysis of auditor change information for a sample of publicly-listed firms, over a time period of assumed increased price rivalry. Statistical tests were then performed to determine if any trends in auditor changes existed over the fifteen year period examined. Thus, in this chapter, the motivation for this study is reviewed, and the major assumptions and research procedures are described. Finally, the empirical hypotheses, statistical tests and results are presented.

The literature review presented in the preceding chapter provided an overview of the research into auditor changes over the past two decades. The work detailed here should be considered as an extension of the studies discussed in Chapter Three. In particular, a number of the methods employed here result from the earlier efforts of Burton and Roberts [1967], Coe and Palmon [1979], and Schwartz and Menon [1985]. However, much of the past research has not pursued the testing of any hypotheses; rather, they have been largely descriptive studies, reporting on certain aspects of auditor changing behavior. The study presented here differs in that the intention is not to simply generate more descriptive material on auditor turnover. Instead, the hypotheses tested extend from the theories developed in the SNS article reviewed in Chapter Two. The
theoretical framework that motivates this empirical study is briefly summarized below.

**Summary of Theoretical Hypotheses**

Auditor independence may be compromised when price rivalry is introduced into auditing markets. A disequilibrium results, where auditors cannot simultaneously maintain their existing economic rents and independence from their clients. Therefore, this disequilibrium implies the possible erosion of auditor independence, diminished rents through decreasing fees, and, ceteris paribus, increased auditor turnover. Client firms will switch auditors if incumbents do not match their rivals' lower bids because of either imperfect information regarding the lower bid amounts, or because incumbent auditors rationally decide to forego some client accounts rather than risking fee reductions on their remaining stock of clients.

As not all auditors will risk nonindependence, the primary effect of price rivalry should be the erosion of economic rents through diminished fees. However, as fee data is largely unavailable, such an examination warrants a research endeavor beyond the scope of this research project. Therefore, this study examines the secondary effect of price rivalry on auditor turnover.

Once rivalry drives prices down to the competitive equilibrium, auditor independence will be restored and both fees and auditor turnover should remain relatively constant. Thus, if the primary motivation for auditor selection is price, and if
audit markets can be successfully segmented into sub-markets of auditors offering substitutable audit services, then with the introduction of price rivalry we would expect to observe an increased rate of auditor changes.

The above summary not only suggests the general direction of the empirical work performed here, but it also contains the major assumptions used in this research project. Each of these assumptions must be discussed in turn.

Assumptions Employed in the Empirical Study

The first major assumption employed in this study states that price is the primary factor used by auditees in the selection of an auditor. As was demonstrated in Chapter Three, the empirical results pertaining to the reasons for auditor changes have been mixed. Whereas Burton and Roberts' results [1967] confirmed that fee competition was an unimportant factor in auditor selection prior to the 1972 AICPA rule change, subsequent studies by Bedingfield and Loeb [1974] and Schwartz and Menon [1985] concluded that price considerations were important in at least some auditor changes. Furthermore, the evidence regarding other causes for auditor switching, such as the role of other-than-unqualified audit opinions preceding an auditor change, have also been inconclusive. Thus, from the studies published to date, we cannot conclude with certainty what constitutes the primary motivation in auditor selection. Therefore, in the absence of concrete evidence to the contrary, the common micro-economic assumption of price as the primary
factor in product selection is employed in this research study. The validity of such a simplifying assumption must remain untested at this time.

The second assumption used in this study implies that auditing markets can be segmented into sub-markets where the auditors are offering near-perfect substitutes within these sub-markets. This assumption is supported by recent research indicating that product differentiation exists within the general market for audit services.\textsuperscript{25} In the U.S. auditing market, where audit services are performed exclusively by Certified Public Accountants (CPAs), a common division is made between the services offered by the Big Eight or national auditing firms, and between the smaller, local and regional, auditors. The national auditing firms are of sufficient scope and size that each may singularly undertake a major audit of any of the largest international corporate clients. On the other hand, the local or regional auditing firms are generally unable to audit any significant number of the largest clients. Thus, the domination of Big Eight auditors is most pronounced in the market for the largest corporate client accounts.

Given the size and scope differentials between the national and non-national auditing firms, it may not be appropriate to examine only the total (un-segmented) auditor changes in our analysis of auditor turnover. Therefore, an assumption used here is that we can successfully subdivide the overall market for audits into sub-markets of auditors offering substitutable
audit services. One such division that is made here is between the Big Eight and non-Big Eight auditors.

The third major assumption implicit within this research project is that we can identify and examine a period of time which contains an observable change in fee competition. Recall that we are searching to discover if any trends in auditor changing exist during a period of increased price rivalry. Our theory predicts that rivalry will increase auditor turnover until the competitive price is achieved. In this study, we assume that the recent removal of AICPA prohibitions on competitive bidding, advertising and direct solicitation have acted as invitations for increased price rivalry. As these sanctions were removed in 1972, 1978 and 1979 respectively, we would expect to observe some increase in auditor turnover during the 1970's. Thus, our analysis of auditor changes examines the rate of auditor turnover from 1969 to 1983.

The final assumption employed in this empirical study concerns the behavior of the rate of auditor changes once the competitive equilibrium has been attained. Whereas we would expect some indication of increased auditor turnover during a period of price rivalry, auditor turnover should remain relatively constant at equilibrium. With identical pricing and no economic rents to protect, auditors operating at the competitive equilibrium have no incentives to behave non-independently and risk any costs associated with non-independent actions. However, this does not necessarily imply zero auditor
turnover at equilibrium. If we assume that not all auditors uniformly agree as to what constitutes independent versus nonindependent behavior, then this implies that the costs of nonindependence are specific to individual auditors. Therefore the client companies, although facing identical fee structures, may engage in auditor switching as they search for independent auditors who agree with them on these contentious reporting issues. Such behavior might resemble the currently disputed phenomenon of "opinion shopping." Thus, at the competitive equilibrium we would expect to find some constant, positive rate of auditor turnover.

Sources of Data

In order to examine auditor changes over time, a number of possible data sources were considered for this research study. One potential data set would include all auditor changes for publicly-listed firms as recorded in the SEC News Digest. Such a data set was used by McConnell [1983] for the five year period ending in 1978, where he found a total of approximately 3,300 auditor changes. In order to obtain such a data set, the daily News Digest would have to be reviewed over a sufficient time period such that trend analysis could be performed. However, as the News Digest does not provide auditor details, further examination of the SEC Forms 8-K would be required. Such an extensive data set was not considered for this project as a full set of SEC Forms 8-K are not available locally. Nevertheless, such an extension of McConnell's work would be a welcomed addition to the existing body of literature.
Another possible source of data for auditor change information is available for the NYSE, AMEX and OTC firms listed in the Moody's Industrial Manuals. The studies by Burton and Roberts [1967] and Coe and Palmon [1979] used the Moody's Manuals as their primary sources of data. These manuals provide general financial information, including auditor listings, for a large number of industrial firms on an annual basis. However, there are a number of disadvantages associated with using the Moody's Manuals. First, they only record information for the largest and most actively traded firms. Thus even a sample selected from the Moody's OTC Industrial Manuals will not contain smaller companies that change auditors. This is significant in that McConnell [1983] showed that OTC firms have the greatest overall rate of auditor changes (where his sample of OTC companies included firms of all sizes, not just those included in the Moody's Manuals). Furthermore, reporting "gaps" occur in the manuals when listed companies fail to provide information in any given year. And finally, auditor information procured from the Moody's Manuals will not indicate multiple auditor changes within a single year.28

Notwithstanding the disadvantages listed above, the Moody's OTC Industrial Manuals were selected as source material for this study. In large part, this choice was made because no other locally available source of data was discovered.29 Additionally, the use of the Moody's material allowed for comparison with the time-series results indicated by Coe and Palmon [1979].
The data set was restricted to OTC firms because we assumed that the market of OTC audits would have been the most competitive (compared with the NYSE and AMEX markets) during a period of changing market structure. This assumption seems reasonable in that the evidence presented by previous researchers has indicated that the Big Eight dominance was less pronounced in the market for OTC audits. Thus we assumed that, on average, OTC companies encountered fewer transactions costs in auditor switching as compared with the larger firms listed on either the NYSE or AMEX. Additionally, McConnell reported that between 1974 and 1978, the largest number of auditor changes were made by the OTC firms. And finally, in accordance with McConnell's findings regarding Big Eight versus non-Big Eight tier switches, we assumed that, on average, OTC companies were less likely to change from one sub-market of auditors to another. Thus, we would expect to find relatively more "in-group" switches by OTC firms than those made by companies listed on the two major exchanges. Given our assumption of segregating the auditing market into sub-markets, we believed that an examination of OTC companies would yield the richest source of auditor change information.

Research Methods

Auditor change data were collected for a sample of OTC firms reporting during the fifteen year period from 1969 to 1983. This time period seemed sufficiently long to capture any trends in auditor turnover preceding and following the removal of the AICPA prohibitions on bidding, advertising and
solicitation in 1972, 1978 and 1979. A sample of 200 OTC companies was randomly selected from OTC firms that were simultaneously listed in the 1970 and 1984 Moody's OTC Industrial Manuals. The sample size represented approximately 41 percent of all OTC companies that had auditor and general financial information listed for the years of 1969 and 1983.

Recall that in this study our intention is to isolate auditor changes resulting from falling prices caused by a change in market structure, and to eliminate those changes apparently motivated by other non-price determinants. Thus, this criterion of simultaneous listings was used in order to control for auditor changes motivated by severe financial distress and/or bankruptcies. Additionally, such a constraint controls for changes caused by client companies experiencing sufficient growth to move on to a larger exchange, and also for those changes resulting from company mergers where a name change was involved.

The auditor listings for each of the 200 sample firms were collected for the fifteen years under review. Although all of the 200 OTC companies were listed in both the 1970 and 1984 Moody's Manuals, a number of firms had large reporting "gaps," where the companies failed to report their financial information to Moody's for several years. An effort was made to get auditor listing information from other sources, and we assumed that for companies where the auditor listing remained unchanged surrounding the "gap," that no auditor change took place.
Nevertheless, nine companies were eliminated from the sample as their reporting "gaps" were considered too large. A complete listing of the 191 sample firms is provided in Appendix B.

