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**LABORATORY STUDY OF THE EFFECTS OF
AUDITOR'S BUSINESS RISK ON
AUDIT SCOPE**

BY

Judith Christina Walo

A DISSERTATION

**Submitted to
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LABORATORY STUDY OF THE EFFECTS OF AUDITOR'S BUSINESS RISK ON AUDIT SCOPE

BY

Judith Christina Walo

This study addressed the following research question: Does the auditor's business risk affect audit scope? There is disagreement in the auditing literature on whether or not business risk affects audit scope. The purpose of this study was to determine the extent, if any, that business risk from factors related to auditor litigation affects audit scope. It was hypothesized that audit scope would increase when auditing clients with increased auditor's business risk.

A laboratory study was performed with 32 audit managers from two Big Eight firms as subjects. The following business risk factors were manipulated: industry, ownership, and financial condition. Industry was manipulated as litigious and nonlitigious. Ownership was manipulated as public and private. Financial condition was manipulated as weak and strong. Audit scope was operationalized by total budgeted hours, materiality, sample sizes (including confirmations), and selected audit procedures.

Each subject was given four cases which required audit scope decisions in planning the year-end substantive tests of accounts receivable. A between subjects design was used

for industry, and a repeated measures design was used for ownership and financial condition. ANOVAs were performed to test developed hypotheses. Error expectation was measured and included as a covariate in additional analyses using covariance analysis.

Budgeted audit hours, which is an overall measure of audit scope, had significant effects from ownership and financial condition. Budgeted audit hours were significantly greater for a public company or a client with a weak financial condition. When firm and error expectation were included in the analysis, ownership and firm had significant effects, while financial condition did not. A four-way interaction among firm X industry X ownership X financial condition also resulted. Materiality was not significantly affected. The analysis of materiality was surprising in that materiality judgments changed in the opposite direction from what was expected when there were changes in industry and financial condition. There were no significant effects on number of confirmations or on selected audit procedures. There were significant effects from ownership and financial condition on sample sizes to test the cutoff of sales. The CPA firm had a significant effect on budgeted audit hours, materiality, and number of confirmations. Error expectation was significantly affected with manipulations of financial condition; i.e., the managers expected significantly more errors if the financial condition was weak.

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CHAPTER I

INTRODUCTION

Although the professional auditing standards acknowledge that there is a risk of loss to the auditor's professional practice from litigation, sanctions, or adverse publicity (the auditor's business risk), the standards do not address the effect business risk may have on audit evidence. In fact, the standards exclude business risk from audit risk (American Institute of Certified Public Accountants, 1989, AU312.02, footnote 1). Therefore, there is no guidance on what effect, if any, business risk should have on the nature, extent, and timing of audit procedures (which is hereinafter referred to as the audit scope).

The purpose of this study is to determine the extent, if any, that business risk affects audit scope. The specific research question addressed by this study is: Does the auditor's business risk increase audit scope?

Business risk may have the following two effects on audit scope:

1. Audit scope is increased. In response to the possibility of being sued, the auditor might practice "defensive auditing" (Jaenicke, 1977). Defensive auditing is increasing the scope of the audit, thereby gathering more evidence than is required under generally accepted auditing

standards. Increasing audit evidence improves audit quality and may be justified if the auditor is required to defend the audit.

2. Audit scope is not affected. Business risk has no effect on the audit because business risk is not considered under generally accepted auditing standards. That is, since business risk does not affect the probability that the financial statements are misstated, audit scope should not be affected.

Since the auditing literature disagrees about the role of business risk in an audit, an empirical study is needed to determine the extent to which perceived business risk affects audit scope. The audit consequences of business risk can be evaluated to determine if the effect is appropriate. This knowledge should be of interest to both practitioners and researchers (Akresh, Loebbecke, Scott, 1988).

It is hypothesized that with an increase in business risk audit scope will be increased. Hypotheses will be investigated by conducting a laboratory experiment with audit managers from two Big Eight firms as subjects. The managers will be asked to make audit scope decisions to plan the year-end testing of accounts receivable in cases which have manipulations in business risk.

In the statistical analysis, independent variables with two levels each will result from the manipulated factors: litigious and nonlitigious industry, public or private

ownership, and weak and strong financial condition. The dependent variables to operationalize audit scope will be total budgeted audit hours, materiality, sample sizes (which includes confirmations), and selected audit procedures. Separate ANOVAs will be conducted for each dependent variable.

A major concern of this study is to control the effect on audit scope from error expectation. Because business risk and inherent risk have many common factors, manipulated business risk factors may cause a coincidental effect on inherent risk and, hence, on audit scope because of changes in error expectation. Of primary interest is to determine if there is an effect to audit scope because of defensive auditing. With a change in error expectation, audit scope may be affected independently of an effect from business risk, thereby confounding the results. To isolate the effect from business risk, changes in error expectation will be measured and included as a covariate in additional statistical tests using covariance analysis.

This dissertation is organized as follows. Chapter II consists of a review of the related literature. Chapter III discusses the research hypotheses, preparation of the cases, research design, and method of analysis. Chapter IV reports and discusses the results of the hypothesis testing. Chapter V presents additional analyses. Chapter VI is a summary of the results and presents this dissertation's contributions

and limitations. Included in Chapter VI are suggestions for additional research.

CHAPTER II

LITERATURE REVIEW

This chapter discusses the relevant research on business risk for the purpose of developing research hypotheses. The research hypotheses are discussed in Chapter III.

Four areas of literature are relevant to this study. First, the literature on auditor's business risk, including the definition and the importance of business risk, is discussed. Second, the audit risk model and its relation to business risk and error expectation is presented. Third, the literature on business risk factors and their associations with auditor litigation and errors is reviewed. Finally, empirical research on the effect of business risk on audit scope is discussed.

Business Risk

The professional auditing standards describe business risk:

In addition to audit risk, the auditor is also exposed to loss or injury to his professional practice from litigation, adverse publicity, or other events arising in connection with financial statements that he has examined and reported on. This exposure is present even though the auditor has performed his examination in accordance with generally accepted auditing standards and has reported appropriately on those financial statements. Even if an auditor assesses this

exposure as low, he should not perform less extensive procedures than would otherwise be appropriate under generally accepted auditing standards (AICPA, 1989, AU312.02, footnote 1).

Brumfield, Elliott, and Jacobson (1983) list three aspects of auditor's business risk: (1) litigation by clients or third parties; (2) legal sanctions imposed by public or private regulatory bodies such as the Securities and Exchange Commission (SEC) or the American Institute of Certified Public Accountants (AICPA); and (3) an impaired professional reputation because of litigation, sanctions, or adverse publicity.

There are costs associated with each aspect of business risk. For example, litigation could involve settlement costs, attorney's fees, lost auditor time, and additional expenses. Sanctions might involve costs or lost revenues. An impaired reputation could adversely affect the practice through obtaining new clients, losing clients, or affecting personnel morale and retention (Jaenicke, 1977). Each of the aspects of business risk is discussed in turn.

Litigation

Auditor litigation has involved significant payments to clients and investors. The Wall Street Journal reported that settlements against auditors of \$50 million were awarded and one firm (Arthur Andersen & Co.) had litigation losses in excess of \$100 million during the period 1982 to 1984 (Berton, 1985b). These losses were probably covered by

malpractice insurance¹.

Typically, malpractice insurance covers all amounts in excess of the deductible which the auditor is legally required to pay and defense costs incurred in responding to the claims (Brooks, 1987). The Wall Street Journal has reported that liability insurance rates have significantly increased and that some insurance companies have stopped offering coverage. Insurance costs have become so expensive that some auditing firms have considered not carrying insurance (Berton, 1985a). Liability insurance does not cover damage to the auditor's reputation, loss of clients, or loss of potential clients due to litigation.

Sanctions

Legal sanctions by the SEC could involve restrictions and limitations to the firm's professional practice. Legal sanctions by the SEC include injunctive and administrative proceedings against the auditor (Jaenicke, 1977).

Injunctive proceedings are initiated to restrain the auditor from further violations and often occur along with civil litigation involving large claims. In a study of public companies involved in litigation, Palmrose (1987) found 14 percent of the cases resulted in SEC sanctions against the auditor. Administrative rulings under Rule 2(e) of the SEC rules of practice allow the SEC to censure the

¹The audit firm must usually pay a deductible which may be sizable (from \$1,000,000 to \$5,000,000), and the policies usually have limits.

auditor or to suspend temporarily or permanently the privilege of auditors to appear and practice before the SEC. Under Rule 2(e), SEC sanctions have included (1) required peer reviews; (2) restrictions on mergers with other firms; (3) prohibitions for a specified period from accepting new SEC clients; (4) requirements to adopt certain auditing procedures; (5) required continuing education programs; (6) required disclosures to new clients of the SEC's findings, (7) encouragement to merge with a larger firm; and (8) prohibition of a partner to be or act in the partner capacity for a ten-month period (Jaenicke, 1977, p. 48). Restrictions and limitations on the firm's practice from sanctions could result in lost client fees and damage to the firm's reputation.

Impaired Reputation

Litigation or sanctions could impair a public accounting firm's reputation. Even if the firm should prevail, the publicity accompanying litigation or SEC sanctions could be of considerable embarrassment to the auditor and firm. An impaired reputation could result in lost client fees through an effect on the firm's ability to attract new clients. Even though there is no empirical evidence supporting lost client fees from adverse publicity, practitioners have high regard for their professional reputations. As one partner in a Big Eight firm said in regard to the quality of work performed by his firm, "In an

audit our reputation is on the line; it's all we really have."²

The rest of this dissertation concentrates on business risk from litigation because of its significance to business risk and the availability of prior research that relates client and engagement characteristics to auditor litigation. These characteristics are used to develop business risk factors. Because litigation captures at least some of the risk from sanctions and much of the risk from an impaired reputation, concentrating on business risk from litigation does not diminish the generalizability of business risk effects.

Relationship of Audit Scope and Audit Evidence

Audit scope is related to audit evidence. As it is used in this research, audit scope is a measure of the amount of work planned to collect a certain level of audit evidence. During audit planning, the auditor develops "an overall strategy for the expected conduct and scope of the audit" (AICPA, 1989, AU311.03). At that time, decisions are made about the level of auditing necessary to gather sufficient evidence in order to evaluate the financial statements and issue an auditor's opinion. In planning the audit, the auditor considers the nature, extent, and timing of audit procedures to be performed and writes an audit program which the auditor believes will satisfy the

²Per personal communication May 1989.

objectives of the audit (AICPA, 1989, AU311.05). In this research, the term "audit scope" is used to signify the work to be performed and has the dimensions of the nature, extent, and timing of audit procedures planned which will result in a certain quantity and quality of evidence.

Should Business Risk Affect Audit Scope?

Jaenicke (1977) discusses the effect of the legal environment on society if auditors practice defensive auditing. Defensive auditing is defined as increasing audit scope beyond that required by auditing standards because there is potential litigation related to the engagement. The cost to society of defensive auditing is the opportunity cost associated with lost benefits to society when the auditor does unnecessary work. There is no evidence on how significant unnecessary work is in practice.

Increased auditing because of defensive auditing may be beneficial to the auditor. If a firm has a reputation for high quality audits, the firm may not be as likely to be sued. Kinney (forthcoming), as reported by Palmrose (1988), modeled the probability of a suit against an auditor.

$P(\text{suit}) = f(\text{actual user losses, amount of misstatement in audited financial statements, reputation of auditor for audit quality . . . , auditor legal posture, and user's and client's costs to sue})$ (Kinney, forthcoming; see Palmrose, 1988)

The firm's reputation for audit quality in part results from gathering a high level of evidence. As this model indicates, if the auditor has a reputation for gathering a

high level of evidence, would-be plaintiffs may be hesitant to involve the auditor in litigation.

When the auditor's legal environment is considered, increasing audit scope beyond that required by auditing standards might be a prudent business strategy (Holstrum and Kirtland, 1982). Although costs to increase audit scope may be fully or partially borne by the client, the auditor might choose not to bill the client in order to be competitive (Jaenicke, 1977). Since litigation also could involve significant costs to the auditor, defensive auditing might maximize the auditor's profits over the long run even if the full costs to audit are not realized on certain engagements.

Impact Of Business Risk On Audit Scope

There is controversy in the literature over whether or not business risk has an effect on audit scope. Simunic (1980) provided theoretical support connecting loss exposure and audit scope in a positive model of the auditor's loss function:

$$E(d) = f(a, q)$$

$E(d)$ = the expected present value of possible future losses which may arise from this period's audited financial statements

a = the quantity of resources utilized directly by the auditee in operating the internal accounting system

q = the quantity of resources³ utilized by the auditor in performing the audit examination (Simunic, 1980, p. 168)

³Audit scope

The loss function varies over audit engagements and is affected by the client's loss exposure. If the engagement is assessed as having a high loss exposure, both a (auditee's resources) and q (audit scope) are increased. An increase in a and q has the effect of decreasing the potential loss from litigation (d).

Business risk may have an impact on audit scope through the audit risk model. The audit risk model is such an integral part of the audit process that it is examined briefly in the next section.

Audit Risk Model

The audit risk model is part of the professional auditing standards and links audit risk to the level of audit scope (AICPA, 1989, AU312.01).

The audit risk model, as it is presented in the auditing standards, is described below in terms of a planning model; i.e., a model of the auditor's audit scope decision made at the beginning on an audit:

$$DR = AR / (IH \times CR)$$

DR = detection risk; the risk that an auditor's procedures will lead him to conclude that error in an account balance or class of transactions that could be material, when aggregated with error in other balances or classes, does not exist when in fact such error does exist.

AR = audit risk; the risk that the auditor may unknowingly fail to appropriately modify his opinion on the financial statements that are materially misstated.

IH = inherent risk; the susceptibility of an account balance or class of transactions to error that could be material, when aggregated with error in other balances or classes, assuming that there were no related internal accounting controls.

CR = control risk; the risk that error that could occur in an account balance or class of transactions and that could be material, when aggregated with error in other balances or classes, will not be prevented or detected on a timely basis by the system of internal accounting control (AICPA, 1989, AU312.20).

The planning model shows detection risk (DR) as a function of audit risk (AR) and the client's inherent risk (IH) and control risk (CR). The detection risk (which is under the auditor's control) indicates the amount of evidence to be gathered, with low detection risk indicating a high level of evidence, and high detection risk indicating a low level of evidence.

The level of audit risk required by generally accepted auditing standards is undefined and left to auditor judgment. There is a generally accepted maximum audit risk allowable and there is a minimum, but undefined, amount of evidence required under the standards (Brumfield, et al, 1983).

The levels of inherent risk and control risk are client dependent and are assessed by the auditor when planning the audit and doing tests of the accounting system.

Effect Of Error Expectation On Audit Risk Model

Errors are unintentional misstatements or omissions in the financial statements and may involve:

Mistakes in gathering or processing accounting data from which financial statements are prepared.

Incorrect accounting estimates arising from oversight or misinterpretation of facts.

Mistakes in the application of accounting principles relating to amount, classification, manner of presentation or disclosure (AICPA, AU316.02, 1989).

Irregularities are intentional misstatements or omissions and may involve:

Manipulation, falsification, or alteration of accounting records or supporting documents . . .

Misrepresentation or intentional omission of events, transactions, or other significant information

Intentional misapplication of accounting principles, relating to amount, classification, manner of presentation, or disclosure (AICPA, AU316.03, 1989).

During audit planning, the auditor assesses the risk that material errors and irregularities are present and adjusts inherent and control risk accordingly. For example, an auditor might assess inherent risk as being moderate in one year for a client with stable management, but may assess inherent risk as high in a subsequent year when management turnover is high. An increase in inherent risk or control risk causes a reduction in detection risk, requiring that greater or higher quality evidence be obtained and, hence, an increase in audit scope.

In assessing inherent and control risk, the auditor considers management characteristics, operating and industry characteristics, engagement characteristics, and specific

account characteristics (AICPA, 1989). For example, management characteristics indicating higher risks are: management is unduly aggressive, emphasizes meeting earnings projections, has a high turnover, or has a poor reputation. Included in operating and industry characteristics indicating higher risks may be inadequate or inconsistent client profitability compared to its industry or client susceptibility of its performance to economic factors. Other engagement characteristics indicating higher risks may include new audit clients or the presence of difficult accounting issues.

For the purpose of this dissertation, error expectation will include the auditors' expectation of both errors and irregularities. Many of the characteristics which affect error expectation also are included in the client and engagement characteristics which are the source of the business risk factors developed in a later section.

Effect Of Change in Audit Risk On the Audit Risk Model

Once inherent risk and control risk are determined, a change in audit risk directly affects the level of detection risk for the engagement. The auditor may use his or her judgment in determining the level of audit risk (as long as the maximum allowable under the professional standards is not exceeded). A reduction in audit risk causes a reduction in detection risk, requiring greater or higher quality evidence be obtained.

Business Risk Effect On the Audit Risk Model

There is not agreement in the literature on whether or not business risk affects the audit risk model. If the audit risk model is affected, the effect might be through the level of audit risk acceptable for the engagement. Audit risk might be decreased for a client that subjects the auditor to higher business risk than normal. A contrary view is that business risk does not affect the audit risk model because financial statement misstatement is not affected.

Decrease In Audit Risk Used In Audit Risk Model

If the auditor believes that a client presents a risk of involving the auditor in litigation, the level of audit risk acceptable for the engagement may be decreased (Arens and Loebbecke, 1988; The Canadian Institute of Chartered Accountants, 1980; Boritz and Jensen, 1984). A decrease in audit risk results in a decrease to detection risk and an increase to audit scope. This response to the perceived threat of litigation is referred to as "defensive auditing" in this research.

Audit risk might vary over a narrow low range depending upon the client's "sensitivity" or loss exposure:

The maximum acceptable level of overall risk will depend on the sensitivity of the client and the cost of the audit procedures involved, as well as on who the users of the financial statements will be.

A very low degree of acceptable overall risk might be desirable when exposure and sensitivity are

high, such as in the case of most regulated industries, public companies and those enterprises where the inherent risk of error or irregularity is high (The Canadian Institute of Chartered Accountants, 1980, p. 96).

Arens and Loebbecke (1988) use the term "desired audit risk" to describe "subjectively determined" audit risk. Audit risk is subjectively determined because it is assessed or set at a level which is comfortable to the auditor.

Auditing at a lower risk level than required under the auditing standards may occur because the auditor prefers to take less risk than the profession requires:

Business risk is governed by the auditor's own risk preferences. . .

Some auditors might choose to audit to a higher level of assurance (lower risk) than the minimum required by the profession. The difference between the "required" minimum level of audit assurance and the level actually selected by an auditor represents an adjustment for business risk (Boritz and Jensen, 1984, p. 6).

There is empirical support that risk preference affects audit scope decisions (Clarke, 1987). Thus, audit scope decisions may be an individual matter within the bounds of firm and professional requirements and contingent upon whether or not business risk exceeds a comfortable level. An association between risk preference and audit scope might be an indicator of a business risk adjustment.

Deloitte Haskins & Sells (DH&S) treat business risk as a special audit risk and adjust the audit risk for an engagement with unusual business risk. Holstrum and Kirtland (1982) described the DH&S approach:

In an audit engagement, if factors exist that are normally associated with increased business risk, we may attempt to control our business risk by correspondingly increasing our audit work beyond that normally performed in an audit or by taking unusual audit precautions (Holstrum and Kirtland, 1982).

No Effect On Audit Risk Model

Business risk may not affect audit scope because business risk is not a component in the audit risk model. Brumfield, et al (1983) stated that business risk arising from factors not related to expectation of error should not be included in the audit risk model and should not affect audit scope. Stated differently, detection risk should not be affected if there has been no effect on potential errors.

Munter and McCaslin (1984) concurred and stated that, since business risk is always present in an audit, business risk should not affect audit scope:

As the term is used in SAS No. 47, it (audit risk) differs from business risk--the exposure to loss or injury in the professional practice from litigation or publicity--which is present whether or not GAAS have been applied in the audit. Thus, the level of business risk present should not affect the nature, timing, and extent of audit procedures to be performed. The level of audit risk, since it does affect the applicability of GAAS in an engagement, will affect the nature, timing, and extent of audit procedures to be performed (Munter and McCaslin, 1984, p. 35).

Ricchiute (1983) argued on an economic basis that an auditor's legal liability cannot justify an audit scope that is greater than that required by generally accepted auditing standards. Doing more audit work than is necessary under

the standards is described by Ricchiute as "overauditing." Overauditing is costly to the auditor and can result in audit fees which are excessive.

Other Effects of Business Risk On the Audit

Billing, Documentation, Staffing, and Supervision.

When unusual business risk is present, non-scope effects may occur to the audit. The literature indicates that business risk might affect billing, audit documentation, staffing, and supervision. The billing rates might be affected, with clients with higher business risk paying higher rates (Brumfield, et al, 1983). The documentation of audit procedures performed might be more extensive for clients with higher business risk (Winters, 1983; Jaenicke, 1977). More experienced auditors may be assigned or closer supervision may occur on audits with higher business risk. According to generally accepted auditing standards, engagements with higher audit risk ordinarily require more experienced staff or more extensive supervision (AICPA, 1989). Experienced auditors could be expected to do a better job of auditing and to be more aware of the implications of possible problems on the audit.

Acceptance and Continuance of Client Relationship Procedures

Potential clients with high business risk might not be accepted, or undesirable clients might be discontinued. An audit firm may have formalized acceptance and continuance procedures to evaluate the risk to audit prior to committing

itself to the engagement. High risk clients can be identified, and the audit firm may choose not to accept the engagement if the risk to audit is excessive (Bremser, 1980). Clients who may pose excessive auditor business risk may be screened out before acceptance, thus eliminating the need to adjust audit scope from business risk.

Models of the Effects of Business Risk and Error Expectation On Audit Scope

The preceding discussion shows there is controversy over whether or not business risk affects audit scope. Confusion over the effects of business risk on audit scope is heightened because factors⁴ that indicate the presence of business risk may also indicate the presence of errors. The audit risk model previously discussed excludes business risk specifically. However, error expectation is an integral part of the model through its effect on inherent and control risk.

The possible effects of business risk factors on error expectation, business risk, and audit scope are shown in Figure 1. Model 1 shows that business risk factors which increase error expectation increase audit scope. Model 1 is

⁴In a subsequent section in this Chapter, six business risk factors are developed: economy; industry; management philosophy, reputation, and control environment; public or private ownership; client and auditor relationship; and financial condition. These factors are called business risk factors in this dissertation because business risk is emphasized in this research.

consistent with the audit risk model. Model 2 shows that business risk factors which increase business risk perception without an increase to error expectation increase audit scope; i.e., a model of defensive auditing. In Model 2, the effect of business risk on audit scope is not consistent with the audit risk model as written in the auditing standards. However, Model 2 is consistent with the literature previously discussed suggesting that audit risk in the audit risk model be adjusted to "desired audit risk" (Arens and Loebbecke, 1988; The Canadian Institute of Chartered Accountants, 1980; Boritz and Jensen, 1984).

Model 3 shows a dual effect of business risk factors on business risk perception and error expectation on audit scope. Model 4 shows business risk factors have no effect on audit scope, but as previously indicated may affect other aspects of the audit such as billing, staffing, supervision, and documentation or client acceptance and retention.

The focus of this research is to determine if defensive auditing occurs when business risk factors are present. Defensive auditing is depicted in Model 2 and Model 3. If business risk affects audit scope, then the effect is through an adjustment to the audit risk model. Audit risk would be changed to "desired audit risk" in the audit risk model:

MODEL 1

Business Risk		Error		Audit
Factors	----->	Expectation	----->	Scope
		Affected		Affected

MODEL 2

Business Risk		Business Risk		Audit
Factors	----->	Perception	----->	Scope
		Affected		Affected

MODEL 3

Business Risk		Error		Audit
Factors	----->	Expectation	----->	Scope
		Affected		Affected

Business Risk		Business Risk		Audit
Factors	----->	Perception	----->	Scope
		Affected		Affected

MODEL 4

Business Risk		No Effect
Factors	----->	On Audit
		Scope

Figure 1
 MODELS OF EFFECT OF BUSINESS
 RISK FACTORS ON AUDIT SCOPE

$$DR = DAR / (IH \times CR)$$

DR = detection risk (definition unchanged; see previous section)

DAR = desired audit risk; the risk under generally accepted auditing standards, which may be reduced to reflect business risk, that the auditor may unknowingly fail to appropriately modify his opinion on the financial statements that are materially misstated.

IH = inherent risk (definition unchanged; see previous section)

CR = control risk (definition unchanged; see previous section)

Business Risk Factors

Assignment of Characteristics to Factors

The auditing and auditor litigation literature reveals 20 client and engagement characteristics associated with auditor business risk. These characteristics along with their sources are listed in Table 1.

A review of the 20 characteristics indicates natural groupings for most of the characteristics. These six groupings are referred to in this research as business risk factors. The following presents how the characteristics were assigned to business risk factors.

The characteristics of economy and industry are each important and significantly different from any other characteristic. Therefore, the business risk factors of economy and industry were created for these characteristics. Characteristics 3 through 8 which relate to management reputation and experience and to management policy toward developing strong internal control systems were grouped

Table 1
 CLIENT AND ENGAGEMENT CHARACTERISTICS
 ASSOCIATED WITH AUDITOR'S BUSINESS RISK

	<u>Description</u> ⁵	<u>Source</u> ⁶						
		a	b	c	d	e	f	g
1.	Economy in which the company operates--a depressed, stagnant economy indicates higher business risk	x	x				x	
2.	Industry in which the company operates--a new, unstable industry, or an economy greatly influenced by external events indicates higher business risk	x	x	x	x	x		x
3.	Management philosophy about accounting and operational matters--an aggressive management indicates higher business risk	x				x	x	
4.	Control environment, including the possibility of management override--business risk is higher with weak administrative controls, management not control conscious, or high possibility of management override	x		x				
5.	Rate of management and board turnover--high turnover indicates higher business risk	x		x				

⁵The descriptions for Characteristics 1-13, 15, and 19-20 are taken from Brumfield, et al, (1983), p. 65. The descriptions for Characteristics 16-17 are taken from Arens and Loebbecke (1988). The description for Characteristic 18 is taken from Booker (1973) and Anderson, Giese, and Booker (1970), and the description for Characteristic 14 is taken from Booker (1973).

⁶a = Brumfield, et al (1983)
 b = Anderson, Giese, and Booker (1970)
 c = Booker (1973)
 d = Arens and Loebbecke (1988)
 e = Palmrose (1988)
 f = Palmrose (1987)
 g = St. Pierre and Anderson (1984)

Table 1 (Cont'd.)

	<u>Description</u>	<u>Source</u>						
		<u>a</u>	<u>b</u>	<u>c</u>	<u>d</u>	<u>e</u>	<u>f</u>	<u>g</u>
6.	Business reputation of management and owners--poor reputation indicates higher business risk	x		x				
7.	Experience of management and owners--low experience indicates a higher business risk	x						
8.	Existing or potential client litigation--if litigation is significant, business risk is higher	x						
9.	Public or nonpublic ownership--a public company indicates a higher business risk	x	x			x	x	
10.	Regulatory problems--significant problems indicate higher business risk	x					x	x
11.	Previous audit history--higher business risk is present with no prior audits, qualified or adverse opinions on prior audits, disagreements or many adjustments on prior audits	x						x
12.	Client understanding of auditor responsibilities--unclear understanding indicates a higher business risk to the auditor of being sued by the client	x						
13.	Conflicts of interest between client and auditor or auditor independence--significant conflicts or independence problems indicate higher business risk	x	x	x	x			

Table 1 (Cont'd.)

	<u>Description</u>	<u>Source</u>						
		<u>a</u>	<u>b</u>	<u>c</u>	<u>d</u>	<u>e</u>	<u>f</u>	<u>g</u>
14.	Longevity of the audit engagement--a long tenure could increase business risk if the auditor loses objectivity; a long tenure could decrease business risk because the auditor is experienced and familiar with the client		x	x				
15.	Financial position and operating performance--weak position or performance indicates a higher business risk	x			x		x	x
16.	Financing used--statements with significant amounts of liabilities are more likely to be used extensively by creditors; greater use indicates higher business risk		x	x	x			
17.	Size of client--the larger the client, the more widely the distribution of the financial statements; business risk is greater with greater distribution	x		x			x	
18.	Rate of growth--a rapid growth through mergers and acquisitions will normally increase the auditor's risk; a primary concern to the auditor is the client's financial planning with rapid growth. Inadequate financing increases the auditor's business risk		x	x				
19.	Company location--if the client is located in a small community, business risk is higher	x						
20.	Business acuity or sophistication of client community--a high level in the community indicates a higher business risk	x						

under the business risk factor of management philosophy, reputation, and control environment. Characteristics 9 and 10 relate to types of ownership and were grouped under the business risk factor of public or private ownership.

Characteristics 11 through 14 refer to the relationship of the auditor with the client. These characteristics were grouped under the business risk factor of client and auditor relationship. Characteristics 15 and 16 relate to financial position and the amount of liabilities and were grouped under the business risk factor of financial condition. The business risk from size (Characteristic 17) results from the wider distribution of financial statements of larger companies. Size was not specifically assigned to a business risk factor because size was considered to be a surrogate for industry and/or ownership.

The business risk from rate of growth results when a company has not been managed properly during rapid growth. The company typically has weak internal controls and is inadequately financed. Rate of growth was assigned to the factors of management philosophy, reputation, and control environment and financial condition.

Characteristics 19 and 20 were not assigned to factors because the characteristics seem to conflict with one another. According to No. 19, business risk is higher for the client located in a smaller community, while according to No. 20, business risk is higher for the client located in

a sophisticated community. Since it is likely that there is a correlation in the size of the community with its level of sophistication, it would not seem unusual for a large community to be sophisticated and for a small community to be unsophisticated. Because these characteristics were determined to be not significant for this research and only one source cited community characteristics, no factor was created.

In summary, the client and engagement characteristics found in the literature are grouped and discussed under the six business risk factors of economy; industry; management philosophy, reputation, and control environment; public and private ownership; client and auditor relationship; and financial condition. See a summary of the groupings of characteristics to business risk factors on Table 2.

