

University of Mississippi

eGrove

Proceedings of the University of Kansas
Symposium on Auditing Problems

Deloitte Collection

1-1-1990

Assessing control risk: Effects of procedural differences on auditor consensus

Jane E. Morton

William L. Felix

Follow this and additional works at: https://egrove.olemiss.edu/dl_proceedings



Part of the [Accounting Commons](#), and the [Taxation Commons](#)

Recommended Citation

Auditing Symposium X: Proceedings of the 1990 Deloitte & Touche/University of Kansas Symposium on Auditing Problems, pp. 109-113;

This Article is brought to you for free and open access by the Deloitte Collection at eGrove. It has been accepted for inclusion in Proceedings of the University of Kansas Symposium on Auditing Problems by an authorized administrator of eGrove. For more information, please contact egrove@olemiss.edu.

6

Assessing Control Risk: Effects of Procedural Differences on Auditor Consensus*

Jane E. Morton

William L. Felix, Jr.

University of Arizona

ABSTRACT

In 1988, Statement on Auditing Standards Number 55, "Consideration of the Internal Control Structure in a Financial Statement Audit", was issued by the AICPA as a replacement standard for AU Section 320, "The Auditor's Study and Evaluation of Internal Control", in an attempt to improve auditors' control risk assessments. This paper describes the conceptual differences between the old and new standards with respect to control risk assessment. In addition, results are presented for an experiment in which practicing auditors are asked to assess control risk following one of two risk assessment procedures based on the two approaches suggested by the old and new standards. These tentative results, based on small sample sizes, do not indicate a clear "winner" in terms of consensus, however it appears that a procedural effect is present.

1. Introduction

Early in 1990, the auditor's responsibility for the evaluation and testing of a client's internal control structure was altered when Statement on Auditing Standards No. 55 (SAS 55), "Consideration of the Internal Control Structure in a Financial Statement Audit", became effective. According to Temkin and Winters [1988, pp. 98], "It's objective is to enhance audit effectiveness by improving audit planning and sharpening the auditor's assessments of control risk."

The new standard however, is not simply an attempt at integration of the old AU Section 320, "The Auditor's Study and Evaluation of Internal Control", and Statement on Auditing Standards No. 47 (SAS 47), "Audit Risk and Materiality in Conducting an Audit." Significant changes also appear to have been made in the basic concepts underlying the old standards.¹ Consequently, a

*The authors would like to acknowledge the helpful comments of Bill Waller.

¹The conceptual changes in SAS 55, described in the next section of this paper, resulted in a number of changes to other professional standards (including SAS 47.) Throughout the paper, we use AICPA *Professional Standards*, Volume 1 (June, 1987) to reflect pre-SAS 55 standards. We refer to these as the "old standards".

primary focus of the new standard is the introduction and discussion of the procedure for assessing control risk within the context of these changes.

Presumably, following the SAS 55 procedure for assessing control risk should result in "better" control risk assessments than those made under the old standards. Unfortunately, precise measurement of the extent of improvement that such a procedure might provide is problematic. The development of a reasonably specific normative model which could be applied across all firms to determine what the control risk assessment SHOULD be would be difficult due to the complexity of the internal control structure and differences in this structure across audit clients. Furthermore, ex-post determination that the control risk assessment was appropriate is not often feasible due to the lack of any clear link between control risk assessments and observable outcomes. However, if the purpose of professional standards is to provide uniform guidance to auditors, then we should expect that application of the SAS 55 procedure for assessing control risk by many auditors in the SAME audit situation would result in a greater degree of consensus among auditors than there would be in the absence of such a procedure, for reasons discussed below.

Einhorn [1974] points out that agreement (i.e., consensus) can be thought of in two ways: (a) agreement "in fact" and (b) agreement "in principle." In the context of assessing control risk, agreement in principle implies that auditors have a common understanding of the control risk assessment process, including the type of evidence to be collected, how that evidence should be weighted and combined to arrive at an assessed level of control risk, and the role of the control risk assessment in planning the audit. Agreement in fact, on the other hand, refers to agreement on the actual control risk assessments.

One goal of professional standards for auditors, implicitly, is to achieve a higher degree of agreement in principle than would be achieved in the absence of standards. Consequently, if this goal is achieved for a given standard then, *ceteris paribus*, we should expect to see greater agreement in fact among auditors than there would be in the absence of such a standard.² The term "consensus", as used in this paper, refers to the degree of agreement in fact.

The use of consensus as a measure for decision quality has received support in auditing research [see, for example, R. Ashton, 1983, and A. Ashton, 1985]. It is important to recognize that a high degree of consensus does not necessarily imply accuracy. The "correct" decision at each stage in an audit is not generally known. Indeed, the identification of "incorrect" decisions can often only be made well after the fact in the event of an audit failure, if at all. However, the successful defense of auditor decisions in the event of litigation often involves establishing a consensus, via expert witnesses, that the auditor acted in a prudent manner [Joyce and Libby, 1982]. This argument seems a particularly appropriate reason for using consensus to measure and compare the "quality" of control risk assessments made using the SAS 55 procedure with other procedures since SAS 55 is one of eight new standards is-

²It should be noted that auditors at large firms see the professional standards through the filter of the firm audit manual, workpapers, etc. This filter affects consensus to the extent that there are differences in this filter across firms.

sued by the AICPA in response to SEC and congressional criticism stemming largely from recent cases of auditor litigation.³

The purpose of this paper is to describe the conceptual differences between the SAS 55 procedure for assessing control risk and the procedure suggested by the old standards.⁴ In addition, we provide preliminary evidence on the effects that such procedural differences might have on the degree of auditor consensus. The results of this study are intended to provide insights for future, more refined experiments. We conduct an experiment in which practicing auditors are given information relating to a hypothetical client's internal control structure elements and are asked to assess control risk on a qualitative scale (ranging from "lowest" to "highest"). Half of the subjects receive a description of a control risk assessment procedure based on our interpretation of SAS 55 and are asked to follow this procedure in making their assessment. The remaining subjects receive a description of an alternative procedure based on concepts implicit in the old standards (described in the next section of this paper). Consensus is measured by converting qualitative responses into a simple quantitative scale and computing the standard deviation of each group's responses.