The auditor change information on the remaining 191 OTC companies was then further examined and analyzed. For the purposes of this study, an "auditor change" was defined as an identifiable change in auditors that was apparently motivated only by price considerations. Thus any auditor switch resulting from a CPA firm merger was excluded from the collection of auditor changes. Accordingly, all possible changes were closely examined to determine if the change in auditor resulted from an auditor merger. Similarly, the financial histories of all companies indicating auditor changes were examined to ascertain if any other pertinent events may have motivated the auditor switch. Such exogenous factors could include client company mergers, major lawsuits, voluntary Chapter XI proceedings, or disputes over accounting methods. Events listed surrounding five changes prompted the removal of these individual changes from the total number of auditor changes collected.

Summary of Descriptive Statistics

After applying the above criteria, the resulting number of auditor changes that occurred over the fifteen years totalled 159. The listing of these changes, by year and by firm, is presented in Appendix C. However, twenty-three of these changes could not be positively identified as to whether or not they were caused by auditor mergers. The total number of annual
auditor changes, along with the calculated auditor turnover rates, are presented in Table I. The data are segregated for inclusion or exclusion of these unidentified possible mergers. The average number of yearly changes and the average annual auditor turnover rates are also presented. Assuming that all of the twenty-three unidentified changes were not caused by mergers, the average annual turnover rate was 5.95 percent. Assuming a "worst case" situation where all of the twenty-three changes resulted from auditor mergers, the average rate was 5.09 percent. Both of the above turnover rates are significantly higher than any of the rates calculated by Coe and Palmon [1979] for NYSE, AMEX or OTC companies. The absolute highest turnover rate found by Coe and Palmon was 3.42 percent, which was for changes from non-Big Eight to Big Eight auditors for AMEX firms, and included all CPA firm mergers. When auditor mergers were excluded, Coe and Palmon's highest annual turnover rate was 3.21 percent for total AMEX changes.37

Table II summarizes our findings compared with the OTC data collected by Coe and Palmon. Even including all changes resulting from CPA firm mergers, Coe and Palmon found a total of only 66 changes from a sample of 115 OTC companies over a twenty-four year period. In contrast, our findings of 159 changes (as shown in Table II, the total is increased if all mergers are included) for 191 firms over fifteen is significantly higher. Nevertheless, the absolute number of changes discovered in both studies is remarkably small.
The frequency of auditor changes by individual companies is presented in Table III. Eighty-five companies (or 44.5 percent of the total 191 firms) did not change auditors at all during the fifteen year period. A total of 94 firms changed auditors once or twice during the period examined, with only twelve OTC companies listing more than three auditors over the fifteen years. Thus the majority of OTC firms in this sample were not inclined to change auditors often, with the average number of auditor changes at less than one (.83) per company. While we have no information on multiple changes within any given year, the above evidence does not appear to support the notion that these firms engaged in either "audit" or "opinion" shopping during the years under review. However, such a conclusion can only be considered as conjectural without further evidence and proper testing.

Given our assumption regarding audit market segmentation for product differentiation, Table IV presents annual and average auditor change data for the following categories: auditor changes within the Big Eight firms, changes within the non-Big Eight firms, and the combined in-group switches of changes within Big Eight and non-Big Eight auditors. In 1969, Big Eight firms audited 113 (or 59.2 percent) of the 191 sample OTC companies (with the remaining 78 companies audited by non-Eight firms). In 1983, the Big Eight auditors serviced 121 OTC firms (or 63.4 percent) of the sample companies. Hence the Big Eight firms experienced a net gain of eight clients over the fifteen year period examined. Additionally, only four auditor
changes from non-Big Eight to Big Eight firms were identified as resulting from CPA firm mergers (with an additional six unidentified changes), with a total of 26 confirmed changes from non-Big Eight to Big Eight auditors. Thus some movement from the non-Big Eight to Big Eight firms did occur.

The average annual turnover rates for the segmented data are also indicated in Table IV, and have been calculated in the following manner:

\[
\frac{\text{total number of changes}}{\text{number of companies audited by auditor-type in 1969}} = \frac{1}{14}
\]

where auditor-type represents either Big Eight or non-Big Eight auditors. This calculation of annual rates conforms with that used by Coe and Palmon and allows for comparison between the two studies. Inspection of Tables II and IV reveals that all of the OTC turnover rates indicated in this study are significantly higher than those reported by Coe and Palmon.

**Formal Tests for Trends in Auditor Turnover**

To test for increasing trends in auditor changes over time, a set of regression analyses were performed with the dependent variable representing the annual number of auditor changes per auditor-type, and the independent variable indicating the fourteen reporting periods from 1969 to 1983. These tests were performed using the regression routines available on the Michigan Interactive Data Analysis System (MIDAS) using a
significance level of 5 percent (.05). The null and alternative hypotheses were styled as follows:

1. \( H_0 \): For the total 159 OTC auditor changes, there was no statistically significant relationship between the number of auditor changes and time.

   \( H_1 \): For the total 159 OTC auditor changes, there was a statistically significant positive relationship between the number of auditor changes and time.

2. \( H_0 \): For those OTC auditor changes from a Big Eight to another Big Eight auditor, there was no statistically significant relationship between the number of auditor changes and time.

   \( H_1 \): For those OTC auditor changes from a Big Eight to another Big Eight auditor, there was a statistically significant positive relationship between the number of auditor changes and time.

3. \( H_0 \): For those OTC auditor changes from a Non-Big Eight to another Non-Big Eight auditor, there was no statistically significant relationship between the number of auditor changes and time.

   \( H_1 \): For those OTC auditor changes from a Non-Big Eight to another Non-Big Eight auditor, there was a statistically significant positive relationship between the number of auditor changes and time.

4. \( H_0 \): For the sum of OTC auditor changes within the Big Eight and Non-Big Eight auditors, there was no statistically significant relationship between the number of auditor changes and time.

   \( H_1 \): For the sum of OTC auditor changes within the Big Eight and Non-Big Eight auditors, there was a statistically significant positive relationship between the number of auditor changes and time.

Two additional tests for trends in auditor changes were performed. As our data indicated some movement from non-Big Eight to Big Eight auditors, the following hypotheses were tested (again at the 5 percent level of significance):
5. \( H_0 \): For those OTC auditor changes from a Big Eight to a Non-Big Eight auditor, there was no statistically significant relationship between the number of auditor changes and time.

\( H_1 \): For those OTC auditor changes from a Big Eight to a Non-Big Eight auditor, there was a statistically significant relationship between the number of auditor changes and time.

6. \( H_0 \): For those OTC auditor changes from a Non-Big Eight to a Big Eight auditor, there was no statistically significant relationship between the number of auditor changes and time.

\( H_1 \): For those OTC auditor changes from a Non-Big Eight to a Big Eight auditor, there was a statistically significant relationship between the number of auditor changes and time.

It should be noted that these two hypotheses were styled to test for either increasing or decreasing turnover. As our theory does not attempt to predict trends in changes between auditor-types, the tests are included for completeness and interest only, and the results should have no bearing on our conclusions regarding auditor turnover. The results of the six tests described above are fully documented in Appendix D, and are summarized below.

Results of Regression Tests

According to our hypothesis discussed earlier, we would expect to find some increase in auditor turnover during the fifteen years examined (and thus a positive coefficient associated with our time variable). Although a perceptible increase might not be apparent in the total annual auditor changes, our theory predicts that an increasing trend should be
apparent within the segmented sub-markets (and thus perceptible in tests 2 to 4). Whereas Coe and Palmon found an increasing trend in auditor changes within the Big Eight auditing firms, our results did not confirm their findings. In fact, no significant relationships between the number of auditor changes and time were found, except for an increasing trend in changes from non-Big Eight to Big Eight auditors. For these changes, the positive coefficient associated with the time variable was significant at 0.25 percent (.0025) with an r-squared value of .54737. All of the other regression tests failed to indicate any statistically significant relationship between the number of auditor changes and time.

While the positive relationship between changes from non-Big Eight to Big Eight auditors supports our earlier evidence of some exodus of client companies from smaller to the national auditing firms, this result is only tangential to our general hypothesis. Thus while this result is somewhat interesting, we must conclude that the evidence presented here does not support our theory of increasing auditor turnover during an assumed period of increased price rivalry. The implications of this overall result, and recommendations for further research are discussed in the following chapter.
Chapter Five

SUMMARY OF RESULTS AND IMPLICATIONS FOR FURTHER RESEARCH

Summary of Test Results

In the preceding chapter, the motivation and general results of an empirical study on auditor turnover rates were described. Whereas the theoretical framework provided by the SNS article implied that auditor change rates should increase during a period of price rivalry, our empirical study failed to support this hypothesis. Although our turnover rates were higher than those recorded by Coe and Palmon [1979], both studies generally found no significant relationship between auditor turnover and time. The results of the regression tests performed in this study failed to reject the hypotheses of no change in auditor turnover over the fifteen year period examined. The data collected supported the notion that auditor turnover remained relatively constant during that time period. Additionally, segmentation of the data into subdivisions containing changes within the Big Eight auditors and changes within the non-Big Eight auditors did not alter the basic result of relatively constant auditor changes over time. Only the changes from non-Big Eight to Big Eight auditors indicated any statistically significant relationship to time. There are a number of potential explanations as to why this study did not produce the expected results of increased auditor turnover over the fifteen years examined. Each of these possible reasons must be examined in turn.
Possible Explanations for Results of Statistical Tests

The general result of constant auditor turnover could imply that increased price rivalry did not occur during the fifteen years examined. Either the AICPA's removal of prohibitions did not act as catalysts for increased price rivalry, thus negating a primary assumption employed in this study, or the stimuli provided by the three rule changes were too weak to be detected by our tests. Thus, the major effect of the AICPA rule changes may be that incumbent auditors decreased fees over this time period such that any residual effect to auditor turnover was minimal. Although it seems unlikely that the prohibitions removal had no effect on auditor selection, it is quite plausible that the effect to auditor changes was more minor than expected.38,39

Another possible reason for finding relatively constant auditor turnover rates is that, according to the SNS model, the competitive equilibrium for OTC firms may have already been attained before the time period examined. For example, although the formal sanctions forbidding competitive bidding were removed in 1972 (due to the antitrust suit filed by the U.S. Federal Justice Department), the AICPA Council issued a public statement in 1967 indicating that the rule prohibiting bid competition would no longer be strictly enforced. Thus it is possible that our time period does not extend far enough to capture earlier effects to auditor turnover rates. (The absolute high number of total changes from 1969 to 1970 might support this
Furthermore, given our assumption of higher levels of competitiveness in the OTC markets during a period of changing market structures, we do not know if such levels of competitiveness existed prior to the introduction of increased price rivalry. Thus a major shortcoming of this model is that we have no way to distinguish whether the competitive equilibrium has been achieved without access to fee information (or average total cost data for all firms). Therefore, the attainment of the competitive equilibrium remains as one possible explanation for the empirical findings presented.