Dual Effect Of Business Risk Factors On Business Risk and Error Expectation

Research on business risk factors' associations with auditor litigation is reviewed in this section. As discussed earlier, if the auditor is practicing defensive auditing, audit scope would be increased beyond that required under generally accepted auditing standards. As previously reviewed, an increase in audit scope could result from a decrease in the level of audit risk below that required under generally accepted auditing standards.

In addition to reviewing the litigation aspect of each

Table 2
BUSINESS RISK FACTORS

**Client and Engagement
Characteristics⁷**

1. Economy	1. Economy
2. Industry	2. Industry
3. Management Philosophy	3. Management Philosophy, Reputation, and Control Environment
4. Control Environment	
5. Rate of Turnover	
6. Business Reputation	
7. Experience	
8. Existing or Potential Litigation	
9. Public or Nonpublic Ownership	4. Public or Private Ownership
10. Regulatory Problems	
11. Previous Audit History	5. Client and Auditor Relationship
12. Client Understanding	
13. Conflicts of Interest and Independence	
14. Longevity of engagement	
15. Financial Position and Operating Performance	6. Financial Condition
16. Financing Used	

⁷Characteristics associated with auditor's business risk from Table 1

Table 2 (Cont'd.)

<u>Client and Engagement Characteristic</u>	<u>Business Risk Factor</u>
17. Size of Client	Factor Not Assigned ⁸
18. Rate of Growth	Assigned to Other Factors ⁹
19. Company Location	Factor Not Assigned
20. Client Community	Factor Not Assigned

⁸Size is not assigned to a business risk factor. Size may be a surrogate for other factors such as Industry or Public or Private Ownership.

⁹The business risk from rate of growth is included in the business risk factors of Management Philosophy, Reputation, and Control Environment and Financial Condition. Business risk from rapid growth results if the client has not been managed properly with adequate control and if the client is inadequately financed.

business risk factor, the research on each factor's association with errors is included. As discussed in an earlier section, business risk factors may have a coincidental effect on error expectation¹⁰. Changes in error expectation may affect inherent and/or control risk which affects the amount and quality of evidence and, hence, the audit scope which the auditor requires. To control for the effects on audit scope from changes in error expectation, any effect each factor has on error expectation must be considered in developing the cases and analyzing the results.

Economy

Brumfield, et al (1983) and Anderson, et al, (1970) indicate there is a higher business risk for the auditor when the economy is depressed.

Litigation Research. If the economy is depressed, investors in capital markets might try to recover their losses through litigation against the auditors. Palmrose (1987) noted high numbers of lawsuits following major economic downturns which suggested a link between the economic conditions and auditor litigation. In summary, auditors' risk from lawsuits may be increased with downturns in the economy.

Error Research. Errors and irregularities could be increased if management is motivated to try to hide negative

¹⁰See the models and discussion earlier in this Chapter

effects caused by a poor economy (Leichti, 1986). In a poor economy, management might choose methods that result in more optimistic values to enhance the company's reporting.

Management might be motivated to window dress (to improve the appearance of the financial statement results) to maintain a certain level of earnings per share, to satisfy loan covenants, or to improve operating results that affect management compensation programs. Since errors might increase, auditors might increase their expectation of errors during periods of downturns in the economy.

Industry

Brumfield, et al, (1983), Booker (1973), and Anderson, et al, (1970) include industry as a factor in business risk. A new, unstable industry that is affected by external events presents a high risk to the auditor. If the type of business is risky for the client, then the auditor could be affected by this risk, too.

Litigation Research. Palmrose (1988) and St. Pierre and Anderson (1984) found some industries have a higher or lower relative incidence of lawsuits involving auditors.

Palmrose (1988) studied the industry breakdown of 472 auditor litigation cases which occurred from 1960-1985 and found a difference in the relative incidence of litigation for some industries. In a statistical test of the computers and electronics industry, there were significantly more cases involving computers and electronics than the number of

companies in this industry as a percent to all companies would indicate. St. Pierre and Anderson (1984) found two industries had relatively more litigation than would be expected: (1) finance, insurance, real estate; and (2) manufacturing. Services and construction had lower litigation than would be expected. In summary, auditors' risk from lawsuits increases with certain industries.

Error Research. Industry complexity could increase the probability of errors. Studies have shown that error rates vary for different industries (Hylas and Ashton, 1982; Ham, Losell, and Smieliauskas, 1985). Kreutzfeldt and Wallace (1986) found that of manufacturing, oil and gas, and banking industries, manufacturing companies have the greatest number of errors when the errors in all accounts are combined. The size of the errors was greatest for oil and gas and lowest for banks. Ham, et al, 1985, found the error rates in accounts receivable were lower in service and manufacturing industries than in distributing industries. Hylas and Ashton (1982) found that the type of industry could be used to predict audit areas with high incidence of errors. Since errors differ by industry, auditors might change their error expectations with changes in industry.

Management Philosophy, Reputation, and Control Environment

Brumfield, et al (1983) indicate clients with an aggressive management toward accounting and operational matters involve higher auditor business risk. If management

is not control conscious, has a poor reputation, has little business experience, or has a high turnover, then the business risk is high. Booker (1973) indicates business risk is lower when management is reputable and stable.

Litigation and Error Research. This factor could have a significant effect on business risk from litigation and on error expectation. In fact, the research on litigation indicates that most of the risk from litigation from this factor is connected with errors and intentional misstatement. Palmrose (1987) found that management fraud is a major factor in lawsuits against auditors. Palmrose (1987) reported that nearly 50 percent of auditor litigation cases involve irregularities and that 93 percent of the cases involving irregularities were due to management fraud. Of the 189 cases (from a total of 472 cases) relating to business failure, 106 of those cases were in conjunction with management fraud.

In addition to the effect on errors, there is a concern that the auditors' procedures may not uncover fraud. If management's integrity is in question, significant irregularities could exist which may not be detected by audit, even if the audit is conducted under generally accepted auditing standards (AICPA, 1989).

In summary, research on the management philosophy, reputation, and control environment factor indicates that litigation and error expectation are closely entwined and

cannot be practically separated.

Public Or Private Ownership

Brumfield, et al (1983) indicate that public companies involve higher business risk than private companies because of public companies' greater exposure to financial statement users and regulators.

The public company's greater exposure to litigation and adverse publicity is independent of whether there is an error in the financial statements. This is because . . . litigation can occur when the audit and the financial statements comply with professional standards--in other words, when the auditor has done what is necessary to detect material financial statement error and therefore to issue an appropriate opinion. Even if the auditor could do a perfect audit, reducing audit risk to zero, business risk arising solely because the auditee is a public company wouldn't be eliminated (Brumfield, et al, 1983, p. 66).

Arens and Loebbecke (1988) include distribution of ownership as an indicator of the financial statement use. Since a public company's statements are usually distributed more widely than a private company's statements, there is more business risk associated with auditing the public company because there are more interested parties.

Litigation Research. Increased litigation for public companies has been shown by St. Pierre and Anderson (1984). The possible reasons for increased auditor litigation are: (1) an increase in the number of interested parties (Arens and Loebbecke, 1988); and (2) an increase in the scrutiny accorded public companies by regulators such as the SEC (St. Pierre, 1983). The Exchange Act of 1934, which deals with

sales and purchases of securities, covers securities from firms with assets greater than \$3,000,000 and at least 500 stockholders. The SEC accounted for more suits against auditing firms than suits by stockholders or clients; i.e., the SEC accounted for 41 percent of the cases, while stockholders accounted for 35 percent (St. Pierre and Anderson, 1984). In summary, the auditors' risk from lawsuits is increased when auditing a public company.

Error Research. The research on errors and type of ownership indicates that the ownership factor does not affect error expectation. In fact, the number of errors discovered in the audits of private (non-SEC) companies and public (SEC) companies are the same, and private companies have larger relative errors (Kreutzfeldt and Wallace, 1986).

Client and Auditor Relationship

Higher business risk is present if the client has had no prior audits or has had difficulties with previous audits; i.e., had disagreements with auditors, or received qualified, or adverse opinions (Brumfield, et al, 1983). The longevity of the client and auditor relationship is an indicator of business risk, with a longer tenure indicating lower business risk (Anderson, et al, 1970; St. Pierre, 1983).

Litigation Research. St. Pierre and Anderson (1984) report that 24 percent of the lawsuits in their study involved relatively new clients (the auditor having three or

less years of experience with the client). If there is a misunderstanding between the client and the auditor about the auditor's responsibilities, litigation against the auditor may result (Brumfield, et al, 1983). Therefore, the auditors' risk from lawsuits may increase in new client relationships or relationships without good communication between the client and auditor.

Error Research. St. Pierre and Anderson (1984) report a disproportionate number of alleged errors in the lawsuits against auditors involved a tenure of three or less years. These new client relationships accounted for proportionately more audit execution errors, more errors in interpreting auditing standards, and more management fraud cases. The errors may increase on new clients because the auditor is not familiar with the client's operations and problem areas (Booker, 1973). The auditor becomes more knowledgeable with repeat engagements. Although empirical evidence supports less errors in long relationships, a long tenure has been conjectured to increase errors which go undetected because the auditor becomes complacent (Booker, 1973).

Client's Financial Condition

A weak financial condition or weak operating performance indicates a higher business risk (Brumfield, et al, 1983; Arens and Loebbecke, 1988).

Litigation Research. Palmrose (1987) found approximately 50 percent of the litigation cases against

auditors involve financial failure or severe financial distress. Perhaps financial failure increases the likelihood the auditor will get sued because of the auditor's "deep pockets" (Palmrose, 1988). Creditors and investors in a failing company might try to recover from the auditors if collection from the company may not be possible (Simunic 1980).

When a company is under financial distress, debt increases (Zavgren, 1985). Extensive debts may mean that the statements are scrutinized more by creditors (Arens and Loebbecke, 1988) or the debt covenants may be violated. Both of these outcomes could result in the auditor being involved in litigation. In summary, the auditors' risk from lawsuits is increased when auditing a client with a weak financial condition.

Error Research. Errors or irregularities could increase if management desires to cover up a poor operating performance or deteriorating financial condition. Palmrose (1987) found 56 percent of the lawsuits involving business failures also involve management fraud. Kreutzfeldt and Wallace (1986) found more and larger errors in companies with liquidity or profitability problems.

Summary

Research has shown business risk factors are associated with both auditor litigation and errors in the financial statements. See Table 3 for a summary of this research.

Table 3
ASSOCIATION OF BUSINESS RISK FACTORS WITH ERRORS
AND AUDITOR LITIGATION

<u>Business Risk Factor</u>	<u>Association With Errors</u>	<u>Association With Auditor Litigation</u>
Economy	Management could window dress to try to hide negative effects to financial statements (Leichti, 1986)	Investors may sue auditors because of auditors' "deep pockets." Litigation against auditors increases during downturns in the economy (Palmrose, 1987)
Industry	Business complexity may make audit difficult increasing the chance that errors or irregularities are missed (St. Pierre and Anderson, 1984) Industry may be uncertain which could mean increased uncertainty for the client and accounting for the client Error rates differ by industry (Kreutzfeldt and Wallace, 1986) Account areas with high errors are predictable by industry (Hylas and Ashton, 1982; Ham, et al, 1985)	Some industries are more litigious than others (Palmrose, 1988) Industry may be a factor in the number of examinations by regulators (St. Pierre and Anderson, 1984)

Table 3 (Cont'd.)

<u>Business Risk Factor</u>	<u>Association With Errors</u>	<u>Association With Auditor Litigation</u>
Management Philosophy, Reputation, and Control Environment	If management is not control conscious, the potential for errors is increased If management integrity is in question, management fraud could result in significant irregularities. Irregularities may not be detected in a properly designed and executed audit (AICPA, 1988)	Management fraud is a major factor in lawsuits brought against auditors (Palmrose, 1987)
Public or Private Ownership	Private companies have the same number of errors as public companies, but the relative size of errors is greater for private companies (Kreutzfeldt and Wallace, 1986) NonSec reporting companies have errors as a percent of total assets twice as large as SEC clients (Kreutzfeldt and Wallace, 1986)	Public companies' statements are more widely used which increase the number of interested parties Greater proportion of audits of public companies than private result in litigation involving the auditor (St. Pierre and Anderson, 1984)

Table 3 (Cont'd.)

<u>Business Risk Factor</u>	<u>Association With Errors</u>	<u>Association With Auditor Litigation</u>
Client and Auditor Relationship	Errors and Irregularities may not be discovered on new engagements because the auditor is not as knowledgeable about problem areas as in repeat engagements (Booker, 1973)	Litigation between the client and auditor could result if there is a misunderstanding about the auditor's responsibilities (Brumfield, et al, 1983)
	On long tenured engagements, auditor may become complacent and overlook problems (Booker, 1973)	Significantly large number of lawsuits involve new clients (St. Pierre and Anderson, 1984)
Client Financial Condition	Management may try to "window dress" to improve the client's results and financial position (Leichti, 1986)	Financial failure increases the likelihood the auditor will get sued because of the auditor's "deep pockets" (Palmrose, 1988)
		Extensive debts might mean financial statements are scrutinized more heavily by creditors (Arens and Loebbecke, 1988)

None of these factors, perhaps with the exception of public or private ownership, are free from impacting error expectation. The possible effect on error expectation from management philosophy, reputation, and control environment appears to be significant and pervasive in affecting other factors, especially the economy and financial condition. The public or private ownership factor has the least effect on errors; in fact, the same incidence of errors has been found in public and private companies. Industries indicate differing error rates, and new clients pose an increased threat to error expectation because of the auditor's unfamiliarity with the client. If these factors are used in a study of the effect business risk has on audit scope, with the possible exception of ownership, the effect due to error expectation must be considered in determining if defensive auditing is practiced.

Empirical Studies of Business Risk

Effects On Audit Scope

Empirical evidence on the impact of business risk factors on audit scope is sparse. McAllister and Dirsmith (1982) and Kaplan (1985) conducted studies on the impact of the industry environment stability on audit scope. A third study by Simunic (1980) relates litigation loss exposure variables and litigation loss sharing variables to audit fees. Each of these studies is reviewed, and implications for this research are discussed.

In a survey of audit engagement teams with clients in uncertain business environments (air transportation and semiconductors) and certain environments (automotive assembly and plastics), McAllister and Dirsmith (1982) asked auditors if the client's business environment affected the nature, extent, or timing of audit procedures performed (the audit scope). Seventy-nine percent indicated that the audit scope of clients belonging to uncertain industries were significantly affected. Only 43 percent responded that clients from certain industries were significantly affected.

The survey reported that industry type may affect audit scope. Respondents indicated the significance of the effect on the audit, but not how the audit was affected. It was not reported if a Likert scale was used or if the respondents merely had to indicate that the effect was "significant" or "less than significant." Their study did not address whether increased audit scope was due to defensive auditing or to a change in error expectation.

In a laboratory experiment with auditors as subjects, Kaplan (1985) manipulated environment and internal control strength to test audit scope effects on accounts receivable. Using an organizational approach, Kaplan concluded that environmental stability should affect audit planning judgments. The client faces greater uncertainty when the industry environment is changing. And that uncertainty might affect the auditor's perceived audit risk and business

risk. The environmental dimensions manipulated by Kaplan (1985) were: type of industry, growth rate, stability of profits, client age, length of engagement, anticipation of going public, and key management turnover. Audit scope was operationalized by budgeted audit hours.

Kaplan (1985) found that the client environment has the effect of moderating the auditor's assessment of internal control when budgeting audit hours. The environmental stability when accompanied by changes in internal control significantly affected planned audit hours. The interaction between environment and internal control suggested that the environment played a role in the auditor's distinguishing between weak controls in a stable environment and weak controls in a dynamic environment.

Kaplan (1985) followed Joyce's (1976) methodology in the choice of budgeted audit hours as a dependent variable. The subjects were given five categories of audit procedures (confirmation of accounts receivable, review of accounts written off as uncollectible, review of cash collections after the balance sheet date, determination of adequacy of allowance for uncollectible accounts, and review of the cutoff) for budgeted hours.

Although Kaplan referred to business risk, no attempt was made to distinguish between audit scope effects from defensive auditing or changes in error expectation. Although defensive auditing may have been present, the

presumption might be made that audit scope effects were due to changes in error expectation since internal control strength was varied. Kaplan did not ask the auditors to select specific audit procedures nor to indicate sample sizes.

Simunic (1980) developed a positive audit fee model and tested market competitiveness in auditing publicly held companies. Included in the fee model was a variable for the expected future losses from litigation and the auditor's loss sharing ratio. Simunic's positive model for audit costs is:

$$E(C) = cq + E(d/a, q)E(Q)$$

$E(C)$ = the auditor's expected total costs

c = the per-unit factor cost of external audit resources to the auditor, including all opportunity costs and therefore a provision for a normal profit.

q = the quantity of resources utilized by the auditor in performing the audit examination¹

a = the quantity of resources utilized directly by the auditee in operating the internal accounting system

$E(d/a, q)$ = the expected present value of possible future losses which may arise from this period's audited financial statements. The losses are conditional on the levels of a and q .

$E(Q)$ = the expected ex-post fraction of losses borne by the auditor (Simunic, 1980, p. 163 and p. 165)

The client's loss exposure influenced auditor assessment of $E(d/a, q)$ and possible future losses from litigation. $E(Q)$ also was referred to as the auditor's

loss-sharing ratio. The auditor shared the loss from litigation with the client.

Simunic (1980) regressed scaled audit fees on variables used to control for loss exposure and loss sharing ratios and on a dummy variable for Big Eight or Non-Big Eight auditors. The variables used to control for loss exposure because of complexity were (1) the number of subsidiaries, (2) the number of industries in which the client operates, and (3) the relative assets held in foreign countries. The variables used to control for accounting problems were the receivables to total assets and inventories to total assets. The auditor's loss exposure increased with an increase in complexity and with an increase in accounting problems.

The variables used to indicate the auditor's share of losses were related to the client's financial distress: (1) ratio of net income to assets; (2) a dummy variable to indicate if the client had a loss in the current or two previous years; and (3) a dummy variable to indicate if the client received a "subject to" qualified opinion in the current year. The auditor's expected loss sharing ratio would increase with a decrease in the ratio of net income to assets, with incidence of client losses, and with a "subject to" qualified opinion.

With the exception of the variable for the ratio of net income to assets, all of the loss exposure variables and loss sharing variables were found to be significant as

explanatory variables of audit fees.

Simunic's (1980) study showed the significance of variables thought to be associated with auditor litigation on explaining audit fees. The fee is the product of the price and quantity of audit services. Simunic's (1980) study indirectly tested the significance of potential litigation on the pricing and/or quantity of audit services. The variables Simunic (1980) studied may have confounded an increase in fees caused by the litigation effect with an effect from greater errors which may have occurred on clients with greater complexity.

Implications Of These Empirical Studies On This Research.

Unlike McAllister and Dirsmith (1982), who asked the auditors about the effect that environment had on the audit, this study will examine changes in specific audit procedures when business risk factors are manipulated. The effect on audit scope due to a change in the extent of errors will be measured in this study.

Kaplan (1985) did not address whether the effects in his study were due to defensive auditing or to perceived increase in potential errors. Since the study included a manipulation of internal control strength, the presumption might be that the effects in his study were from changes in error expectation. The focus of this research is to test for defensive auditing. Kaplan's study did not examine changes in specific auditing procedures or changes to sample

sizes, both of which are analyzed in this study.

Simunic (1980) indirectly tested the significance of potential litigation on the pricing of services, the quantity of services (audit scope), or a combination of price and quantity. This study directly will determine if the quantity of audit services changed with manipulations made to auditor exposure to potential litigation. The variables Simunic studied may have confounded the effect on fees due to an increase in errors which may have occurred on clients with greater complexity. This study considers the effect of error expectation on audit scope.

Summary

In summary, business risk may involve auditor liabilities and may be considered by auditors in determining audit scope. Although business risk is present whenever an audit is conducted, the degree of business risk may vary depending upon characteristics of the audit engagement. Research on auditor litigation has shown that certain characteristics are associated with higher incidence of auditor litigation. There is disagreement in the auditing literature on whether or not business risk affects audit scope. Although business risk is excluded by auditing standards from the audit risk model, the literature indicates business risk may affect the level of audit risk acceptable to the auditor.

The implications from the reviewed research indicate a

need to determine if factors associated with auditor business risk affect audit scope and if the effect, if any, is due to defensive auditing.

CHAPTER III
RESEARCH METHOD

Introduction

This study examines the effect of three business risk factors on audit scope. It attempts to determine whether audit scope is increased when factors that indicate higher business risk are present. The specific research question addressed by this study is: Does the auditor's business risk increase audit scope?

The laboratory experimental method was used to address the research question. The laboratory experimental method was chosen so that business risk factors could be manipulated while controlling for other effects on audit scope. Also, with the laboratory method, subjects could be randomly assigned to the treatments, and the manipulated variables could be precisely specified.

The factors chosen for manipulation were: industry, private or public ownership, and client's financial condition. These factors were chosen for two reasons: (1) existing research shows an association of these factors with auditor litigation and (2) the possibility was present to reduce effects on error expectation through information provided in the cases. The business risk factors that were identified in Chapter II and not manipulated (economy;

client and auditor relationship; and management philosophy, reputation, and control environment) were held constant in the study.

Economy was not manipulated because of the difficulty in placing the subjects into changing economies. A strong economy was depicted in the cases which was the economic condition present at the time the study was conducted. As discussed in Chapter II, business risk from client and auditor relationships encompasses two areas: new versus continuing clients and client/auditor disagreements. New versus continuing client relationships was not manipulated because audit scope differences which are unrelated to business risk should occur between a new client and a continuing client. Client/auditor disagreements were not manipulated because of the possible effects on the audit due to expectation of errors. In addition, very poor client/auditor relationships would probably not exist in practice because such client relationships would not be continued. As it was discussed in Chapter II, auditing firms usually have formal procedures in accepting new clients and evaluating whether or not a client should be retained. Management philosophy, reputation, and control environment was not manipulated because of the probable significant effect on expectation of errors. Also, manipulation of management integrity and reputation would have had an intrusive effect on the other factors

manipulated.

As discussed in Chapter II, business risk factors may cause a change in audit scope because of defensive auditing (the focus of this research) and coincidentally because of a change in the auditor's error expectation. The primary interest in this study was the effect, if any, of defensive auditing on audit scope. Because of the possible effect of expectation of errors on audit scope, changes in error expectation was also considered in the analysis.

Thirty-two audit managers from two Big Eight public accounting firms were each presented with four cases. The managers were asked to make audit scope decisions for each of the four cases. Audit scope was measured by the variables described later in this chapter and were analyzed using the ANOVA and covariance analysis to determine any treatment effects.

Hypotheses

The research hypotheses are stated first in terms of audit scope and then in terms of the specific dependent variables used to operationalize audit scope.

Hypotheses on the Effect of Industry on Audit Scope

Some industries have a higher or lower relative incidence of lawsuits involving auditors (Palmrose, 1988; St. Pierre and Anderson, 1984). If the auditor is practicing defensive auditing, the audit scope should be greater for a client in an industry which involves more

auditor litigation than for a client from an industry not involved in significant litigation.

H_1 : Audit scope will be significantly higher for clients in industries associated with high incidence of auditor litigation than for clients in industries associated with low levels of litigation.

$H_{1,1}$: Total budgeted audit hours will be significantly higher for clients in industries associated with high incidence of auditor litigation than for clients in industries associated with low levels of litigation.

$H_{1,2}$ Materiality will be significantly lower for clients in industries associated with high incidence of auditor litigation than for clients in industries associated with low levels of litigation.

$H_{1,3}$: Sample sizes will be significantly higher for clients in industries associated with high incidence of auditor litigation than for clients in industries associated with low levels of litigation.

$H_{1,4}$: The number of audit procedures selected will be significantly higher for clients in industries associated with high incidence of auditor litigation than for clients in industries associated with low levels of litigation.

Hypotheses on the Effect of Ownership on Audit Scope

Public companies offer more exposure to risk of litigation than private companies (St. Pierre and Anderson, 1984). As discussed in Chapter II, because of increased users and regulators, auditing a public company subjects the auditor to possible litigation and adverse publicity, which is independent of whether there is an error in the financial statements. If the auditor is practicing defensive auditing, audit scope should increase when auditing a public company.

H₂: Audit scope will be significantly higher for a public company than for a privately held company.

H_{2.1}: Total budgeted audit hours will be significantly higher for a public company than for a privately held company.

H_{2.2}: Materiality will be significantly lower for a public company than for a privately held company.

H_{2.3}: Sample sizes will be significantly higher for a public company than for a privately held company.

H_{2.4}: The number of procedures selected will be significantly higher for a public company than for a privately held company.

Hypotheses on the Effect of Financial Condition On Audit Scope

A weak financial condition or weak operating performance may indicate pending financial failure or loss to interested parties. Financial failure increases the likelihood that the auditor will be sued (Palmrose, 1988). If the auditor is practicing defensive auditing, the audit scope should be higher for companies which have a weak financial condition.

H₃: Audit scope will be significantly higher for a client with a weak financial condition than for a client with a strong financial condition.

H_{3.1}: Budgeted audit hours will be significantly higher for a client with a weak financial condition than for a client with a strong financial condition.

H_{3.2}: Materiality will be significantly lower for a client with a weak financial condition than for a client with a strong financial condition.

H_{3.3}: Sample sizes will be significantly higher for a client with a weak financial condition than for a client with a strong financial condition.

H_{3.4}: The number of procedures selected will be significantly higher for a client with a weak financial condition than for a client with a strong financial condition.

Hypotheses on the Effect of Combined Factors on Audit Scope

As reported in Chapter II, there has been very little empirical research testing the effects of business risk on audit scope. The final set of hypotheses will be tested to provide descriptive knowledge about whether or not business risk could have a significant effect on audit scope when audit scope for a client with high business risk is compared to audit scope for a client with low business risk.

H₄: Audit scope will be significantly higher for a publicly owned weak client who is a member of a litigious industry than for a privately held strong client who is a member of a nonlitigious industry.

H_{4.1}: Budgeted audit hours will be significantly higher for a publicly owned weak client who is a member of a litigious industry than for a privately held strong client who is a member of a nonlitigious industry.

H_{4.2}: Materiality will be significantly lower for a publicly owned weak client who is a member of a litigious industry than for a privately held strong client who is a member of a nonlitigious industry.

H_{4.3}: Sample sizes will be significantly higher for a publicly owned weak client who is a member of a litigious industry than for a privately held strong client who is a member of a nonlitigious industry.

H_{4.4}: The number of procedures selected will be significantly higher for a publicly owned weak client who is a member of a litigious industry than for a privately held strong client who is a member of a nonlitigious industry.

Table 4 summarizes the hypotheses.

Preparing the Cases

A laboratory experimental method was used to test the hypotheses. The three business risk factors of interest were manipulated in cases, while other effects on audit scope were controlled. Audit managers were randomly assigned to the cases.

Another method which might have been used is the field study method. Under the field study approach, audit workpapers for an audit already performed could be examined for the effect of business risk factors on audit scope. However, in contrast with the laboratory method, the business risk factors could not be manipulated nor extraneous variables controlled (Kerlinger, 1973).

The accounts receivable audit area was used to test audit scope decisions for three reasons. First, accounts receivable is found on most audits and is typically material for most clients. Second, most managers have had considerable program-planning experience in accounts receivable. Third, accounts receivable has been studied in other research on audit scope decisions (Kaplan, 1985; Joyce, 1976; Clarke, 1987). Although the inventory audit area is material, typically found in manufacturers, and

Table 4
SUMMARY OF HYPOTHESES

<u>General Hypothesis</u>	<u>Total Budgeted Hours</u>	<u>Mater- iality</u>	<u>Sample Size</u>	<u>Pro- cedures</u>
H ₁ : Audit scope will be significantly higher for clients in industries associated with high incidence of auditor litigation than for clients in industries associated with low levels of litigation.	H _{1.1}	H _{1.2}	H _{1.3}	H _{1.4}
H ₂ : Audit scope will be significantly higher for a public company than for a privately held company.	H _{2.1}	H _{2.2}	H _{2.3}	H _{2.4}
H ₃ : Audit scope will be significantly higher for a client with a weak financial condition than for a client with a strong financial condition.	H _{3.1}	H _{3.2}	H _{3.3}	H _{3.4}
H ₄ : Audit scope will be significantly higher for a publicly owned weak client who is a member of a litigious industry than for a privately held strong client who is a member of a nonlitigious industry.	H _{4.1}	H _{4.2}	H _{4.3}	H _{4.4}

managers usually have extensive experience in auditing inventory, inventory was not used because of the probable differential effect on error expectation in the two industries used in this dissertation. In the computer and electronics industry (one of the industries used) obsolescence of the inventory is a characteristic of this industry.

The background information which is common to all four cases was provided. A statement was included that interim tests of the internal controls had been completed and that the auditor had assessed control risk for each of the financial statement assertions as "low." The levels of control risk is an indicator of the probability that errors exist in the accounts. A low control risk indicates a good system of internal control which should allow only a relatively small number of errors.

Inherent risk was provided in the cases in terms of descriptions of client and engagement characteristics commonly associated with inherent risk (Arens and Loebbecke, 1988; Robertson and Davis, 1988). As a result of the pilot tests and discussions with audit firm personnel, it was decided not to represent inherent risk as a certain level; e.g., medium. The pilot subjects had difficulty in keeping inherent risk constant when manipulations were made in the cases. After discussion with a national partner of one of the participating firms, it was decided inherent risk should

be allowed to change, thereby improving the external validity of the study. All of the client and engagement characteristics were written in language to indicate that there is not likely to be irregularities or manipulations by management. For example, management was described as honest, competent, conservative, with a good reputation and long tenure. Management was said to be interested in responsible financial reporting and to lack motivation or desire to misstate the financial statements.

Finally, the background materials contained financial statements for the strong financial condition and an aged accounts receivable trial balance.