A potential confounding factor which may limit the usefulness of our results is the inability to completely control for differences in firm policy with regard to control risk assessments and/or the extent to which different firms have already adopted methods which are congruent with SAS 55. For example, although auditor subjects are asked to follow the specific procedure for assessing control risk that is described in their questionnaire, their responses may nevertheless be unintentionally biased toward control risk assessments which reflect elements of their firms' policies. We attempt to control for these effects by stressing to subjects the importance of following the described control risk assessment procedure regardless of how it may differ from their firm's policy. However, even if we are successful in our attempt to motivate (conscious) unbiased responses, it is unlikely that (unconscious) firm bias can be completely eliminated.

The results of this experiment have implications for auditors' assessments of control risk in practice. If the procedure used to assess control risk has a significant effect on auditors' control risk assessments, then great care should be taken in recognizing and considering these effects in order to determine the most appropriate procedure to follow. In particular, if a prescribed procedure contains equivocalities with respect to the role of evidence in assessing control risk or with respect to the meaning of the assessment itself, then low consensus may be an indication that control risk assessment is not necessarily recognized as the same task across auditors. In other words, a prescribed procedure which fails to achieve agreement in principle is likely to result in low

³See "Official Releases", *Journal of Accountancy* (July, 1988), pp. 144.

⁴While the sequence of events (i.e., obtaining an understanding of internal controls, collection of evidence, etc.) does not differ between the old and new standards, what does differ is the auditor's internal process (i.e., how the information collected is used to assess control risk). We use the term "procedure" to refer to the particular way in which judgments are made with respect to control risk.

consensus. Consequently, using a procedure which results in low consensus among auditors may result in a more difficult defense in the event of litigation where there is disagreement among expert witnesses.

The remainder of this paper is organized as follows. The next section describes the SAS 55 procedure for assessing control risk and discusses the conceptual differences between it and the procedure suggested by the old standards. The third section describes the experiment and discusses possible results. The fourth section presents the results and the final section provides concluding remarks and suggestions for further research.

2. SAS 55 Control Risk Assessment Procedure

Statement on Auditing Standards No. 55 (SAS 55), "Consideration of the Internal Control Structure in a Financial Statement Audit", alters the auditor's responsibility for the evaluation and testing of a client's internal control structure. In particular, SAS 55 expands the scope of the evaluation and specifically identifies the type of knowledge needed to obtain a sufficient understanding of a client's internal control structure and the degree of knowledge needed to plan the audit. The bulk of the new standard, however, focuses on the auditor's responsibility for assessing control risk and describes the procedure to be followed in making this assessment. A brief description of this procedure follows.

Prior to assessing control risk, the auditor is required to obtain a sufficient understanding of the client's internal control structure to plan the audit. The internal control structure consists of the following elements [Paragraph 8]: 1) The control environment, 2) The accounting system, and 3) Control procedures.

After obtaining an understanding of the internal control structure, the auditor begins the process of assessing control risk. This process is described in SAS 55, Paragraphs 29 and 30, as follows:

29. Assessing control risk is the process of evaluating the effectiveness of an entity's internal control structure policies and procedures in preventing or detecting material misstatements in the financial statements. Control risk should be assessed in terms of financial statement assertions. After obtaining the understanding of the internal control structure, the auditor may assess control risk at the maximum level for some or all assertions because he believes policies and procedures are unlikely to pertain to an assertion, are unlikely to be effective, or because evaluating their effectiveness would be inefficient.

30. Assessing control risk at below the maximum level involves:

- Identifying specific internal control structure policies and procedures relevant to specific assertions that are likely to prevent or detect material misstatements in those assertions.
- Performing tests of controls to evaluate the effectiveness of such policies and procedures.

In effect, the assessed level of control risk is that level that is supported by evidential matter obtained from evaluating the effectiveness of operating internal control structure policies and procedures. It follows then, that after obtaining an understanding of the internal control structure but prior to performing any tests of controls (assuming, for illustration purposes, that no tests of controls were performed during the course of obtaining the understanding), the control risk assessment should be at the maximum level. As tests of controls are performed and evidential matter is collected which confirms the effectiveness of internal control structure policies and procedures, the control risk assessment is reduced. Consequently, the greater the extent of testing, the greater the potential reduction in the assessed level of control risk from the maximum level.

Ultimately, after all testing has been completed, the final (evidence-supported) assessed level of control risk is used, along with the assessed level of inherent risk, to determine the acceptable level of detection risk for the purpose of determining the nature, timing, and extent of substantive tests to perform.⁵ It would seem then, that a primary motivation for the SAS 55 procedure for assessing control risk is to ensure that this necessary input to the Audit Risk Model⁶ is properly supported by evidential matter.

While SAS 55 attempts to make a positive move toward greater consistency with other standards, some significant changes in the basic concepts underlying the old standards are implicit in the control risk assessment procedure as it is described in SAS 55. In paragraph 28 of SAS 55, control risk is defined as “the risk that a material misstatement that could occur in an assertion will not be prevented or detected on a timely basis by the entity’s internal control structure policies or procedures.” However, the assessment of control risk based solely on the quantity (and quality) of evidential matter collected is inconsistent with this definition. The auditor’s control risk assessment should be, and is defined as, a representation of his beliefs regarding the risk of a material error⁷ getting through the client’s internal controls, but these beliefs are ignored under some conditions in the SAS 55 control risk assessment procedure. Consider the following examples.

Suppose that we’re conducting two audits. After obtaining an understanding of each client’s internal control structure, control risk is assessed at the maximum level for both. For the first client, control risk is assessed at the maximum level because the auditor believes there are material weaknesses in the entity’s internal control structure. For the second client, the auditor believes the internal control structure is strong but has assessed control risk at the maximum level because performing tests of controls would be ineffi-

⁵SAS 55’s expansion of factors to be considered in obtaining an understanding of a client’s internal control structure may lead to increased confounding of the inherent risk and control risk assessments. This issue (albeit critical) is beyond the scope of this paper. See Waller [1990] for an analysis of this confounding.

⁶See the Appendix of “Audit Sampling”, AICPA *Professional Standards* - Volume 1 (AICPA, 1987), AU Section 350.

⁷We use the terms “error” and “misstatement” interchangeably.

cient.⁸ In the first case, the auditor has identified areas of weakness in the client's internal control structure and should direct additional audit effort to searching for material error where he believes the risk of error is high. In the second case, however, no material weaknesses in the internal control structure have been identified by the auditor. The course of action indicated in this case may be quite different than the first, yet because the assessed level of control risk is the same for both cases, this suggests that the nature, timing, and extent of substantive testing would not differ between the two.⁹

The maximum assessed level of control risk does not have the same meaning between the two cases. In the first case, the assessed level of control risk is, as defined in SAS 47, a reflection of the auditor's beliefs regarding the risk of material error getting through the client's internal control structure. In the second case, however, the auditor's beliefs are not reflected at all. The assessed level of control risk is arbitrarily set for the purpose of planning the audit. It would seem, however, that a key factor in audit planning would be the auditor's actual expectations regarding material error, yet these expectations are not reflected in the control risk assessment in the second case.