Another possible explanation for failing to discover the expected results of increased auditor turnover involves our assumptions regarding product differentiation. We assumed that segregating the overall auditing market into sub-markets of Big Eight versus non-Big Eight could approximate markets where the participants were offering near perfect substitutes. Such a partitioning may be too coarse to reveal any underlying trends within markets where the products or services are actually perceived to be nearly identical. Therefore, at least theoretically, finer segregation (which might include industry specialization and/or regional expertise) could uncover trends in auditor changes not indicated by the tests performed within this study. However, given the small absolute number of changes found in this research project, such further segmentation would be unlikely to produce any additional information.
Another likely explanation for our empirical results stems from the fact that there were significant problems with the data set used in this study. By using the Moody's Manuals we immediately limited our analyses of auditor changes to a narrow set of larger OTC firms, thus neglecting the numerous smaller OTC firms that are not listed in Moody's. This is significant in that McConnell [1983] discovered a significantly larger absolute number of OTC auditor changes when he examined all changes reported to the SEC. Furthermore, our additional controls providing for a stable set of companies listed in the OTC Manuals throughout the fifteen year period may have further distorted our results. And lastly, without also looking at the NYSE and AMEX auditor change information for that period, we have eliminated a large set of potentially informative data.

Areas for Subsequent Research

Further work would be required to resolve the abovementioned problems contained within this study. To ensure that all of the effects resulting from increased bid competition following the 1967 AICPA public announcement were captured, collection of auditor change information would be required for the three years from 1967 to 1969, and for a number of years preceding 1967. The Moody's Manuals for these years are publicly available (although not available locally). This additional work could identify if, for this sample of OTC firms, a short period of increased auditor turnover occurred following the 1967 announcement. Additionally, the sample size of OTC firms could be expanded to include all companies reporting in
the Moody's Manuals over the extended period of examination (recall that our sample size represented approximately 41 percent of those firms simultaneously listed in both the first and final years). However, it is unlikely that expanding the number of OTC firms in this manner would alter the results found in this study.

Unfortunately, such embellishments to this research project would not solve the basic limitations encountered due to the data set we used. Given the large absolute number of auditor changes found by McConnell [1983], it is apparent that by restricting our examination to only those OTC firms listed in the Moody's Manuals, we have eliminated a very rich source of auditor change information. Thus a more complete examination of auditor turnover over time would require a project similar in scope to that produced by McConnell, where a very large number of changes could be collected and analyzed for trend analyses. Unfortunately, according to McConnell, the SEC information on auditor changes for the years 1971 to 1973 contained numerous classification and data errors, thus substantially increasing the potential workload for analyses of changes in that period. Nevertheless, auditor change information could be procured for all firms reporting to the SEC from 1971 to the present. Examination of such a data set would be strongly preferred over the collection of a smaller subset of companies, as is available through the Moody's Manuals.
Finally, further research should address the issue of determining when the competitive equilibrium has been achieved. The obvious method to do this would be to avoid this secondary set of auditor change information, and examine the expected primary effect of price rivalry on audit fees. As discussed earlier in this thesis, the standard effect of the introduction of rivalry into a market is to drive prices (in our case, audit fees) down to the competitive equilibrium. Thus if audit fees could be observed over a time period that contained increased rivalry, we would expect to see a general fee decline until the competitive equilibrium was achieved. The collection of fee data over a sufficiently long period of time would prove very interesting, although given that fee data is largely unavailable publicly, the task admittedly would be an onerous one.

This chapter has summarized the basic results of our empirical tests, and provided some suggestions for further research work. While an extension of this research project might generate some additional information, more interesting results are likely to be achieved if future researchers examine either a significantly larger data set of auditor changes, or concentrate their research efforts on the primary effect of increased rivalry on audit fees.
Chapter Six
SUMMARY AND CONCLUSIONS

In this thesis, we have examined some of the relationships between the market structure of auditing, auditor independence, and the rate of auditor changes over time. The general motivation for this research stemmed from the persistent allegations found in accounting literature that increased levels of competition in auditing somehow compromise the independence of public auditors. As such allegations have surfaced and resurfaced numerous times over the past two decades, it appeared that this issue could not be settled without the construction of an underlying theoretical model. Anecdotal evidence and empirical studies on users' perceptions of auditor independence had failed to provide sufficient evidence such that researchers (both academic and legislative) were unanimous regarding the answer to the following question: Does competition in auditing promote or inhibit auditor independence?

The research described in the first part of this thesis addresses the question posed above. In collaboration with two other researchers, the author examined how the market structure of auditing may affect auditor independence. The result of this effort was the paper entitled "Market Structure and Auditor Independence," by Stein, Nielsen and Simunic (SNS), which was summarized in Chapter Two, and is fully reproduced in Appendix A. In this article, we concluded that the attainment of the competitive equilibrium in auditing provides sufficient
conditions for auditor independence. Furthermore, we analyzed the effects of increased levels of competition (or rivalry between competing auditors) on auditor independence and found that independence may be compromised until the competitive equilibrium is achieved. However, as not all auditors will risk being nonindependent, we would expect rivalry to decrease auditors' fees as client companies replace incumbent auditing firms with new auditors offering identical services at a lower price. And further extending the SNS hypotheses, we would also expect to discover an increasing rate of auditor turnover during this period of rivalrous disequilibrium.

The effect of increased rivalry on auditor turnover was examined in the second portion of this thesis. After a review of the existing literature on auditor changes, an empirical study of OTC auditor changes was performed. For this study, auditor information was collected for a sample of 191 companies listed in the Moody's OTC Industrial Manuals from 1969 to 1983. Assuming that AICPA rule changes in 1972, 1978 and 1979 prompted increased price rivalry in the auditing markets, our theory would predict that increased auditor turnover should be observable during that time period.

Regression tests performed on the sample data indicated no identifiable increase in auditor changing behavior. And although the number of auditor changes recorded, and the rates of auditor turnover computed, were significantly higher than those reported by Coe and Palmon [1979], the absolute number of
changes recorded was remarkably small. The only significant trend discovered indicated an increasing movement of OTC firms from non-Big Eight to Big Eight auditing firms.

Finally, reasons for failing to discover our expected results were explored. Either our model predicting diminished fees and increased auditor turnover is incorrect, or our assumptions employed and/or the data set examined were inadequate. Given the nature of the research problem, and the continuing interest in these issues, further refinements to the modelling and additional testing of these hypotheses is recommended. However, future researchers may find richer results by examining either a larger data set of auditor changes, or through the collection of audit fee data.
<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Changes</th>
<th>%</th>
<th>Year</th>
<th>No. of Changes</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1969-70</td>
<td>18</td>
<td>9.42</td>
<td></td>
<td>13</td>
<td>6.81</td>
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<tr>
<td>1970-71</td>
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<td>6.81</td>
<td></td>
<td>9</td>
<td>4.71</td>
</tr>
<tr>
<td>1971-72</td>
<td>13</td>
<td>6.81</td>
<td></td>
<td>11</td>
<td>5.76</td>
</tr>
<tr>
<td>1972-73</td>
<td>12</td>
<td>6.28</td>
<td></td>
<td>10</td>
<td>5.24</td>
</tr>
<tr>
<td>1973-74</td>
<td>7</td>
<td>3.66</td>
<td></td>
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<td>3.14</td>
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<tr>
<td>1974-75</td>
<td>8</td>
<td>4.19</td>
<td></td>
<td>8</td>
<td>4.19</td>
</tr>
<tr>
<td>1975-76</td>
<td>13</td>
<td>6.81</td>
<td></td>
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<td>6.28</td>
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<tr>
<td>1976-77</td>
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<td>5.24</td>
<td></td>
<td>10</td>
<td>5.24</td>
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<tr>
<td>1977-78</td>
<td>13</td>
<td>6.28</td>
<td></td>
<td>13</td>
<td>6.28</td>
</tr>
<tr>
<td>1978-79</td>
<td>10</td>
<td>5.24</td>
<td></td>
<td>9</td>
<td>4.71</td>
</tr>
<tr>
<td>1979-80</td>
<td>12</td>
<td>6.28</td>
<td></td>
<td>11</td>
<td>5.76</td>
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<tr>
<td>1980-81</td>
<td>8</td>
<td>4.19</td>
<td></td>
<td>6</td>
<td>3.14</td>
</tr>
<tr>
<td>1981-82</td>
<td>11</td>
<td>5.76</td>
<td></td>
<td>10</td>
<td>5.24</td>
</tr>
<tr>
<td>1982-83</td>
<td>11</td>
<td>5.76</td>
<td></td>
<td>7</td>
<td>3.66</td>
</tr>
<tr>
<td>TOTALS</td>
<td>159</td>
<td></td>
<td></td>
<td>136</td>
<td></td>
</tr>
</tbody>
</table>

Averages: 11.36 5.95 9.71 5.09

### TABLE II
SUMMARY OF OTC AUDITOR CHANGE RESULTS

<table>
<thead>
<tr>
<th></th>
<th>Nielsen</th>
<th>Coe and Palmon</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Total Number of OTC Firms</td>
<td>191</td>
<td>115</td>
</tr>
<tr>
<td>:Number of Change Periods Examined</td>
<td>14</td>
<td>24</td>
</tr>
<tr>
<td>3. Total Number of Auditor Changes</td>
<td>168*</td>
<td>66</td>
</tr>
<tr>
<td>:Annual Turnover Rate</td>
<td>6.28%</td>
<td>2.39%</td>
</tr>
<tr>
<td>4. Total Number of Auditor Changes Excluding All Possible Mergers</td>
<td>136</td>
<td>37</td>
</tr>
<tr>
<td>:Annual Turnover Rate</td>
<td>5.09%</td>
<td>1.34%</td>
</tr>
</tbody>
</table>

* For comparison with Coe and Palmon's result, this amount includes all changes identified in the rough data, except for changes such as "Haskins and Sells" to "Deloitte, Haskins and Sells."