Instructions in the cases directed the managers to perform the following tasks:

1. Provide a materiality level for proposing an adjustment.
2. Determine audit procedures and sample sizes to audit accounts receivable at the year-end.
3. Determine budgeted audit hours to carry out selected audit procedures.
4. Answer questions regarding the risk and expected error in each of the cases.
5. Answer questions for the purpose of providing information to be used in testing manipulations of the independent variables.

6. Provide demographic and other information in an exit questionnaire.

7. Complete a risk preference questionnaire.

See Appendix A through E for samples of the case materials. The general instructions and case background information for both the litigious and nonlitigious groups are in Appendix A. The four cases with ownership and financial condition information are in Appendix B. The case instructions and list of potential audit procedures are in Appendix C. The risk preference questionnaire is in Appendix D, and the exit questionnaire is in Appendix E. Each case packet consisted of the general instructions and case background information for either the litigious or nonlitigious industry, four cases with case instructions and potential audit procedures for each case, and two questionnaires.

The two CPA firms' personnel and audit manuals were consulted in preparing the cases. Writing the cases in terminology used by the firms enhanced the internal validity of the experiment. When terminology differed between the two firms or to avoid confusion, definitions were provided in the cases.

In all, there were eight cases, with four cases written for a litigious industry and four cases for a nonlitigious industry. The four cases under the two industries were identical (except for the industry). One case depicted a

public company with a weak financial condition, and another case depicted a public company with a strong financial condition. Two additional cases depicted a private company with a weak financial condition and a private company with a strong financial condition.

Pilot tests using audit managers from both CPA firms were conducted. As a result of the pilot tests and discussions with the pilot participants and other firm personnel, adjustments were made to improve comprehension and clarity in the cases.

Independent Variables

Three independent variables were manipulated. Table 5 summarizes the two levels for each of the variables.

Industry As Independent Variable

The first variable was industry, and the two levels were a litigious industry (computers and electronics) and a non-litigious industry (adhesives and sealants). A litigious industry is one which has in prior research been associated with higher than expected auditor litigation. The computers and electronics industry has higher than expected litigation (Palmrose, 1988). A reasonable choice for a nonlitigious industry was a manufacturing company in the general manufacturing industry (SIC No. 2000).¹¹ A company that manufactures adhesives and sealants (SIC No.

¹¹Per a personal communication with Dr. Zoe-Vonna Palmrose, Assistant Professor, University of California, Berkeley

Table 5
Independent Variables

<u>Independent Variable</u>	<u>Description of Levels</u>
Industry	Litigious--XYZ Co. manufactures semiconductors and is in the computers and electronics industry. In studies on comparing rates of auditor litigation among industries, it has been found that there is significant litigation against auditors in this industry by clients or third parties. Relative to audits of companies in other types of industries, this company may be considered to belong to a litigious industry.
	Nonlitigious--XYZ Co. manufactures sealants and adhesives and is in the general manufacturing industry. In studies on comparing rates of auditor litigation among industries, it has been found that there is no significant litigation against auditors in this industry by clients or third parties. Relative to audits of companies in other types of industries, this company may be considered to belong to a nonlitigious industry.
Ownership	Public--XYZ Co. is a publicly owned company with its stock widely distributed and actively traded.
	Private--XYZ Co. is a privately owned company with its stock held by a family.

Table 5 (Cont'd.)

<u>Independent Variable</u>	<u>Description of Levels</u>
Financial Condition	Weak--XYZ Co. has enjoyed upward trends of earnings until 1987 and growth in its assets and equities. However, in 1987 the Company experienced a reverse. In 1988, the year under audit, the Company's condition significantly deteriorated. Its product has met with severe competition. The Company has had to borrow extensively to try to withstand the loss of market share, and no improvement in the Company's situation is expected during the next year. XYZ's present financial condition is summarized as weak. Strong--XYZ Co. has enjoyed upward trends of earnings over the last several years and growth in its assets and equities. The year under audit, 1988, is consistent with previous years. XYZ Co. has increased its market share, and its prospects for the next year look promising. XYZ's present financial condition is summarized as strong.

2891) was used to represent the nonlitigious industry. A manufacturer of adhesives and sealants was chosen because of the similarity of its financial statement components and ratios to a manufacturer of semiconductors (SIC No. 3674) as reported in Dun & Bradstreet's Industry Norms 1987-88 and Key Business Ratios.

As discussed earlier (see Table 3 in Chapter II), industry complexity could increase error expectation. To minimize the possible industry effect on perceived potential errors, the litigious or nonlitigious nature of the industries was emphasized, rather than the industry complexity. In addition to the background information which has been already discussed that indicates errors were unlikely, a statement was made in the industry description that:

The nature of the client's business does not increase the likelihood of errors being present in the accounts receivable.

The clients from the litigious industry were described in the cases as being members of the computers and electronics industry which manufacture semiconductors. A statement was provided in the case indicating that studies on auditor litigation have shown significant auditor litigation in this industry. The industry was summarized as litigious.

The clients from the nonlitigious industry were described as being members of the general manufacturing

industry which manufacture sealants and adhesives. A statement was provided in the case that in studies on auditor litigation it has been found that there was no significant auditor litigation in this industry. The industry was described as nonlitigious.

Ownership As Independent Variable

The second variable was type of ownership, and the two levels were public ownership and private ownership. A publicly held company was designated in the cases as having stock which was widely distributed and actively traded. The privately held company was designated as having its stock held by a family.

The research on errors discussed earlier indicated that although the same number of errors were discovered on private and public audits, private companies had larger relative errors than public companies (Kreutzfeldt and Wallace, 1986). If the auditors increased audit scope for a private company over a public company, this change in audit scope could be a reaction to perceived expectation of larger relative errors. If the auditor increased the audit scope for public companies, this could be a response to business risk. No additional statement regarding errors was considered necessary to include with the descriptions depicting ownership.

Financial Condition As Independent Variable

The third variable was financial condition, and the two levels were weak financial condition and strong financial condition. Information provided in the cases indicated that previous performance by both weak and strong companies had been strong until the year prior to the audit. During the prior year and year under audit, the weak company had met with severe competition and had to borrow extensively. The strong company's performance during the prior year and year under audit was consistent with the previous years, with upward trends of earnings, stable debt, and growth in equities. Financial statements for the weak company were included in the weak company cases. Financial statements for the strong company were included in the background materials.

Zavgren's (1985) study and Dun & Bradstreet's Industry Norms 1987-88 and Key Business Ratios were used in preparing the financial statements. Zavgren developed a model to detect companies which will fail. Zavgren's model was appropriate for this study in developing the weak company's financial statements because the model indicated signs of poor financial health prior to the year the company fails. Zavgren found the acid test ratio and the ratio of long term debt to invested capital to be highly significant in the model. The acid test ratio indicates the company's ability to pay its current and maturing debt, and the debt-to-equity

ratio indicates the company's debt leverage. A company which is failing is more highly leveraged than a healthy company. According to Zavgren (1985), "the most reliable indication of a firm's health or lack of health is its use of debt" (p. 20). If the company is not able to meet high debt service requirements, the company may go bankrupt.

Dun & Bradstreet's Industry Norms 1987-88 and Key Business Ratios for both industries (semiconductors and adhesives and sealants) were used in preparing the financial statements for both the strong and weak companies. The ratios for companies with assets greater than \$1 million and designated in the upper quartile were used for the strong company. The ratios for the companies designated in the lower quartile were used for the weak company. The financial statements for the weak and strong companies differed in current and long-term debt, stockholders' equity, and performance for the current and prior year. No change was made to assets because of possible effects these changes could have on materiality and hence on audit scope.

In effecting the changes to the acid test and debt-to-equity ratios, the following changes were made to the financial statements for the strong condition to prepare the financial statements for the weak condition:

1. Current liabilities were increased
2. Long-term debt was increased
3. Stockholders' equity was decreased

Profitability, measured by return on investment, was not a significant indicator of financial distress in Zavgren's study. However, profits were substantially reduced in this study to support the decrease in stockholders' equity.

Changes in error expectation were a particular concern with manipulations of financial condition. Controlling for the subject's perceptions of what management might do to enhance the company's position is difficult and perhaps impossible. Special care was taken in the cases to minimize management's ability and motivation to manipulate the accounts as follows:

Integrity of management. Your firm's assessment of XYZ's management is that it is honest and competent. Management is conservative with regard to operational and accounting matters, has a good reputation, and has had a long tenure. Management has a high level of integrity and has a high interest in responsible financial reporting. In your review, you are satisfied that there is a lack of management motivation or desire to misstate the financial statements.

Dependent Variables

The audit managers were asked to select audit procedures, give sample size data and materiality, and provide budgeted audit hours to audit accounts receivable at the year-end.

Audit scope has three dimensions (1) the audit procedures selected, which indicates the quality of evidence to be collected; (2) the timing of the audit procedures, which is at an interim or a year-end date, and (3) the extent of the audit procedures, which is the sample size to

be collected. This study operationalizes two of the three dimensions of audit scope: the nature of the audit procedures and the extent of testing. The timing is kept constant by stating in the case that all procedures are to be performed at year-end. The dependent variables were total budgeted audit hours, materiality, sample sizes, and audit procedures selected. Total budgeted audit hours is an overall measure of audit scope and operationalizes both the nature of audit procedures and the extent of testing. Materiality and sample sizes operationalize the extent of testing. Audit procedures selected operationalizes the nature of the audit procedures. See Figure 2.

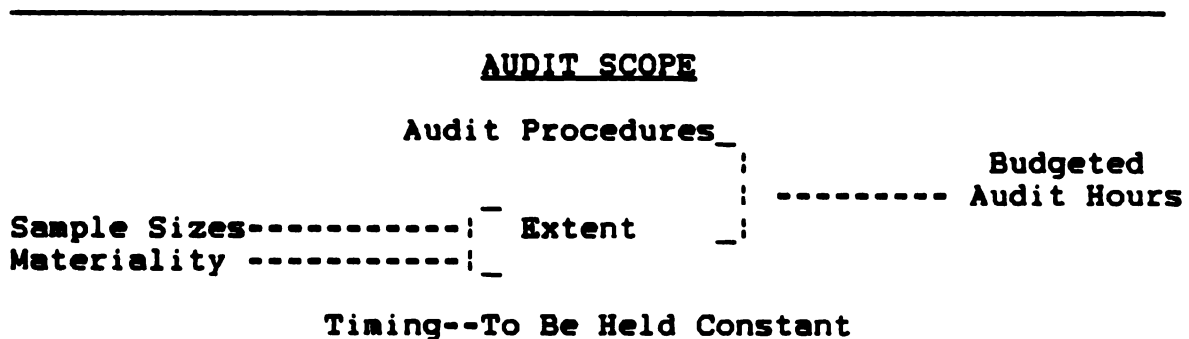


Figure 2
DEPENDENT VARIABLES TO OPERATIONALIZE AUDIT SCOPE

Total Budgeted Hours

Budgeted audit hours has been used as a measure of audit scope in other studies (Joyce, 1976; Kaplan, 1985). Budgeted audit hours encompasses the time required to carry out the audit procedures selected and to complete testing on

the samples selected. The managers were asked to state the budgeted audit hours to complete each procedure selected to the nearest one-half hour¹². The hours the managers stated for each procedure were added to arrive at total budgeted audit hours.

Materiality

Materiality is an important determinant of audit scope, especially the extent of tests (Holstrom and Messier, 1982). Materiality and audit risk must be considered together in determining the nature, extent and timing of audit procedures (AICPA, 1989, AU312.17). The auditing literature states that there is an inverse relationship between materiality and extent; i.e., if a low materiality is set, more testing should be done. The managers were asked to provide the level of materiality in each case:

Before writing the audit program for accounts receivable, please answer the following question:

What is the combined error which is material for accounts receivable? (i.e., what is the amount required to propose an adjusting journal entry to the accounts receivable balance?) \$ _____

Since there is an inverse relationship between materiality and extent of testing, it is expected that materiality will be decreased when business risk is increased. A decrease in materiality indicates an increase in planned audit scope.

¹²However, some subjects provided one-quarter hour estimates for some of the procedures.

Sample Size

Sample size has been used as a measure of audit scope (Clarke, 1987). An increase in sample size is an increase in the extent of testing. With increases in business risk, it is expected that the sample sizes will also increase. The most important sample size in this study is the number of confirmations to be requested to verify the ending balance of accounts receivable. Although confirmations are emphasized, other sample sizes to vouch balances to documentation and trace balances through the accounting records will be tested.

Audit Procedures

The managers determined the audit procedures to be included in the audit program for each of the cases. A potential list of audit procedures was provided to save the managers writing time, and the managers were given space to add procedures not on the list. The list of audit procedures is shown in Appendix C.

Administering the Cases

The subjects in this dissertation included 31 audit managers and one experienced senior¹³ from the Detroit and

¹³ Audit managers were requested from both firms. It was not discovered until after the experiment had taken place that one of the participants was an experienced senior. The materials prepared by the senior were not significantly different from other participants. This subject's audit experiences were similar to other manager participants who were newly promoted. Because of the similarity and because there was only one non-manager participant, the subjects in this study will be referred to as managers.

Chicago offices of two Big Eight CPA firms.

Eight managers from each office were randomly assigned to one of four sequences in either the litigious industry group or the nonlitigious group. The order of the cases was counterbalanced through use of a Latin square design to minimize effects from practice (Keppel, 1982, p. 373).

In three of the four office locations, the researcher conducted the experiment at the firms' offices. The managers met with the researcher and were given the case materials to complete. Approximately one-half of the managers from each office took the materials back to their offices to complete. The rest of the managers chose to do the cases in a conference room with the researcher present. All of the managers gave the completed cases to the researcher within a few hours.

The managers were instructed to do the cases in the order presented and not to change any responses on cases already completed once a new case was started. The managers were told not to discuss the task with others. The managers were encouraged to ask the researcher any questions they might have had while completing the cases. Approximately five of the managers who took the materials back to their offices or stayed in the conference room asked questions. The managers asked for clarification on the end-of-case questions regarding manipulations or the experience

questions on the exit questionnaire. There were no questions regarding audit scope decisions. There was no discussion in the conference room among the participants and between the participants and the researcher.

The managers from the fourth office received the materials from their personnel director who mailed the responses back to the researcher. Completing the study by mail was requested by the office. These managers were given the same instructions which were given orally to the other participants. The instructions were given via a letter prepared by the researcher and contained in the case materials. The responses from the fourth office appeared to be as conscientiously prepared as the responses from the other three offices. The managers doing the cases by mail were given a telephone number to call the researcher if the managers had any questions. None of the managers telephoned the researcher. It took approximately one month to receive all of the responses from the fourth office.

A Summary of the Experimental Task

The audit managers were asked to select audit procedures and to provide budgeted audit hours, materiality, sample sizes, and error expectation for audit accounts receivable at the year-end. Each audit manager was given a case packet which consisted of background information for all of the cases, specific information for four independent cases, and risk preference and exit questionnaires. The

background information consisted of (1) a description of the industry, (2) a description of the control environment, (3) a description of the factors not changed in this study which described inherent risk and business risk, and (4) financial statements for a strong financial condition and an aged accounts receivable trial balance. See Appendix A.

Each specific case contained the following: (1) a description of the type of ownership and financial condition, (2) a listing of potential audit procedures (3) manipulation checks on ownership, financial condition, and risk to audit, and (4) questions inquiring if non-scope precautions should be required for the client; e.g., staffing with experienced auditors, increasing documentation, intensifying supervision, or billing at a higher schedule of rates. See Appendix B and Appendix C.

Manipulation Checks

Three questions were asked at the end of each case to provide information for manipulation checks of the independent variables. The first was a question, adapted from Kaplan (1985), to ascertain if the risk in the cases was manipulated. A 10-point Likert scale was used, with a low risk as .1 and a high risk as 1.0. The question was:

Compared to your perception of your audited clients, how would you rate the risk of auditing the company depicted in this case?

Because the response to this question is dependent upon the experience of the manager, answers to this question may be

useful only in assessing the manipulation of risk for the independent variables which are repeated.

The second question asked for the type of ownership depicted in the case:

This client is _____ (public or private?)

The third question asked for the financial condition of the client depicted in the case. A 5-point Likert scale was used with a weak condition as 1 and a strong condition as 5:

I would rate the financial condition of this client as

Two responses on industry were requested in the exit questionnaire at the conclusion of the study. One response was to select the type of industry of the companies depicted in the cases. The second asked the managers to indicate whether or not the industry involved significant auditor litigation. If both of the responses were correct, manipulation of industry type will be considered accomplished.

Risk Preference Questions

The managers were asked two risk preference questions which will be used to classify the managers' risk preferences. The first question, which was a gamble, was adapted from Young (1985):

If someone would be willing to give you \$50 for certain, or a gamble that pays \$100 with probability p and \$0 with probability $1 - p$, what would p have to be (between 0 and 1) so that you are indifferent between the \$50 for certain and taking the gamble?

To operationalize risk preference, Young (1985) grouped the responses into risk averse ($p > .5$) and not risk averse ($p < .5$).

The second question, which was self-rating, was adapted from MacCrimmon and Wehrung (1986):

How would you rate your own willingness to accept professional exposure as compared to other audit managers in your firm? (Professional exposure is the risk of loss to the auditor's or firm's professional practice because of litigation?)

A 7-point Likert scale was used with 1 being "much less willing," 4 "equally willing," and 7 "much more willing." The correlation between risk preference and the dependent variables will be tested to see if the relationship is significant.

If a significant relationship exists between risk preference and audit scope, audit scope may have been adjusted because of the manager's risk preference. As discussed in Chapter II, this adjustment could be an adjustment for business risk and would be evidence of an effect on audit scope from business risk (Boritz and Jensen, 1984).

Statistical Method

Design of the Experiment

The experiment is a between subjects design for two industry types, with one group of managers given a litigious industry type and the other group given a nonlitigious industry type. The experiment is also a within subjects

design for two ownership levels (public and private ownership) and two financial condition levels (weak and strong financial condition).

A mixed design was chosen for the following reasons. Since the number of available audit managers was limited, a complete between subjects design with three factors was not practical. If a complete repeated measures design had been used, each manager would be required to complete eight cases. To decrease the effects of fatigue and to keep the managers motivated, the time the manager spent on the task was considered. In addition, available manager time was limited. Therefore, a mixed design with each manager completing four cases, a risk preference questionnaire, and an exit questionnaire was feasible. See Figure 3 for the experimental design.

The hypotheses will be tested using a repeated measures factorial analysis of variance (ANOVA) design. A repeated measures design is desirable not only because the design economizes subjects, but also because variability between the subjects from the experimental error is eliminated (Neter, Wasserman, Kutner, 1985). In a repeated measures design, each subject acts as his or her own control. Thus, all sources of variability found between the subjects is excluded from the experimental error, which increases the power of the significance tests in detecting treatment effects.

Industry					
		Litigious		Nonlitigious	
		Weak	Strong	Weak	Strong
Public Ownership		High Risk			
Private Ownership					Low Risk

Figure 3
DESIGN OF EXPERIMENT

Error Expectation Effect

If any of the hypotheses are rejected, business risk could have affected audit scope. However, before an unqualified conclusion could be made that business risk affected audit scope, additional analysis with changes in error expectation should be considered. If error expectation changed significantly in the cases, a covariate analysis of the dependent variables with error expectation as a covariate will be performed.

Including error expectation as a covariate adjusts audit scope for an effect attributed to changes in error expectation. The remaining audit scope is the effect attributable to defensive auditing with changes in business risk.

In covariate analysis, a linear adjustment is made for the effect of a covariate on the dependent variable. When the covariate is affected by the treatment, the adjustment may remove part of the treatment effect. Thus, the adjusted treatment means may not correspond to the actual situation in the experiment (Winer, 1971). Caution must be exercised in interpreting the adjusted means when the covariate is changing (Neter, et al, 1985). A problem particularly results if the covariate acts as an intermediary or causal variable on the phenomenon being studied.

In this research, if business risk factors affect audit scope, the effect of business risk on audit scope is modeled

to have a separate causal chain from the model of error expectation on audit scope. Thus, error expectation is not modeled as an intermediary variable between the business risk factors manipulated (the independent variables) and the audit scope dependent variables. This model flows from the discussion in Chapter II that business risk exists independently from the presence of errors. See Figure 1 in Chapter II.

Covariate analysis is an appropriate method of analysis if error expectation does not impact perceived business risk. If error expectation does impact perceived business risk, use of covariate analysis biases against finding significance by removing some of the treatment effect. To the extent that error expectation affects perceived business risk, the adjusted treatment means may be adversely affected, and significant treatment effects from business risk which are present may not be revealed in covariate analysis. Unfortunately, there is no existing research available which has modeled and tested these relationships. However, as discussed in Chapter II, the literature supports the existence of business risk separate from the risk that errors may or may not be present (Brumfield, et al, 1983; AICPA, 1989; The Canadian Institute of Chartered Accountants, 1980; Arens and Loebbecke, 1988).

CPA Firm Effect

Significant differences have been found among Big Eight CPA firms, and part of the differences in the firms is attributable to audit structure (Morris and Nichols, 1988). Kinney (1986) and Morris and Nichols (1988) have suggested that researchers conducting behavioral studies of auditors' judgments in procedures and reporting should consider the effect of the firms' technological preferences. Based upon the classifications found in Morris and Nichols (1988) and Kinney (1986), one of the firms in this dissertation can be considered to be unstructured and the other structured. The effect on the dependent variables attributable to firm affiliation was tested.

Summary

In this Chapter, hypotheses were developed for the effects on audit scope from manipulations of three business risk factors. To test the hypotheses, the laboratory experiment method was selected, with audit managers from two Big Eight CPA firms participating. ANOVAs and covariance analysis will be performed to analyze the results. The independent variables chosen were industry, public or private ownership, and financial condition, with manipulations of two levels each. To operationalize audit scope the dependent variables chosen were total budgeted hours, materiality, sample sizes, and audit procedures selected. Separate analyses will be conducted on error

expectation, risk preference, and firm affiliation to determine if these variables had an effect on audit scope. Chapters IV and V will report and discuss the results of the these tests.

CHAPTER IV

RESULTS

This Chapter presents the results of data analysis. Demographic information about the subjects and preliminary analyses on manipulation checks, order effects, and error expectation are presented first. Tests of hypotheses and discussion of the results follow.

Demographic Information

Thirty-two audit managers from two Big Eight firms participated in the study. Based upon their availability, eight managers from the Detroit and Chicago offices of each firm were selected by their firms to participate.

The managers were experienced in planning the audits of accounts receivable for manufacturing companies. As a group, the managers had planned an average of 31 audits of accounts receivable and had over 50 percent of their experience in auditing manufacturing firms. An average of one and one-quarter hours was required for each manager to complete the cases. See Table 6 for a summary of the demographic information.

Table 6
DEMOGRAPHIC INFORMATION ABOUT THE SUBJECTS

	<u>X</u>	<u>S</u>
<u>Experience</u>		
Number of years public accounting experience	7.7	4.7
Number of years manager experience	1.8	1.6
Number of manufacturing clients	7.0	8.1
Approximate number of times has planned the audit of accounts receivable	31.0	22.6
<u>Client Industry Experience</u>		
Percent non-manufacturing	43 %	27.8
% Manufacturing		
< \$20 million	7	15.3
\$20-\$50 million	11	19.5
\$51-\$100 million	8	13.1
Over \$100 million	31	31.4
	100%	
	<u>Yes</u>	<u>No</u>
Been involved in auditor litigation	3 (9%)	29 (91%)
Audited a client in computers and electronics	13 (41%)	19 (59%)
Audited a client in adhesives and sealants	5 (16%)	27 (84%)
Number of hours to complete cases:		
Range 3/4 - 3 hours		
x = 1.250		
s = 0.421		

Preliminary Analyses

Manipulation Checks

Manipulation checks were included to provide assurance that operationalization of the independent variables was as intended. Four manipulation checks were made. The first determined if the risk to audit varied over the cases. The second and third ascertained whether the subjects paid attention to the type of industry and type of ownership. The fourth determined if financial condition was manipulated as weak or strong.

Risk to Audit

Since risk was manipulated in the cases, the auditors' perceived risk to audit the clients depicted in the cases should have changed with manipulations of the independent variables. As a manipulation check, the managers were asked to rate the risk to audit the clients in each case:

Compared to your perception of your audited clients, how would you rate the risk of auditing the company depicted in this case?

The managers recorded their responses on a 10-point Likert scale, with 0.1 for low risk and 1.0 for high risk. As discussed in Chapter III, since the response to this question was dependent upon the managers' past experiences, this manipulation check was intended to be useful only in testing the manipulations of the independent variables which were repeated; i.e., ownership and financial condition. The cell means of the managers' ratings are reported in Table 7.

Table 7
CELL MEANS OF RISK TO AUDIT

		Industry			
		Litigious		Nonlitigious	
	Weak	Strong	Weak	Strong	Row Means
Public	.662 (.18)	.400 (.18)	.712 (.22)	.362 (.16)	.534
Private	.594 (.19)	.362 (.18)	.587 (.15)	.269 (.13)	.453
Column Means	.628	.381	.650	.316	
		.505		.483	

Column Means For Financial Condition:

Weak = .639

Strong = .349

Number of subjects in each cell = 16; total subjects = 32

Standard deviation is shown in parentheses

An ANOVA indicated that the manipulation of ownership and financial condition significantly affected the risk to audit ($p < .05$); however, the industry did not. See Table 8 for the ANOVA results. Eta squared, which is an indication of the strength of an effect, was .40 for financial condition and .03 for ownership.

In summary, the risk to audit was significantly affected when ownership and financial condition were manipulated. Since the responses depended upon the managers' risk experience with other clients, it was not necessary to the dissertation that industry (a between subjects independent variable) be significant in this test.

Type of Industry

Although the industry was not significant in the risk to audit, the managers did notice the industry. In the computers and electronics industry (litigious) group, all (100%) of the managers responded correctly when asked to select the type of industry and state whether or not the industry was litigious. In the adhesives and sealants industry (nonlitigious) group, all but one manager (94%) responded correctly.

Type of Ownership

Most of the managers knew the type of ownership of the clients depicted in the cases. Of the public cases, 98% of the cases were classified correctly, and of the private cases, 88% were classified correctly.

Table 8
ANOVA With Risk To Audit As Dependent Variable

	<u>SS</u>	<u>DF</u>	<u>F</u>	<u>P-value</u>
Between				
Industry	.02	1	.23	.64
Within				
Ownership	.21	1	12.46	.00*
Condition	2.70	1	83.51	.00*
Interactions				
Industry X Ownership	.03	1	1.49	.23
Industry X Condition	.06	1	1.89	.18
Ownership X Condition	.01	1	1.32	.26
Industry X Ownership X Condition	.00	1	.00	1.00
Error				
Subjects/Industry	2.03	30		
Ownership X Subjects	.51	30		
Condition X Subjects	.97	30		
Ownership X Condition X Subjects	<u>.18</u>	<u>30</u>		
	6.72	127		

Condition = Financial Condition

*Significant at $p < .05$

Eta squared: Ownership = .03

Condition = .40

Financial Condition

The manipulation check on financial condition indicated that financial condition was successfully manipulated. The managers were asked to rate the client's financial condition in each case on a 5-point Likert scale, with 1 for "weak" and 5 for "strong." An ANOVA indicated a significant effect for financial condition at $p < .05$. See Table 9 for the ANOVA results. The eta squared for financial condition was .71. Since the average response for the weak was 1.8 ($s=.9$), and the average response for the strong was 4.2 ($s=.7$), financial condition was manipulated as intended.

Summary

The manipulation checks for the three independent variables indicated that these variables were manipulated as intended.

Order Effects

The order of presenting the treatments is a potential source of confounding when repeated measure designs are used (Keppel, 1982). To minimize an order effect, counterbalancing the treatment presentations was instituted in this study.

An ANOVA did not reveal any significant order effects at $p < .05$ for the dependent variables. See Table 10 for the ANOVA results.

Table 9
ANOVA With Financial Condition As Dependent Variable

	<u>Sum of Squares</u>	<u>DF</u>	<u>F</u>	<u>P-value</u>
Between				
Industry	1.32	1	1.15	.29
Within				
Ownership	.07	1	.85	.36
Condition	192.57	1	157.00	.00*
Interactions				
Industry X Ownership	.20	1	2.36	.14
Industry X Condition	.38	1	.31	.58
Ownership X Condition	.07	1	.85	.36
Type X Ownership X Condition	.20	1	2.36	.14
Error				
Subjects/Industry	34.42	30		
Ownership X Subjects	2.48	30		
Condition X Subjects	36.80	30		
Ownership X Condition X Subjects	<u>2.48</u>	<u>30</u>		
	270.99	127		

Condition = Financial Condition

* Significant at $p < .05$

Eta squared: Condition = .71

Table 10
ANOVA Results To Test Order Effects

	<u>DF</u>	<u>F</u>	<u>P-value</u>
<u>Budgeted Audit Hours</u>			
Order	3	.51	.68
Treatment X Order	21	.81	.70
<u>Materiality</u>			
Order	3	.26	.86
Treatment X Order	21	.46	.98
<u>Sample Sizes</u>			
<u>Confirmations</u>			
Order	3	.44	.73
Treatment X Order	21	.79	.73
<u>Procedure 6</u>			
Order	3	1.14	.34
Treatment X Order	21	.92	.57
<u>Procedure 8</u>			
Order	3	.22	.88
Treatment X Order	21	1.36	.16
<u>Procedure 15</u>			
Order	3	.03	.99
Treatment X Order	21	.65	.87

Changes In Error Expectation

Changes in error expectation as well as changes in business risk may have affected audit scope. The following describes the tests performed on error expectation.

After each case, the managers were asked to indicate their error expectation on a 7-point Likert scale, with 1 for "very unlikely" and 7 for "highly probable."

Table 11 summarizes the cell means for error expectation under the eight situations depicted in the cases. A t-test comparing the means of the highest risk cell, litigious public weak ($x=4.000$), with the lowest risk cell, nonlitigious private strong ($x=2.437$), indicated a significant difference between the means ($t=3.93$, $df\ 30$, $p=.00$). Therefore, manipulations in the cases had an effect on error expectation.