To illustrate further, suppose that after obtaining an understanding of a client's internal control structure, the auditor believes that there is a low probability that a material error will not be prevented or detected on a timely basis by internal control policies and procedures, i.e., he believes control risk is low. The auditor's expectations regarding material error in the financial statements are developed during the course of obtaining the understanding and should be used as the basis for planning the audit.

The auditor can follow a number of alternative avenues for the collection of audit evidence. These may include performing extensive tests of controls and limited substantive tests; few, if any, formal tests of controls and expanded substantive tests; or any combination which the auditor believes will provide sufficient evidential matter to support an opinion on the financial statements. The choice among alternatives would be based in large part on the differential costs of the various avenues, but the auditor's beliefs regarding control risk should be used constructively regardless of which avenue is chosen. Consequently, if the auditor chooses not to perform tests of controls due solely to cost considerations, a control risk assessment at the maximum level incorrectly implies that he believes the risk of error is high simply because performing tests of controls would be inefficient. This reasoning is contrary to the very concept and definition of control risk.

In all fairness to the drafters of SAS 55, this criticism is really a joint criticism of the SAS 55 control risk assessment process AND the Audit Risk Model

⁸Although this option is stated in paragraph 29 of SAS 55, it seems likely that some tests of controls would have to be performed in order to obtain a sufficient understanding of a client's internal control structure.

⁹Although this issue is an empirical one, it seems likely that, at least in some circumstances, allowable detection risk and choice of audit procedures would vary between the two cases described in this scenario. This possibility is explicitly recognized in paragraph 3.5 of the audit guide for SAS 55 (AICPA, 1990). This situation may be due in part to a blurring of the distinction between inherent risk and control risk.

(ARM). The shortcomings of the ARM are well-documented [see, for example, Cushing and Loebbecke, 1983, and Kinney, 1989]. In particular, the ARM does not accommodate both the auditor's beliefs and an assessment of the sufficiency of evidence to support those beliefs. SAS 55 attempts to reconcile the two by prescribing a procedure for assessing control risk based on a sufficiency of evidence criterion, however in many cases (as illustrated above) this method will not adequately reflect the auditor's actual expectations and consequently, will, at least as described, ignore potentially valuable information. Ideally, a risk model should accommodate separate assessments of risk and evidence sufficiency [see Waller and Felix, 1984, for an example of the rudiments of such a model.] This concept has also been suggested by Loebbecke, Eining, and Willingham [1989] with respect to auditor's assessments of the likelihood of material management fraud. They state, for example; "[I]n addition to searching for information to support the assessment about each component, the auditor must make a judgment about the thoroughness and reliability of his/her procedures" [page 4].

Although professional standards do not explicitly "model" separate belief assessments and evidence sufficiency assessments, this basic concept was nevertheless reflected in the old standards,¹⁰ as illustrated below.

The first standard of reporting states: "The report shall state whether the financial statements are presented in accordance with generally accepted accounting principles." According to AU Section 312, "Audit Risk and Materiality in Conducting an Audit," paragraph 3:

The phrase 'present fairly in conformity with generally accepted accounting principles' implicitly indicates the auditor's *belief* that the financial statements taken as a whole are not materially misstated (emphasis added.)

Indeed, the opinion rendered by an auditor on a client's financial statements is a direct reflection of his beliefs regarding the risk of material error in the financial statements. Consequently, an auditor will issue an unqualified audit opinion only if he believes that the risk of undetected material error in the financial statements is sufficiently low. The risk of undetected material error in a client's financial statements at the conclusion of an audit is the familiar "Audit Risk" discussed in AU Section 312. However, an auditor's assessment of his beliefs regarding the risk of material error is an important consideration not only at the conclusion of an audit, but throughout the audit process. Clearly, the auditor's beliefs regarding the risk of material error is an important consideration in planning the audit as well. AU Section 312, paragraph 8, states:

The auditor should consider audit risk and materiality both in (a) planning the audit and designing auditing procedures and (b) evaluating whether the financial statements taken as a whole are presented fairly in conformity with generally accepted accounting principles.

¹⁰In the following analysis, we use AICPA Professional Standards, Volume 1 (June, 1987) to reflect pre-SAS 55 (old) standards.

At the individual account-balance level, this guidance suggests that if the auditor believes the risk of material error in a particular account is high, this belief should be reflected in his choice of audit procedures to perform with respect to that account. Indeed, AU Section 312, paragraph 19, makes this explicit:

The auditor needs to consider audit risk at the individual account-balance or class-of-transactions level because such consideration directly assists him in determining the scope of auditing procedures for the balance or class.

The decomposition of audit risk into three component risks (i.e., inherent risk, control risk, and detection risk) is an explicit reflection of the fact that the auditor's beliefs regarding the risk of material error are an important consideration throughout the audit process. Furthermore, these beliefs affect, and in turn are affected by, the auditing procedures performed at various stages in the audit.

For example, at the conclusion of an audit, an undetected material error in a client's financial statements indicates that (1) a material error occurred, (2) it was not detected by the client's internal control structure, and (3) it was not detected by the auditor. Consequently, the auditor's belief regarding the risk of undetected material error at the conclusion of the audit will depend on his beliefs regarding the likelihood of the occurrence of (1) through (3). These "component beliefs" are sequentially addressed at different stages in the audit process. Furthermore, because the auditor's beliefs are an integral part of the planning process, the auditor's beliefs regarding the risk of material error after, say, evaluating the client's internal control structure (i.e., after assessing inherent risk and control risk) affect the choice of audit procedures in the substantive testing stage of the audit which in turn affects the likelihood of (3).

What then is the role of audit evidence in the formation of the auditor's beliefs, that is, on his assessments of these component risks? Prior to SAS 55, the second and third standards of field work stated:

Second Standard: There is to be a proper study and evaluation of the existing internal control as a basis for reliance thereon and for the determination of the resultant extent of the tests to which auditing procedures are to be restricted.

Third Standard: Sufficient competent evidential matter is to be obtained through inspection, observation, inquiries, and confirmations to afford a reasonable basis for an opinion regarding the financial statements under examination.