### TABLE III

FREQUENCY OF AUDITOR CHANGES BY COMPANY

<table>
<thead>
<tr>
<th>Number of Auditor Changes</th>
<th>Number of Companies</th>
<th>Percentages (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>85</td>
<td>44.5</td>
</tr>
<tr>
<td>1</td>
<td>59</td>
<td>30.9</td>
</tr>
<tr>
<td>2</td>
<td>35</td>
<td>18.3</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
<td>4.7</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>1.1</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>.5</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>191</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

# TABLE IV
SEGMENTED AUDITOR CHANGES
1969-1983

<table>
<thead>
<tr>
<th>Changes within Big Eight Auditors</th>
<th>Changes within Non-Big Eight Auditors*</th>
<th>Total In-group Auditor Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1969-70  3</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>1970-71  4</td>
<td>5</td>
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<td>1971-72  3</td>
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<td>1972-73  4</td>
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<td>1973-74  1</td>
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<td>4</td>
<td>6</td>
</tr>
<tr>
<td>1975-76  1</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>1976-77  2</td>
<td>4</td>
<td>6</td>
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<tr>
<td>1977-78  3</td>
<td>4</td>
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</tr>
<tr>
<td>1978-79  2</td>
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<td>1979-80  5</td>
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<td>4</td>
<td>6</td>
</tr>
<tr>
<td>1981-82  3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>1982-83  2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td><strong>TOTALS</strong>  <strong>37</strong></td>
<td><strong>63</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Average Annual Turnover Rate  
- **2.34%**  
- **5.77%**  
- **3.74%**

Average Annual Turnover Rate (Coe & Palmon)  
- **.92 %**  
- **.80%**  
- **.87%**

*Includes 17 unidentified changes. If these are removed, the average annual turnover rate is 4.21%.

FOOTNOTES

1. This paper examines some of the issues pertaining to the public auditing industry in the United States. The structure of the industry, including the overall demand for public audits, the levels of competitiveness and the legislative or regulatory environment, is notably different in Canada than that found in the U.S. However, little attention has been directed toward the structure and conduct of Canadian public auditors, with virtually no academic or professional research devoted to these issues. Certainly the lack of available Canadian data hampers any such research effort.

2. "Opinion-shopping," or when a client company either makes multiple auditor changes or proposals with the intention of procuring a more "compliant" auditor is one of the issues under review by the House Subcommittee. The Subcommittee has called for hearings to examine both the overall quality and effectiveness of financial disclosures in the U.S. According to Chairman John D. Dingall, the hearings will also focus on the "effectiveness of independent accountants who audit publicly owned corporations" and the performance of the Securities and Exchange Commission in meeting its auditing and accounting responsibilities." ["Congressional Subcommittee Convenes. . . .", p. 12] The hearings commenced February 20, 1985 and are expected to continue throughout 1985.

3. For an excellent overview of the issues involved, see Buckley and Weston [1980].

4. A review of the complete body of research on auditor independence is too long to be warranted here. However, a short list of recent research is provided on the first page of Appendix A.

5. For a full discussion of these conflicts, see Goldman and Barlev [1974] and Nichols and Price [1983].

6. The above discussion on the role of the public auditor assumes that perfect information does not exist. In fact, an outside auditor's opinion would have no value if perfect information was available to all parties. As information asymmetries do exist (for example, between owners and managers within the firm, and between the firm and third party users), the usefulness of the public auditor is maintained. This assumption of imperfect information is used throughout the analyses contained in this thesis.

7. Such arguments could be perceived as self-serving when written by practicing auditors who are interested in
maintaining elevated levels of market concentration. However, the following example is by Sterling [1973], a notable accounting academic who clearly has no personal self-interest involved. Sterling stated:

The major problem facing public accounting today is its lack of power. . .[which] is lessened further by the existence of competition among accounting firms. Resignation from an engagement might be an effective means of enforcement if it were not for the fact that other firms may take the engagement and issue an opinion. [p.66]

8. For example, see Watts and Zimmerman [1981] and DeAngelo [1981a]. These authors have defined audit quality to be the market-assessed joint probability that an auditor will both discover and report a breach in the client's accounting system. Thus one measure of auditor independence is the assessed probability of an auditor reporting a discovered breach.

9. Consistent with standard micro-economic theory, the competitive price includes a normal return to capital.

10. See Chapter Two for a full discussion of this mechanism.

11. As will be discussed in Chapter Two, rivalrous actions can include other forms of non-price competition. In this paper we focus on the effects of increased fee competition (or price rivalry).

12. Even if the increased rivalry was based on non-price determinants such as product differentiation, we would expect to observe increased turnover if incumbents refuse to increase or alter their package of services rendered at a constant price. Similar arguments regarding information asymmetries would explain why incumbents do not match their rivals' proposals for increased services.

13. The interested reader is directed to Appendix A for the entire text of the SNS article.

14. The work in this thesis, in large part, is premised upon the analyses presented in the September, 1985 version of the SNS paper. We have since received numerous comments on that version, and Mr. Stein has decided to pursue this topic area in his doctoral dissertation. The authors acknowledge that the SNS article contains certain problem areas, including the lack of a precise definition of auditor independence. Nevertheless, for the purposes of this thesis endeavor, the analyses and conclusions of the existing SNS paper form the framework for the work presented here.
15. In this paper we assume that the market for audits prefers auditor independence (or at least the appearance of independence) over nonindependence. Although we acknowledge that a sub-market for auditor nonindependence exists, we assume that a reputation for nonindependence is generally deemed an auditor cost and not a benefit.

16. For the sake of convenience, none of the equations employed by SNS will be reproduced here. Again, the interested reader is directed to Appendix A.

17. Given the existence of differences in auditors' opinions regarding whether or not a particular action qualifies as "independent," we would also expect to see differing levels of auditors' assessments as to the costs of nonindependence. This issue is discussed further in Chapter Four.

18. The assumption of an oligopolistic market structure would conform with much of the anecdotal evidence cited throughout the 1970's. Certainly price competition was restricted until the antitrust suit in 1972, and allegations of the continued lack of price competitiveness extended into the mid-1970's. Such allegations largely motivated the Senate Subcommittee (Metcalf Commission) investigation.

19. Only two recent studies have collected audit fee data. For his doctoral dissertation, Simunic [1980] collected fee data for a sample of 397 U.S. firms by distributing questionnaires to a total of 1,207 companies. Francis [1984] replicated much of Simunic's study using publicly available Australian data which included audit fee data.

20. In 1971 the SEC issued Securities Act Release No. 34-9344 which revised Forms 8-K to require the reporting of a change in the principal auditor of a registrant. The requirement stated that firms were to disclose any significant accounting or auditing disagreements with former auditors occurring in the eighteen months preceding the auditor change. 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 the reasons for the auditor change.

21. This section of Coe and Palmon's paper is extremely confusing. Although the authors stated that they found no relationship between the rate of auditor changes and time [p.5], they then referred (incorrectly) to their total annual turnover data, indicating that turnover rates did increase over time, especially during the final six years.
of the sample period. It is only with very careful inspection that the reader can conclude that Coe and Palmon found only Eight auditor turnover rates increasing over time, and that this result was not documented in the material presented. In his review of this Coe and Palmon paper, McConnell [1983] indicated his own confusion when he stated that they did find increasing auditor turnover rates. Given Coe and Palmon's problems of exposition, McConnell's oversight is understandable.

22. It should be noted that the credibility of such self-reporting is questionable. The SEC addressed this problem by also requiring companies to include written statements from their former auditors indicating whether they agreed or disagreed with the SEC registrant's statements regarding previous auditor-client disagreements.

23. The auditors identified as having a tendency to qualify opinions were Arthur Young & Co., Coopers & Lybrand, and Touche Ross & Co.

24. Given that nearly 80 percent of the 3,300 auditor changes identified (through examination of the daily SEC News Digest publication) were made by OTC companies, McConnell limited his analysis of OTC changes to a large sample set.

25. For example, see DeAngelo [1981b], Dopuch and Simunic [1982], and Simunic and Stein [1984].

26. For example, if there is sufficient disagreement in the appropriate reporting method to be used for an individual client, one auditor may perceive an action as nonindependent, and will therefore assess a higher cost to using that accounting method compared to another auditor who views the same action as independent (and will assess zero costs of nonindependence.

27. This author approached McConnell with the idea of extending his database such that some trend analyses could be performed. However, McConnell declined.

28. Examination of McConnell's data for multiple auditor changes reveals that this is not a significant problem.

29. Who Audits America provides auditor listings and auditor change information for most of the same companies listed in the Moody's Manuals. However, its first edition was published in 1976, providing at maximum only nine years of data. Furthermore, McConnell [1983] found a sufficient number of data errors in Who Audits America to conclude that it was an unreliable primary source of information. Given the above problems, coupled with the fact that Who Audits America is not available locally, this publication was not chosen as the primary data source for this study.
30. For example, see Coe and Palmon [1979] and McConnell [1983.]

31. The sample size of 200 firms was based on an informal assessment of the marginal benefits/costs of sampling, and that this amount at least equalled Coe and Palmon's 1979 sample size of 115 OTC firms.

32. An unfortunate result of imposing such a constraint is that the sample set then consists of "stagnant" companies; that is, these are firms experiencing insufficient growth to "move on" to the larger exchanges. The implications of this constraint are discussed in Chapter Five.

33. The following OTC companies were removed from the sample because of large reporting "gaps":
   Digital Products Corporation
   El Chico Corporation
   Humphrey, Incorporated
   MPC Educational Systems, Incorporated
   Metallurgical Industries, Incorporated
   Motor Coils Manufacturing Corporation
   Professional Care Services, Incorporated
   Rectisel Corporation
   Sterling Computer Systems, Incorporated.

34. For all of the recorded auditor changes, an effort was made to get information on the continued existence of the predecessor auditor. If the "old" auditor was listed subsequent to the indicated change in our sample of OTC changes, in Who Audits America, or in an appropriate local telephone directory, then we assumed that no merger took place. As indicated below, twenty-three changes could not be positively identified as to whether an auditor merger occurred.

35. The following five auditor changes were eliminated from the total collection of changes because of the reasons listed below:
   1983 auditor change by Paul Harris Stores, Incorporated. The company organized a major refinancing package that year and simultaneously changed from a non-Big Eight auditor to a Big Eight auditor.
   1981 auditor change by South State Oil and Gas Company. The opinion rendered by the successor auditor indicates a material accounting change where the oil field pumping units inventory is revalued at a significantly higher value than was reported by the predecessor.
   1983 auditor change by United States Surgical Corporation. Changes in accounting policies during 1982 and 1983 led to lawsuits initiated by
the SEC against the client company.