To determine which independent variables had a significant effect on error expectation, an ANOVA with error expectation as the dependent variable and industry, ownership, and financial condition as independent variables, was performed. As shown in Table 12, the main effect for financial condition was significant at the $p < .05$ level. There were no significant interactions. A review of the cell means on Table 11 indicated that perceived error was higher for the weak financial condition cases ($x=3.906$) than the strong financial condition cases ($x=2.578$). Therefore, error expectation increased when the client's financial

Table 11
CELL MEANS OF ERROR EXPECTATION

Industry					
	Litigious		Nonlitigious		Row Means
	Weak	Strong	Weak	Strong	
Public	4.000 (1.265)	2.625 (.957)	3.937 (.929)	2.562 (1.031)	3.281
Private	4.000 (1.155)	2.687 (.946)	3.687 (1.078)	2.437 (.964)	3.203
Column Means	4.000	2.656	3.812	2.500	3.242
	3.328		3.156		

Column Means For Financial Condition:

Weak = 3.906

Strong = 2.578

Number of subjects = 16 in each cell (Total n = 32)

Standard Deviation is shown in parentheses

Table 12
ANOVA WITH ERROR EXPECTATION AS DEPENDENT VARIABLE

	Sums of Squares	DF	F	P-value
Between				
Industry	.95	1	.31	.58
Within				
Ownership	.20	1	.88	.36
Condition	56.45	1	58.80	.00*
Interaction				
Industry X Ownership	.38	1	1.72	.20
Industry X Condition	.01	1	.01	.93
Ownership X Condition	.07	1	.51	.48
Industry X Ownership X Condition	.01	1	.06	.81
Error				
Subjects/Industry	92.00	30		
Ownership X Subjects	7.00	30		
Condition X Subjects	29.00	30		
Ownership X Condition X Subjects	<u>4.00</u>	<u>30</u>		
	190.07	127		

Condition = Financial Condition

*Significant at $p < .05$

Eta squared: Condition = .30

condition was weak. An ANOVA also was prepared with the manager's auditing firm as an additional independent variable. There were no significant firm effects.

The results showed that auditors expected more errors when the client's financial condition was weak than when it was strong. Auditors may become more cautious when auditing a weak client because they anticipate that management may try to improve the financial statements. Several managers indicated to the researcher that it was their belief that it was human nature for management to try to enhance unfavorable performance. Accounting involves many judgment areas, and financial condition and operating results can be improved by overly optimistic estimates. Given the opportunities available to management to affect reporting, auditors may be more skeptical when the client has a weak condition. Recall that empirical findings discussed in Chapter II supported the managers' beliefs; i.e., that errors were more frequent and larger in companies with liquidity or profitability problems (Kreutzfeldt and Wallace, 1986).

Since error expectation changed in the cases, audit scope may have been affected by the changes. To see if there was a relationship between error expectation and measured audit scope, a correlational analysis was performed. As Table 13 illustrates, the correlations did not show a consistent pattern. There were thirteen

Table 13
CORRELATIONS OF ERROR EXPECTATION
WITH DEPENDENT VARIABLES

<u>Dependent Variable</u>	Industry							
	Litigious				Nonlitigious			
	1	2	3	4	1	2	3	4
Hours								
r=	.15	.37	.28	.55*	-.22	-.13	-.20	-.05
p=	.30	.08	.15	.01	.20	.32	.22	.43
Materiality								
r=	.17	.50*	.26	.69*	-.18	.08	-.21	.04
p=	.27	.02	.16	.00	.26	.39	.22	.14
Sample Sizes: Confirmations								
r=	.12	.80*	.46*	.81*	-.14	-.44*	-.00	-.39
p=	.32	.00	.04	.00	.31	.04	.50	.07
Other Sample Sizes:								
Procedure 6								
r=	-.36	-.45*	-.23	.15	.31	-.12	.29	-.40
p=	.09	.04	.20	.29	.12	.33	.14	.06
Procedure 8								
r=	.04	.64*	.22	.42*	.27	.59*	.41	.47*
p=	.44	.00	.21	.05	.16	.01	.06	.03
Procedure 15								
r=	-.22	.35	-.06	.43*	-.20	.08	.12	.10
p=	.20	.10	.41	.05	.23	.38	.33	.35

Case Type Legend

- 1 = Public Weak
- 2 = Public Strong
- 3 = Private Weak
- 4 = Private Strong

* Significant at $p < .05$

significant relationships ($p < .05$) between error expectation and the dependent measures. The private strong cases accounted for six significant relationships (five in the litigious group and one in the nonlitigious group). The public strong cases accounted for six significant relationships (four in the litigious group and two in the nonlitigious group). The remaining significant correlation was in the litigious private weak case.

A surprising result was the direction of some of the relationships. Materiality had two significant relationships, and both were direct relationships; i.e., an increase in materiality correlated positively with an increase in error expectation. If materiality was changed simultaneously with a change in perceived error, the relationship should have been inverse, rather than direct. This unexpected result indicated that auditors may not have considered expectation of error when making materiality decisions.

Confirmations had four significant relationships, with one being an inverse relationship. The significant direct relationships were in the litigious group, while the significant inverse relationship was in the nonlitigious group. A direct relationship was expected; i.e., with an increase in error expectation, the number of confirmations should have increased.

The correlations indicated some association between

error expectation and some of the dependent measures. Evidence of an actual causal link between error expectation and audit scope was indicated in responses made by the subjects in the exit questionnaire. Twenty subjects (63%) indicated that their audit scope decisions were affected by changes in expected errors and that all of the dependent measures were affected somewhat by changes in error expectation.¹⁴ The most affected was budgeted audit hours, with 50 percent of the subjects indicating budgeted hours were affected. See Table 14 for a summary.

Table 14
EFFECT OF ERROR EXPECTATION ON DECISIONS

	Yes		No	
	N	%	N	%
Did the probability of errors change in the cases?	23	73%	9	28%
Were decisions made in the cases affected by change in errors?	20	63%	12	38%
Was materiality affected?	10	31%	22	69%
Were audit procedures selected affected?	14	44%	18	56%
Were sample sizes affected?	15	47%	17	53%
Were budgeted audit hours affected?	16	50%	16	50%

¹⁴The managers were also asked if business risk affected their decisions. The results are reported in Chapter V. Twenty-one (66%) responded that their decisions were affected by business risk, with 47% indicating budgeted audit hours were affected.

Since the managers indicated that changes in error expectation influenced their audit scope decisions, analysis with error expectation as a covariate was conducted in the tests of hypotheses under each of the dependent variables.

Tests of Hypotheses

The research hypotheses which were presented in Chapter III are listed below.

- H₁: Audit scope will be significantly higher for clients in industries associated with high incidence of auditor litigation than for clients in industries associated with low levels of litigation.
- H₂: Audit scope will be significantly higher for a public company than for a privately held company.
- H₃: Audit scope will be significantly higher for a client with a weak financial condition than for a client with a strong financial condition.
- H₄: Audit scope will be significantly higher for a publicly owned weak client who is a member of a litigious industry than for a privately held strong client who is a member of a nonlitigious industry.

In summary, it was hypothesized that business risk factors affected audit scope. An increase to audit scope was hypothesized to occur when a client was a member of a litigious industry, was a public company, or had a weak financial condition.

ANOVAs were performed to test the effects of manipulated business risk factors on audit scope. The independent variables were industry, ownership, and financial condition. Audit scope was operationalized by the

dependent variables of total budgeted audit hours (hours), materiality level for accounts receivable (materiality), sample sizes, and procedures selected. Detailed discussion of the tests is shown under each of the dependent variables.

As discussed in Chapter III, other literature has suggested that, in behavioral studies of auditor decisions on audit procedures, the auditor's CPA firm affiliation should be considered. Since the two CPA firms represented in this study differed in structure, firm was included as an independent variable in the ANOVAs and analysis of covariance.

In the preliminary analysis discussed earlier in this Chapter, financial condition had a significant effect on error expectation. In addition, correlational analysis indicated some association between error expectation and some of the dependent variables which operationalized audit scope. To adjust for the possible effect of error expectation on audit scope, covariance analysis with error expectation as a covariate was performed in addition to the ANOVAs.

Total Budgeted Audit Hours (Hours)

The following specific hypotheses apply to total budgeted hours:

$H_{1.1}$: Total budgeted audit hours will be significantly higher for clients in industries associated with high incidence of auditor litigation than for clients in industries not so associated.

$H_{2.1}$: Total budgeted audit hours will be significantly higher for a public company than for a privately held company.

$H_{3.1}$: Budgeted audit hours will be significantly higher for a client with a weak financial condition than for a client with a strong financial condition.

$H_{4.1}$: Budgeted audit hours will be significantly higher for a publicly owned weak client who is a member of a litigious industry than for a privately held strong client who is a member of a nonlitigious industry.

Summary

An ANOVA with audit scope measured by hours and without firm and error expectation in the analysis supported $H_{2.1}$ and $H_{3.1}$ but did not support $H_{1.1}$. Therefore, hours were significantly increased for public companies and for companies with a weak financial condition. When firm was included as an independent variable and error expectation was included as a covariate, ownership and firm had significant main effects, but most of the effect on audit scope from financial condition was removed. The four-way interaction among firm X industry X ownership X financial condition was also significant.

$H_{4.1}$ was weakly supported at $p=.08$. Therefore, budgeted audit hours were statistically greater for the cell with the highest business risk than the cell with the lowest business risk.

Detailed Tests

Table 15 summarizes the data values for hours under the eight situations depicted in the cases. As illustrated in Table 15, the mean hours changed in the predicted direction when business risk factors were changed to higher levels of risk. The greatest number of budgeted hours ($x=55$) was in the cell with the highest risk; i.e., a litigious public company with a weak financial condition. The smallest number of budgeted hours ($x=39$) was in the cell with the lowest risk; i.e., a nonlitigious private company with a strong financial condition.

Hypothesis: $H_{4.1}$

$H_{4.1}$: Budgeted audit hours will be significantly higher for a publicly owned weak client who is a member of a litigious industry than for a privately held strong client who is a member of a nonlitigious industry.

A t-test on the difference between the means in the highest risk cell and the lowest risk cell was conducted. The difference between the two cells was weakly significant ($t=1.83$, $p=.08$). Thus audit scope as measured by hours weakly supported $H_{4.1}$.

Hypotheses: $H_{1.1}$, $H_{2.1}$, $H_{3.1}$

$H_{1.1}$: Total budgeted audit hours will be significantly higher for clients in industries associated with high incidence of auditor litigation than for clients in industries not so associated.

$H_{2.1}$: Total budgeted audit hours will be significantly higher for a public company than for a privately held company.

Table 15
CELL MEANS OF TOTAL BUDGETED AUDIT HOURS

Industry					
	Litigious		Nonlitigious		Row Means
	Weak	Strong	Weak	Strong	
Public	55 (35)	45 (36)	48 (17)	40 (17)	47
Private	51 (26)	42 (28)	45 (17)	38 (14)	44
Column Means	53	44	46	39	45
	48		43		

Column Means For Financial Condition:

Weak = 50

Strong = 42

Number of subjects = 16 in each cell (Total n = 32)

Standard deviation is shown in parentheses

$H_{3.1}$: Budgeted audit hours will be significantly higher for a client with a weak financial condition than for a client with a strong financial condition.

Table 16 presents the ANOVA for hours. As shown in Table 16 the main effects for both ownership and financial condition were significant at the $p < .05$ level, while the main effect for industry was not. There were no significant interactions. Thus, the audit scope as measured by hours supported $H_{2.1}$ and $H_{3.1}$, but did not support $H_{1.1}$.

Additional Analysis--Firm and Error Expectation

Firm. Since firm affiliation may have affected budgeted hours, additional analysis with firm as an independent variable was performed. Table 17 presents the cell means for budgeted audit hours by firm. The Firm 1 mean hours changed in the predicted directions when the business risk factors were manipulated except the private nonlitigious weak cell and the public nonlitigious weak cell contained the same number of hours. Firm 2 mean total hours changed in the predicted direction except when comparing three of the four cells the litigious industry to the nonlitigious industry. Table 18 presents the ANOVA table with firm as an additional between subjects variable. The main effects for firm, ownership, and financial condition and the interaction of firm X industry X ownership X condition were statistically significant at $p < .05$.

The difference in the number of audit hours between the firms might be due to a firm philosophical difference as to

Table 16
ANOVA WITH TOTAL BUDGETED AUDIT HOURS AS DEPENDENT VARIABLE

	<u>Sums of Squares</u>	<u>DF</u>	<u>F</u>	<u>P-value</u>
Between				
Industry	1,056	1	.45	.51
Within				
Ownership	296	1	4.29	.05*
Condition	2,233	1	22.76	.00*
Interaction				
Industry X Ownership	4	1	.05	.82
Industry X Condition	40	1	.41	.52
Ownership X Condition	2	1	.14	.71
Industry X Ownership X Condition	0	1	.01	.91
Error				
Subjects/Industry	69,631	30		
Ownership X Subjects	296	30		
Condition X Subjects	2,943	30		
Ownership X Condition X Subjects	<u>433</u>	<u>30</u>		
	76,934	127		

Condition = Financial Condition

*Significant at $p < .05$

Eta squared: Ownership = .004

Condition = .029

Table 17
CELL MEANS OF TOTAL BUDGETED AUDIT HOURS BY FIRM

FIRM 1

Industry

	Litigious		Nonlitigious		Row Means
	Weak	Strong	Weak	Strong	
Public	71 (40)	59 (45)	52 (19)	45 (20)	57
Private	63 (27)	54 (32)	52 (19)	41 (16)	53
Column Means	67	62	52	43	55
			48		

Column Means For Financial Condition:

Weak = 60

Strong = 50

Number of subjects = 8 in each cell (Total n = 16)

Standard Deviation is shown in parentheses

Table 17 (Cont'd)

FIRM 2

Industry

	Litigious		Nonlitigious		Row Means
	Weak	Strong	Weak	Strong	
Public	38 (19)	32 (19)	43 (12)	35 (13)	37
Private	39 (20)	30 (18)	37 (12)	34 (12)	35
Column Means	39	31	40	35	36
	35		37		

Column Means For Financial Condition:

Weak = 39

Strong = 33

Number of subjects = 8 in each cell (Total n = 16)

Standard Deviation is shown in parentheses

Table 18

**ANOVA WITH TOTAL BUDGETED AUDIT HOURS AS DEPENDENT VARIABLE
WITH FIRM INCLUDED**

	Sums of Squares	DF	F	P-value
Between				
Industry	1,056	1	.53	.47
Firm	11,201	1	5.58	.03*
Within				
Ownership	296	1	4.29	.05*
Condition	2,233	1	21.83	.00*
Interaction				
Industry X Firm	2,224	1	1.11	.30
Industry X Ownership	4	1	.05	.82
Firm X Ownership	54	1	.79	.38
Industry X Condition	40	1	.39	.54
Firm X Condition	77	1	.75	.39
Ownership X Condition	2	1	.18	.67
Industry X Firm X Ownership	85	1	1.23	.28
Industry X Firm X Condition	1	1	.01	.91
Industry X Ownership X Condition	0	1	.02	.89
Firm X Ownership X Condition	2	1	.14	.71
Firm X Industry X Ownership X Condition	114	1	10.04	.00*
Error				
Subjects/Industry & Firm	56,205	28		
Ownership X Subjects	1,932	28		
Condition X Subjects	2,864	28		
Ownership X Condition X Subjects	<u>318</u>	<u>28</u>		
	78,708	127		

Condition = Financial Condition

*Significant at $p < .05$

Eta squared: Ownership = .004

Condition = .028

Firm = .142

Firm X Industry X Ownership X Condition = .001

the amount of evidence required for any audit. The dissimilarity in firms might also be attributed to differences in expectation on how much client assistance can be expected. If the client was expected to be heavily involved with the audit in preparing schedules, analyses, and follow-up, the auditor might factor in the client time, thereby reducing the auditor time required. Also, the budgeted audit hours might have been affected by firm differences in the experience level of the staff assigned to different types of clients. Experienced staff should require fewer budgeted hours than inexperienced staff. Therefore, it is possible that the managers from Firm 1 expected less experienced staff, while the managers from Firm 2 expected more experienced staff.

The four-way interaction between firm and the other independent variables was primarily a result of the firms responding differently to manipulations of industry. As shown in Table 17, Firm 1 hours were higher whenever the client was a member of the litigious type industry. However, Firm 2 hours were higher for clients in the nonlitigious industry, except when the client was weak and private. Since industry was a between subjects independent variable, one-half of the managers randomly received the computers/electronics clients and one-half randomly received the adhesives/sealants clients. There was a firm difference in the amount of industry experience the participants had in

the industry they received in the study. As shown in Table 19, Firm 1 had more experienced participants responding to

Table 19
Participants' Industry Experience By Firm

<u>Firm</u>	<u>Numbers of Managers</u>		<u>Experienced With Industry Received In Study</u>	
	<u>CE</u>	<u>AS</u>	<u>CE</u>	<u>AS</u>
1	8	1	3	1
2	5	4	1	4

CE = Computers and Electronics Industry (Litigious)

AS = Adhesives and Sealants Industry (Nonlitigious)

the computers/electronics industry (litigious) and Firm 2 had more experienced participants responding to the adhesives/sealants industry (nonlitigious) cases. Perhaps the difference in industry experiences contributed to the firm effect. The four-way interaction will be discussed further at the end of this section.

Error Expectation. Because the preliminary analysis discussed earlier in this Chapter indicated that error expectation might have affected budgeted audit hours, covariate analysis with error expectation as a covariate was performed. The results are shown in Table 20. Use of error expectation as a covariate removed most of the effect on budgeted hours from financial condition. The significant main effects for ownership and firm and the significant

Table 20
COVARIATE ANALYSIS WITH TOTAL BUDGETED AUDIT HOURS
AS THE DEPENDENT VARIABLE AND WITH
ERROR EXPECTATION AS A COVARIATE

	Sums of Squares	DF	F	P-value
Between				
Industry	827	1	.41	.53
Firm	11,400	1	5.59	.03*
Within				
Ownership	293	1	4.10	.05*
Condition	49	1	.57	.46
Interaction				
Industry X Firm	1,442	1	.71	.41
Industry X Ownership	3	1	.03	.85
Firm X Ownership	44	1	.62	.44
Industry X Condition	35	1	.41	.53
Firm X Condition	117	1	1.37	.25
Ownership X Condition	2	1	.20	.66
Industry X Firm X Ownership	79	1	1.10	.30
Industry X Firm X Condition	31	1	.36	.55
Industry X Ownership X Condition	0	1	.02	.90
Firm X Owner X Condition	1	1	.15	.70
Firm X Industry X Ownership X Condition	115	1	9.75	.00*
Error				
Subjects/Type & Firm	55,027	27		
Ownership X Subject	1,930	27		
Condition X Subject	2,297	27		
Ownership X Condition X Subject	<u>317</u>	<u>27</u>		
	74,009	123		

Condition = Financial Condition

*Significant at $p < .05$

four-way interaction for firm X industry X ownership X financial condition were not affected.

Additional Analysis--Individual Auditors

Joyce (1976) discussed the individual differences among auditors in judgments regarding the level of audit testing to be performed. Joyce (1976) found a lack of consensus in the number of hours to audit accounts receivable; for example, the average number of hours over all audit situations tested in Joyce's (1976) study ranged from 22 hours to 120 hours, with an overall average of 54 hours for 35 subjects. This study's average number of hours over all audit situations ranged from 12 hours to 134 hours, with an overall average of 45 hours for 32 subjects. Analysis of individual auditor's decisions might reveal patterns of changes made in the cases by individual managers.

Table 21 shows indexes of hours budgeted for each of the cases relative to the hours budgeted for Case 4. Case 4, which was the audit of a private strong company, depicted the client with the lowest risk of the four cases each manager completed. The hours to audit Case 4 were used as the base hours in determining the indexes for the other cases which depicted clients with more risk. For example, Manager No. 8 budgeted 32 hours for Case 4 and budgeted 51 hours for Case 1. The index for Case 1 was calculated as:

$$\text{Index} = 51 / 32 = 1.4$$

Therefore, to audit a public weak client, Manager No. 8

Table 21
INDEXES OF TOTAL BUDGETED HOURS FOR CASES 1 - 3
RELATIVE TO CASE 4

<u>Auditor</u>	<u>Firm</u>	<u>Industry**</u>	<u>Case*</u>			
			<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
1	1	1	1.2	1.3	.8	--
2	1	1	.9	.5	--	--
3	1	2	1.4	--	1.4	--
4	1	2	1.5	1.4	1.4	--
5	1	2	1.2	1.1	1.2	--
6	1	2	1.5	--	1.3	--
7	1	1	1.7	1.2	1.5	--
8	1	1	1.4	--	1.4	--
9	2	2	--	--	--	--
10	2	1	1.8	1.1	1.8	--
11	2	2	1.1	--	1.1	--
12	2	1	--	--	--	--
13	2	2	1.8	.8	1.5	--
14	2	2	--	--	--	--
15	2	1	1.1	--	.9	--
16	2	1	1.3	1.4	1.1	--
17	2	2	1.6	1.2	1.2	--
18	2	1	1.2	.9	1.2	--
19	1	1	--	.9	1.2	--
20	2	2	1.2	--	1.2	--
21	2	2	1.4	1.1	1.2	--
22	2	2	1.3	--	1.1	--
23	2	1	2.0	--	2.0	--
24	2	1	1.3	1.1	2.1	--
25	1	1	1.2	.9	--	--
26	1	2	1.5	--	1.6	--
27	1	2	1.1	--	1.1	--
28	1	2	1.1	.9	1.1	--
29	1	1	1.4	1.1	1.4	--
30	1	1	1.2	1.1	1.2	--
31	1	2	1.5	1.2	1.6	--
32	1	2	1.1	--	1.1	--
Totals			27>1	12>1	25>1	

*Case Legend:

1 = Public, weak
 2 = Public, strong
 3 = Private, weak
 4 = Private, strong

**Industry:

1 = Litigious
 2 = Nonlitigious

increased the hours to equal 1.4 times the hours budgeted to audit a private strong company.

Of the 32 managers, 27 (84%) had indexes > 1 for Case 1 (public weak); 12 (38%) had indexes > 1 for Case 2 (public strong); and 25 (78%) had indexes > 1 for Case 3 (private weak). If the nonparametric sign test (Siegel, 1956) is conducted, the public weak ($z=4.73$, $p=.00$) and private weak ($z=4.23$, $p=.00$) conditions were significantly different from the private strong condition. The public strong condition was not significantly different from the private strong condition ($x=6$, $N=18$, $p=.12$).¹⁵ This is strong evidence of individual auditors changing their audit scope decisions with the changing business risk factor financial condition. Of course, this data cannot indicate how much of each auditor's audit scope decisions were due to changes in error expectation.

Discussion

Audit scope when measured by the budgeted hours was significantly affected by the type of ownership and financial condition of the client. The manager's CPA firm affiliation also was significant and resulted in a significant interaction between the firm and all of the independent variables.

¹⁵Since this test is considered a small sample size, the statistical significance for the sign test is conducted by using the binomial distribution. With sample sizes greater than 25, the normal approximation to the binomial distribution can be used (Siegel, 1956).

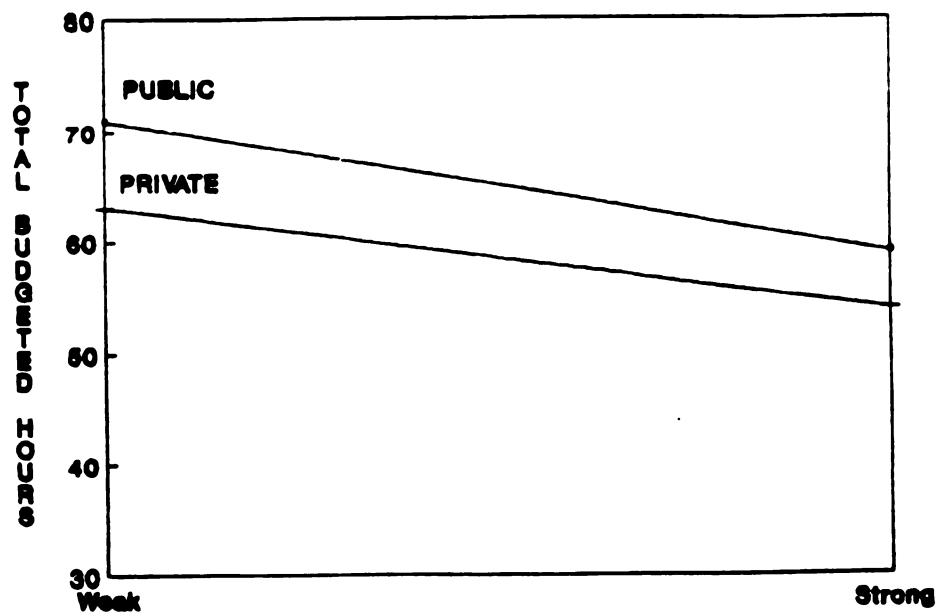
Ownership

This study found a significant effect on audit scope when ownership was manipulated. As reported earlier in this Chapter, this study found no significant effect of ownership on error expectation. Therefore, the significant effect on budgeted hours without a significant increase in error expectation is strong evidence that business risk from ownership affected audit scope.

However, since there was a significant four-way interaction of firm X industry X ownership X condition, the effect from ownership must be qualified. Graphs of the budgeted hours for the two firms clearly shows interaction for firm 2 between ownership and financial condition in the litigious industry. See Figure 4 for the graphs. When the client was weak, more hours were budgeted for the private than the public client. However, when the client was strong, more hours were budgeted for the public than the private client. There was also interaction for Firm 1 in the nonlitigious industry; i.e., the public and private company had the same budgeted hours when it was weak, but the public company had more budgeted hours than the private company when it was strong. See Figure 5 for the graph.

For Firm 1, it may be that for nonlitigious clients the financial condition determined the number of hours when it was weak. However, when financial condition was strong, ownership became more important and the public companies

FIRM 1: Litigious



FIRM 2: Litigious

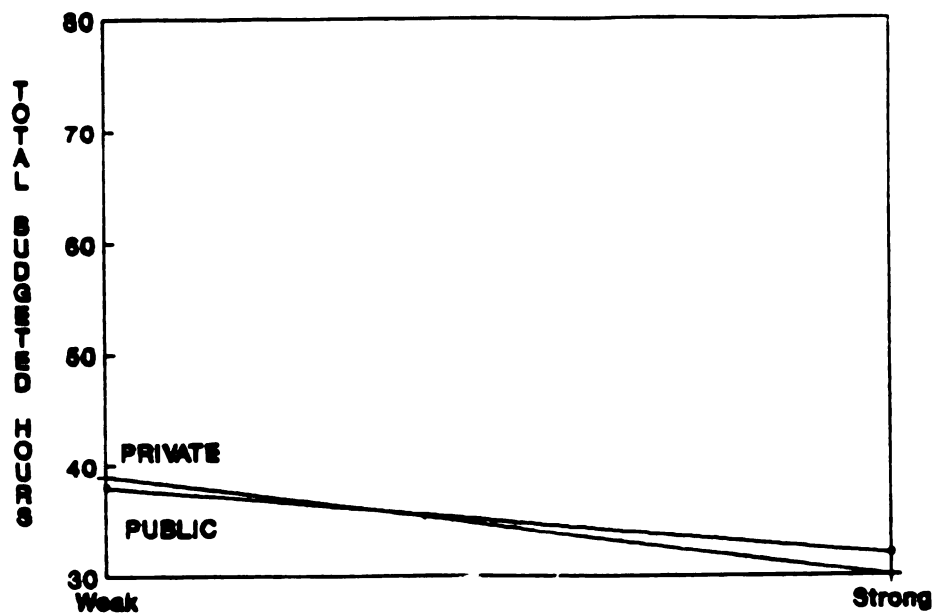
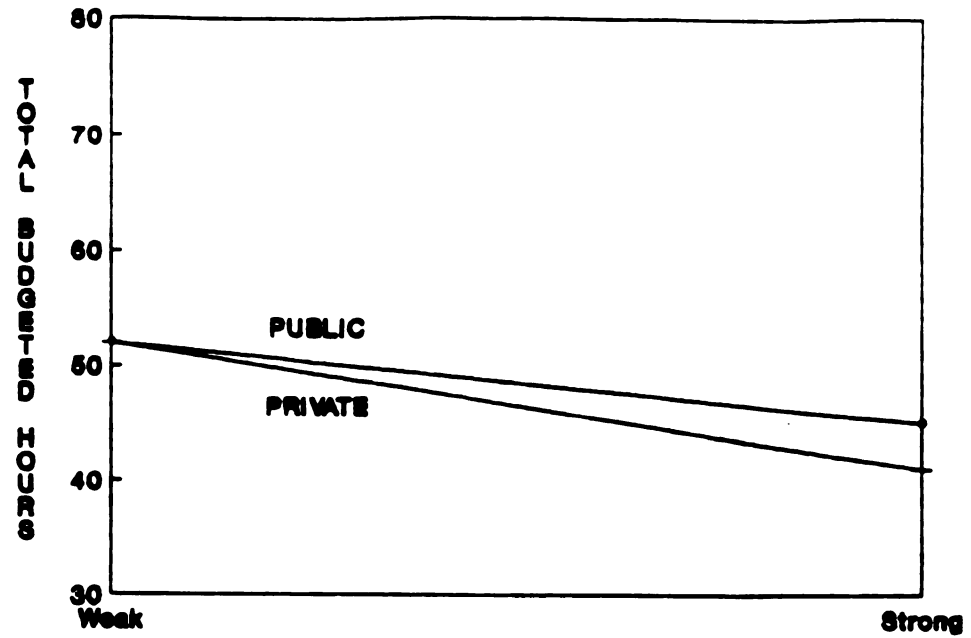


Figure 4
BUDGETED HOURS UNDER WEAK AND STRONG
FINANCIAL CONDITION--LITIGIOUS

FIRM 1: Nonlitigious



FIRM 2: Nonlitigious

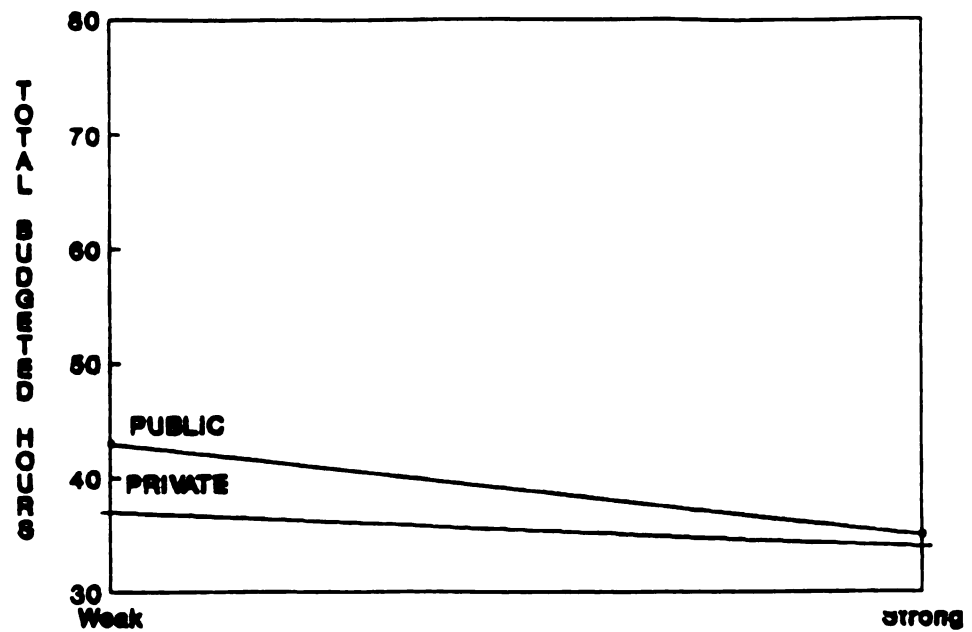


Figure 5
BUDGETED HOURS UNDER WEAK AND STRONG
FINANCIAL CONDITION--NONLITIGIOUS

required more hours. For Firm 2, it may be that for litigious clients error expectation played a greater role when the financial condition was weak. The manager anticipated larger relative errors when auditing a private client than a public client. But when financial condition was strong, business risk effects from public ownership were more important. Although the results indicated that the firms behaved differently, there does not appear to be any substantive explanation of these firm differences. The firms behaved similarly for both industries when the financial condition was strong; i.e., more hours were planned for the public than the private client.