Thus, although an unqualified opinion on a client's financial statements necessarily reflects the auditor's belief that audit risk is acceptably low, this belief alone is not enough to justify the opinion. The standards of field work require that the auditor collect sufficient competent evidential matter to support his opinion. Sufficient evidential matter may be obtained through any combination of tests of controls evidence and substantive testing evidence

that, in the auditor's professional judgment, meets this requirement. For example, AU Section 350, "Audit Sampling", paragraph 19, states:

The second standard of field work recognizes that the extent of substantive tests required to obtain sufficient evidential matter under the third standard should vary inversely with the auditor's reliance on internal accounting control. These standards taken together imply that the combination of the auditor's reliance on internal accounting control and his reliance on his substantive tests should provide a reasonable basis for his opinion, although the portion of reliance derived from the respective sources may vary.

Under the old standards, the sufficiency of evidence assessment is reflected in the degree of reliance placed on the respective sources of evidential matter. At the conclusion of the audit, then, the combination of the evidence collected should provide the auditor with the required basis for reliance on his beliefs regarding the risk of undetected error in the financial statements and in turn, on the opinion rendered. This concept of reliance is further linked explicitly to the auditor's component risk assessments. For example, AU Section 312, paragraph 24, states:

The auditor might make separate or combined assessments of inherent risk and control risk. If he considers inherent risk or control risk, separately or in combination, to be less than the maximum, he should have an appropriate basis for any *reliance* he places on his assessments (emphasis added).

This guidance implies that, although the auditor may *believe* control risk is low, in order to *rely* on his low assessment, he must have sufficient evidential matter as a basis for that reliance, and consequently, as a basis for restricting substantive tests. It does NOT imply, however, that the auditor's beliefs about control risk are *determined* only by evidential matter obtained from tests of controls. We argue that the auditor forms expectations (i.e., beliefs) about the existence of material error in the financial statements *prior* to testing. Indeed, it is these beliefs that form the basis for planning the audit, as noted above. The role of evidential matter, then, is to provide a basis for *reliance* on those beliefs. The collection of evidential matter which supports the auditor's beliefs contributes to the basis for reliance, while evidential matter which contradicts the auditor's beliefs reduces the basis for reliance. In the event of contradictory evidence, the auditor may reconsider whether his initial assessments regarding the risk of material error are still an accurate reflection of his beliefs and, in this respect, evidential matter may cause beliefs to be revised. However, it seems unreasonable to assume that an auditor either has no beliefs until competent evidential matter is collected, or that his beliefs are irrelevant unless sufficient evidential matter is collected to provide a basis for reliance thereon.

Unfortunately, the concept of reliance was eliminated from the professional standards with the issuance of SAS 55 because of perceived confusion over its meaning [Temkin and Winters, 1988] and was replaced with guidance that combines risk assessments with evidence sufficiency assessments in ways

that are sometimes inconsistent (i.e., equivalent control risk assessments may have different meanings in different circumstances.). The old standards emphasized the role of the auditor's beliefs in planning the audit and moving forward through the various stages of evidence collection in order to collect sufficient evidential matter to provide a basis for reliance on those beliefs. SAS 55, on the other hand, seems to focus on the evidence collected as a means of working backwards to "set" beliefs about control risk. Implicitly, it also eliminates the requirement to assess the sufficiency of the evidence collected since control risk is "assessed" at that level that is supported by evidential matter (regardless of the auditor's true beliefs). This new focus represents a major change in the basic concepts underlying the professional standards.

The procedure for assessing control risk suggested by the old standards does not differ from the SAS 55 procedure in terms of the sequence of events (i.e., obtaining an understanding of internal control structure elements, performing tests of controls, etc.). Under our position, the old standards suggest that the control risk assessment should be based on the auditor's beliefs and a separate assessment made regarding the sufficiency of the evidence collected to rely on those beliefs. The next section of the paper describes the use of an "evidence-based" control risk assessment procedure and a "belief-based" procedure (corresponding to our interpretation of the SAS 55 procedure and the procedure suggested by the old standards) in an experimental task setting.

3. The Experiment

This experiment represents a first attempt at examining the effects that procedural differences in assessing control risk might have on auditors' consensus. Due to the exploratory nature of this experiment and the lack of a theory which might predict the degree of agreement in fact for each procedure, we make no predictions with respect to consensus. However, the conceptual differences between the two procedures do suggest different mean responses between the groups following each procedure at various decision points. These are discussed shortly.

The subject group for this experiment consists of 64 practicing auditors from "Big Six" accounting firms. This group includes 33 seniors, 23 managers, two new partners, and four experienced staff.¹¹ We intentionally used subjects who were in at least their third busy season. It was believed that these subjects would be experienced enough to be comfortable with control evaluation and its role in the audit process. Subjects have an average of 65 months of auditing experience and have worked on an average of 24 audits in which they were directly involved in internal control work. The average total number of audits worked on is 41.

Subjects are divided into two main groups and, according to group, are provided with specific instructions for assessing control risk. Risk assessments (for both groups) are based on a qualitative scale ranging from "lowest" to "highest".

¹¹Two subjects did not indicate their experience level on their questionnaires.

One group, hereafter referred to as the “evidence-based” group, are instructed to assess control risk at that level that is sufficiently supported by the evidence presented in the questionnaire. Consistent with the SAS 55 procedure, they are told that a control risk assessment below the highest level must be supported by sufficient evidence.

The second group, hereafter referred to as the “belief-based” group, are instructed to assess control risk at that level that reflects their beliefs regarding the risk that a material error will not be prevented or detected by the client’s internal control structure elements. They are further told that their control risk assessment should reflect their beliefs regardless of whether or not they feel that sufficient evidence exists to support those beliefs.¹²

After reading their specific instructions, subjects are provided with information regarding a hypothetical client’s internal control structure. This includes a description of the company and its operations, accounting system, personnel, and results of specific tests of controls on the previous year’s audit. They are told that their focus is on the valuation assertion for gross accounts receivable. Half of the subjects receive a description which indicates that the client’s internal control structure with respect to this assertion is relatively strong, while the other half receive a description which indicates significant weaknesses in the client’s internal control structure.¹³ In addition, half of the subjects are told that, due to cost considerations, tests of controls will not be performed on this year’s audit. The other half are told that the same tests of controls performed last year will be performed on this year’s audit.

This design resulted in eight different combinations of control risk assessment procedures, strength of internal controls, and planned tests of controls (as illustrated in Figure 1).