1977 and 1981 auditor changes by Van Dyk Research Corporation. The company switched back and forth between two auditors during a period of Chapter XI proceedings. An earlier change was not removed from the total changes collected.

36. The AICPA library in New York was contacted regarding the status of these possible changes/mergers. However, the AICPA librarians were unable to provide the necessary information in time for this thesis submission.

37. The difference between our computed rates and those presented by Coe and Palmon is puzzling. Unfortunately, Coe and Palmon did not provide segregated annual turnover rates for OTC firms, and hence we cannot compare the two data sets. Given that there is a seven year overlap (1969 to 1975), such a comparison would have been informative.

38. In a recent paper on accounting services for small clients, O'Keefe and Barefield [1985] found that an average of 35 percent of the very small manufacturing firms in their sample received unsolicited proposals in 1982 and 1983 from nonincumbent auditing firms. Assuming that these firms received no unsolicited proposals prior to 1979, this evidence supports the notion that the AICPA rule changes had some effect on auditor selection.

39. One might conjecture that an increasing market for audits might sufficiently dampen the expected results of price rivalry. However, most observers of auditing markets concur that the overall market for audits has remained generally stable over the past two decades. Legislation introduced in the past decade pertaining to the audit requirements for financial institutions and municipalities has not significantly altered the size of the auditing market.

40. It is also possible that other (exogenous) criteria used in auditor selection have delayed the effects of increased rivalry on auditor turnover. Thus it is plausible that the time period examined may not extend long enough after the 1978 and 1979 rule changes to capture the major effects to auditor changes. However, anecdotal evidence that this author has received from professional auditors indicates that changes in the rate of auditor turnover were noticeable by the early 1980's.

41. We acknowledge that the collection of fee data alone may be insufficient to determine if the competitive equilibrium has been reached. For example, cost and capital investment data may also be required to determine levels of profitability.
BIBLIOGRAPHY


APPENDIX A

MARKET STRUCTURE AND AUDITOR INDEPENDENCE

M. Stein, A. Nielsen, and D. Simunic

The University of British Columbia

June 1985
1. INTRODUCTION

It is commonly agreed that an auditor should be independent of his client. Further, the auditor should also have the appearance of independence to third parties, above actually being independent. However, all auditors may not always be independent, and in the past decade considerable attention has been focussed on issues pertaining to auditor independence. Some of the research to date includes examination of the underlying auditor-client conflict [Goldman and Barlev (1974), Nichols and Price (1976)], the possible relationship between auditor turnover and independence [Burton and Roberts (1967), Chow and Rice (1982), Nichols and Smith (1983)], and the effect of pricing policies or auditor size on audit quality [DeAngelo (1981a), (1981b)]. Additionally, the current debate over the provision of management advisory services by auditors stems from the alleged negative impact on auditor independence that such services may imply [eg. Simunic (1984)].

Similarly, in recent years there has been extensive debate regarding the market structure of public accounting.\(^1\) Allegations of market concentration have often maintained that the markets for audits are structured oligopolistically, especially in the market for large clients. For example, the Report of the U.S. Senate Subcommittee (Metcalf Report) concluded that there is insufficient competition in audit markets, particularly among the largest national firms.\(^2\) On the other hand, the AICPA Commission on Auditor's Responsibilities (Cohen Commission) asserted that excessive price competition in extant markets for audits jeopardizes the quality of audits provided.

Beyond the Cohen Commission's claim regarding audit quality, there has been limited research on the relationship between auditor independence and market structure. Conedes and Kihlstrom (1982) investigated the
effect of market structure on audit quality, but their concept of "quality" is largely undefined, and cannot be directly applied to auditor independence. The empirical evidence regarding market structure and the perception of auditor independence has been mixed. Shockley (1981, p. 785) studied the perceptions of CPA's and financial statement users with respect to the independence of audit firms. He concluded that "audit firms operating in highly competitive environments ... are perceived as having a higher risk of losing independence." However in a recent study, Knapp (1985) found no conclusive evidence that auditors' perceived independence is undermined in a highly competitive market for audits. Knapp's results indicate that the level of competitiveness for audit services "does not have a major influence on user's perceptions of auditor's ability to resist management pressure." (1985, p. 209)

The actual or perceived effect of market structure on auditor independence remains unclear. It is within this general context that we offer our model demonstrating how various market conditions provide incentives for either auditor independence or nonindependence. We show that a sufficient condition for auditor independence is the attainment of the competitive price in the audit market. We do not address the empirical questions of the current degree of competition in extant audit markets, nor whether auditors are independent. Our purpose is to clarify the issues, provide a definition of auditor independence which facilitates analysis, and show how the distinction between competition and rivalry is necessary to understand claims that price competition leads to impaired independence.

The remainder of the paper is organized as follows. In Section 2 we define auditor independence and introduce our model. We then introduce economic rents (Section 3) and demonstrate how market structure affects
independence (Section 4). The costs of nonindependence are detailed in Section 5, and Section 6 analyzes the alleged loss of independence due to rivalry. Our conclusions and a brief summary are provided in Section 7.

2. A MODEL OF AUDITOR INDEPENDENCE

We start by assuming that auditors are utility maximizers over wealth. Also, we assume that all audits are homogeneous and are accomplished by a common technology. Further the audits are statistically independent in the sense that the normal costs of each audit do not affect one another. We define the following notation:

\[ F_i(a_j) = \text{auditor } i's \text{ fee for the audit of client } j, \]
\[ C(a_j) = \text{the normal cost of audit } j, \]
\[ D_i(a_j) = \text{the separable cost to auditor } i \text{ of taking a nonindependent action with respect to client } j, \]
\[ T_j = \text{the net cost to the client } j \text{ of switching auditors.} \]

An auditor is independent of his client if the auditor's actions are not influenced by the preferences of the client. However, since auditor fees are channelled through the corporation there is a potential conflict between auditors and managers. Managers may have de facto control over fees while auditors must report on the performance of managers. Recognizing this conflict, we ask the following question: When is it in the auditor's economic interest to be independent of his client? Our answer comes in two varieties. The first is when the auditor is worse off by being nonindependent. We call this incentive independence. The second is when the auditor has sufficient bargaining power to resist the client's requests for nonindependent action. This we term bargaining independence.

More formally, the auditor is better off being independent if the following inequalities hold:
\[ F_i(a_j) - C(a_j) > 0 \]  
\[ F_i(a_j) - C(a_j) - D_i(a_j) < 0 \]

In our analysis, we restrict ourselves to a discussion of auditor wealth. We assume that more wealth is preferred to less, and that the normal cost of an audit includes a normal return to the auditor's effort. This is important as the wage paid to the auditor is just sufficient at the margin for the auditor to be indifferent between auditing and other non-auditing activities.

Equation (1) indicates that the auditor prefers (weakly) an independent audit of client \( j \) to not having the client. Equation (2) indicates that not having the client is preferred (weakly) to a nonindependent audit. Immediately, two key points of our analysis can be seen. First, if we assume that the costs of nonindependence are always nonnegative, then a necessary condition for nonindependence occurs when equation (1) holds strictly. If equation (1) is false or holds with equality, then equation (2) will hold and the auditor would prefer to drop the client rather than incur the costs of nonindependence.

In most of what follows we can think of the auditor as facing the following choice problem:

\[
\text{MAX } U[w(q)] = \max [u(w(q_1)), u(w(q_2)), u(w(q_3))] 
\]

where \( U(w) \) is the utility of wealth and \( q_1, q_2, q_3 \) are the auditor's choices (with respect to a particular client) of, respectively, audit independently, audit nonindependently, or do not audit. For example, if equation (1) and (2) hold, then the auditor faces the following choice:

\[
\text{MAX } [F-C, F-C-D, 0] 
\]

and chooses the independent audit since

\[ F-C > 0 > F-C-D. \]
The auditor may also be independent if the following inequalities hold:

\[ F_1(a_j) - C(a_j) > 0 \]  \hspace{1cm} (1)
\[ F_1(a_j) < F_1(a_j) + T_j, \forall i=2 \ldots M. \]  \hspace{1cm} (3)

Here we have made auditor one the incumbent auditor, and this set of conditions implies that the incumbent prefers the audit to not auditing, and (from equation (3)) the client's threat to defect is not credible. The incumbent auditor can resist the client even if:

\[ F_1 - C(a_j) - D_1(a_j) \geq 0 \]  \hspace{1cm} (4)

should hold, since a profit maximizing client would not switch auditors. ²

The two preceding sets of conditions are very different in flavour. The first indicates the auditor prefers independence, whereas the second set indicates that the auditor can bargain for independence. When equations (1) and (2) hold, the auditor is incentive independent. On the other hand, the auditor will be nonindependent if equations (1) and (4) hold strictly and equation (3) is false. Equation (1) is likely to hold if the market structure allows the auditor to earn economic rents. Furthermore, the magnitude of \( D \) is clearly important in whether equation (2) will hold. If it is believed that \( D \) is very large, then auditors will essentially always be independent. As the size of \( D \) may also be associated with the existence of rents, and because \( D \) can also determine whether equation (4) will hold, there appears to be a strong connection between auditor independence and the earning of rents in audit markets.

3. ECONOMIC RENTS

Economic rents are defined as returns in excess of the normal return to an asset. Typically, economic rents are earned on assets whose supply
is limited, and the rent is the difference in the asset's value between its best and best alternative use. Rents are of interest in economic policy as their existence may indicate imperfect competition in a given market. In particular, rents can often occur in markets where significant barriers to entry exist thus limiting supply.

The market for audits, with the professional requirements necessary for supplier entry, is a candidate for economic rents. In our model, an economic rent exists with respect to a particular audit if the inequality in equation (1) strictly holds (i.e. the fee strictly exceeds all normal costs).

DeAngelo [1981b] also discussed how the existence of rents could affect auditor independence. However, her rents are generated by auditor-specific efficiency gains, not by market structure. DeAngelo contended that while client-specific rents reduce auditor independence with respect to a particular client, the sum total of all other client rents act as a collateral bond against nonindependence. Her results are consistent with those presented here. However, we believe our results to be more general as we provide conditions under which rents may or may not lead to auditor nonindependence.