Industry

Industry did not have a significant effect on total budgeted hours. In other studies industry had been shown to affect audit scope (McAllister and Dirsmith, 1982; Kaplan, 1985).

The difference in results in this study from McAllister and Dirsmith (1982) might be because (1) the industry characteristic manipulated was different from the characteristic manipulated by McAllister and Dirsmith; (2) the influence of error expectation caused changes in audit scope in McAllister and Dirsmith (1982); or (3) the design in this study was different from the design of McAllister and Dirsmith.

This study emphasized the litigious or nonlitigious

characteristic of industries, while McAllister and Dirsmith (1982) emphasized certainty or uncertainty of industries. Managers may consider characteristics of industry in determining audit scope, but do not consider the litigious or nonlitigious characteristic. In addition, the firms may differentially emphasize the effect of the litigious/nonlitigious nature of clients on audits in their training programs and audit manuals.

Another possible explanation for the difference in results is that the McAllister and Dirsmith (1982) study did not control for differences in error expectation in the industry. Audit scope effects in those studies might have been due to differences in complexity or differences in internal control systems which may have differentially affected the extent of errors in the accounts for the different industries. This study did not manipulate changes in internal control and attempted to control for changes in potential errors.

Finally, the design of the McAllister and Dirsmith (1982) study might have contributed to the different results. McAllister and Dirsmith (1982) sent questionnaires to audit teams of actual clients. The teams indicated whether or not industry affected audit scope. Therefore, the response by auditors in McAllister and Dirsmith's (1982) study were self-assessments of what the auditors thought they did; i.e., they thought they increased the audit scope.

Perhaps the increases to audit scope were not actually significant increases, but the auditors thought or imagined their increases were significant.

Kaplan's (1985) study was a laboratory experiment with industry included as only one component of environmental stability. Kaplan did not attempt to isolate the effect on audit scope solely from industry.

Financial Condition

When error expectation was added as a covariate, financial condition no longer had a significant effect on budgeted audit hours. As discussed in Chapter III, use of covariate analysis may have biased the results by attributing the treatment effect to error expectation. Therefore, although it cannot be proven here, it is possible there was more effect from business risk than the covariance analysis indicated.

However, it is also possible that error expectation, not business risk, was the cause of the increase in audit scope for a company with a weak financial condition. As discussed earlier, the managers might have anticipated that the client would try to improve the appearance of the financial condition; and in response to this expectation, the managers budgeted more time to do audit testing.

Conclusion

In conclusion, total budgeted audit hours were significantly affected with manipulations of the business

risk factors of ownership and financial condition. When covariance analysis was performed, error expectation removed the significant effect from financial condition. When firm was added as an independent variable, firm had a significant effect, along with ownership, and the four-way interaction of firm X industry X ownership X financial condition.

Although ownership had a significant main effect, since there was a significant four-way interaction which included ownership, the effect of ownership must be qualified as to the firm and industry and whether the financial condition was weak or strong. When financial condition was strong, ownership determined the level of audit scope, with the public company receiving more audit hours. When financial condition was weak, there was an interaction between the firm and the industry. For Firm 1, when the industry was nonlitigious, audit scope was the same for public and private clients. For Firm 2, when the industry was litigious, audit scope was higher for the private than the public clients.

In an analysis of individual auditor's audit scope decisions using nonparametric statistics, the public weak and private weak conditions were significantly different from the private strong conditions. Therefore, on an individual auditor basis, manipulations of the financial condition significantly affected the budgeted audit hours. It is not possible to determine if this effect was due to

error expectation or business risk.

Materiality

The following hypotheses apply to materiality:

H_{1.2}: Materiality will be significantly lower for clients in industries associated with high incidence of auditor litigation than for clients in industries not so associated.

H_{2.2}: Materiality will be significantly lower for a public company than for a privately held company.

H_{3.2}: Materiality will be significantly lower for a client with a weak financial condition than for a client with a strong financial condition.

H_{4.2}: Materiality will be significantly lower for a publicly owned weak client who is a member of a litigious industry than for a privately held strong client who is a member of a nonlitigious industry.

Summary

The audit scope as measured by materiality did not statistically support any of the hypotheses.

Detailed Tests

Table 22 summarizes the cell means for materiality in the eight situations depicted in the cases. As Table 22 illustrates, the mean materiality did not change in the predicted direction when the business risk factors of industry and financial condition were changed to higher levels of risk. The mean materiality for the litigious industry ($x = \$142,345$) was higher than the mean materiality level for the nonlitigious industry ($x = \$83,907$), while the mean materiality level for the weak client was higher

Table 22
CELL MEANS OF MATERIALITY

Industry					
	Litigious		Nonlitigious		Row Means
	Weak	Strong	Weak	Strong	
Public	136,250 (116,940)	143,438 (119,885)	92,188 (75,784)	74,063 (56,634)	111,485
Private	136,563 (119,467)	153,125 (118,994)	95,313 (74,955)	74,063 (56,634)	114,766
Column Means	136,407	148,282	93,751	74,063	113,126
	142,345		83,907		

Column Means For Financial Condition:

Weak = 115,079

Strong = 111,173

Number of subjects = 16 in each cell (Total n = 32)

Standard Deviation is shown in parentheses

(x=\$115,079) than the strong client (x=\$111,173).

Materiality changed in the expected direction with changes in ownership, with materiality for the public company (x=\$111,485) being slightly lower than the private company (x=\$114,766).

Hypothesis: $H_{4.2}$

$H_{4.2}$: Materiality will be significantly lower for a publicly owned weak client who is a member of a litigious industry than for a privately held strong client who is a member of a nonlitigious industry.

Hypothesis $H_{4.2}$ was not supported when materiality was the measure of audit scope. The smallest materiality level (x=\$74,063) was in two cells, the nonlitigious strong private cell and the nonlitigious strong public cells. The largest materiality (x=\$153,125) was in the litigious strong private cell.

Hypotheses: $H_{1.2}$, $H_{2.2}$, $H_{3.2}$:

$H_{1.2}$: Materiality will be significantly lower for clients in industries associated with high incidence of auditor litigation than for clients in industries not so associated.

$H_{2.2}$: Materiality will be significantly lower for a public company than for a privately held company.

$H_{3.2}$: Materiality will be significantly lower for a client with a weak financial condition than for a client with a strong financial condition.

Table 23 presents the ANOVA table for materiality.

There were no significant main effects. Industry was weakly significant ($p=.09$); however, as shown on Table 22,

Table 23
ANOVA MATERIALITY AS DEPENDENT VARIABLE

	Sums of Squares	DF	F	P-value
Between				
Industry	1.0928E+11	1	3.16	.09
Within				
Ownership	344,531,250	1	2.25	.14
Condition	488,281,250	1	.21	.65
Interaction				
Industry X Ownership	94,531,250	1	.62	.44
Industry X Condition	7.969E+9	1	3.38	.08
Ownership X				
Condition	78,125,000	1	1.11	.30
Industry X Owner-	312,500,000	1	4.44	.04*
ship X Condition				
Error				
Subjects/Industry				
& Firm	1.0364E+12	30		
Ownership X Subjects	4.5859E+9	30		
Condition X Subjects	7.0767E+10	30		
Ownership X Condition				
X Subjects	<u>2.1093E+9</u>	<u>30</u>		
	1.230E+12	127		

Condition = Financial Condition

*Significant at $p < .05$

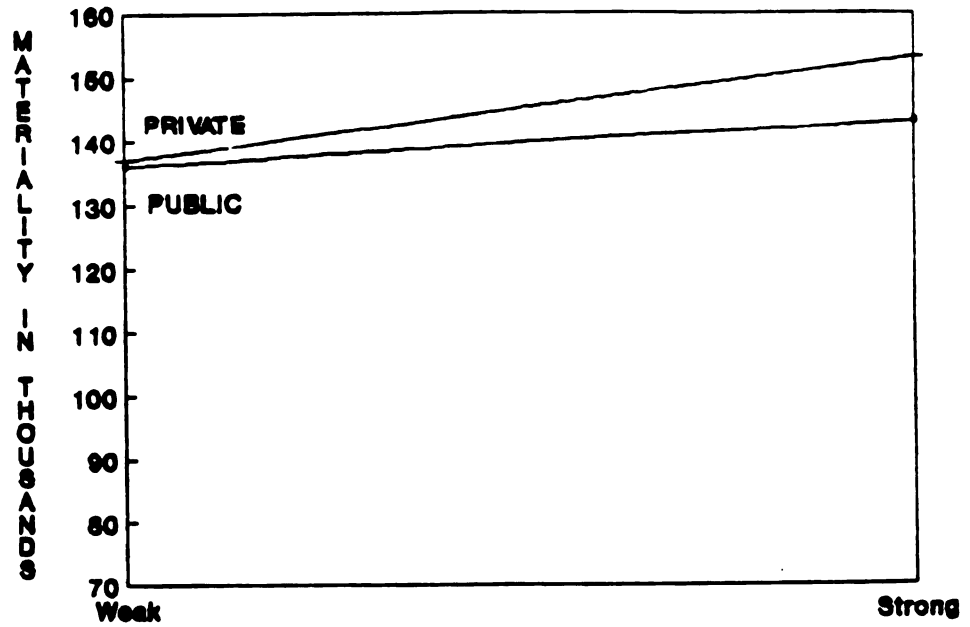
materiality levels changed in the opposite direction than hypothesized; i.e., materiality was higher for the litigious industry than the nonlitigious industry.

As shown in Table 23, the three-way interaction (industry X ownership X financial condition) was significant at the $p < .05$ level. In a three-way interaction, the three variables interact when the interaction of two of the variables changes at different levels of the third variable.

As the graph on Figure 6 indicates, the interaction of ownership and financial condition changed between the litigious and nonlitigious industry types. In the litigious industry, materiality for the public and private clients who were weak was nearly the same. When the financial condition was strong, materiality for both the public and private clients was greater than the weak, but materiality for the private clients was larger than the public clients. In the nonlitigious industry, the opposite effect occurred. Materiality for the private clients was greater than the materiality for the public clients who were weak. When the financial condition was strong, materiality for the public and private clients was the same. Also, materiality was smaller for both public and private clients when the financial was strong than when it was weak.

If the litigious group was considered alone, materiality levels changed in the predicted direction for

BOTH FIRMS: Litigious



BOTH FIRMS: Nonlitigious

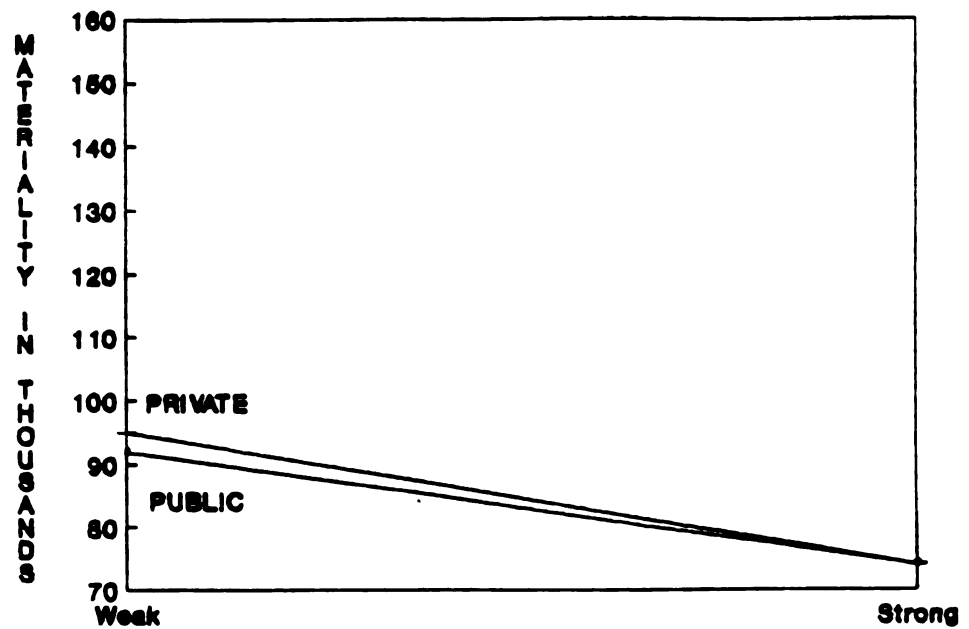


Figure 6
MATERIALITY UNDER WEAK AND STRONG
FINANCIAL CONDITION

financial condition. Also, the smallest materiality ($x = \$136,250$) was in the litigious cell with the highest risk; i.e., the weak, public client. The largest materiality ($x = \$153,125$) was in the litigious cell with the lowest risk; i.e., the private strong client.¹⁶ If the nonlitigious group was considered alone, materiality did not change in the predicted direction with changes in financial condition. Materiality for strong clients was lower ($x = \$74,063$) than for weak clients ($x = \$93,751$). However, materiality did change in the predicted direction for ownership. Materiality was slightly lower for public clients ($x = \$83,126$) than private clients ($x = \$84,688$), which was consistent with the hypothesized direction.

Additional Analysis--Firm and Error Expectation

As shown in Table 24, materiality for Firm 1 was higher than materiality for Firm 2 in each of the cells. The overall mean materiality for Firm 1 was \$151,250, while the overall mean materiality for Firm 2 was \$75,000. The mean materiality was higher for the litigious industry than the nonlitigious industry for both Firm 1 and Firm 2, which was inconsistent with the hypothesized effect of industry. The mean materiality for public ownership when compared to private ownership was consistent with the predicted

¹⁶ An ANOVA on the litigious industry type alone did not result in significant effects. Ownership X Condition is marginally significant at $p = .08$.

Table 24
CELL MEANS OF MATERIALITY BY FIRM

FIRM 1

Industry

	Litigious		Nonlitigious		Row Means
	Weak	Strong	Weak	Strong	
Public	193,750 (132,119)	215,625 (124,598)	108,750 (78,274)	77,500 (31,510)	148,906
Private	200,000 (133,630)	228,125 (119,102)	108,750 (78,274)	77,500 (31,510)	153,594
Column Means	196,875	221,875	108,750	77,500	151,250
	209,375		93,125		

Column Means For Financial Condition:

Weak = 152,813

Strong = 149,688

Number of subjects = 8 in each cell (Total n = 16)

Standard Deviation is shown in parentheses

Table 24 (Cont'd)

FIRM 2

Industry

	Litigious		Nonlitigious		Row Means
	Weak	Strong	Weak	Strong	
Public	78,750 (65,506)	71,250 (57,987)	75,625 (74,519)	70,625 (76,506)	74,063
Private	73,125 (59,398)	78,125 (57,442)	81,875 (74,159)	70,625 (76,506)	75,938
Column Means	75,938 75,313	74,688	78,750 74,688	70,625	75,000

Column Means For Financial Condition:

Weak = 77,344

Strong = 72,656

Number of subjects = 8 in each cell (Total n = 16)

Standard Deviation is shown in parentheses

direction for both Firm 1 and Firm 2. The mean materiality for weak condition when compared to strong condition was not consistent with the predicted direction for either firm, with the materiality for weak condition being higher.

To determine if firm had a statistical effect on materiality, firm was added as an independent variable in the ANOVA. Table 25 presents the ANOVA table with firm as a between subjects variable. As shown in Table 25, the main effects for firm and industry were significant at $p < .05$. However, as discussed earlier, although the main effects for industry were significant, materiality for the two levels of industry were not consistent with the hypothesized direction; i.e., materiality was higher for the litigious industry ($x = \$142,282$) than the nonlitigious industry ($x = \$83,907$). The three-way interaction (industry X ownership X financial condition) was again significant at $p < .05$.

Covariance analysis with error expectation added as a covariate was performed. There was no change to the significance testing results.

Discussion

It was apparent from the results that the managers did not use the information manipulated in the cases to make materiality decisions. An analysis of the individual materiality decisions indicated that 12 (38%) managers did not change the level of materiality in any of the cases.

Table 25
ANOVA WITH MATERIALITY AS DEPENDENT VARIABLE
WITH FIRM INCLUDED

	Sums of Squares	DF	F	P-value
Between				
Industry	1.0928E+11	1	4.12	.05*
Firm	1.8605E+11	1	7.01	.01*
Within				
Ownership	344,531,250	1	2.27	.14
Condition	488,281,250	1	.21	.65
Interaction				
Industry X Firm	1.0695E+11	1	4.03	.05*
Industry X Ownership	94,531,250	1	.62	.44
Firm X Ownership	63,281,250	1	.42	.52
Industry X Condition	7.969E+9	1	3.39	.08
Firm X Condition	19,531,250	1	.01	.93
Ownership X Condition	78,125,000	1	1.08	.30
Industry X Firm X Ownership	282,031,250	1	1.86	.18
Industry X Firm X Condition	4.875E+9	1	2.07	.16
Industry X Ownership X Condition	312,500,000	1	4.31	.05*
Firm X Owner X Condition	0	1	0	1.00
Firm X Industry X Ownership X Condition	78,125,000	1	1.08	.31
Error				
Subjects/Industry & Firm	7.4337E+11	28		
Ownership X Subjects	4.2406E+9	28		
Condition X Subjects	6.5872E+10	28		
Ownership X Condition X Subjects	<u>2.0312E+9</u>	<u>28</u>		
	4.82E+11	127		

Condition = Financial Condition

*Significant at $p < .05$

Ten (31%) managers actually increased the level of materiality for the public weak clients over the materiality for the private strong client. Only nine (28%) managers behaved as would be expected in setting materiality for clients with different risks: they reduced materiality for the public strong client (highest risk client) from that of the private weak client (the lowest risk client).

The managers appeared to be using information not manipulated in the case in determining materiality. It was apparent from the results that determining materiality was not related to the risk to audit the client.

Although industry had a weakly significant effect on materiality, the effect was in the opposite direction as expected. The reason for this may be due to the design of the experiment; i.e., industry was a between subjects independent variable. Therefore, the managers responding to the litigious clients were different from the managers responding to the nonlitigious clients. As discussed earlier, other auditing research has found poor consensus in audit planning among auditors. A better test for industry may have been to have included it as a repeated measure so that managers' individual differences would have been controlled.

The manager's CPA firm affiliation had a significant effect on materiality judgments. Although a definition for materiality was provided in the cases, the managers may have

responded to materiality judgments using materiality as defined by their firms. The firms may define materiality differently.

Sample Sizes

The following hypotheses apply to sample sizes:

H_{1.3} Sample sizes will be significantly higher for clients in industries associated with high incidence of auditor litigation than for clients in industries not so associated.

H_{2.3}: Sample sizes will be significantly higher for a public company than for a privately held company.

H_{3.3}: Sample sizes will be significantly higher for a client with a weak financial condition than for a client with a strong financial condition.

H_{4.3}: Sample sizes will be significantly higher for a publicly owned weak client who is a member of a litigious industry than for a privately held strong client who is a member of a nonlitigious industry.

The managers were given a list of potential procedures which contained eight procedures requiring sample size responses. Three of the procedures involved different methods to select the account balances of accounts receivable to confirm:

Procedure

<u>Number</u>	<u>Description</u>
1.	Use a stratified sampling strategy and send positive confirms to all accounts over \$ _____. (Includes substantiating nonreplies and following up exceptions.)
2.	Select a random sample of _____ accounts not confirmed in No. 1 and send positive confirmations. (Includes substantiating nonreplies and following up exceptions.)

3. Select a monetary unit sample to confirm the accounts. (Includes substantiating nonreplies and following up exceptions.) If this procedure is chosen, you must provide the selection criteria below: Confidence level; one- or two-tailed tests; expected error; tolerable error.

The sample sizes for Procedures 1 through 3 were the number of accounts to be confirmed. No manager selected all three procedures. The managers chose Procedure 1, a combination of Procedures 1 and 2, or the subjects chose Procedure 3. Every manager required confirmation of accounts receivable.¹⁷ For analysis purposes, the numbers of confirmations from the three procedures were added together to obtain the confirmation total.

Procedures 1 and 3 required the manager to provide confirmation selection criteria. In order to obtain the numbers of confirmations for the sample sizes, the researcher had to convert the selection criteria given for Procedures 1 and 3 to numbers of confirmations. Procedure 1 was converted to numbers of confirmations by counting the accounts on the aged trial balance which corresponded to the managers' selection criteria. Procedure 3 was converted to numbers of confirmations after applying the firms' software packages which processed the selection criteria and produced an interval size. The interval size was used to obtain the

¹⁷ Confirmations of receivables are required under the professional standards (AICPA, 1989, AU331.01). If the auditor does not confirm receivables, the auditor must justify giving an expression of an opinion without following the auditing standards.

number of confirmations by dividing the interval size into the total balance of accounts receivable. Procedure 2 did not require conversion because the number of accounts to be confirmed was provided by the managers.

The remaining five procedures required sample sizes of accounts or transactions to trace or vouch:

Procedure

<u>Number</u>	<u>Description</u>
5.	Trace ____accounts from the aged trial balance to the related subsidiary ledger for aging and the balance.
6.	Vouch a sample of ____accounts in the aged trial balance to sales invoices to test accuracy of aging.
8.	Vouch accounts which are ____days past due and over \$_____ to cash receipts after the balance sheet date.
14.	Trace ____accounts from the subsidiary ledger to the aged trial balance.
15.	Select the last ____sales transactions from the sales journal and the first ____sales transactions from the subsequent year's sales journal and vouch to shipping documents to check for the date of actual shipment and correct recording.

The researcher determined the sample sizes for Procedures 8 and 15 after applying the criteria provided by the managers. The managers provided the number of accounts to be traced or vouched in Procedures 5, 6, and 14; therefore, no conversion was necessary. See Table 26 for a description of the methods used to determine the sample sizes for vouching and tracing.

Table 26
 DETERMINING SAMPLE SIZES FOR
 VOUCHING AND TRACING AUDIT PROCEDURES

<u>Procedure</u>	<u>Method To Determine Sample Size</u>
5	Manager provided the number of accounts.
6	Manager provided the number of accounts.
8	Researcher counted the number of accounts in the aged trial balance which both exceeded the minimum dollar amount provided by the managers and were at least past due by the number of days stipulated by the manager.
14	Manager provided the number of accounts.
15	Researcher added together the number of sales transactions provided by the manager for the last sales transactions and the first transactions into one sample size. ¹⁸

¹⁸ All but two managers selected the same number of sales transactions to vouch in the last and first transactions. Of these two managers, both differed the number for the last and first by only one transaction.

A majority of the managers did not select Procedures 5 and 14. Of those managers selecting Procedure 5, seven did not change the sample size in the cases; of those selecting Procedure 14, four did not change the sample size. See Table 27 for a summary of the managers selecting the procedures requiring vouching and tracing.

Table 27
SELECTIONS MADE BY MANAGERS TO VOUCH AND TRACE

<u>Procedure</u>	<u>Did Not Selected</u>	<u>Select</u>
5	10	22
6	32	2
8	24	8
14	7	25
15	29	3

Of the procedures requiring sample sizes, the procedures involving confirmations (Procedures 1 through 3) were the most important in this study. As is true for most audits, the confirmation process comprised the most significant portion of the year-end testing of accounts receivable. Of the average total hours of 45 (Table 15) budgeted to audit accounts receivable in this study, an average of 22 hours was budgeted for confirmations. This contrasts with only an average of 9 hours budgeted for the remaining five procedures requiring sample sizes.

In view of the importance of confirmations to the audit, confirmations will be emphasized when testing the hypotheses regarding sample sizes.

Confirmations

The following hypotheses apply to confirmations:

H_{1.3}: The number of confirmations will be significantly higher for clients in industries associated with high incidence of auditor litigation than for clients in industries not so associated.

H_{2.3}: The number of confirmations will be significantly higher for a public company than for a privately held company.

H_{3.3}: The number of confirmations will be significantly higher for a client with a weak financial condition than for a client with a strong financial condition.

H_{4.3}: The number of confirmations will be significantly higher for a publicly owned weak client who is a member of a litigious industry than for a privately held strong client who is a member of a nonlitigious industry.

Summary

Audit scope as measured by numbers of confirmations did not support any of the hypotheses.

Detailed Tests

Table 28 summarizes the data values for numbers of confirmations under the eight situations depicted in the cases. As illustrated in Table 28, the numbers of confirmations did not change in the predicted direction with changes between litigious and nonlitigious industries. The mean number of confirmations was higher for the nonlitigious group ($x=34.0$) than the litigious group ($x=28.9$), which was contrary to the hypothesized direction of change. However, the mean number of confirmations was higher for public companies ($x=32.3$) than private companies ($x=30.4$) and the

Table 28
CELL MEANS OF CONFIRMATIONS

Industry					
	Litigious		Nonlitigious		Row Means
	Weak	Strong	Weak	Strong	
Public	31 (9)	29 (11)	35 (18)	34 (18)	32
Private	30 (11)	25 (11)	33 (15)	34 (17)	30
Column Means	31	27	34	34	31
		29		34	

Column Means For Financial Condition:

Weak = 32

Strong = 31

Number of subjects = 16 in each cell (Total n = 32)

Standard Deviation is shown in parentheses

mean number of confirmations was higher for weak companies ($x=32.3$) than strong companies ($x=30.6$), which was consistent with the hypothesized directions of change.

Hypothesis: $H_{4.3}$

$H_{4.3}$: The number of confirmations will be significantly higher for a publicly owned weak client who is a member of a litigious industry than for a privately held strong client who is a member of a nonlitigious industry.

The number of confirmations in the highest risk cell, litigious public weak ($x=31.2$), was lower than the number of confirmations in the lowest risk cell, nonlitigious private strong ($x=33.7$). Therefore, audit scope as measured by numbers of confirmations did not support $H_{4.3}$.

Hypotheses: $H_{1.3}$, $H_{2.3}$, $H_{3.3}$

$H_{1.3}$: The number of confirmations will be significantly higher for clients in industries associated with high incidence of auditor litigation than for clients in industries not so associated.

$H_{2.3}$: The number of confirmations will be significantly higher for a public company than for a privately held company.

$H_{3.3}$: The number of confirmations will be significantly higher for a client with a weak financial condition than for a client with a strong financial condition.

Table 29 presents the ANOVA table for numbers of confirmations. As shown in Table 29, there were no significant effects at $p < .05$. Thus, the number of confirmations requested does not support $H_{1.3}$, $H_{2.3}$, or $H_{3.3}$.

Table 29
ANOVA WITH CONFIRMATIONS AS DEPENDENT VARIABLE

	Sums of Squares	DF	F	P-value
Between				
Type	815	1	1.42	.24
Within				
Ownership	107	1	2.22	.15
Condition	86	1	.48	.50
Interaction				
Type X Ownership	3	1	.06	.81
Type X Condition	126	1	.70	.41
Ownership X Condition	1	1	.06	.81
Type X Ownership X Condition	27	1	2.58	.12
Error				
Subjects/Type	17,249	30		
Ownership X Subjects	1,447	30		
Condition X Subjects	5,437	30		
Ownership X Condition X Subject	<u>316</u>	<u>30</u>		
	25,614	127		
Type = Industry				
Condition = Financial Condition				

Additional Analyses--Firm and
Error Expectation

To determine if there were significant firm effects on numbers of confirmations, an independent variable for the manager's CPA firm was added in the ANOVA. Table 30 presents the ANOVA with firm as an additional between subjects variable. As shown in Table 30, the main effect for firm was significant at $p < .05$. The significant effect resulted because Firm 1 consistently showed more confirmations in each cell than did Firm 2. The average number of confirmations was 36 for Firm 1 and 27 for Firm 2. The difference between the firms might be due to philosophical differences about the amount of evidence required to do an audit. The difference also might be due to a difference in the types of substantive tests to emphasize, with Firm 1 relying more on confirmations and Firm 2 relying less on confirmations and more on other tests such as analytical review.