After reading the description of the client’s internal control structure, subjects in the “NO TESTS OF CONTROLS” group are asked to assess control risk (for the valuation assertion of gross accounts receivable) according to the instructions provided in their questionnaire. Subjects in the “TESTS OF CONTROLS” group are asked to make a preliminary assessment of control risk according to their instructions. Following this preliminary assessment, subjects in this group are provided with the results of tests of controls and are asked to revise their control risk assessment to reflect this additional information, if necessary.

All subjects are then asked to make an assessment of the sufficiency of the evidence provided to support their control risk assessment. Finally, all subjects are provided with a description of planned substantive tests and are

¹²In the introductory section of the questionnaire, subjects are asked to follow the specific instructions for assessing control risk contained in their questionnaire regardless of how that procedure may differ from that used by themselves or their firm in practice. During the pre-testing phase of the experiment, however, there was considerable confusion among the belief-based subjects as to whether or not their knowledge of SAS 55 should influence their assessments. For this reason, the instructions for the belief-based group state that their risk assessments may be contrary to the SAS 55 requirement to consider evidence sufficiency in assessing control risk.

¹³Pre-testing of these descriptions was somewhat limited. Consequently, elements which were intended to reflect significant strengths or weaknesses may not necessarily be viewed as such by subjects.

Figure 1
Experiment Design

PANEL A : Evidence-Based Procedure (N = 35)

	<u>INTERNAL CONTROL STRUCTURE</u>	
	STRONG	WEAK
TESTS OF CONTROLS	(a) n = 8	(b) n = 9
NO TESTS OF CONTROLS	(c) n = 9	(d) n = 9

PANEL B: Belief-Based Procedure (N = 29)

	<u>INTERNAL CONTROL STRUCTURE</u>	
	STRONG	WEAK
TESTS OF CONTROLS	(e) n = 7	(f) n = 8
NO TESTS OF CONTROLS	(g) n = 7	(h) n = 7

asked to recommend a sample size for positive confirmations. In addition, they are asked whether or not they would consider sending confirmations prior to year-end appropriate.

Discussion of Possible Results

The first decision point at which responses can be compared is the preliminary control risk assessment made by those subjects in cells a, b, e, and f. Since subjects in the evidence-based group (cells a and b) should base their assessment on that level that is sufficiently supported by the evidence presented up to that point, their control risk assessments should be at or near the highest level. At this point, tests of controls have not yet been performed and consequently, there should be little justification to reduce the control risk assessment from the highest level for either the "STRONG" or the "WEAK" internal control structure scenarios.

The belief-based group, however, should have significantly different preliminary control risk assessments between cells e and f, corresponding to the "STRONG" and "WEAK" internal control structure scenarios. Since their assessments should be based on their beliefs, regardless of the degree of evidence to support those beliefs, the risk assessments for the "STRONG" scenario (cell e) should be significantly lower than the risk assessments for the "WEAK" scenario (cell f). The expected results for the preliminary control risk assessments are summarized in Figure 2.

The second point of comparison is the control risk assessment for subjects in the "NO TESTS OF CONTROLS" group and revised control risk assessment for subjects in the "TESTS OF CONTROLS" group. To begin, risk assessments for the "NO TESTS OF CONTROLS" group using the evidence-based procedure should exhibit the same characteristics as described above

Figure 2
Preliminary Control Risk Assessments: Expected Results

PANEL A : Evidence-Based Procedure

	<u>INTERNAL CONTROL STRUCTURE</u>	
	STRONG	WEAK
TESTS OF CONTROLS	High	High
NO TESTS OF CONTROLS	n/a	n/a

PANEL B: Belief-Based Procedure

	<u>INTERNAL CONTROL STRUCTURE</u>	
	STRONG	WEAK
TESTS OF CONTROLS	Low	High
NO TESTS OF CONTROLS	n/a	n/a

for the evidence-based preliminary control risk assessments. That is, since no tests of controls are being performed, there should be little justification for a reduction in the control risk assessment for either the “STRONG” or the “WEAK” internal control structure scenarios. Consequently, the control risk assessments for both cells c and d should be at or near the highest level.

The risk assessments for the “NO TESTS OF CONTROLS” group using the belief-based procedure should similarly correspond to the belief-based preliminary risk assessments described above. That is, even though tests of controls are not to be performed, the belief-based assessments for the “STRONG” internal control structure scenario (cell g) should be significantly lower than the risk assessments for the “WEAK” scenario (cell h).

In the cases corresponding to “TESTS OF CONTROLS” (cells a, b, e, and f), we expect to see somewhat different results. Risk assessments for the evidence-based group should now differ between the “STRONG” and “WEAK” internal control structure scenarios. Since tests of controls have been performed, the risk assessments for the evidence-based group in the “STRONG” internal control structure scenario should reflect the fact that evidence exists to justify a reduction in the control risk assessment from the highest level (cell a). However, the results of tests of controls presented in the questionnaire for the “WEAK” internal control structure scenario indicate that two of the four controls tested are not operating effectively. Consequently, we shouldn’t expect to see a significant reduction in the control risk assessment. That is, the evidence presented does little to justify a reduction in the assessment from the highest level for subjects in cell b.

The risk assessments for the “TESTS OF CONTROLS” group using the belief-based procedure (cells e and f) should exhibit little change from the preliminary risk assessments made by these subjects. The reason is that results of tests of controls presented in the questionnaire reveal few “surprises.” Tests of controls results for the “STRONG” internal control structure scenario are relatively strong and results are weak for the “WEAK” internal

control structure scenario. In other words, tests of controls results should do little to change these subjects' preliminary beliefs.

The expected results for each cell for subjects' control risk assessments are summarized in Figure 3.

Figure 3
Control Risk Assessments: Expected Results

PANEL A : Evidence-Based Procedure

	<u>INTERNAL CONTROL STRUCTURE</u>	
	STRONG	WEAK
TESTS OF CONTROLS	Low	High
NO TESTS OF CONTROLS	High	High

PANEL B: Belief-Based Procedure

	<u>INTERNAL CONTROL STRUCTURE</u>	
	STRONG	WEAK
TESTS OF CONTROLS	Low	High
NO TESTS OF CONTROLS	Low	High

All subjects are asked to make an assessment of the sufficiency of the evidence presented to support their control risk assessments. These assessments are made on a qualitative scale ranging from "COMPLETELY INSUFFICIENT" to "COMPLETELY SUFFICIENT". Since subjects in the evidence-based group are asked to assess control risk at that level that is sufficiently supported by the evidence presented, their evidence sufficiency assessments should all be at or very near the "COMPLETELY SUFFICIENT" level. The assessments made by the belief-based group, however, should vary depending upon whether or not tests of controls have been performed. For the "NO TESTS OF CONTROLS" group, we expect the evidence sufficiency assessment to be low, at or near the "COMPLETELY INSUFFICIENT" level, at least for the "STRONG" internal control structure scenario. It is not clear, *ex-ante*, what the assessment should be for the "WEAK" internal control structure scenario; i.e., how sufficient must evidence be when controls are NOT to be relied on? For this reason, we make no prediction for the "WEAK" scenario. Sufficiency assessments for the belief-based group in the "TESTS OF CONTROLS" case should be significantly higher than for the "NO TESTS OF CONTROLS" case in the "STRONG" internal control structure scenario. Again, no prediction is made for the "WEAK" case.