Unlike DeAngelo, we are concerned with economic rents generated by market structure. These rents are endogenously determined and thus accrue to all auditors. Since the loss of existing rents could be a major component of nonindependence costs, these costs may be expected to vary directly with the size of the rents. If this is correct, then the collateral bond is also endogenously created by market structure, and independence would exist regardless of market structure. We investigate this issue in the next three sections.
4. MARKET STRUCTURE AND INDEPENDENCE

In this section we analyze how market structure influences auditor independence. There are four paradigm cases which demonstrate the key issues involved. We look at what happens under monopoly and competition, subdividing in each instance for the institutional arrangement where audits are compelled (e.g. legislatively imposed) and where they are optional. Later, we briefly introduce the intermediate case of oligopoly.

CASE 1: MONOPOLY, MANDATORY AUDIT

At first glance this case may appear to be the arrangement where the auditor has the maximum leverage to enforce independence. There are no substitutes for the auditor's service and the clients are compelled to buy from a single supplier. This situation is described by equation (3):

\[ F_1 \leq F_2 + T \]  

(3)

where we can think of \( T \) as being indefinitely large. This would seem to ensure the auditor of bargaining independence. The client has no credible threat of defection and the auditor shares this information. However, because the audit is mandatory, the auditor must audit. In effect, this changes the auditor's choices, as the option of withdrawing from the audit with outcome zero is no longer available. The choice faced by the auditor is:

\[ \max_{q \in Q} [F-C-E, F-C-D, -\infty] \]  

(5)

where \( E \) are the costs of remaining independent. These costs can be thought of as nonreimbursable costs which a disgruntled client can impose upon the auditor through noncooperation. The costs associated with \( D \) in this case are the expected costs of loss of the monopoly charter. For instance, if the auditor's actions are deemed to be nonindependent, this
could invite governmental intervention which would reduce the monopolist's wealth.\(^9\)

These two costs act in opposing ways. If \(E\) is large (relative to \(D\)), the auditor will maximize (5) by being independent. If \(D\) is large then the auditor will sacrifice some independence.\(^10\)

The key result for the mandated monopoly case is that the client and auditor are bound to one another. Thus by limiting the auditor's choice set, nonindependence becomes possible. Note that the preceding analysis does not refer to equation (1). Here the existence of rents is irrelevant as the choice faced by the auditor does not allow any action to protect rents.

CASE 2: MONOPOLY, NONMANDATORY AUDIT

In this case both the auditor and the client can choose the no audit option. Therefore the auditor will be independent if either equations (1) and (2) hold; or alternatively, if equations (1) and (3) hold, where the right hand side of (3) is now interpreted as the cost of the alternative to the monopoly-provided audit.\(^11\) If equation (1) fails to hold, then the auditor will choose the no audit option. However, we have not eliminated the possibility of nonindependence. Using the standard microeconomic formula, a monopolist sets price according to the equation:

\[
F[l - \frac{1}{\eta}] = C'
\]

(6)

where \(\eta\) is the price elasticity of demand and \(C'\) is marginal cost.\(^12\)

Equation (6) generally implies that equation (1) will strictly hold. This provides for the possibility that equation (4) will also hold; whether (4) will hold depends upon the size of \(D\). Large costs of nonindependence will enforce independent action. As DeAngelo [1981b] pointed out, one major
component of D may be the loss of rents on other clients. If the lost aggregate rents are large (in an expected value sense), then D may be sufficiently large to bring the auditor back to independence.\textsuperscript{13}

Before moving to the next case, we should comment upon the relationship between equations (6) and (3). The elasticity in (6) will be related to the availability of substitutes in (3). The auditor will charge higher prices in those cases where the alternatives are most expensive. This has the effect of keeping the difference between the right and left hand sides of equation (3) small. While (3) holds the auditor will be independent, if the auditor has mispriced his service due to some uncertainty about the right hand side of (3), and if (4) also holds, he may not be able to resist client pressure for nonindependent action.

\textbf{CASE 3: COMPETITION, MANDATORY AUDIT}

Under competition, equation (1) holds with equality. This implies that it is never preferred by the auditor to bear any costs of nonindependence, and the auditor will be incentive independent. As with the case of a mandated monopoly, we still have the problem of nonreimbursable noncooperation costs. Unlike monopoly however, in competition the auditor has a counter. The auditor can force the client to change auditors and bear the transactions costs, $T_j$. Thus if the client uses the threat of noncooperation to induce auditor nonindependence, the auditor can use the threat of forcing the client to change auditors.\textsuperscript{14}

In a competitive market where there are no rents and with mandatory audits, auditors cannot afford to bear the costs of nonindependence. Therefore we might expect to see a mechanism for shedding these nuisance clients, such as an audit report qualification. If we compare this to the
monopoly case, the difference is the existence of rents under monopoly. The rents allow some room to go along with the client. Even with imperfect competition, the auditor would find use for qualifying those audits which cannot be shed. An empirical implication would be that audit reports are more readily qualified the smaller the rents.

CASE 4: COMPETITION, NONMANDATORY AUDITS

Again, equation (1) holds with equality. The auditor is indifferent between auditing and not auditing a particular client. The auditor will tolerate no nonindependence, as it is costly and inhibits the making of a normal return. Thus equation (2) holds along with (1) and the auditor is incentive independent.

CASE 5: OLIGOPOLY

Oligopoly is an intermediate case between monopoly and competition. For our purposes what is important is that with an oligopolistic market structure, equation (1) is likely to hold strictly, given that oligopolistic auditors face a downward sloping demand curve for their product. Equation (1) implies the existence of rents and the possibility of nonindependence. The remaining analysis would proceed along the lines of the monopoly case. However, in general, the rents to each auditor will be smaller than in the monopoly case, and hence there should be fewer instances where equations (1) and (4) hold simultaneously. We shall return to a further analysis of the oligopoly case when we discuss competition and rivalry.
SUMMARY

The results of this section can be summarized as follows: competitive pricing leads to incentive independence, whereas non-competitive pricing allows for the possibility of nonindependence. Whether auditor independence will be maintained depends upon the magnitude of D. If D is large, incentive independence results. On the other hand, if D is small then either bargaining independence occurs when client defection is costly, or auditors will be nonindependent if clients require it. Outside of the monopoly, mandatory audit case we conclude that competitive pricing is sufficient to ensure independence and rents are necessary for nonindependence.

5. THE COSTS OF NONINDEPENDENCE

In the previous section we saw how the magnitude of nonindependence costs (D) was vital to the determination of auditor independence. In this section we explore how market structure and nonindependence costs may be related.

DeAngelo [1981b] asserted that a primary cost of nonindependence is the loss of rents from other clients. That is,

\[ D_1(a_j) = \sum_{k \in N}^{k \neq j} F_1(a_k) - C(a_k) \]  

where N is the set of clients held by auditor one. Presumably information about the loss of auditor one's independence will cause his other clients to seek an independent auditor. Thus \( D_1(a_j) \) will be large when the auditor is collecting many rents. This is the basis for DeAngelo's collateral bond.
The collateral bond leads to the curious result that while individual rents create an opportunity for nonindependence (our equation (1)), the aggregate loss of rents will force equation (2) to hold and thus incentive independence is achieved. This mechanism is important in that market structure can determine the existence and magnitude of the rents. It is a straight-forward step to see how large rents increase the size of D and thus strengthen the collateral bond.

We have a number of criticisms of the collateral bond. First, the size of the potential loss may not be sufficiently large to ensure independence. Recall that nonindependence may be continuous, and small variations from auditor independence may not have serious results. Auditors may take small deviations from an independent action. Even if these deviations are material, frequently there is enough judgment required in auditing decisions to obscure the impact of the nonindependent action. Thus the probability of actual detection of nonindependence may be very small.

Furthermore, equation (7) defines the maximum penalty for auditor nonindependence. In reality, firms do not lose all of their clients because of a single indiscrete act. And finally, the cost D should be expressed in terms of an expectation. If the probability of getting caught is small, then the accompanying penalties may not be sufficiently large to deter nonindependent action.

Therefore when the above factors are combined, the auditor may view D to be sufficiently small such that equation (4) holds for a particular audit. The size of D is an empirical issue and we can see no reason to a priori restrict its range.
Another criticism of the collateral bond is that competitive pricing provides a better mechanism to ensure auditor independence. If equation (1) holds with equality then (2) must hold and incentive independence is guaranteed. There is no need to rely upon bargaining independence when rents exist and $D$ is small.

We believe the appeal of the collateral bond argument for limiting competition rests with a particular type of transitional condition in the market to which we now turn.

6. COMPETITION AND RIVALRY

The distinction between competition and rivalry is often overlooked in discussions of market structure and independence. By rivalry we mean the inter-firm opportunism and exploitation of opportunities that ultimately lead to economic efficiency. Rivalry is competing. On the other hand, by competition we mean the state of competitive equilibrium characterized by the absence of economic profits. We feel that the failure to make this distinction leads to the kind of confusion where anti-competitive behavior is seen as preserving independence.

The argument that competition (actually rivalry) impedes independence is summarized below by Shockley [1981, p. 787]

As competition for audit clients increases, client's opportunities and incentives to replace incumbent auditors also increase. Reasons for the change may range from minimization of audit fees to a search for a more compliant auditor. Regardless, auditors' dependence on their clients may increase if they believe that other auditing firms would be happy to accept the engagement should a client become displeased.

To understand the motivation for the above argument, let us suppose that the market for audits is organized oligopolistically, and there is no rivalry among the auditors.
We will maintain our previous assumptions used in Section 2. Auditors will be independent if either the conditions for incentive or bargaining independence hold. Incentive independence rests upon the costs of nonindependence being large, whereas bargaining independence depends upon equation (3):

\[ F_1 < F_2 + T. \] (3)

With no rivalry, \( F_1 \) equals \( F_2 \), and if the net transactions cost of switching auditors is positive, then equation (3) will hold. What is important to note is that we are describing a market situation where there are positive rents and yet no loss of independence.

There are several troubling economic points. As in all cases of imperfect competition there are price and quantity distortions. The market is being restricted and there is no reason to believe that a socially optimal amount of auditing is occurring. Additionally, the virtue of independence is being maintained as a result of collusive, and therefore generally unstable, arrangements between suppliers. The lack of price rivalry supports the mechanism necessary to ensure both incentive and bargaining independence.