Because the preliminary analysis indicated that error expectation might have affected audit scope decisions, Covariance analysis with error expectation as a covariate was performed with confirmations as the dependent variable. There were no changes to the significance testing when error expectation was included.

Table 30
ANOVA WITH CONFIRMATIONS AS DEPENDENT VARIABLE
WITH FIRM INCLUDED

	Sums of Squares	DF	F	P-value
Between				
Type	815	1	1.58	.22
Firm	2,766	1	5.37	.03*
Within				
Ownership	107	1	2.32	.14
Condition	86	1	.48	.50
Interaction				
Type X Firm	65	1	.13	.73
Type X Ownership	3	1	.06	.81
Firm X Ownership	27	1	.59	.45
Type X Condition	126	1	.70	.41
Firm X Condition	267	1	1.48	.23
Ownership X Condition	1	1	.06	.81
Type X Firm X Ownership	130	1	2.82	.10
Type X Firm X Condition	122	1	.68	.42
Type X Ownership X Condition	27	1	2.49	.13
Firm X Owner X Condition	1	1	.12	.73
Firm X Type X Ownership X Condition	10	1	.88	.36
Error				
Subjects/Type & Firm	15,442	28		
Ownership X Subjects	906	28		
Condition X Subjects	86	28		
Ownership X Condition X Subjects	<u>306</u>	<u>28</u>		
	21,293	127		

Type = Industry

Condition = Financial Condition

*Significant at $p < .05$

Additional Analysis--Individual Auditors

As discussed earlier in this Chapter, other research has found a lack of consensus among auditors. Clarke (1987) found wide variation in responses on the number of accounts to confirm (range of 10 to 125 accounts for a single case). The number of confirmations varied over the range of 14 to 80 accounts for eight cases in this study.

Since there was a wide range of the numbers of confirmations in this study, an analysis of individual auditor's decisions might provide evidence of patterns of changes in the cases for individual managers. An analysis at an individual level might indicate an attempt by the managers to change audit scope decisions.

Table 31 shows indexes of the total confirmations required by each manager for each of the cases relative to the total confirmations required for Case 4. Case 4, which depicted an audit of a private strong company and had the lowest risk of all the cases, was used as a base in determining the index for the other three cases. The index was prepared in the same manner as described earlier in this Chapter under the dependent variable budgeted audit hours.

Of the 32 managers, 15 (47%) had indexes > 1 for Case 1 (public weak); 6 (19%) had indexes > 1 for Case 2 (public strong); and 14 (44%) had indexes > 1 for Case 3 (private weak). If the nonparametric sign test (Siegel, 1956) is conducted, the public weak ($x=3$, $N=18$, $p=.00$) condition was

Table 31
INDEXES OF CONFIRMATIONS FOR CASES 1 - 3
RELATIVE TO CASE 4

<u>Auditor</u>	<u>Firm</u>	<u>Industry**</u>	<u>Case*</u>			
			1	2	3	4
1	1	1	--	--	.9	--
2	1	1	--	--	--	--
3	1	2	1.7	--	1.7	--
4	1	2	1.7	1.3	1.2	--
5	1	2	.6	.9	.6	--
6	1	2	1.5	--	1.3	--
7	1	1	1.4	1.4	1.4	--
8	1	1	1.4	--	1.4	--
9	2	2	--	--	--	--
10	2	1	--	--	.6	--
11	2	2	--	--	--	--
12	2	1	1.2	1.2	1.2	--
13	2	2	1.2	--	1.2	--
14	2	2	--	--	--	--
15	2	1	3.0	3.0	--	--
16	2	1	1.4	1.2	--	--
17	2	2	.2	--	.2	--
18	2	1	1.3	1.3	1.3	--
19	1	1	--	--	--	--
20	2	2	--	--	--	--
21	2	2	--	--	--	--
22	2	2	1.8	--	1.4	--
23	2	1	2.0	--	2.0	--
24	2	1	1.2	--	1.9	--
25	1	1	--	--	--	--
26	1	2	.9	--	1.9	--
27	1	2	--	--	--	--
28	1	2	--	--	--	--
29	1	1	1.8	--	1.8	--
30	1	1	--	--	--	--
31	1	2	1.3	--	1.3	--
32	1	2	--	--	--	--
Totals			15>1	6>1	14>1	

*Case Legend:

1 = Public, weak
2 = Public, strong
3 = Private, weak
4 = Private, strong

**Industry:

1 = Litigious
2 = Nonlitigious

significantly different from the private strong condition. The public strong ($x=1$, $N=7$, $p=.06$) and private weak ($x=4$, $N=14$, $p=.09$) conditions were statistically different (although weakly so) from the private strong condition. These results indicate that both public ownership and weak financial condition influenced the managers to increase the number of confirmations. This is strong evidence that individual managers varied their audit scope decisions, especially when the client had a weak financial condition in comparison to a strong financial condition. However, the change in the number of confirmations might be due to business risk or to error expectation.

Discussion

None of the manipulated variables had a statistically significant effect on the number of confirmations. When the manager's CPA firm was included as an independent variable, firm had a significant effect. The nonparametric tests on individual auditors showed that the managers required a greater number of confirmations when the client was public and weak than when the client was private and strong.

Industry

The discussion earlier on industry under budgeted audit hours in an earlier section of this Chapter is relevant also for confirmations. To recap, industry did not have a significant effect on confirmations in this study, but industry had been significant in other studies of audit

scope (McAllister and Dirsmith, 1982; Kaplan (1985)). Explanations for the difference in findings might be because the industry characteristics manipulated in those studies were not the same as manipulated in this study. This study varied the litigious nature, while those studies varied industry stability or environmental certainty.

This study enlisted a between subjects design for industry. The effectiveness of significance testing is would have been enhanced with a repeated measures design, especially when large individual differences are present, as is the case in audit planning.

Financial Condition

Financial condition did not have a significant effect on the number of confirmations. However, in an analysis of the behavior of individual managers (Table 21), 14 (44%) managers increased audit scope in the two weak cases (public weak and private weak) over the scope for the private strong case. Therefore, some of the individual manager's decisions were affected when financial condition was manipulated.

An analysis of the individual managers' decisions also revealed that 11 (34%) managers did not change the number of confirmations in the cases. At least for those managers, the number of confirmations was probably determined using only the unvarying information in the cases (e.g., the aged trial balance) or by using a heuristic method to determine some minimum number of accounts to confirm.

Ownership

Ownership did not have a significant effect on the number of confirmations. However, there was some evidence in the nonparametric tests of individual managers that the public ownership condition increased the number of confirmations required.

Conclusion

None of the manipulated variables were statistically significant in parametric tests on confirmations. In an analysis of individual auditor's decisions, 44 percent of the managers increased the number of confirmations for a weak company over a strong company. However, 34 percent of the managers did not vary the number of confirmations. Firm was statistically significant with Firm 1 employing more confirmations than Firm 2. The two firms might enlist different approaches in substantive testing of accounts receivable, with Firm 1 relying more heavily on confirms and Firm 2 relying less so and engaging in other testing such as analytical review.

Other Sample Sizes

The hypotheses applicable to the other sample sizes are:

$H_{1.3}$: The sample sizes will be significantly higher for clients in industries associated with high incidence of auditor litigation than for clients in industries not so associated.

$H_{2.3}$: The sample sizes will be significantly higher for a public company than for a privately held company.

$H_{3.3}$: The sample sizes will be significantly higher for a client with a weak financial condition than for a client with a strong financial condition.

$H_{4.3}$: The sample sizes will be significantly higher for a publicly owned weak client who is a member of a litigious industry than for a privately held strong client who is a member of a nonlitigious industry.

The sample sizes for Procedures 6, 8, and 15 were tested for significant from industry, ownership, and financial condition.¹⁹

Each sample size was analyzed separately by ANOVA, ANOVA with firm added as an independent variable, and analysis of covariance, with error expectation as a covariate. The hypothesis testing results for these procedures are summarized on Table 32 and discussed at the conclusion of the analysis.

Sample Size For Procedure 6

Procedure 6 is:

Vouch a sample of _____ accounts in the aged trial balance to sales invoices to test accuracy of aging.

Summary. Audit scope as measured by Procedure 6 sample size supported $H_{2.3}$ and $H_{3.3}$ but did not support $H_{1.3}$ or $H_{4.3}$.

¹⁹Since only 31 percent of the managers selected Procedure 5 and only 22 percent selected Procedure 14, no testing was performed on Procedure 5 and 14 (Table 27).

Table 32
RESULTS OF ANOVA AND ANALYSIS OF COVARIANCE (ANCOVA) TESTING
ON OTHER SAMPLE SIZES

	<u>p-values</u>			
	<u>Industry</u>	<u>Ownership</u>	<u>Condition</u>	<u>Interaction</u> ^I
<u>ANOVA</u>				
Procedure 6	.99	.04*	.00*	None
Procedure 8	.71	.93	.00*	I X C p=.03
Procedure 15 ^F	.97	.06**	.00*	None
<u>ANCOVA</u>				
Procedure 6	.95	.05*	.71	None
Procedure 8	.89	.95	.19	I X C p=.03
Procedure 15 ^F	.97	.07**	.03*	None

^FSignificant Firm effects at $p < .05$

^ISignificant interactions; I X C = Industry X Condition

*Significant at $p < .05$

**Significant at $p < .10$

Detailed Tests. Table 33 summarizes the data values for the cell means for the eight situations depicted in the cases. The mean sample size changed in the predicted direction except in the strong cells with changes from litigious to nonlitigious. The sample size in the cell with the highest risk, litigious public weak ($x=9$), was larger than the sample size with the lowest risk, nonlitigious private strong ($x=7$), but it was not significantly higher ($t=1.58$, $df\ 30$, $p=.12$). Therefore, $H_{4.3}$ was not supported by the sample size for Procedure 6.

Table 32 presents the ANOVA and analysis of covariance for the sample size for Procedure 6. The ANOVA showed significant main effects for ownership and financial condition at $p < .05$. There were no significant interactions. As illustrated in Table 33, the mean sample size for the public company ($x=8$) was greater than the mean sample size for the private company ($x=7$) which indicated the main effect for ownership supported $H_{2.3}$. The mean sample size for the weak company ($x=8$) was greater than the mean sample size for the strong company ($x=6$) which indicated the main effect for financial condition supported $H_{3.3}$.

Table 33
CELL MEANS SAMPLE SIZE FOR PROCEDURE 6

Industry					
	Litigious		Nonlitigious		Row Means
	Weak	Strong	Weak	Strong	
Public	9 (6)	6 (7)	8 (4)	7 (5)	8
Private	8 (7)	5 (6)	7 (4)	6 (4)	7
Column Means	9	6	8	7	7
	7		7		

Column Means For Financial Condition:

Weak = 8

Strong = 6

Number of subjects = 16 in each cell (Total n = 32)

Standard Deviation is shown in parentheses

Firm Effect and Error Expectation

There were no significant firm effects. When covariance analysis with error expectation as a covariate was performed, financial condition was no longer significant. There was still a significant main effect from ownership.

Sample Size For Procedure 8

Procedure 8 is:

Vouch accounts which are _____ days past due and over \$ _____ to cash receipts after the balance sheet date.

Summary

Audit scope, as measured by Procedure 8 sample size, supported $H_{3.3}$ but must be qualified by the type of industry. Procedure 8 sample size did not support $H_{1.3}$, $H_{2.3}$, or $H_{4.3}$.

Detailed Tests

Table 34 summarizes the data values for the cell means for the eight situations depicted in the cases. The mean sample size changed in the predicted direction in some of the cells when business risk factors were changed to higher levels of risk.

The sample size in the cell with the highest risk, litigious public weak ($x=23.6$), was larger than the sample

Table 34
CELL MEANS SAMPLE SIZE FOR PROCEDURE 8

Industry					
	Litigious		Nonlitigious		Row Means
	Weak	Strong	Weak	Strong	
Public	24 (14)	22 (17)	24 (18)	16 (15)	21
Private	23 (14)	21 (14)	26 (17)	16 (15)	21
Column Means	23	21	25	16	21
	22		20		

Column Means For Financial Condition:

Weak = 24

Strong = 19

Number of subjects = 16 in each cell (Total n = 32)

Standard Deviation is shown in parentheses

size with the lowest risk, nonlitigious private strong ($x=15.8$), but not significantly higher ($t=1.52$, df 30, $p=.14$). Therefore, $H_{4.3}$ was not supported by the sample size for Procedure 8.

Table 32 presents the ANOVA for the sample size for Procedure 8. There were significant main effects for financial condition and a significant two-way interaction (Industry Type X Condition) at $p < .05$. The mean sample size for the weak company ($x=24$) was greater than the mean sample size for the strong company ($x=19$), which indicated the main effect for financial condition supported H_3 . However, since financial condition was involved in a significant interaction with industry, the effect of condition must be qualified as to the effect of condition when combined with either the litigious or nonlitigious industry. As illustrated in Table 34, the mean sample size for the litigious weak cell ($x=23$) was less than the mean sample size for the nonlitigious weak cell ($x=25$). However, the mean sample size for the litigious strong cell ($x=21$) was greater than the nonlitigious strong cell ($x=16$). If the litigious or nonlitigious industries are considered separately, the sample sizes for the weak cases were greater than the strong cases, which was consistent with the hypothesized direction.

Analysis of the graph of the sample size for Procedure 8 indicated that the number of accounts to be vouched was

similar for the weak and strong client when the industry was litigious. However, when the industry was nonlitigious the number of accounts to be vouched was considerably greater for the weak than the strong client. See Figure 7 for the graph. Since the auditors completing the litigious cases were different individuals from those auditors completing the nonlitigious cases, individual differences and lack of consensus might be the causes of the interaction. The auditors completing the litigious cases did not vary greatly the number of accounts to vouch for the weak clients from the number to vouch for the strong clients. However, the auditors doing the nonlitigious cases required considerably more accounts to be vouched for the weak ($x=25$) than the strong ($x=16$) clients. It is possible that the interactive effect was not caused by individual differences and lack of consensus among the participants. It could have been caused by differential effects of industry when combined with financial condition. Perhaps, when the industry was litigious, the managers did not vary the number of accounts, but instead required a certain minimum number of accounts. However, when the industry did not affect the decision (i.e., the industry was nonlitigious), the financial condition became important to the decision and a larger sample size was required when the client had a weak condition. However, it should be noted that the sample size for the weak client was higher in the nonlitigious industry

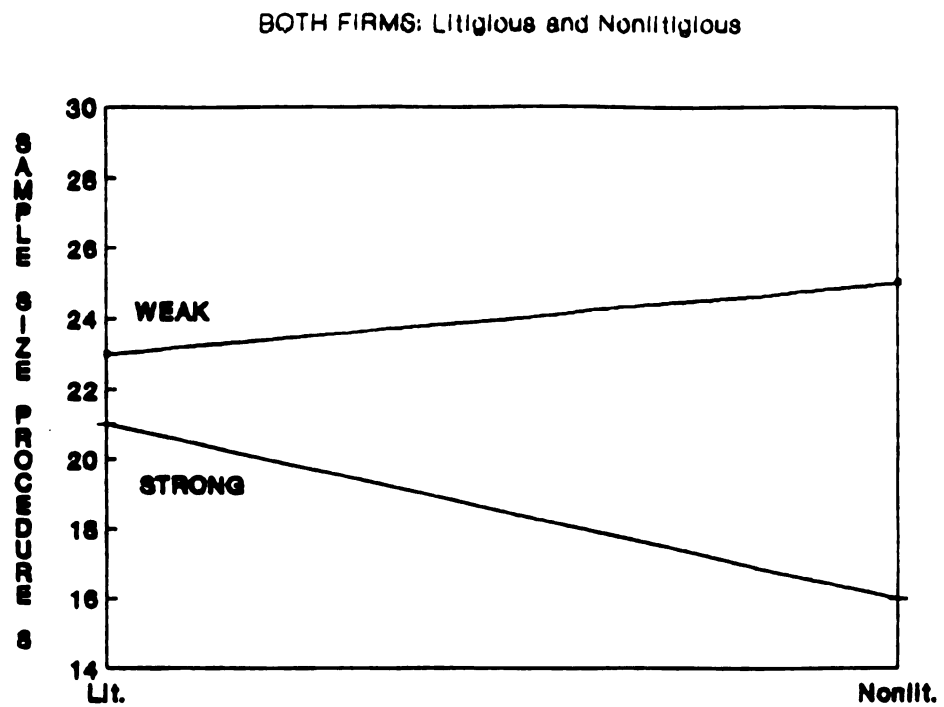


Figure 7
SAMPLE SIZE FOR PROCEDURE 8 FOR
LITIGIOUS AND NONLITIGIOUS INDUSTRIES

than in the litigious industry.

Firm Effect and Error Expectation

There were no significant firm effects. When covariance analysis with error expectation as a covariate was performed, financial condition was not significant. The industry X condition interaction was significant.

Sample Size For Procedure 15

Procedure 15 is:

Select the last _____ sales transactions from the sales journal and the first _____ sales transactions from the subsequent year's sales journal and vouch to shipping documents to check for the date of actual shipment and correct recording.

Summary. Audit scope as measured by Procedure 15 sample size supported $H_{3.3}$. Procedure 15 sample size did not support $H_{1.3}$, $H_{2.3}$, or $H_{4.3}$.

Detailed Tests. Table 35 summarizes the data values for the cell means for the eight situations depicted in the cases. The mean sample size changed in the predicted direction in some of the cells when business risk factors were changed to higher levels of risk. The sample size in the cell with the highest risk, litigious public weak ($x=16$), was larger than the sample size in the cell with the lowest risk, nonlitigious private strong ($x=12$), but not significantly higher ($t=1.37$, $df\ 30$, $p=.18$). Therefore, $H_{4.3}$ was not supported by the sample size for Procedure 15.

Table 32 presents the ANOVA for the sample size for Procedure 15. There were significant main effects for

Table 35
CELL MEANS OF PROCEDURE 15 SAMPLE SIZE

Industry					
	Litigious		Nonlitigious		Row Means
	Weak	Strong	Weak	Strong	
Public	16 (9)	11 (7)	14 (10)	12 (10)	13
Private	14 (9)	10 (7)	14 (10)	12 (10)	13
Column Means	15 13	11	14 13	12	13

Column Means For Financial Condition:

Weak = 15

Strong = 12

Number of subjects = 16 in each cell (Total n = 32)

Standard Deviation is shown in parentheses

financial condition at $p < .05$. There were no significant interactions. As illustrated in Table 35, the mean sample size for the weak company ($x=15$) was greater than the mean sample size for the strong company ($x=11$) which indicated the main effect for financial condition supported $H_{3.3}$.

Firm Effect and Error Expectation

When CPA Firm was added as an independent variable, there were significant firm effects at $p < .05$) on the sample size for Procedure 15. The mean sample size for Firm 1 was 17, and the mean sample size for Firm 2 is 16. When covariance analysis with error expectation as a covariate was performed, there was no change to the significance testing found in the ANOVAs.

Discussion

Public ownership caused a significant increase to the sample sizes to vouch accounts to sales invoices to test aging (Procedure 6). Ownership was a weakly significant effect on the sample size to vouch sales transactions at the cutoff (Procedure 15). After including error expectation in covariance analysis, only the effect on the sample size for Procedure 15 was significant at $p < .05$.

The industry X financial condition interaction was significant for the sample size for procedure 8. The interaction may have been due to individual differences and lack of consensus among the participants or to a substantive difference in the treatment effects. Sample sizes were

similar for the weak and strong clients when the industry was litigious which might indicate financial condition did not affect the decision. However, when the industry was nonlitigious, the sample size was considerably greater for the weak client than for the strong client, which might indicate when industry is not important in the decision (i.e., the industry is nonlitigious) financial condition becomes important.

Number of Audit Procedures Selected

The following hypotheses apply to the number of audit procedures selected:

H_{1.4} The number of audit procedures selected will be significantly higher for clients in industries associated with high incidence of auditor litigation than for clients in industries not so associated.

H_{2.4}: The number of audit procedures selected will be significantly higher for a public company than for a privately held company.

H_{3.4}: The number of audit procedures selected will be significantly higher for a client with a weak financial condition than for a client with a strong financial condition.

H_{4.4}: The number of audit procedures selected will be significantly higher for a publicly owned weak client who is a member of a litigious industry than for a privately held strong client who is a member of a nonlitigious industry.

The managers were given a list of 18 potential audit procedures from which to select in planning an audit of accounts receivable. Table 36 summarizes the number of times each procedure was selected under the different cases. The maximum number of times any procedure could be selected for any case was 16.

A review of the managers' selections indicated that the managers did not vary the procedures selected significantly from case to case. Therefore, none of the hypotheses were supported for selected procedures used as a measure of audit scope.

Of the 32 managers, 11 (34%) made no changes. Four (12%) changed confirmation procedures only, and two (6%) made confirmation procedures changes plus other changes. Of the 15 remaining managers, nine (28%) made changes on only one procedure, two (6%) made changes on two procedures, two (6%) made changes on three procedures, and two (6%) made changes on four procedures.

Summary of Hypothesis Testing

A summary of the results for the hypothesis tests are presented in Table 37. H_1 (industry) was not supported by any of the significance tests, although industry was included in four significant interactions.

H_2 (ownership) was supported by significance tests on budgeted audit hours and sample size for Procedure 6. H_2

Table 36
NUMBER OF TIMES EACH PROCEDURE WAS SELECTED

<u>Procedure</u>	<u>Industry</u>							
	<u>Litigious</u>				<u>Nonlitigious</u>			
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
#1 Confirms: Stratified	12	13	13	14	15	13	16	14
#2 Confirms: Random	11	12	11	12	10	7	11	9
#3 Confirms: Monetary Unit	3	2	2	1	1	3	0	2
#4 Foot, X-Foot, Trace Aged T/B	15	14	14	14	15	15	15	15
#5 Trace accounts to subsidiary	4	4	4	3	5	5	5	5
#6 Vouch accounts to invoices	15	11	13	10	15	14	15	14
#7 Review Aged T/B for unusual	16	16	16	16	15	16	15	15
#8 Vouch accounts to receipts	13	12	13	12	11	10	12	10
#9 Review write-off documents	12	12	11	11	7	7	7	7
#10 Discuss collectibility	16	16	16	16	16	16	16	16
#11 Compare aging % to prior	16	16	16	16	16	16	16	16
#12 Compare allowance % of A/R to prior	15	16	14	14	15	14	15	15
#13 Evaluate allowance adequacy	16	15	15	15	16	16	16	16
#14 Trace accounts from subsidiary to aged T/B	2	3	2	3	5	4	3	4
#15 Vouch sales at cutoff	14	14	14	14	15	14	15	14
#16 Review large sales returns after year-end	16	15	16	15	16	16	16	16
#17 Compare bad debts expense % of sales to prior	13	13	13	13	9	9	8	9
#18 Compare number of days sales in A/R	16	15	15	16	15	13	12	13

<u>Case Types Legend</u>	<u>Total Procedures</u>	
	<u>Litigious</u>	<u>Nonlitigious</u>
1 = Public Weak	225	217
2 = Public Strong	219	208
3 = Private Weak	218	213
4 = Private Strong	215	210

Maximum number of times procedure could be selected was 16.

Table 37
SUMMARY OF TESTS OF HYPOTHESES

<u>Dependent Variable</u>	<u>Hypothesis</u>			
	H ₁	H ₂	H ₃	H ₄
Budgeted Audit Hours ^F	-	Xa	Xae	Xc
Materiality Level For Accounts Receivable ^F	-	-	-	-
Procedures Selected	-	-	-	-
Sample Sizes:				
Confirmations	-	-	-	-
Other:				
Procedure 6	-	X	Xe	-
Procedure 8	-	-	Xb	-
Procedure 15	-	Xc	X	-

X = Significant results at $p < .05$

- = Nonsignificant results

F = Significant firm effects at $p < .05$

Xa = Significant results at $p < .05$. When firm was added to the analysis, there was a significant interaction of Firm X Industry X Ownership X Financial Condition

Xb = Significant results at $p < .05$. Significant interaction of Industry X Financial Condition

Xc = Weakly significant at $p < .10$

Xae = See Xa; when error expectation was added as a covariate in covariance analysis, financial condition was no longer significant

Xe = Significant results at $p < .05$. When error was added as a covariate, financial condition was no longer significant

was weakly supported by significance tests on the sample size for Procedure 15. The significant effect of ownership on budgeted audit hours must be qualified because ownership was included in a significant four-way interaction among firm X industry X ownership X financial condition.

H_3 (financial condition) was supported. However, when covariance analysis was conducted with changes in error expectation as a covariate, most of the effect from financial condition was removed from budgeted audit hours and sample size for Procedure 6. H_3 was supported by the sample size for Procedure 15 and Procedure 8. Financial condition was involved with a significant interaction with industry in Procedure 8.

H_4 (comparison of high risk cell to low risk cell) was weakly supported by significance tests on budgeted audit hours.

Analyses of individual manager's decisions using nonparametric statistics provided support that audit scope as measured by confirmations was affected by ownership and financial condition and budgeted audit hours was influenced by financial condition (which supports the ANOVA results).

It should be noted that the results from analysis of individual manager's decisions may include an effect to audit scope from error expectation.

Additional analyses are presented in Chapter V. A summary of the discussion of results is presented in Chapter VI.

CHAPTER V
ADDITIONAL ANALYSIS

Introduction

This Chapter reports analyses in three areas: (1) risk preference adjustments to audit scope in reaction to business risk, (2) non-scope effects of business risk, and (3) responses to the exit questionnaire.

Testing the association between risk preference and audit scope is an indirect test that business risk could have influenced audit scope. Other literature has indicated there might be a relationship between risk preference and the auditor's propensity to adjust audit risk in reaction to business risk (Boritz and Jensen, 1984).

Testing non-scope effects of business risk is for the purpose of adding to the understanding of the effects of business risk on the audit. Although the primary interest of this dissertation was to determine if business risk affected audit scope, determining other possible effects to the audit from business risk should be of interest to both practitioners and researchers.

Analyzing responses in the exit questionnaire might provide additional insights into the effects of business risk on an audit. Responses to the following sections of the exit questionnaire will be presented: (1) the subjects'

perceptions of the effect that the business risk factors had on their audit scope decisions in the cases; (2) the subjects' perceptions of business risk for a public client, private client, weak client, and strong client; (3) the subjects' perceptions of the changes to inherent and control risk in the cases; and (4) the subjects' responses as to whether or not their responses in the cases were representative of what they would do in practice.

Risk Preference

According to Boritz and Jensen (1984) adjusting the level of acceptable audit risk below that required by auditing standards is a reaction to business risk and is a function of auditor risk preference. A significant correlation between audit scope and risk preference may indicate the presence of a business risk adjustment included on audit scope.

As an indirect test on whether or not business risk may have affected audit scope, a correlation analysis between the managers' risk preferences and their audit scope decisions was performed. Two risk preference measurements were taken: an attitude measure and a choice measure. The attitude measure was adapted from MacCrimmon and Wehrung (1986) and is a self-appraisal of risk preference. As MacCrimmon and Wehrung (1986) discussed, several objections to self-rating can be raised. Among these are (1) there is no incentive to tell the truth; (2) the truth may not be

known; and (3) the question may be too general and cannot reflect preferences in different situations. However, the ability to self-assess risk propensity cannot be dismissed (MacCrimmon and Wehrung (1986)).

Each manager was asked:

How would you rate your willingness to accept professional exposure as compared to other audit managers in your firm?

The managers were given a 7-point Likert scale on which to give their responses. A response of 1 was "much less willing," 4 was "equally willing," and 7 was "much more willing." Table 38 reports the frequencies of responses.

Table 38
FREQUENCIES OF RISK ATTITUDE MEASURE

<u>Value</u>	<u>Frequency</u>	<u>%</u>
1	1	3.1
2	4	12.5
3	13	40.6
4	8	25.0
5	5	15.6
7	<u>1</u>	<u>3.1</u>
	32	100.0

The mean response was 3.5 ($s=1.2$), and the range was from 1 to 7. Responses from 26 (81%) of the auditors were within the range of 3 to 5. This compared to 66% of the executives in the MacCrimmon and Wehrung study. In this study, only six (19%) of the managers rated themselves as "more willing" to take risks, while 56 percent of the MacCrimmon and Wehrung executives rated themselves as "more willing."

According to MacCrimmon and Wehrung, the tendency of the average executive to rate himself as more risky is consistent with a cultural bias to taking risk. Audit managers appeared not to be affected by this bias. Perhaps, audit managers were responding to an expectation that auditors should be conservative in taking risks.

The choice measure was adapted from Young (1985). A choice measure may be superior to an attitude measure of risk preference when the intention is to make inferences about choice behavior (MacCrimmon and Wehrung, 1986). Each manager was asked to respond with a probability to the following question:

If someone would be willing to give you \$50 for certain, or a gamble that pays \$100 with probability p and \$0 with probability $1 - p$, what would p have to be (between 0 and 1) so that you are indifferent between the \$50 for certain and taking the gamble?

See Table 39 for the frequencies of responses. The mean response was .62 ($s=.15$), and the range was .30 to .95.

Thirteen (41%) of the auditors chose .50 which indicates an expected value approach, while 17 (53%) chose between .51 to .95 which indicates a risk averse approach. The attitude and choice measures were not significantly correlated ($r = .05$; $p = .39$). Therefore, both measures were used in the rest of the analysis to determine if there was a relation between risk preference and audit scope.

Table 39
FREQUENCIES OF RISK CHOICE MEASURE

<u>Value</u>	<u>Frequency</u>	<u>%</u>
.30	1	3.1
.49	1	3.1
.50	13	40.6
.51	1	3.1
.60	2	6.3
.66	1	3.1
.70	1	3.1
.75	8	25.0
.80	2	6.3
.90	1	3.1
.95	<u>1</u>	<u>3.1</u>
	32	100.0

Two preliminary tests were performed to determine if there were significant differences in risk preference between the two groups of auditors (i.e., the litigious and nonlitigious industry groups) and the two firms. There were no significant differences between the groups under either risk measure, nor were there significant differences between the two firms. The results are reported in Table 40.