The final point of comparison between groups is the sample size recommendation for positive confirmations. Comparison of responses at this point should provide insight into whether using different control risk assessment procedures results in different decisions with respect to substantive testing. Since the scenarios in cells a and e, b and f, c and g, and d and h are pair-wise identical, we should not see any significant differences in recommended sample sizes between these pairs of cells. We expect the sample sizes in cells

a and e to be the lowest. Furthermore, if auditors choose higher sample sizes in cases where an evaluation of a client's internal control structure reveals significant weaknesses, we might expect the sample sizes in cells c and g to be somewhat lower than those recommended for cells b and f, and d and h. In the next section, subjects' responses are evaluated and the results are presented. In addition, some implications of these results are discussed.

4. Results

In this section, we present results of an experiment described in the previous section of this paper which is intended as a first step in the investigation of the effects of procedural differences on auditors' control risk assessments. While this first step is an admittedly crude one, the results presented here may nevertheless provide some insight into the control risk assessment process and suggest possible avenues for future, more refined experiments in this area of auditor judgment. Also, the results presented here are based on a limited number of responses and consequently, the number of responses for each of the cells shown in Figure 1 is small. For this reason, the usefulness of a statistical analysis of the data is limited. We therefore confine our analysis primarily to a qualitative comparison of responses rather than performing extensive statistical tests.

In the analysis that follows, we use the following abbreviations to denote the risk assessment procedure, strength of internal controls, and planned tests of controls:

Evidence-Based Procedure - EB
Belief-Based Procedure - BB
Strong Internal Controls - STR
Weak Internal Controls - WK
Tests of Controls - T
No Tests of Controls - NT

The responses for participants who used, for example, the belief-based risk assessment procedure and whose questionnaires contained the strong internal control scenario with no tests of controls will be denoted BB-STR-NT. This corresponds to cell g in Figure 1.

Subjects' control risk assessments are based on a qualitative scale ranging from "Lowest" to "Highest". In order to facilitate comparison of risk assessments across groups, we convert these responses to a numerical value by letting an assessment of "Lowest" equal "1" and "Highest" equal "5". (Thus a control risk assessment of "Medium" would be given a value of "3".) Similarly, subjects' assessments of evidence sufficiency are based on a qualitative scale ranging from "Completely Insufficient" to "Completely Sufficient". These are converted to a numerical value with "1" corresponding to an assessment of "Completely Insufficient" and "5" corresponding to an assessment of "Completely Sufficient".

Preliminary Control Risk Assessments

Subjects who completed questionnaires corresponding to cells a, b, e, and f in Figure 1 were asked to make a preliminary assessment of control risk

prior to reviewing the results of tests of controls. Table 1 presents a summary of the responses for these groups.

Table 1
Preliminary Control Risk Assessments

Group	Cell	Number of Responses	High	Low	Mean	St. Dev
EB-STR-T	a	8	5.00	2.00	3.07	1.371
EB-WK-T	b	9	5.00	3.00	4.22	0.813
BB-STR-T	e	7	4.00	1.00	2.42	0.975
BB-WK-T	f	8	4.00	2.00	3.03	0.750

As predicted (see Figure 2), the mean response of 3.07 for cell a is higher than the mean response of 2.42 for cell e (although a one-sided t-test of the difference was not significant; p-value = .15). This makes sense since the responses for the evidence-based group should reflect the level of control risk that is supported by evidence and at this point in the questionnaire, there is little evidential support for a risk assessment below the highest level. However, the mean risk assessment for the evidence-based group IS significantly lower than the maximum level of “5.00” (p-value = .0027). This may suggest that subjects viewed some of the information given in the description of the client’s operations as providing evidence to support a lower risk assessment. Alternatively, it may indicate that subjects let their beliefs influence their risk assessments. Since internal controls are relatively strong, we expected the belief-based group’s responses to reflect a belief that control risk is below the highest level. A one-sided t-test of the difference between the mean response of 2.42 and the maximum level was significant (p-value = .0002).

A comparison of the responses between cells b and f is somewhat more disturbing. We expected the mean responses for each to be high given the weaknesses described in the questionnaire, however the mean response of 3.03 for cell f is significantly lower than both the maximum level (p-value = .00) and the mean response of 4.22 for cell b (p-value = .0072). One possible explanation for this result is that our description of weaknesses was not salient enough to generate an overall impression of a weak internal control structure. In addition, the mean response of 4.22 for cell b is significantly less than the maximum level (p-value = .01), contrary to our expectation. The difference between the means for cells e and f is marginally significant (p-value = .10). Also, the difference between mean responses for cells a and b is marginally significant (p-value = .063).

We use the standard deviation of responses to measure consensus for each group. For the strong internal control scenario, the belief-based group’s responses exhibit a higher degree of consensus (as evidenced by a lower standard deviation) than the responses for the evidence-based group. Likewise, for the weak scenario, the belief-based group’s responses exhibit a higher degree of consensus. F-tests of the difference between the standard deviations were not significant.

Control Risk Assessments

Table 2 provides a summary of each group's control risk assessments. For the groups represented by cells a, b, e and f, these assessments represent a revision of their preliminary control risk assessments (described above) after reviewing results for tests of controls. For the remaining groups (cells c, d, g, and h), the control risk assessments are made after subjects are informed that tests of controls are not going to be performed.