Now, let us suppose that price rivalry is introduced to the market such that nonincumbent firms have incentives to charge lower fees than incumbent auditors. The following relationship may hold:

\[ F_1(a_j) > F_2(a_j) + T_j. \] (8)

Auditors can no longer prevent client defection. If we assume that clients desire some type of nonindependence and equations (4) and (8) hold, then the auditor cannot resist the client's request. This illustrates the claim that increased rivalry can weaken independence. But one should recognize that the problem arises only because the incumbent auditor is simultaneously attempting to hold on to independence and
rents. If the incumbent auditor reduces his fee to meet the competitor's, then equation (3) will hold and bargaining independence is restored.

Falling fees also affect incentive independence. If we use a prime to denote the lower fee structure under rivalry, then:

\[
D_1(a_k) = \sum_{k \neq j} F_1(a_k) - C(a_k) > \sum_{k \neq j} F'_1(a_k) - C(a_k) = D'_1(a_k). \quad (9)
\]

However, independence may not be affected as the lower fee structure has reduced the excess of \([F-C]\). If there is sufficient linearity then the decrease in \(D\) will just offset the decrease in \([F-C]\) and incentive independence will hold.

Thus the introduction of rivalry could produce the appearance of nonindependence as those auditors attempting to maintain rents cannot also maintain independence. Furthermore, with more rivalry, clients will expect more cooperation to support the previous level of higher fees. We can see how the existence of rents and the desire to maintain them provide pressure for auditor nonindependence during this period of disequilibrium. However, once rivalry forces fees to the competitive price, there will be no further price cutting and incentive independence will hold thus guaranteeing auditor independence.

SUMMARY AND CONCLUSIONS

The independence of auditors is critical to society and to the auditing profession. In this paper we have demonstrated how market structure and auditor independence may be related. We developed the notions of incentive and bargaining independence and illustrated how each is applicable under various market structures. We also demonstrated how the existence of rents could compromise independence and how different market structures are compatible with the existence of
rents. We then analyzed a disequilibrium situation perhaps descriptive of auditing markets in recent years and showed how auditor independence would be perceived during the equilibrating process.

In conclusion, our analysis argues strongly for the benefits of competition in the auditing market. In the past, the profession instituted rules to limit entry and restrict rivalry. These rules may have added to the perceived "professionalism" of auditors, but at the same time created conditions which can give rise to economic rents. Since the existence of such rents is necessary (although not sufficient) for auditors to lose their independence, the societal good of auditor independence is more likely to be achieved if auditing markets are competitively organized.
1 For an overview of the issues involved, see Buckley & Weston (1980).

2 Empirical evidence with respect to actual levels of competition does not support the Senate's allegation of insufficient competition (Simunic, 1980).

3 See Simunic and Stein (1985) for the significance of this assumption. Also, note that we model action in one period only. However, since most of what we are concerned with occurs at the beginning of the period, we do not believe this assumption to be restrictive.

4 Audit committees consisting of outside directors may mitigate this problem, although to the extent the auditor must rely upon the goodwill and cooperation of management, the potential conflict remains.

5 We have suppressed issues of uncertainty. To do this one can think of the D's as being expressed in certainty equivalent units. As usual U'(w) > 0.

6 We exclude the possibility that unscrupulous auditors could save enough in production costs by supplying a low quality audit to make nonindependent costs negative. This assumption is based upon a legal environment where such cheating is heavily sanctioned. This is in contrast to the Klein and Leffler (1981) model of product quality in the absence of such legal sanctions. In that model quasi-rents are required in order to provide incentives for suppliers to produce a high quality product.

7 We hold F constant in our analysis because we assume that the fee offered by the auditor is determined by prevailing market conditions. The fee offered is not discriminatory in the sense the auditor offers the same fee to all similar clients. We do not allow the fee to increase as compensation for auditor nonindependence. We are interested in whether a given fee provides incentives for nonindependence and believe it to be trivially true that the auditor can always be bribed to be nonindependent.

8 Without equation (3) holding, the payoff to an independent action would be zero, which in view of (4) makes the nonindependent audit the preferred action.

9 For example, the government could undertake any of the following: revoke the auditor's license, reduce his fees, mandate auditing procedures, impose fines, institute third party liability, etc.

10 The costs E and D may well be continuous in the auditor's actions. Thus it is possible to observe small deviations from independence where the auditor equates the derivatives of these costs with respect to his action. While we have modelled the auditor's choice as being discrete, it is sometimes useful to think of the continuous choice
analogue. In this case, as nonindependence is not all or none, it is possible to have small D's thus allowing equation (2) to hold.

11 For instance, substitutes may be a surety bond to insure creditors, or a large purchase of shares by managers to signal to shareholders.

12 Recall that \( \eta = -\frac{p}{q} \frac{dq}{dp} \).

13 Again, if we allow some continuous amount of nonindependence, then it is possible that the auditor will choose some optimum where D is positive although small.

14 Going somewhat beyond our model, it is clear that even if in a given period the auditor gets "stuck" with a noncooperative client, the client will be passed on in the next period. The client will have to bear a succession of transactions costs and financial markets will learn that it is the client and not the auditor who is unreliable.

15 This could accord with the situation where there are few providers of audit services and professional ethics codes prohibit activities such as advertising which promote rivalry.


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Appendix B: LIST OF SAMPLE OTC COMPANIES

Academy Computing Corporation
Aero Systems, Incorporated
Air Cargo Equipment Corporation
Alabama By-Products Corporation
Algorex Corporation
Allied Security, Incorporated
Alloy Metal Products, Incorporated
Alpine Geophysical Associates, Incorporated
American Medical Services, Incorporated
American Nuclear Corporation
American Recreation Centers, Incorporated
Auric Corporation
Aztec Manufacturing Company
Baker Manufacturing Company
Barringer Resources, Incorporated
Bel Fuse, Incorporated
Big Piney Oil and Gas Company
Biospherics, Incorporated
Black Angus Systems, Incorporated
Boston Sand and Gravel Company
Broughton Foods Company
Buck Engineering Company, Incorporated
Butler National Corporation
Calumet Industries, Incorporated
Campbell Manufacturing Company, Incorporated
Carolina Mills, Incorporated
Centrex Corporation
Century Papers, Incorporated
Cerveceria Corona, Incorporated
Charvoz-Carsen Corporation
Chatham Manufacturing Company
Clayton Corporation
Cochrane Furniture Company, Incorporated
Communications Industries, Incorporated
Computer Usage Company, Incorporated
Comshare, Incorporated
Connohio, Incorporated
Control Laser Corporation
Cordis Corporation
Cybermatics, Incorporated
Cyclotron Corporation
D.A.B. Industries, Incorporated
Daylight Industries, Incorporated
Dekalb AgResearch, Incorporated
Dewey Electronics Corporation
Discovery Oil Limited
Dollar General Corporation
DuArt Film Laboratories, Incorporated
Dynasill Corporation of America
E.B.S. Data Processing, Incorporated
Educational Development Corporation
Educational Technology, Incorporation
Elco Industries, Incorporated
Electronic Control Systems, Incorporated
Elwell-Parker Systems, Incorporated
Evans (Bob) Farms, Incorporated
Fabric Wholesalers, Incorporated
Fanning Enterprises, Incorporated
Felters Company
Fine Products Company, Incorporated
Fleet Leasing, Incorporated
Fluorocarbon Company
Funtime, Incorporated
G & K Services, Incorporated
Gam Rad, Incorporated
Gap Instruments Corporation
General Kinetics, Incorporated
Geriatric and Medical Centers, Incorporated
Goddard Industries, Incorporated
Graco, Incorporated
Guardian Packaging Corporation
Gulf Energy and Development Corporation
Hallmark Data Systems, Incorporated
Hamburger Hamlets, Incorporated
Haverty Furniture Companies, Incorporated
Hermetite Corporation
Hershey Creamery Company
Hickory Furniture Company
Hill Brothers, Incorporated
Hydro Flame Corporation
Hytek International Corporation
Industrial Acoustics Company, Incorporated
Infodata Systems, Incorporated
Inter-Continental Services Corporation
Inter-Polymer Industries, Incorporated
International Packings Corporation
Intertherm, Incorporated
Isomet Corporation
Jaco Electronics, Incorporated
Jerrico, Incorporated
Johnson Electronics, Incorporated
Jones and Vining, Incorporated
Kalvar Corporation
Kettering Industries, Incorporated
Keweenaw Land Association, Limited
Kratos, Incorporated
Lady Baltimore Foods, Incorporated
Lake Shore, Incorporated
Lewis (Palmer G.) Company, Incorporated
Life Sciences, Incorporated
Lindly and Company, Incorporated
Logan Clay Products Company
Los Alamitos Race Course
MSI Electronics, Incorporated
Magnetic Controls Company
Mark Twain Marine, Incorporated
Mathematical Applications Group, Incorporated
Maxon Industries, Incorporated
Medex, Incorporated
Metallurgical Industries, Incorporated
Metro-Tel Corporation
Michaels (J.), Incorporated
Mile High Kennel Club
Miles-Samuelson, Incorporated
Miller Industries, Incorporated
Mogen David Kosher Meat Products Corporation
Monarch Cement Company
National Beryllia Corporation
Network Data Processing Corporation
New Dimensions in Education, Incorporated
New York Testing Laboratories, Incorporated
NMC Corporation
North American Biologicals, Incorporated
Offshore Navigation, Incorporated
Ohmart Corporation
Oneita Knitting Mills
Oppenheimer Industries, Incorporated
Oshkosh B'Gosh, Incorporated
Osrow Products Company, Incorporated
Packaging Systems Corporation
Pasquale Foods, Incorporated
Paul Harris Stores, Incorporated
Peerless Manufacturing Company
Photo-Control Corporation
Photo-Marker Corporation
Plasmine Corporation
Polyplastex United, Incorporated
Power Designs, Incorporated
Programming and Systems, Incorporated
Pulaski Furniture Corporation
Puritan-Bennett Corporation
RPS Products, Incorporated
Radiation Systems, Incorporated
Radio Frequency Company, Incorporated
Refac Technology Development Corporation
Reuter, Incorporated
Rex Plastics, Incorporated
Rospatch Corporation
Royalpar Industries, Incorporated
San/Bar Electronics Corporation
Saxton Products, Incorporated
Scan-Optics, Incorporated
Scope, Incorporated
Seneca Oil Company
Sherburne Corporation
Sirco International Corporation
Sloan Technology Corporation
Solid Controls, Incorporated
South States Oil and Gas Company
Spiral Metal Company, Incorporated
Staff Builders, Incorporated
Stauffer Communications, Incorporated
Sturm, Ruger and Company, Incorporated
Survival Technology, Incorporated
Tad's Enterprises, Incorporated
Tapecon, Incorporated
Technology, Incorporated
Telemation, Incorporated
Time Sharing Resources, Incorporated
Tinsley Laboratories, Incorporated
Trans-Industries, Incorporated
Trion, Incorporated
Troxel Manufacturing Company
Turner Broadcasting System, Incorporated
2B Systems, Incorporated
UMC Electronics Company
United States Surgical Corporation
Universal Manufacturing Company
Vail Associates, Incorporated
Valmont Industries, Incorporated
Van Dyk Research Corporation
Wailuku Sugar Company
Walker (B.B.) Company
Walker Color, Incorporated
Weinschel Engineering Company, Incorporated
Western Beef, Incorporated
Weston (Roy F.), Incorporated
Widmann (L.F.), Incorporated
Wright (Wm. E.) Company
Wyman-Gordon Company
York Research Corporation
Zenith Laboratories