Table 41 reports the correlations between risk preference and the measures of audit scope used in this study. The correlations between risk preference and the dependent variables (audit scope) did not indicate a relationship between audit scope and risk preference. Forty-four (46%) of the 96 correlations were not in the

Table 40

TESTS TO DETERMINE IF THE LITIGIOUS AND NONLITIGIOUS
GROUPS AND THE MANAGERS CPA FIRM AFFILIATION GROUP
DISPLAYED DIFFERENCES IN RISK PREFERENCE

<u>BETWEEN SUBJECTS GROUPS</u>	
	<u>Litigious</u> <u>Nonlitigious</u>
<u>Attitude</u>	x=3.6 (1.3) x=3.4 (1.1) t=.59, df 30, p = .56
<u>Choice</u>	x=.62 (.16) x=.62 (.15) t=.08, df 30, p = .94
<u>CPA FIRM GROUPS</u>	
	<u>Firm 1</u> <u>Firm 2</u>
<u>Attitude</u>	x=3.3 (1.1) x=3.8 (1.3) t=-1.2, df 30, p = .24
<u>Choice</u>	x=.63 (.13) x=.61 (.18) t=.31, df 30, p = .76

Table 41
CORRELATIONS OF RISK PREFERENCE MEASURES
WITH DEPENDENT VARIABLES

		Industry							
		Litigious				Nonlitigious			
<u>Dependent Variable</u>		1	2	3	4	1	2	3	4
Hours									
<u>Attitude</u>									
r=	.11	.07	.11	.01		.09	.06	.20	.08
p=	.34x	.40x	.34x	.48x		.38x	.41x	.23x	.38x
<u>Choice</u>									
r=	-.25	-.29	-.23	-.36		.11	.19	.20	.10
p=	.17x	.14x	.19x	.08x		.35	.24	.22	.36
Materiality									
<u>Attitude</u>									
r=	-.10	-.28	-.10	-.24		.19	.38	.17	.38
p=	.35x	.15x	.35x	.19x		.24	.07*	.26	.07*
<u>Choice</u>									
r=	.11	-.15	-.17	-.12		-.24	-.40	-.22	-.40
p=	.34x	.29	.26	.33		.19	.06*	.20	.06*
Sample Sizes: Confirmations									
<u>Attitude</u>									
r=	-.02	.08	-.27	.12		-.09	.14	.22	.17
p=	.48	.38x	.15	.33x		.38x	.31x	.21x	.26x
<u>Choice</u>									
r=	-.16	-.15	-.07	-.14		.42	.28	.46	.26
p=	.27x	.29x	.40x	.31x		.05**	.15	.04**	.17
Other Sample Sizes:									
Procedure 6									
<u>Attitude</u>									
r=	-.01	-.13	-.29	-.23		-.24	-.10	-.12	.05
p=	.49	.31	.14	.20		.19	.36	.33	.43x
<u>Choice</u>									
r=	.21	-.03	.05	.03		.28	.29	.36	.25
p=	.23	.45x	.42	.46		.15	.13	.09*	.18

Table 41 (Cont'd)

Dependent Variable	Litigious				Nonlitigious			
	1	2	3	4	1	2	3	4
Other Sample Sizes, cont'd.								
Procedure 8								
<u>Attitude</u>								
r=	-.25	-.15	-.23	-.22	-.18	-.03	.04	-.03
p=	.18	.30	.19	.21	.33	.46	.44x	.45
<u>Choice</u>								
r=	-.17	-.29	-.06	-.28	-.03	.06	-.05	.04
p=	.27x	.14x	.42x	.15x	.45x	.41	.43x	.44
Procedure 15								
<u>Attitude</u>								
r=	-.31	-.35	-.31	-.38	.04	.25	.25	.25
p=	.12	.10	.12	.07*	.44x	.17x	.17x	.17x
<u>Choice</u>								
r=	-.23	-.10	-.12	-.12	.03	.16	.16	.16
p=	.20x	.35x	.33x	.33x	.45	.28	.28	.28

Case Type Legend

- 1 = Public Weak
 2 = Public Strong
 3 = Private Weak
 4 = Private Strong

Notes

Attitude measure is based upon self-assessment; choice measure is a gamble.

* Significant at $p < .10$

** Significant at $p < .05$

x Sign is not as expected if risk preference has a relationship with the dependent variable (44/96 have incorrect sign)

expected direction²⁰. There were only two significant relationships at $p < .05$ and five additional marginally significant correlations at $p < .10$. In conclusion, risk preference as measured by the above attitude and choice measures did not have a significant relationship with audit scope. Therefore, it was not indicated that the managers made an adjustment to audit scope because of their risk preferences. At least for the business risk factors manipulated in this study, these findings did not support Boritz and Jensen (1984) that audit risk is adjusted for business risk.

These results are not consistent with the findings of Clarke (1987) that risk preference affects audit scope decisions. The difference in findings between this study and Clarke (1987) might be because the risk preference measures used in the two studies were different. Clarke (1987) used three measures with ten questions in each measure. This study used two measures with a single question in each measure. The different results might be attributed to differences in the experience level of the subjects doing the task. The subjects in the Clarke (1987)

²⁰The value for a manager who is risk averse is <4 in the attitude measure; therefore, the expected direction of a relationship with materiality should be positive and negative for all other dependent variables. The value for a manager who is risk averse is $>.5$ in the choice measure; therefore, the expected direction of a relationship with materiality should be negative and positive for all other dependent variables.

study were audit seniors, while the subjects in this study were audit managers. Experience might mitigate the effect that risk preference has on audit scope decisions.

Lastly, Clarke (1985) assessed only the relationship between risk preference and audit scope as measured by sample sizes. This study assessed the relationship between risk preference and audit scope as measured by hours, materiality, and sample sizes. The sample sizes in Clarke's (1987) study were for both substantive and transactional audit tests, with an emphasis on transactional testing. The sample sizes in this study were for substantive audit tests. Risk preference might have a greater effect on transactional testing than on substantive testing.

In conclusion, risk preference as measured by two attitude and choice measures did not have a significant relationship with audit scope. Therefore, there was not indirect support that the managers made an adjustment to audit risk as a reaction to business risk.

Non-scope Effects On The Audit

When unusual business risk is present, auditors may take non-scope measures to counteract the increased risk. Additional analysis was performed to determine if business risk may have affected the audits of the clients depicted in the cases in ways not measured by the dependent variables for audit scope. The managers were asked to indicate if other non-scope steps would be taken in the cases:

Would you take any other steps or audit precautions in auditing the accounts receivable for this client?

A list of specific steps or precautions suggested in the literature as possible responses to business risk was provided to the managers:

I would staff the engagement with experienced auditors. Yes No

I would require more documentation of audit evidence than is usually required. Yes No

I would require closer supervision in this engagement. Yes No

I would use a higher billing rate schedule. Yes No

The frequencies of saying "yes" to the specific steps or precautions are shown in Table 42. There were significant differences in the cases in both the litigious and nonlitigious industries in staffing and in requiring closer supervision. The Cochran Q statistic for staffing with more experienced auditors for the litigious group was 13.6 ($p=.00$) and for the nonlitigious group was 16.2 ($p=.00$). The frequencies indicated that the weak clients required more experienced staff than the strong clients. The Cochran Q statistic for closer supervision for the litigious group was 28.4 ($p=.00$) and for the nonlitigious group was 24.7 ($p=.00$). Again, the weak clients required more supervision than the strong clients.

Requiring greater documentation was significantly different in the litigious industry (Cochran Q

Table 42
FREQUENCIES OF NON-SCOPE STEPS SELECTED
IN EACH CASE TYPE

	Industry							
	Litigious				Nonlitigious			
	1	2	3	4	1	2	3	4
Experienced Staff	12	7	12	7	14	9	12	5
Documentation	4	0	3	0	3	0	2	0
Supervision	12	2	10	0	11	1	9	0
Higher billing rates	1	0	0	1	1	0	0	0
Other	1	1	2	1	0	1	0	1
	30	10	27	9	29	11	23	6

	<u>Cochran Q</u>	<u>P-value</u>	<u>Cochran Q</u>	<u>P-value</u>
Experienced staff	13.6	.00*	16.2	.00*
Documentation	10.2	.02*	6.23	.10
Supervision	28.4	.00*	24.73	.00*
Higher billing rates	2.0	.57	3.00	.39
Other	3.0	.39	3.00	.39

Case Type Legend

- 1 = Public Weak
- 2 = Public Strong
- 3 = Private Weak
- 4 = Private Strong

*Significant at $p < .05$

Total possible selections in each case type are 16.

statistic=10.2, $p=.02$) and marginally significant in the nonlitigious industry (Cochran Q statistic=6.23, $p=.10$). Again, the weak clients required more documentation than the strong clients. Although the differences among the cases were statistically significant, more documentation was required only seven times for the litigious and five times for the nonlitigious groups.

In summary, with the presence of a weak financial condition, managers required more experienced auditors and closer supervision. To a lesser degree, managers also required greater documentation. The responses may be a result of business risk or error expectation.

Analysis of Responses on the Debriefing Questionnaire
Survey on the Changes in Business Risk and Effects
of Business Risk in the Cases

As part of the exit questionnaire (Appendix E) the managers were asked to indicate if business risk had changed in the cases and if business risk had affected their audit scope decisions. Twenty-six (81%) managers responded that there was a difference in business risk in the cases, and 21 (66%) responded that their audit scope decisions were affected. Seventeen (53%) indicated audit procedures selected and sample sizes were affected. The responses indicated that all of the audit scope measures were affected somewhat. See Table 43 for the frequencies of responses.

The responses to the exit questionnaire indicated that

Table 43
EFFECT OF BUSINESS RISK ON DECISIONS

	Yes		No	
	N	%	N	%
Did you perceive differences in professional exposure in the cases? ²¹	26	81%	6	19%
Were decisions made in the cases affected by changes in professional exposure?	21	66%	11	34%
Was materiality affected?	13	41%	19	59%
Were audit procedures selected affected?	17	53%	15	47%
Were sample sizes affected?	17	53%	15	47%
Were budgeted audit hours affected?	15	47%	17	53%

audit scope decisions were affected by business risk.

Survey on Perceptions of the Levels of Business Risk From Ownership and Financial Condition

In the exit questionnaire, the managers were asked to rate the auditor's business risk in auditing public companies, private companies, financially weak companies, and financially strong companies. The managers were asked to rate the level of business risk using a 7-point Likert scale with 1 for "low" and 7 for "high." Table 44 reports the mean ratings. The means were significantly different between the public ($x=5.4$) and private ($x=3.1$) clients

²¹The term "professional exposure" was used in the questionnaire instead of business risk to avoid confusion. One of the CPA firms in the study uses the term "business risk" in its auditing manuals to refer to the client's business risk. The definition of professional exposure was provided as part of the question as, "...the risk of loss to an auditor's or firm's professional practice because of litigation. This risk includes a loss of reputation."

Table 44
MEAN RATINGS OF BUSINESS RISK FROM OWNERSHIP AND
FINANCIAL CONDITION

	<u>Mean</u>	<u>Standard</u> <u>Deviation</u>
Ownership		
Public	5.4	1.0
Private	3.1	1.0
Financial Condition		
Weak	5.6	1.2
Strong	3.0	1.3

($t=8.75$, $df\ 31$, $p=.00$), with the public client involving significantly greater business risk. The means were also significantly different between the weak ($x=5.6$) and strong (3.0) clients, with the weak client involving significantly greater business risk ($t=7.3$, $df\ 31$, $p=.00$). In conclusion, the managers perceived significantly greater business risk for clients which are public and clients which have a weak financial condition.

Survey on Changes To Inherent and Control Risk

In the Cases

The managers were asked the following questions in the exit questionnaire about changes in inherent risk:

The factors ordinarily associated with inherent risk were given in the background information. (Inherent risk is defined as the susceptibility of the account to material error assuming there were no related internal accounting controls.) Did inherent risk change as a result of receiving information on ownership and financial condition? If yes, did ownership or financial condition have the greater effect on inherent risk?

Twenty-five (78%) of the managers indicated that inherent risk had changed. Of these 25 managers, 24 managers responded that financial condition had the greater effect on inherent risk.

The managers were asked the following questions in the exit questionnaire about changes in control risk:

Control risk was stated as low in the background information. Did control risk change as a result of your receiving information as to industry, ownership, and financial condition? If yes, did industry, ownership, or financial condition have the greatest effect on control risk?

Fifteen (47%) of the managers indicated that control risk had changed. Of these 15 managers, 12 (38% of all the managers) indicated that financial condition had the greatest effect.

The results indicated that the manipulated business risk factors affected inherent risk and control risk. The factor with the most effect was financial condition. Although the client and engagement information was written to convey to the subjects that it was unlikely that there would be manipulations by management or an increased likelihood of errors and that control risk was low, a majority of the managers believed that errors would be affected; i.e., 75 percent of the managers believed that inherent risk was affected and 38 percent believed control risk was affected when financial condition was manipulated.

These results indicate that components of the audit risk model (inherent risk and control risk) were affected

when financial condition was manipulated. As discussed in Chapter II, with an increase to inherent and/or control risk, detection risk should be decreased to maintain a certain level of audit risk. A decrease in detection risk is achieved through an increase to audit scope. It should be noted that the effect on changes in error perception has been included in the hypothesis testing in Chapter IV through covariance analysis with error expectation as a covariate.

Survey on Whether Or Not Responses Were Representative of What the Managers Would Do In Practice

The managers were asked two questions:

Were your responses representative of what you would probably do in practice? Please explain. What difficulties did you have in completing the cases? For example, did you need any other specific information not provided?

Thirty (94%) of the managers said their responses were representative of what they would probably do in practice. One manager did not respond, and one manager responded that his response was not representative. Fourteen managers (44%) indicated they needed more information.²² The types of information desired were:

1. Information about other areas of the audit
2. Specific information on interim tests performed
3. The level of client assistance

²²All but two of the managers indicated only one piece of information. The other two managers indicated two pieces of information.

4. Degree of involvement of the family in the private clients and access to family members
5. Prior year's accounts receivable reserve
6. Results of the specific testing of accounts receivable in the prior year
7. More detailed accounts receivable aging
8. Industry statistics
9. Prior year's accounts receivable aging
10. Information on any restrictive covenants associated with bank debt
11. Bad debt experience

One manager indicated his responses were not representative of what he would do in practice. The manager indicated that it was not that his responses were biased in any way, but that he would not make any audit scope decisions in practice without knowing all of the information first. He would require more information in practice than was provided in the cases. The researcher talked to the manager to confirm that his responses were not biased.

Summary

Additional analysis showed that there was a significant non-scope effect on the audit from business risk. Non-scope effects included more experienced staff and closer supervision for weak clients in both litigious and nonlitigious industries. In addition, greater documentation was required for weak clients in a litigious industry.

A significant correlation between risk preference and audit scope was not shown. Thus, there was no indirect support that business risk might have caused an adjustment to audit scope.

The exit questionnaire indicated that business risk changed in the cases and that all of the dependent variables were affected by business risk. Public ownership and weak financial condition were perceived by the managers to present significant increased business risk. Although the intent in the cases was to control for changes errors in the cases, manipulations of financial condition affected inherent risk for 75 percent of the managers and affected control risk for 38 percent of the managers. The managers' responses to the cases were representative of what they would do in practice; however, 44 percent of the managers would have liked more information.

CHAPTER VI
DISCUSSION, LIMITATIONS, CONTRIBUTIONS, AND
FUTURE RESEARCH

Introduction

This study addressed the following research question: Does the auditor's business risk affect audit scope? The results of hypothesis testing presented in Chapter IV indicates there is an effect on audit scope from business risk. Three factors of business risk were manipulated to determine the effect on audit scope: industry, ownership, and financial condition.

Audit scope was operationalized with budgeted audit hours, materiality, sample sizes, and selected audit procedures. The results of this study indicate that business risk effects on these variables is mixed. Budgeted audit hours, which is an overall measure of audit scope, were most affected by business risk. There was also significant ownership and financial condition effects. Materiality was not significantly affected by the business risk factors. The analysis of materiality was surprising in that the levels of materiality changed in the opposite direction from what was expected. Also, the auditing procedures selected were not significantly affected with

manipulations of business risk. Some of the sample sizes were affected by business risk. The most important sample size tested was the number of confirmations. Although parametric tests did not show significant effects of business risk on confirmations, nonparametric tests of individual auditor's confirmation decisions indicated a significant effect from ownership and financial condition. Sample sizes for vouching and tracing showed significant effects from ownership and financial condition.

Error expectation had to be considered because manipulations of the independent variables, especially financial condition, may have affected error expectation. With an increase in error expectation, audit scope would probably be increased. Since the purpose of this study was to determine if defensive auditing occurs with the presence of high levels of business risk, this study attempted to isolate the effect of error expectation on audit scope from the effect of business risk.

The results indicated that weak financial condition did significantly increase expectation of error. Changes in error expectation probably affected some or all of the audit scope measures, thereby potentially confounding the results. Therefore, to control for the effect of error expectation on the dependent variables, covariance analysis with error expectation as a covariate was performed. With covariance analysis, financial condition no longer had a significant

effect on budgeted audit hours and the sample size for Procedure 6. Financial condition still had a significant effect on the sample size for Procedure 15.

Since each manager who participated in this study was affiliated with one of two CPA firms, firm was included as an independent variable in the analysis to determine if firm had an effect on audit scope. Firm was significant for the important dependent variables: budgeted audit hours, materiality, and confirmations. When firm was included in the analysis of budgeted audit hours, a four-way interaction among all of the independent variables resulted. With a four-way interaction, interpretation of the effect of the business risk factors on budgeted audit hours became complex.

Detailed discussions of the results were included in Chapter IV and Chapter V. This concluding Chapter first discusses the results under the captions of the independent variables. Next follows the contributions and limitations of this research. Finally, areas of future research are discussed.

Discussion

Ownership

It was hypothesized that audit scope would be significantly higher for clients who are publicly owned than for clients who are privately owned. There have been no

previous studies linking ownership with changes in audit scope.

Ownership had a significant effect on budgeted total hours and the sample size for Procedure 6. Ownership had a weakly significant effect on the sample size for Procedure 15. Since ownership was involved in a significant four-way interaction effect on budgeted audit hours, the effects of ownership must be qualified depending upon the CPA firm, industry, and financial condition present at the time. When the financial condition was strong, more hours were planned for the public client than the private client. However, when the financial condition was weak, the effect of ownership depended upon the manager's CPA firm affiliation and the industry. When the industry was nonlitigious and the financial condition was weak, ownership did not affect audit hours budgeted by the managers from Firm 1; i.e., the same number of hours were budgeted. (For the nonlitigious industry, Firm 2 budgeted more hours for the public client when the financial condition was weak and strong.) When the industry was litigious and the financial condition was weak, ownership affected budgeted audit hours for Firm 2 with more hours budgeted for the private client. (For the litigious industry, Firm 1 budgeted more hours for the public client when the financial condition was weak and strong.) There does not appear to be any substantive explanation for these firm differences.

In an analysis of individual auditor's decisions on numbers of confirmations, nonparametric statistics indicate a significant effect of ownership on the number of confirmations. The managers increased the number of confirmations when the client was public.

Public ownership caused a significant increase in the sample size of vouching accounts to sales invoices. Ownership had a weakly significant effect on sample sizes of doing cutoff vouching of sales transactions.

In conclusion, business risk from ownership had an effect on audit scope. The most significant effect, which was on budgeted audit hours, was affected by other factors. If the financial condition was strong, the hours for the public client were greater than the hours for the private client. If the financial condition was weak, the firm and industry type had an effect on whether more hours were planned for the public client or the private client.

The results indicate that auditors practice defensive auditing when the client is public. Since ownership did not affect changes in inherent or control risk (as discussed in Chapter V), the probable mechanism for an increase to audit scope is through a decrease in audit risk. When the client is public, "desired audit risk" (which is lower than audit risk under the auditing standards) is used in applying the audit risk model. As discussed in Chapter II, with a decrease in audit risk, and no change to inherent and

control risk, detection risk is decreased. A decrease in detection risk brings about an increase in audit scope.

Financial Condition

Financial condition had a significant effect on budgeted audit hours and sample sizes to vouch and trace (i.e., Procedures 6, 8, and 15). Although care was taken in preparing the cases to control for changes in error expectation, financial condition also had a significant effect on error expectation. When the financial condition was weak, the managers expected more errors. The managers apparently expected the client to window dress in order to improve operating results.

To determine if business risk alone (i.e., excluding error expectation effects) had a significant effect on audit scope, covariance analysis with error expectation as a covariate was performed. In covariance analysis, financial condition no longer had a significant effect on budgeted audit hours and sample size for Procedure 6. Therefore, most of the effect on budgeted audit hours and sample size for Procedure 6 was assumed to occur because of changes in error expectation. As discussed in Chapter III, use of covariance analysis might have attributed some of the treatment effect from business risk to error expectation. Therefore, it is possible that the business risk effect on budgeted hours and sample size for Procedure 6 was greater than the covariance analysis showed.

Industry

It was hypothesized that audit scope would be significantly higher for clients in a litigious industry than a nonlitigious industry. Business risk from industry did not have a significant effect on any of the dependent variables and, therefore, all hypotheses related to the effect of industry on audit scope were rejected.

The design of the experiment included industry as a between subjects independent variable with two levels, litigious and nonlitigious industries. As a between subjects design, the group of auditors who received the litigious cases was different from the group who received the nonlitigious cases. Since other research has shown that auditors display lack of consensus and vary widely in audit planning decisions (Joyce, 1976), the between subjects design may not have given a strong enough significance test to discern an industry effect. A repeated measures design which controls for individual differences would have improved the ability of the significance tests to determine significant effects.

Although industry had a weakly significant effect on materiality, materiality changed in the opposite direction than was hypothesized when industry was manipulated. The results might be due to (1) the between subjects design which required a different group of auditors to do each of

the industry levels or (2) extraneous variables affecting materiality that were not controlled in the study.

Business Risk and Error Expectation

This research attempted to isolate the effect of business risk from the effect of changes in error expectation on audit scope. The steps taken to isolate were: (1) On an ex ante basis, the cases were written in language to convey to the reader that the probability of errors was low and that management was conservative and not expected to report false information. (2) As a control, a measurement of error expectation for each case was taken. (3) In the statistical analysis, error expectation was included as a covariate.

It is apparent that the subjects could not accept that changes in financial condition would not affect errors, no matter what they were told in the cases. Possibly the managers viewed increased errors and increased business risk as going together when the financial condition was weak. That is, with increased errors the manager's (and the firm's) business risk was increased. The managers increased audit scope as a response to an increase in inherent risk or control risk, not because of defensive auditing resulting from business risk effects.

If the manager believed business risk from financial condition was a result of increased errors, then the effects on audit scope from financial condition cannot or should not

be separated into a business risk component and an error component (as was done in this study). The effect from business risk and increased errors on audit scope may be intertwined and actually not two effects but only one.

In conclusion, financial condition had a strong effect on audit scope. This study attempted to isolate the effect on audit scope for business risk from that of error expectation. It may be that there is actually only one effect which should not be artificially broken into two effects. That is, perhaps business risk from financial condition comes from an increased expectation of errors; and changes in audit scope result because of the need to increase evidence because of that increased expectation.

Seventy-five percent of the managers indicated that financial condition had a significant effect on inherent risk, and 38 percent indicated a significant effect on control risk. Therefore, for clients with a weak financial condition, the results support that inherent and possibly control risk are increased with no change to audit risk. An increase in inherent or control risk would require a decrease in detection risk, thereby requiring an increase to audit scope.

Other Results

There were several additional interesting results from this study which are summarized below:

1. The CPA firm had a significant effect on budgeted

audit hours. The differences between the firms could have been due to differences in philosophies about the amount of evidence to collect or different assumptions about client assistance during the audit. The difference also could be due to different approaches to the audit, with one firm emphasizing testing with confirmations and the other firm emphasizing analytical procedures which require less audit time. Also, the firms may differ in the emphasis of the timing of the work; i.e., at the interim or year-end. This study covered only the year-end substantive testing of accounts receivable. Perhaps the level of audit scope would have been similar for the two firms if both the interim and year-end work had been included. Lastly, since one of the firms has been classified as structured and the other firm classified as unstructured in other research, the firm differences might be due to these differences in structure.

2. In addition to affecting audit evidence, business risk factors affect the audit through staffing, supervision, and documentation. More experienced staff and closer supervision were required for clients with a weak financial condition. Greater documentation was required for the litigious industry.

3. The participants did not make materiality judgments as would be expected. Thirty-eight percent of the managers did not change the level of materiality in the cases, and 31

percent increased materiality (when a decrease was expected).

Conclusion

This study has shown that business risk factors affect audit scope. However, the effects may be contingent upon the CPA firm.

Ownership was shown to affect budgeted audit hours, but the effect must be qualified depending upon the CPA firm, the industry, and the financial condition. Since error expectation was not affected by changes in ownership, the results indicate that auditors may be practicing defensive auditing when auditing a public client. Auditors might decrease the level of audit risk to a desired audit risk when auditing a public client.

Financial condition has a strong effect on audit scope. Financial condition also has a strong effect on error expectation, with an increase in expected errors occurring when the client has a weak financial condition. This study did not find that auditors practice defensive auditing when a client's financial condition is weak.

Finally, industry did not have a significant effect on any of the dependent variables. Although the litigious nature of industry may indeed not have an impact on audit scope, the results might also be due to the between subjects design of the experiment.

Contributions

The major research contribution of this study was in providing a direct test of the impact of business risk factors on audit scope decisions. Other studies have not concentrated on the impact that business risk has on audit scope. The results provided support that business risk affects audit scope, but the effect may be contingent upon the firm or client factors. Auditors might practice defensive auditing when the client is public. These results add to the existing research on audit planning.

This study operationalized audit scope with four main measures of audit scope. In previous studies on audit scope, only one measure was used. Although budgeted audit hours is an overall measure of audit scope, sample sizes provide a measure of the extent of testing. There was some evidence that sample sizes are significantly affected by business risk.

Another significant contribution of this study is that the participants were practicing audit managers who completed a fairly realistic audit task. The results from this study should increase the understanding of the auditing process.

Other contributions are (1) this study provided evidence that business risk factors have non-scope effects on the audit which increase the cost of the audit, (2) this study showed that auditors may not be making materiality

judgments which fit the circumstances, and (3) this study showed that auditors expect more errors when a client's financial condition is weak.

Limitations

The participants in this study were audit managers from two Big Eight CPA firms. The participants were not chosen at random from all available CPAs, and not all firms were represented. Therefore, generalizing the results must be limited.

This study attempted to control changes in error expectation. However, it was not successful. Financial condition had a strong effect on error expectation. Error expectation apparently did not affect the impact on audit scope decisions from ownership and industry. Therefore, this study may have been limited because financial condition changed error expectation; i.e., the pure effects of business risk on audit scope may not have been isolated. However, it is possible that the business risk from financial condition results from an increase in the likelihood of errors. In that case, isolation should not be done, and failure to eliminate changes in error expectation would not be a limitation.

The managers were asked to make audit scope decisions based upon a fairly realistic audit case. However, in a normal audit other information and resources would be available to the manager; e.g., prior year's workpapers

would be available, which would include, among other items, suggestions for the current year's audit, audit procedures done in prior year, and analyses of bad debts and aging; prior year's manager and/or audit staff would be available for consultation; and industry statistics and publications indicating industry standards and problems would be available. In addition, the manager would probably have interviewed the client, visited the client facilities, and, with these client contacts, may have obtained information not provided in the cases. Therefore, additional information might have changed the audit scope decisions.

Industry was a between subjects independent variable. There were no significant effects from industry. Perhaps, if a full repeated measures design had been possible, with stronger significance tests which accompany a repeated measures design, there might have been significant effects from industry. Since this possibility exists, the effects from industry on audit scope are inconclusive.

Future Research

This study indicates a need for further research in several areas. The impact on audit scope from other business risk factors should be investigated. In addition, since the findings in this study were inconclusive as to the effect of industry on audit scope, further research with industry in a repeated measures design should be done.

Since business risk factors were found to have non-

scope effects, these additional studies might be able to incorporate these effects into the audit scope measures. For example, the responses for the budgeted audit hours might be broken down by experience category. The time for supervision and increased documentation might be provided by the subject.

Further research should be done on the impact of client characteristics on error expectation. This study showed a significant effect of financial condition on error expectation. Do other client characteristics impact error expectation; e.g., size, information systems, geographical location, etc.?

This study utilized the accounts receivable audit area. Additional research might investigate the impact of business risk on other audit areas such as inventory or contingencies.

This study indicates additional research on materiality is needed. The participants in this study did not appear to make materiality judgments as expected.

Further research on the differences of the impact of business risk among firms should be investigated. This study found differences in audit scope between the two firms. Perhaps the differences resulted from differences in the firm emphasis on interim or year-end testing. Another study could investigate both the interim and year-end effects. Since this study investigated only the year-end

testing, the firms' audit scope might be similar if both the interim and year-end testing were considered.

The differences in the firms' use of analytical procedures could result in differences in the number of budgeted hours; i.e., analytical procedures should take less time than confirmation procedures. The firms in this study may have differed in the mix of their audit testing; i.e., one firm may normally emphasize confirmations in substantive testing, while the other firm may normally emphasize extensive analytical procedures. Although some of the analytical procedures were included in this study, there may be some analytical procedures which are done on every audit and which the manager did not think to include in his or her responses in the cases. Therefore, a study with a more complete listing of analytical procedures might provide insight into the differences among firms.

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APPENDIX A
GENERAL INSTRUCTIONS AND BACKGROUND INFORMATION

INSTRUCTIONS

You will be given four cases in which you will be asked to make decisions on audit scope. Each case is independent. The same background information will be used in each case. Additional information specific to each case will be provided at the beginning of each case.

You will be asked to write the audit program to audit the year-end balance of accounts receivable in each case. To save you time, a list of audit procedures which you might want to include in the audit program is included. There will be space provided for you to write additional audit procedures which you may want to include.