Table 2
Control Risk Assessments

Group	Cell	Number of Responses	High	Low	Mean	St. Dev
EB-STR-T	a	8	4.00	1.90	2.81	0.848
EB-WK-T	b	9	5.00	2.00	3.94	1.189
EB-STR-NT	c	9	5.00	2.00	3.47	1.030
EB-WK-NT	d	9	5.00	2.00	3.95	0.947
BB-STR-T	e	7	3.45	1.25	2.43	0.885
BB-WK-T	f	8	5.00	2.00	3.68	0.946
BB-STR-NT	g	7	4.00	1.75	2.69	0.982
BB-WK-NT	h	7	5.00	3.00	4.06	0.597

Tests of Controls Groups

For the groups receiving tests of controls results (cells a, b, e, and f) we expected the responses for each scenario (strong vs. weak internal controls) to be the same across risk assessment procedures (see Figure 3). The mean response of 2.81 for cell a in Table 2 is lower than the mean response of 3.07 for the same group's preliminary risk assessments (cell a in Table 1). This is expected since after receiving the results of tests of controls, subjects in this group had a basis for a reduction in their control risk assessment. The mean response of 2.81 is significantly lower than the maximum (p -value = .00). The mean response for the belief-based group for the strong internal control scenario remained about the same. The mean preliminary assessment was 2.42 (cell e in Table 1) and the mean revised control risk is 2.43 (cell e in Table 2). This makes sense since the evidence presented for tests of controls was consistent with a strong internal control structure. Although the evidence-based group's mean response of 2.81 is higher than the belief-based group's mean response of 2.43, this difference is not significant (p -value = .41).

The mean risk assessment for the evidence-based group in the weak scenario (cell b) decreased after subjects reviewed tests of controls evidence, from 4.22 (Table 1) to 3.94 (Table 2). For this group, we expected the preliminary assessment to be high and remain high after tests of controls evidence was presented, since the evidence presented indicated that some controls were not operating effectively. However, since at least one control was operating effectively, this slight reduction in control risk is not surprising. For the belief-based group, the mean control risk assessment increased

3.03 (cell f in Table 1) to 3.68 (cell f in Table 2). This upward revision in risk assessments may provide an indication that if internal controls weaknesses were not made salient enough in our description of the client's operations, subjects would recognize that internal controls were somewhat weak after reviewing tests of controls evidence. However, the mean response of 3.68 is still significantly lower than the maximum (p -value = .0027). The mean response of 3.94 for the evidence-based group is not significantly different from the mean response of 3.68 for the belief-based group (p -value = .61), as expected.

In addition, the mean response of 2.81 for cell a is significantly lower than the mean response of 3.94 for cell b (p -value = .019). Likewise, the mean response of 2.43 for cell e is significantly lower than the mean response of 3.68 for cell f (p -value = .011). In general, the results for the "Tests of Controls" groups are consistent with our predictions. The mean responses for cells a and e are about the same and are lower than the mean responses for cells b and f, which are also approximately equal.

Finally, a comparison of the standard deviations for cells a versus e and b versus f indicates that consensus is higher for the evidence-based group in the strong internal control scenario and higher for the belief-based group in the weak internal control scenario, although F -tests indicate that none of these differences are significant.

No Tests of Controls Groups

For the strong scenario case, we expected the mean responses to differ between the evidence-based and belief-based groups (see Figure 3). As expected, the mean response of 3.47 for the evidence-based group (cell c) is higher than the mean response of 2.69 for the belief-based group (cell g), although this difference is only marginally significant (p -value = .073). We expected the mean response for the belief-based group to be fairly low given the description of a relatively strong internal control structure and, as expected, the mean response of 2.69 is significantly lower than the maximum (p -value = .0004). However, the mean response of 3.47 for the evidence-based group is somewhat surprising (it is significantly lower than the maximum; p -value = .001). This may suggest that either: 1) subjects viewed some of the information given in the description of the client's operations as tests of controls evidence, 2) subjects were not able to assess control risk based solely on evidence sufficiency without being influenced by their beliefs, or 3) subjects did not understand the instructions provided for making their control risk assessments.

We expected the mean responses for the weak scenario for both the evidence-based and belief-based groups to be high. The mean response for the evidence-based group is 3.95 (cell d) and the mean response for the belief-based group is 4.06 (cell h). The difference between these means is not significant (p -value = .79). Again, the mean response for the evidence-based group is lower than expected. Since both groups' mean responses were lower than the highest level, this may again suggest that we did not adequately emphasize weaknesses in our description of the client's operations. Notwithstanding this, the mean response for the evidence-based group is surprisingly low consid-

ering the lack of evidence provided, and is significantly lower than the maximum (p-value = .0052). The mean response of 3.47 for cell c is not significantly different from the mean response of 3.95 for cell d (p-value = .32), as expected (although both are significantly less than the maximum, contrary to our expectations). The mean response of 2.69 for cell g is significantly lower than the mean response of 4.06 for cell h (p-value = .0058), as expected.

The standard deviations presented in Table 2 for cells c, d, g, and h indicate that consensus is higher for the belief-based group for both the strong and weak internal control scenarios, although F-tests of the differences are not significant.

Evidence-Sufficiency Assessments

Table 3 provides a summary of responses for each group's evidence-sufficiency assessments.

TABLE 3
Evidence-Sufficiency Assessments

Group	Cell	Number of Responses	High	Low	Mean	St. Dev
EB-STR-T	a	8	5.00	2.90	3.99	0.776
EB-WK-T	b	9	5.00	1.00	3.29	1.510
EB-STR-NT	c	9	5.00	1.00	3.39	1.318
EB-WK-NT	d	9	4.85	1.90	3.40	0.881
BB-STR-T	e	7	5.00	2.95	4.04	0.835
BB-WK-T	f	8	4.00	2.15	3.30	0.792
BB-STR-NT	g	7	4.50	2.40	3.27	0.718
BB-STR-NT	h	7	4.00	2.00	3.43	0.787

In the instructions for the evidence-based risk assessment procedure, subjects were told that their risk assessments should correspond to that level that is completely supported by evidence. Consequently, we expected *ex-ante* that all of the sufficiency assessments for the evidence-based groups would be at or near the highest level. However, as Table 3 indicates, the mean evidence-sufficiency assessments for these groups (cells a, b, c, and d) are well below the maximum level. One may argue, however, that when control risk is assessed at the highest level, implying that controls are not to be relied upon, an evidence-sufficiency assessment is not necessary. In other words, must we have sufficient evidential matter to support a decision not to rely on controls? For the evidence-based groups which were not given tests of controls results (cells c and d), we expected control risk assessments to be at or near the highest level. To the extent, however, that the mean responses were lower than the highest level (mean responses were 3.47 for cell c and 3.95 for cell d), we should expect to see high evidence-sufficiency assessments since a reduction in control risk from the highest level should be sufficiently

supported by evidence. However, the mean evidence-sufficiency assessments corresponding to cells c and d are 3.39 and 3.40, respectively. Both are significantly lower than the maximum (p -values = .0032 and .00 for cells c and d, respectively).