(191)
Appendix C : LIST OF OTC COMPANIES CHANGING AUDITORS

1970 Auditor Changes

Alpine Geophysical Associates, Incorporated
American Nuclear Corporation
Campbell Manufacturing Company, Incorporated
Clayton Corporation
Comshare, Incorporated
Educational Development Corporation
Fanning Enterprises, Incorporated
Fluorocarbon Company
Geriatric and Medical Centers, Incorporated
Jaco Electronics, Incorporated
MSI Electronics, Incorporated
Mogen David Kosher Meat Products Corporation
New York Testing Laboratories, Incorporated
Ohmart Corporation
Turner Broadcasting Systems, Incorporated
Van Dyk Research Corporation
Walker Color, Incorporated
Zenith Laboratories, Incorporated

1971 Auditor Changes

Biospherics, Incorporated
Daylight Industries, Incorporated
E.B.S. Data Processing, Incorporated
Educational Technology, Incorporated
Electronic Control Systems, Incorporated
Fine Products Company, Incorporated
Hallmark Data Systems, Incorporated
Inter-Continental Services Corporation
Jerrico, Incorporated
Kratos, Incorporated
Miles-Samuelson, Incorporated
Programming and Systems, Incorporated
2B Systems, Incorporated

1972 Auditor Changes

Alloy Metal Products, Incorporated
Comshare, Incorporated
Discovery Oil Limited
Dynasil Corporation of America
Fluorocarbon Company
Gap Instruments Corporation
Miles-Samuelson, Incorporated
New York Testing Laboratories, Incorporated
North American Biologica, Incorporated
Polyplastex United, Incorporated
Sherburne Corporation
Staff Builders, Incorporated
Troxel Manufacturing Company

1973 Auditor Changes

Barringer Resources, Incorporated
Charvoz-Carsen Corporation
Electronic Control Systems, Incorporated
Goddard Industries, Incorporated
Hytek International Corporation
Intertherm, Incorporated
Jaco Electronics, Incorporated
Life Sciences, Incorporated
Miller Industries, Incorporated
Refac Technology Development Corporation
Time Sharing Resources, Incorporated
Walker (B.B.) Company

1974 Auditor Changes

Alpine Geophysical Associates, Incorporated
Calumet Industries, Incorporated
Dewey Electronics Corporation
Goddard Industries, Incorporated
Isomet Corporation
New Dimensions in Education
Zenith Laboratories, Incorporated

1975 Auditor Changes

Air Cargo Equipment Corporation
Elwell-Parker Electric Company
Life Sciences, Incorporated
Logan Clay Products Company
New York Testing Laboratories, Incorporated
Polyplastex United, Incorporated
Saxton Products, Incorporated
2B Systems, Incorporated

1976 Auditor Changes

Aztec Manufacturing Company
Bel Fuse, Incorporated
Black Angus Systems, Incorporated
Cybermatics, Incorporated
Dynasil Corporation of America
Educational Development Corporation
Electronic Control Systems, Incorporated
Fine Products Company, Incorporated
G & K Services, Incorporated
Logan Clay Products Company
Michaels (J.), Incorporated
Sirco International Corporation
Wailuku Sugar Company

1977 Auditor Changes

Bisopherics, Incorporated
Campbell Manufacturing Company, Incorporated
Electronic Control Systems, Incorporated
Michaels (J.), Incorporated
Miller Industries, Incorporated
National Beryllia Corporation
NMC Corporation
Refac Technology Development Corporation
Tapecon, Incorporated
Western Beef, Incorporated

1978 Auditor Changes

Calumet Industries, Incorporated
Computer Usage Company, Incorporated
Inter-Continental Services Corporation
Jaco Electronics, Incorporated
Lady Baltimore Foods, Incorporated
Maxon Industries, Incorporated
Pasquale Foods, Incorporated
Royalpar Industries, Incorporated
Sirco International Corporation
Sloan Technology Corporation
South States Oil and Gas Company
Staff Builders, Incorporated
Time Sharing Resources, Incorporated

1979 Auditor Changes

Campbell Manufacturing Company, Incorporated
Discovery Oil Limited
Evans (Bob) Farms, Incorporated
Life Sciences, Incorporated
Metro-Tel Corporation
Mogen David Kosher Meat Products Corporation
Packaging Systems Corporation
Seneca Oil Company
Telemation, Incorporated
2B Systems, Incorporated
1980 Auditor Changes

Campbell Manufacturing Company, Incorporated
Cochrane Furniture Company, Incorporated
EBS Data Processing, Incorporated
Geriatric and Medical Centers, Incorporated
Isomet Corporation
Kalvar Corporation
Los Alamitos Race Course
Mathematical Applications Group, Incorporated
Photo-Marker Corporation
Radiation Systems, Incorporated
Scan-Optics, Incorporated
United States Surgical Corporation

1981 Auditor Changes

Charvoz-Carsen Corporation
Elco Industries, Incorporated
Goddard Industries, Incorporated
Hermetite Corporation
Hickory Furniture Company
International Packagings Corporation
Radio Frequency Company, Incorporated
Van Dyk Research Corporation

1982 Auditor Changes

Academy Computing Corporation
Alpine Geophysical Associates, Incorporated
Campbell Manufacturing Company, Incorporated
Educational Development Corporation
Hershey Creamery Company
Hydro Flame Corporation
Hytek International Corporation
Kettering Industries, Incorporated
North American Biologicals, Incorporated
Photo-Marker Corporation
Polyplastex United, Incorporated

1983 Auditor Changes

Academy Computing Corporation
Alloy Metal Products, Incorporated
Fine Products Company, Incorporated
Hershey Creamery Company
Hydro Flame Corporation
Life Sciences, Incorporated
Maxon Industries, Incorporated
Osrow Products Company, Incorporated
Troxel Manufacturing Company
Weinschel Engineering Company, Incorporated
York Research Corporation

(159)
Appendix D: RESULTS OF REGRESSION TESTS

MIDAS
STATISTICAL RESEARCH LABORATORY
UNIVERSITY OF MICHIGAN
14:50:48
SEP 24, 1985

1. Total Auditor Changes (159)

<READ FILE=T.CHNGES VAR=1-2 LABEL=CHANGES,YEAR CASES=1-14>
READ OBSERVATIONS 1-14
VARIABLES BY CASE
<REGRESSION VAR=1,2>

LEAST SQUARES REGRESSION

ANALYSIS OF VARIANCE OF 1.CHANGES N= 14 OUT OF 14

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>DF</th>
<th>SUM SQRS</th>
<th>MEAN SQR</th>
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<td>TOTAL</td>
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MULT R = .43165  R-SQR= .18632  SE= 2.6197

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<td>-.43165</td>
<td>-.28791</td>
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</table>
2. Changes within Big Eight Auditors

<READ FILE=E.E VAR=1-2 LABEL=CHANGES,YEAR CASES=1-14>

READ OBSERVATIONS 1-14
VARIABLES BY CASE
<REGRESSION VAR=1,2>

LEAST SQUARES REGRESSION

ANALYSIS OF VARIANCE OF 1.CHANGES  N= 14 OUT OF 14

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<td>.31758</td>
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</table>

MULT R= .13583  R-SQR= .01845 SE= 1.1866

VARIABLE PARTIAL COEFF STD ERROR T-STAT SIGNIF

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3. Changes within Non-Big Eight Auditors

<READ FILE=N.N VAR=1-2 LABEL=CHANGES,YEAR CASES=1-14>

READ OBSERVATIONS 1-14
VARIABLES BY CASE
<REGRESSION VAR=1,2>

LEAST SQUARES REGRESSION

ANALYSIS OF VARIANCE OF 1.CHANGES  N= 14 OUT OF 14

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MULT R= .46547  R-SQR= .21667 SE= 1.4193

VARIABLE PARTIAL COEFF STD ERROR T-STAT SIGNIF

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4. Changes within Big Eight and Non-Big Eight Auditors

<READ FILE=EN.EN VAR=1-2 LABEL=CHANGES,YEAR CASES=1-14>

READ OBSERVATIONS 1-14
VARIABLES BY CASE
<REGRESSION VAR=1,2>

LEAST SQUARES REGRESSION

ANALYSIS OF VARIANCE OF CHANGES N= 14 OUT OF 14

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<th>SIGNIF</th>
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MULT R= .46983  R-SQR= .22074 SE= 1.7081

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<tr>
<td>CONSTANT</td>
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<td>-1.8437</td>
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5. Changes from Big Eight to Non-Big Eight Auditors

<READ FILE=8.N VAR=1-2 LABEL=CHANGES,YEAR CASES=1-14>

READ OBSERVATIONS 1-14
VARIABLES BY CASE
<REGRESSION VAR=1,2>

LEAST SQUARES REGRESSION

ANALYSIS OF VARIANCE OF CHANGES N= 14 OUT OF 14

<table>
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MULT R= .45080  R-SQR= .20322 SE= 1.6485

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6. Changes from Non-Big Eight to Big Eight Auditors

<READ FILE=N.8 VAR=1-2 LABEL=CHANGES,YEAR CASES=1-14>

READ OBSERVATIONS 1-14
VARIABLES BY CASE
<REGRESSION VAR=1,2>

LEAST SQUARES REGRESSION

ANALYSIS OF VARIANCE OF 1.CHANGES N= 14 OUT OF 14

<table>
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MULT R= .73984  R-SQR= .54737 SE= .90501

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