As much as it is possible, you should prepare these audit programs as you would if you were asked to do so for actual clients. It is extremely important that your responses be representative of what you would do in actual practice.

Thank you for participating in this study. Your participation is essential in completing this research.

BACKGROUND INFORMATION FOR THE CASES

The following background information applies to each of the four cases you will be completing.

You have been assigned as manager of the audit of XYZ Co. The current year's unaudited financial statements and the last two years' audited balances are provided. The client's aged accounts receivable trial balance is also provided.

You are ready to write the audit program for the year-end testing of the accounts receivable. You will also be determining the budgeted audit hours to do this testing. The client has asked that all of the substantive testing (the tests of details of balances) be done at the year-end because of the better availability of client personnel at that time.

Interim testing and assessment of control risk. Interim testing of the controls and the assessment of control risk for the revenues and receivables cycle has been performed. You have found the internal control environment to be strong. Management and independent controls are operating effectively; i.e., management reviews interim financial data and compares these to budgets and other records, reviews reconciliations, follows up on discrepancies reported by customers, and approves write-offs. Based upon your review, you have assessed the control risk for each of the financial statement assertions as being low. Control risk is defined as the risk that a material error will not be prevented or detected on a timely basis by the client's internal accounting control system.

Industry. The nature of the client's business does not increase the likelihood of errors being present in the accounts receivable.

XYZ Co. manufactures semiconductors and is in the computers and electronics industry. In studies on comparing rates of auditor litigation among industries, it has been found that there is significant litigation against auditors in this industry by clients or third parties. Relative to audits of companies in other types of industries, this company may be considered to belong to a litigious industry.

BACKGROUND INFORMATION FOR THE CASES
PAGE 2

Integrity of management. Your firm's assessment of XYZ's management is that it is honest and competent. Management is conservative with regard to operational and accounting matters, has a good reputation, and has had a long tenure. Management has a high level of integrity and has a high interest in responsible financial reporting. In your review, you are satisfied that there is a lack of management motivation or desire to misstate the financial statements.

Relationship of your firm with the client. Your firm has audited XYZ Co. for the last three years. Your firm has had a positive relationship with the client management and personnel, and XYZ Co. has been very satisfied with prior audit results. XYZ's accounting personnel are regarded by your firm as competent. The client personnel has a low turnover with no key client personnel replaced during the year under audit.

Prior years' audits. In prior audits, there have been very few proposed adjusting entries. There have been no significant errors found in the prior years.

Related parties transactions. XYZ Co. does not have any subsidiaries. There have been no unusual transactions between the company and its management which would impact accounts receivable.

Nonroutine transactions or difficult accounting issues. XYZ's accounts receivable and allowance for uncollectible accounts is not unusual from other clients.

Economy. The present economy is healthy.

BACKGROUND INFORMATION FOR THE CASES

The following background information applies to each of the four cases you will be completing.

You have been assigned as manager of the audit of XYZ Co. The current year's unaudited financial statements and the last two years' audited balances are provided. The client's aged accounts receivable trial balance is also provided.

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Interim testing and assessment of control risk. Interim testing of the controls and the assessment of control risk for the revenues and receivables cycle has been performed. You have found the internal control environment to be strong. Management and independent controls are operating effectively; i.e., management reviews interim financial data and compares these to budgets and other records, reviews reconciliations, follows up on discrepancies reported by customers, and approves write-offs. Based upon your review, you have assessed the control risk for each of the financial statement assertions as being low. Control risk is defined as the risk that a material error will not be prevented or detected on a timely basis by the client's internal accounting control system.

Industry. The nature of the client's business does not increase the likelihood of errors being present in the accounts receivable.

XYZ Co. manufactures sealants and adhesives and is in the general manufacturing industry. In studies on comparing rates of auditor litigation among industries, it has been found that there is no significant litigation against auditors in this industry by clients or third parties. Relative to audits of companies in other types of industries, this company may be considered to belong to a nonlitigious industry.

BACKGROUND INFORMATION FOR THE CASES
PAGE 2

Integrity of management. Your firm's assessment of XYZ's management is that it is honest and competent. Management is conservative with regard to operational and accounting matters, has a good reputation, and has had a long tenure. Management has a high level of integrity and has a high interest in responsible financial reporting. In your review, you are satisfied that there is a lack of management motivation or desire to misstate the financial statements.

Relationship of your firm with the client. Your firm has audited XYZ Co. for the last three years. Your firm has had a positive relationship with the client management and personnel, and XYZ Co. has been very satisfied with prior audit results. XYZ's accounting personnel are regarded by your firm as competent. The client personnel has a low turnover with no key client personnel replaced during the year under audit.

Prior years' audits. In prior audits, there have been very few proposed adjusting entries. There have been no significant errors found in the prior years.

Related parties transactions. XYZ Co. does not have any subsidiaries. There have been no unusual transactions between the company and its management which would impact accounts receivable.

Nonroutine transactions or difficult accounting issues. XYZ's accounts receivable and allowance for uncollectible accounts is not unusual from other clients.

Economy. The present economy is healthy.

XYZ CO.
COMPARATIVE BALANCE SHEETS
AS OF DECEMBER 31, 1986-88
(In thousands)

	Audited <u>1986</u>	1987 <u>1987</u>	Unaudited <u>1988</u>
ASSETS			
Current Assets			
Cash	\$ 2,500	\$ 2,730	\$ 3,250
Accounts Receivable, Net	4,000	4,200	4,300
Inventory, LIFO	4,200	4,410	4,200
Other	<u>1,400</u>	<u>1,500</u>	<u>1,290</u>
Total Current Assets	12,100	12,840	13,040
Property, Plant, and Equipment, Net	<u>7,400</u>	<u>8,190</u>	<u>8,440</u>
Total Assets	<u>\$19,700</u>	<u>\$21,030</u>	<u>\$21,500</u>
LIABILITIES AND STOCKHOLDERS' EQUITY			
Current Liabilities			
Accounts Payable	\$ 1,970	\$ 2,100	\$ 2,200
Bank Loans	200	210	210
Notes Payable	985	1,100	1,075
Other	<u>2,364</u>	<u>2,500</u>	<u>2,180</u>
Total Current Liabilities	5,519	5,910	5,665
Long-term Debt Due to First National Bank	<u>3,937</u>	<u>4,220</u>	<u>4,235</u>
Total Liabilities	9,456	10,130	9,900
Stockholders' Equity	<u>10,244</u>	<u>10,900</u>	<u>11,600</u>
Total Liabilities and Stockholders' Equity	<u>\$19,700</u>	<u>\$21,030</u>	<u>\$21,500</u>

XYZ CO.
COMPARATIVE INCOME STATEMENTS
FOR THE YEARS ENDED DECEMBER 31, 1986-88
(In thousands)

	Audited		Unaudited
	<u>1986</u>	<u>1987</u>	<u>1988</u>
Net Sales	\$23,200	\$27,900	\$29,000
Costs and Expenses			
Cost of Sales	16,140	19,081	19,608
Selling and Administrative Expenses	4,461	5,496	6,033
Interest Expense	<u>860</u>	<u>890</u>	<u>900</u>
Total Costs and Expenses	21,461	25,467	26,533
Income from operations, before taxes	1,739	2,433	2,467
Income Taxes	521	779	780
Net Income	<u>\$ 1,218</u>	<u>\$ 1,654</u>	<u>\$ 1,687</u>
Earnings Per Common Share	<u>\$ 1.40</u>	<u>\$ 1.60</u>	<u>\$ 1.63</u>

XYZ CO.
 AGED ACCOUNTS RECEIVABLE TRIAL BALANCE
 December 31, 1988

CUSTOMER	CURRENT	PAST DUE			TOTAL
		30	60	90	
APE Products				6500	6500
Airco Industrial	2612		5000		7612
Albitech				42040	42040
Alden Enterprises				7500	7500
Alexander's Products	41257	19176	26454	3495	90382
American Technology	22446	116210	2500	24000	165156
B&B Machines			2200		2200
B&G Instruments	12500				12500
B&K Enterprises		9508			9508
Babcock Co.		12406	335		12741
Baerman, Inc.	3400	3500			6900
Banas Electronics	1990	453			2443
Barton Industries	2300			16000	18300
Bergman Vaughan Co.		33001		114990	147991
Best Industrial				15000	15000
Better Machines	14099	6785			20883
Better Products		29021			29021
Boston Manufacturing		105000			105000
California Technolog			15098	112500	127598
Calkings Co.		17000	72000		89000
Calteck, Inc.	8224		5114		13338
Cassingway Products	1100	335			1435
Chip, Inc.	10055	6000			16055
Chulski Corp	55482		36000	17445	108927
Cook Corp.			14245		14245
Coopers Machines	50707	37745	2225	3800	94477
Eastec		76000	39000		115000
Eastern Technology				1710	1710
Eastwell Corp.	28843	45012	650	13551	88056
Fowler Manufacturing	51993	4000	3578	7458	67029
Franklin Products	45000	72000			117000
Gandwell Technology		55000	80000	9000	144000
Green Bay Technology	34153	30132	82510	12998	159793
Hackner Enterprises	14988	20000	20115	18445	73548
Jackson Corp.	96932		17000	86000	199932
Janis Transistors	9000				9000
Jasper Corp.	2400	6700		4000	13100
Jennison Corp.	9423		7000		16423
Jennitech	22500	4000	1000	1209	28709
Johns Enterprises	14000				14000
KMN, Inc.	105216	3672	2755		111643
Loeb Transistor	16922				16922
Lone Star Corp.	22100	1750			23850

Long's Products	49130	550			49680
Loomis Manufacturing				2000	2000
MCP Corp.				7500	7500
Mackinac Corp.	52289		91000		143289
Measure, Inc.	38300	8000		54500	100800
Midwest Corp.	14009				14009
Minton, Ltd.		11100			11100
Miotech			42000		42000
Missou Products	55445			6000	61445
Mostech	27998			75000	102998
NRBY Co.	8450	788			9238
NRP Corp.				15962	7501
New England Technolo	8500		52000		60500
New Mexico Manufactu			40000		40000
Newport Manufacturin	16000				16000
Newtech	4500	3600			8100
Noral Industries	27500	4502	1100	610	33712
Norax, Inc.			12000	108180	120180
Prism Products	61454	15000	39832	13490	129776
Providence Manufactu	46000		43289		89289
Quaster, Inc.	32230				32230
Reckers		2500			2500
Reece Manufacturers	10000				10000
Rehfuss Manufacturer	25000				25000
Reliable Products	44000		45500		89500
Restex	6000	450			6450
Reswell Co.			500	22609	23109
Roasan, Inc.	11200				11200
Roberts Enterprises	14527				14527
Robotics, Inc.			8002	1208	9210
Rommax, Inc.			4000	1204	5204
Romney Co.			567	12331	12898
Rostec, Inc.	1600	3200			4800
STYE, Inc.	25023				25023
Sage Products	7500				7500
Salpen, Inc.	800	1600			2400
San Francisco Indust	52000	16000			68000
Saxton, Inc.	3000	440			3440
Schorr Distribution	26000	1000	450		27450
Sealing Technology		22000			22000
Sealon, Inc.		2995			2995
Shaver Corp.	14004				14004
Sherwin Industrial				32100	32100
Shockley Manufacturi				22500	22500
Sidwell & Bickell, I	4402	1054			5457
Sliver Manufacturing	16001				16001
Sorcer Corp.		22000		45000	67000
South West Technolog	8000		52500		60500
Southern Products, Inc.			2610		2610
Southwest Manufactur	7000	22023		9500	38523
Star Distribution	29990	12000	800	3400	46190

Steele Distribution	13000	6500	432		19932
Stephens, Inc.		3335	1345		4680
Swieringa, Inc.	11907				11907
Swift Manufacturing	18500	7000			25500
TCBA Techtronics				500	500
Talbot Technology				10250	10250
Techtrol, Inc.	4000				4000
Techwell, Inc.		11000			11000
Telechrome, Inc.		13002			13002
Tester Corp.			44000		44000
Testwell, Inc.	5630	2208			7838
Texas Machines				42500	42500
Tostral Products	7002				7002
Treadwell, Inc.	8501				8501
Trinity Technology		74000	2200		76200
Viter, Inc.		8000	6200		14200
WOWO, Inc.				1300	1300
Warren Production	6000	450			6450
Waxtek, Inc.	11230				11230
Weber, Inc.		1700	859		2559
Wedgewright Technology		22000			22000
Weeling, Inc.	9250	3500			12750
Western Distributing	17099	7000			24099
Wibel, Inc.	8009				8009
WIC Co.			702	230	932
Wiesen Products			37500		37500
Windal Technology	95141	21262	3310	16025	135738

	1662763	1046166	967477	1021540	4689486

Accounts Receivable 4689486
 Allowance for Uncol-
 lectible Accounts 389367

Net 4300119

BACKGROUND INFORMATION FOR THE CASES

Before proceeding to the four cases, please indicate your expectation of error in the accounts receivable area for XYZ Co. in the scale below.

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
Very						Highly
Unlikely						Probable

APPENDIX B
OWNERSHIP AND FINANCIAL CONDITION MANIPULATIONS
IN THE CASES

CASE

BACKGROUND INFORMATION:

Please refer to BACKGROUND INFORMATION FOR THE CASES.

ADDITIONAL INFORMATION:

Below is information about the ownership and financial condition of XYZ Co.

Ownership:

XYZ Co. is a privately owned company with its stock held by a family.

Financial Condition:

XYZ Co. has enjoyed upward trends of earnings over the last several years and growth in its assets and equities. The year under audit, 1988, is consistent with previous years. XYZ Co. has increased its market share, and its prospects for the next year look promising. The financial statements are shown in the BACKGROUND INFORMATION FOR THE CASES.

XYZ's present financial condition is summarized as strong.

CASE

BACKGROUND INFORMATION:

Please refer to BACKGROUND INFORMATION FOR THE CASES.

ADDITIONAL INFORMATION;

Below is information about the ownership and financial condition of XYZ Co.

Ownership:

XYZ Co. is a privately held company with its stock held by a family.

Financial Condition:

XYZ Co. had enjoyed upward trends of earnings until 1987 and growth in its assets and equities. However, in 1987 the Company experienced a reverse. In 1988, the year under audit, the Company's condition significantly deteriorated. Its product has met with severe competition. The Company has had to borrow extensively to try to withstand the loss of market share, and no improvement in the Company's situation is expected during the next year.

The financial statements as shown in the BACKGROUND INFORMATION FOR THE CASES are changed for certain 1987 audited and 1988 unaudited balances. To assist you, the financial statements with changes are attached. XYZ's present financial condition is summarized as weak.

XYZ CO.
COMPARATIVE BALANCE SHEETS
AS OF DECEMBER 31, 1986-88
(In thousands)

	Audited <u>1986</u>	1987	Unaudited <u>1988</u>
ASSETS			
Current Assets			
Cash	\$ 2,500	2,730	3,250
Accounts Receivable, Net	4,000	4,200	4,300
Inventory, LIFO	4,200	4,410	4,200
Other	<u>1,400</u>	<u>1,500</u>	<u>1,290</u>
Total Current Assets	12,100	12,840	13,040
Property, Plant, and Equipment, Net	<u>7,600</u>	<u>8,190</u>	<u>8,460</u>
Total Assets	<u>\$19,700</u>	<u>\$21,030</u>	<u>\$21,500</u>
LIABILITIES AND STOCKHOLDERS' EQUITY			
Current Liabilities			
Accounts Payable	\$ 1,970	\$ 3,720	\$ 5,000
Bank Loans	200	1,000	2,000
Notes Payable	985	1,500	4,180
Other	<u>2,364</u>	<u>2,000</u>	<u>2,000</u>
Total Current Liabilities	5,519	8,220	13,180
Long-term Debt Due To First National Bank	<u>3,937</u>	<u>3,810</u>	<u>3,320</u>
Total Liabilities	9,456	12,030	16,500
Stockholders' Equity	<u>10,244</u>	<u>9,000</u>	<u>5,000</u>
Total Liabilities and Stockholders' Equity	<u>\$19,700</u>	<u>\$21,030</u>	<u>\$21,500</u>

XYZ CO.
COMPARATIVE INCOME STATEMENTS
FOR THE YEARS ENDED DECEMBER 31, 1986-88
(In thousands)

	Audited		Unaudited
	<u>1986</u>	<u>1987</u>	<u>1988</u>
Net Sales	\$23,200	\$19,000	\$13,000
Costs and Expenses			
Cost of Sales	16,140	15,415	10,653
Selling and Administrative Expenses	4,461	5,000	4,347
Interest Expense	<u>860</u>	<u>1,019</u>	<u>2,000</u>
Total Costs and Expenses	21,461	21,434	17,000
Income (loss) from operations, before taxes	1,739	(2,434)	(4,000)
Income Taxes	<u>521</u>	<u>(1,190)</u>	<u>0</u>
Net Income (Loss)	<u>\$ 1,218</u>	<u>(\$1,244)</u>	<u>(\$4,000)</u>
Earnings (Loss) Per Common Share	<u>\$ 1.40</u>	<u>(\$1.43)</u>	<u>(\$4.60)</u>

CASE

BACKGROUND INFORMATION:

Please refer to BACKGROUND INFORMATION FOR THE CASES.

ADDITIONAL INFORMATION:

Below is information about the ownership and financial condition of XYZ Co.

Ownership:

XYZ Co. is a publicly owned company with its stock widely distributed and actively traded.

Financial Condition:

XYZ Co. has enjoyed upward trends of earnings over the last several years and growth in its assets and equities. The year under audit, 1988, is consistent with previous years. XYZ Co. has increased its market share, and its prospects for the next year look promising. The financial statements are shown in the BACKGROUND INFORMATION FOR THE CASES.

XYZ's present financial condition is summarized as strong.

CASE

BACKGROUND INFORMATION:

Please refer to BACKGROUND INFORMATION FOR THE CASES.

ADDITIONAL INFORMATION;

Below is information about the ownership and financial condition of XYZ Co.

Ownership:

XYZ Co. is a publicly held company with its stock widely distributed and actively traded.

Financial Condition:

XYZ Co. had enjoyed upward trends of earnings until 1987 and growth in its assets and equities. However, in 1987 the Company experienced a reverse. In 1988, the year under audit, the Company's condition significantly deteriorated. Its product has met with severe competition. The Company has had to borrow extensively to try to withstand the loss of market share, and no improvement in the Company's situation is expected during the next year.

The financial statements as shown in the BACKGROUND INFORMATION FOR THE CASES are changed for certain 1987 audited and 1988 unaudited balances. To assist you, the financial statements with changes are attached. XYZ's present financial condition is summarized as weak.

XYZ CO.
COMPARATIVE BALANCE SHEETS
AS OF DECEMBER 31, 1986-88
(In thousands)

	Audited		Unaudited
	<u>1986</u>	<u>1987</u>	<u>1988</u>
ASSETS			
Current Assets			
Cash	\$ 2,500	2,730	3,250
Accounts Receivable, Net	4,000	4,200	4,300
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Other	<u>1,400</u>	<u>1,500</u>	<u>1,290</u>
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Property, Plant, and Equipment, Net	<u>7,600</u>	<u>8,190</u>	<u>8,440</u>
Total Assets	<u>\$19,700</u>	<u>\$21,030</u>	<u>\$21,500</u>
LIABILITIES AND STOCKHOLDERS' EQUITY			
Current Liabilities			
Accounts Payable	\$ 1,970	\$ 3,720	\$ 5,000
Bank Loans	200	1,000	2,000
Notes Payable	985	1,500	4,180
Other	<u>2,364</u>	<u>2,000</u>	<u>2,000</u>
Total Current Liabilities	5,519	8,220	13,180
Long-term Debt Due To First National Bank	<u>3,937</u>	<u>3,810</u>	<u>3,320</u>
Total Liabilities	9,456	12,030	16,500
Stockholders' Equity	<u>10,244</u>	<u>9,000</u>	<u>5,000</u>
Total Liabilities and Stockholders' Equity	<u>\$19,700</u>	<u>\$21,030</u>	<u>\$21,500</u>

XYZ CO.
 COMPARATIVE INCOME STATEMENTS
 FOR THE YEARS ENDED DECEMBER 31, 1986-88
 (In thousands)

	Audited <u>1986</u>	Audited <u>1987</u>	Unaudited <u>1988</u>
Net Sales	\$23,200	\$19,000	\$13,000
Costs and Expenses			
Cost of Sales	16,140	15,415	10,653
Selling and Administrative Expenses	4,461	5,000	4,347
Interest Expense	<u>860</u>	<u>1,019</u>	<u>2,000</u>
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Income (loss) from operations, before taxes	1,739	(2,434)	(4,000)
Income Taxes	<u>521</u>	<u>(1,190)</u>	<u>0</u>
Net Income (Loss)	<u>\$ 1,218</u>	<u>(\$1,244)</u>	<u>(\$4,000)</u>
Earnings (Loss) Per Common Share	<u>\$ 1.40</u>	<u>(\$1.43)</u>	<u>(\$4.60)</u>

**APPENDIX C
CASE INSTRUCTIONS AND POTENTIAL AUDIT PROCEDURES**

CASE INSTRUCTIONS

1. Before writing the audit program for accounts receivable, please answer the following question:

What is the combined error which is material for accounts receivable? (i.e., what is the amount required to propose an adjusting journal entry to the accounts receivable balance) \$

2. On the following pages are potential audit procedures you might choose to include in your audit program.

Indicate on each procedure whether or not you would include that procedure in the audit program. Circle "Y" if you would include the procedure and "N" if you would not. Write the sample size or other selection criteria, if applicable. You do not have to use all of the procedures.

Space is provided after the list of potential procedures for you to add procedures, if you desire. Include sample sizes on any added procedures, if applicable.

Please estimate the audit hours you would budget under each audit procedure.

POTENTIAL AUDIT PROCEDURES

ACCOUNTS RECEIVABLE AND ALLOWANCE FOR UNCOLLECTIBLE ACCOUNTS

Below is a list of potential audit procedures you might choose to audit the accounts receivable and allowance for uncollectible accounts. There is space provided at the end of the list for any other procedures you wish to include.

IMPORTANT.

It is important that you indicate whether or not you will use each procedure. For each procedure selected AND each procedure added, it is extremely important that you write the SAMPLE SIZE OR SELECTION CRITERIA and the BUDGETED HOURS.

		BUDGETED	
			HOURS
Y N	1. Use a stratified sampling strategy and send positive confirms to all accounts over \$_____. (Includes substantiating nonreplies and following up exceptions.) 1.\$_____		_____
Y N	2. Select a random sample of _____ accounts not confirmed in No. 1 and send positive confirmations. (Includes substantiating nonreplies and following up exceptions.) 2._____		_____
Y N	3. Select a monetary unit sample to confirm the accounts. (Includes substantiating nonreplies and following up exceptions.) If this procedure is chosen, you must provide the selection criteria below.	3. N/A	_____
	Confidence level _____%		
	One- or two-tailed test _____		
	Expected error _____		
	Tolerable error _____		
Y N	4. Foot and cross-foot the aged trial balance and trace the balance to the general ledger. 4. N/A		_____

- Y N 5. Trace _____ accounts from the aged trial balance to the related subsidiary ledger for aging and the balance. 5. _____
- Y N 6. Vouch a sample of _____ accounts in the aged trial balance to sales invoices to test accuracy of aging. 6. _____
- Y N 7. Review the aged trial balance for any, large or unusual items. 7. N/A _____
- Y N 8. Vouch accounts which are _____ days past due and over \$_____ to cash receipts after the balance sheet date. 8. _____ days
\$ _____
- Y N 9. Review supporting documentation for selected write-offs and trace to posting in customer receivable accounts. 9. N/A _____
- Y N 10. Discuss with credit manager the likelihood of collecting old accounts. 10. N/A _____
- Y N 11. Compare aging categories as a percentage of accounts receivable with previous years. 11. N/A _____
- Y N 12. Compare allowance for uncollectible accounts as a percentage of accounts receivable with previous years. 12. N/A _____
- Y N 13. Evaluate the adequacy of the allowance. 13. N/A _____
- Y N 14. Trace _____ accounts from the subsidiary ledger to the aged trial balance. 14. _____

- Y N 15. Select the last _____ sales transactions from the sales journal and the first _____ sales transactions from the subsequent year's sales journal and vouch to shipping documents to check for the date of actual shipment and correct recording. 15. _____

- Y N 16. Review large sales returns and allowances after the balance sheet date to determine whether any should be included in the current period. 16. N/A _____
- Y N 17. Compare bad debt expense as a percentage of gross sales with previous years. 17. N/A _____
- Y N 18. Compare the number of days sales in accounts receivable with previous year. 18. N/A _____

ADDITIONAL SPACE FOR ADDED AUDIT PROCEDURES:

Please be sure to include the SAMPLE SIZES AND BUDGETED HOURS to perform the audit procedure.

3. Would you take any other steps or audit precautions in auditing the accounts receivable for this client?

I would staff the engagement with experienced auditors. Yes No

I would require more documentation of audit evidence than is usually required. Yes No

I would require closer supervision in this engagement Yes No

I would use a higher billing rate schedule. Yes No

I would take these other steps:

4. Use the scale below to indicate your expectation of error in the accounts receivable area for XYZ Co.

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
Very						Highly
Unlikely						Probable

5. Compared to your perception of your audited clients, how would you rate the risk of auditing the company depicted this case?

<u>.1</u>	<u>.2</u>	<u>.3</u>	<u>.4</u>	<u>.5</u>	<u>.6</u>	<u>.7</u>	<u>.8</u>	<u>.9</u>	<u>1.0</u>
Low									High

6. This client is _____ (public or private?)

7. I would rate the financial condition of this client as:

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Weak		Medium		Strong

APPENDIX D
RISK PREFERENCE QUESTIONNAIRE

1. If someone would be willing to give you \$50 for certain, or a gamble that pays \$100 with probability p and \$0 with probability of $1 - p$, what would p have to be (between 0 and 1) so that you are indifferent between the \$50 for certain and taking the gamble?

p would have to be _____

2. How would you rate your own willingness to accept professional exposure as compared to other audit managers in your firm? (Professional exposure is the risk of loss to the auditor's or firm's professional practice because of litigation.)

1	2	3	4	5	6	7
Much less willing			Equally willing			Much more willing

**APPENDIX E
EXIT QUESTIONNAIRE**

DEMOGRAPHIC AND DEBRIEFING QUESTIONNAIRE

1. Name and title _____
Telephone number _____ - _____
2. Experience (round to the nearest year):
 - a. Number of YEARS of public accounting experience _____
 - b. Number of YEARS of manager experience _____
 - c. Number of manufacturing clients _____
 - d. Approximate number of TIMES in your entire public accounting career that you have planned the audit of accounts receivable (Repeat clients would count once for each year.) _____
3. Client Industry Experience:

Please classify your audit client experience into the following categories:

Non-manufacturing companies	_____ %
Manufacturing companies having	
Less than \$20 million sales	_____ %
\$20 to \$50 million sales	_____ %
\$51 to \$100 million sales	_____ %
Over \$100 million sales	_____ %
Total	100%

Have you ever audited a company from the
Computers and Electronics Industry _____

Adhesives and Sealants Industry _____
4. Have you ever been involved in litigation as a result of an audit you have conducted? _____
5. The four cases you just completed were in the:
 - a. Computers and Electronics Industry
 - b. Adhesives and Sealants Industry _____

This industry has been shown to:

- a. Involve significant litigation against auditors
- b. Not involve significant litigation against auditors

6. Please state what you believe is the purpose of this research.
7. Please state as best you can what you think is the hypothesis of this research.
8. What difficulties did you have in completing the cases? For example, did you need any other specific information not provided? Did you need reference material? Etc.
9. Were your responses representative of what you would probably do in practice? Please explain.
10. What information had the greatest effect on your decision? Please indicate the MOST IMPORTANT information used by writing its number at the right of the decision.

Information

1. Industry
2. Private or public ownership
3. Financial Condition
4. Other (please explain)

Decision

Materiality _____

Audit Procedures Selected _____

Sample Sizes Selected _____

Budgeted Audit Hours _____

11. Did the probability of errors in accounts receivable change in the four cases? _____
- Were your decisions affected by changes in the probability of errors? _____
- If yes, which decisions were affected?
- | | |
|---------------------------|-------|
| Materiality | _____ |
| Audit Procedures Selected | _____ |
| Sample Sizes Selected | _____ |
| Budgeted Audit Hours | _____ |
12. Did you perceive differences in professional exposure in the cases? _____
- (Professional exposure is defined as the risk of loss to an auditor's or firm's professional practice because of litigation. This risk includes a loss of reputation.)
- Were your decisions affected by differences in professional exposure? _____
- If yes, which decisions were affected?
- | | |
|---------------------------|-------|
| Materiality | _____ |
| Audit Procedures Selected | _____ |
| Sample Sizes Selected | _____ |
| Budgeted Audit Hours | _____ |
13. The factors ordinarily associated with inherent risk were given in the background information.
- (Inherent risk is defined as the susceptibility of the account to material error assuming there were no related internal accounting controls.)
- Did inherent risk change as a result of receiving information on ownership and financial condition? _____
- If yes, did ownership or financial condition have the greater effect on inherent risk? _____
14. Control risk was stated as low in the background information. Did control risk change as a result of your receiving information as to industry, ownership, and financial condition? _____
- If yes, did industry, ownership, or financial condition have the greatest effect on control risk? _____

15. On the scales below, please rate how high professional exposure is for a client with the characteristics given:

- a. The client is publicly owned with a wide distribution of shares.

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
Low			Medium			High

- b. The client is privately owned with its shares held by a family.

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
Low			Medium			High

- c. The client has a strong financial condition.

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
Low			Medium			High

- d. The client has a weak financial condition.

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
Low			Medium			High

16. How interesting did you find your participation in this research?

Very interesting	_____
Reasonably interesting	_____
Of little interest	_____
Of no interest	_____

17. In total, how long did it take you to complete this project (round to the nearest one-quarter hour)? _____ hours

18. Would you like to see the results when the research is completed? _____

THANK YOU FOR CONTRIBUTING YOUR TIME AND EFFORT TO THIS RESEARCH STUDY

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