For the evidence-based groups who received tests of controls evidence such that we might expect a lower-than- maximum control risk assessment (cells a and b) based on this evidence, the mean evidence-sufficiency assessments were also lower than the maximum (3.99 for cell a and 3.29 for cell b). T-tests of the differences between these cells and the maximum level resulted in p -values of .004 and .0048 for cells a and b, respectively. These results suggest that the risk assessments made by the evidence-based groups do not reflect the level that is sufficiently supported by evidential matter. Alternatively, it is possible that subjects did not understand the instructions given for assessing control risk or that the procedure itself, no matter how thoroughly explained, is confusing.

We conducted t-tests of the difference in mean responses between cells a and e, cells b and f, cells c and g, and cells d and h, all of which yielded insignificant results (the p -values were .92, .99, .41 and .53, respectively). In addition, a comparison of standard deviations between the same sets of cells indicate that in all but one case, consensus is higher for the belief-based groups. F-tests of the differences in standard deviations were marginally significant (at level .10) for cells b vs f and cells c vs g.

Sample Size Recommendations

After making their control risk assessments and evidence-sufficiency assessments, subjects in all groups were asked to recommend a sample size for positive confirmations. A summary of these responses is provided in Table 4 below.

Table 4
Sample Size Recommendations

Group	Cell	Number of Responses	High	Low	Mean	St. Dev
EB-STR-T	a	8	70	20	35	17.32
EB-WK-T	b	8	125	25	63	35.70
EB-STR-NT	c	9	70	15	38	17.47
EB-WK-NT	d	9	75	30	51	15.70
BB-STR-T	e	7	100	20	57	27.70
BB-WK-T	f	8	120	25	48	30.90
BB-STR-NT	g	7	100	20	56	28.60
BB-WK-NT	h	7	60	16	40	15.28

We included the sample size recommendation task in the experiment in an attempt to gain some insight into whether or not the use of alternative control risk assessment procedures has an effect on auditors' subsequent deci-

sions. The results in Table 4 indicate that not only are there no clear systematic differences between the evidence-based and belief-based groups, but there also appears to be no clear differences between strong and weak internal control cases and tests of controls versus no tests of controls cases. Responses for this task were highly variable and, as a result, do not provide a great deal of insight.

These results are consistent with prior studies which found subjects' planning decisions subsequent to internal control judgments highly variable [see, for example, Gaumnitz, Nunamaker, Surdick, and Thomas, 1982, and Tabor, 1983]. This variability may be due to different philosophies between audit firms with respect to substantive test planning. Consequently, these results are not surprising. However, since one might argue that differences in control risk assessment procedures would have the greatest impact on the audit process if they affected auditors' subsequent decisions, this is an area that warrants further investigation. A more refined research approach may provide the insight that our design failed to provide with respect to sample size decisions for substantive tests.

Timing of Tests

In addition to providing a sample size recommendation for positive confirmations, subjects were also asked whether they would consider sending confirmations prior to year-end appropriate. The results are presented in Table 5 below.

Table 5
Timing of Tests

Group	Cell	Number of Responses	Prior to Year-End Appropriate?	
			Yes	No
EB-STR-T	a	8	5	3
EB-WK-T	b	9	3	6
EB-STR-NT	c	9	3	6
EB-WK-NT	d	9	0	9
BB-STR-T	e	7	6	1
BB-WK-T	f	8	1	7
BB-STR-NT	g	7	2	5
BB-WK-NT	h	7	3	4

These results do not indicate any systematic differences between the evidence-based and belief-based groups with respect to the timing decision. For the most part, subjects' responses indicated that sending confirmations prior to year-end is appropriate when internal controls are strong and tests of controls have been performed. Thus, the control risk assessment procedure does not appear to affect auditors' timing decisions.

5. Conclusion

In 1988, Statement on Auditing Standards Number 55 was issued by the AICPA as a replacement standard for AU Section 320 in an attempt to improve auditors' internal control evaluations and sharpen auditors' control risk assessments. In this paper, we described what we view as significant differences in the basic concepts underlying the old and new standards.

In particular, the old standards suggested a separation of 1) a control risk assessment based on the auditor's beliefs and 2) an assessment of the sufficiency of evidence to support those beliefs. SAS 55, on the other hand, suggests combining these two assessments into one control risk assessment such that the assessed level of control risk is that level that is sufficiently supported by evidential matter.

We presented results for an experiment in which subjects were asked to assess control risk following one of two risk assessment procedures based on the two approaches described above. While the number of responses evaluated is relatively small, the results provide some interesting insights into the control risk assessment process. While there was no clear "winner" in terms of consensus for the various judgments made by subjects, responses nevertheless seem to indicate a "procedural" effect.

In particular, assessments made with respect to evidence sufficiency for subjects following the "evidence-based" control risk procedure were much lower than expected. Since this group's risk assessments should have corresponded to that level that subjects felt was sufficiently supported by evidence, we expected evidence-sufficiency assessments for this group to be high. These results may have been due to weaknesses in the questionnaire or, alternatively, may suggest that the approach of combining risk and evidence-sufficiency assessments is confusing.

This paper was intended as a rough first step in the investigation of the effects of using alternative procedures to assess control risk. Future experiments would likely add valuable insight into these effects through refinements in subject training, case descriptions, and experimental design with respect to substantive testing decisions. Other factors which may have significant impact on the control risk assessment process and subsequent audit decisions which were not addressed in this paper include making separate versus combined assessments of inherent risk and control risk [Waller, 1990] and decomposing control risk assessments into separate evaluations of internal control design effectiveness and operating effectiveness [Morton and Felix, 1990].

Results presented in this paper are admittedly preliminary in nature and consequently, no general conclusions can be drawn. However, it is clear that there is no dearth of opportunities for expanding our knowledge and insight into this most intriguing area of auditor judgment.

References

- American Institute of Certified Public Accountants, *Statement on Auditing Standards*, No. 55 (New York, 1988).
- _____, *AICPA Professional Standards*, Volume 1 (Commerce Clearing House, Inc., 1987).
- _____, *Audit Guide for Consideration of the Internal Control Structure in a Financial Statement Audit* (New York, 1990).

- Ashton, A. H., "Does Consensus Imply Accuracy in Accounting Studies of Decision Making?" *The Accounting Review* (April 1985), pp. 173-185.
- Ashton, R. H., *Research in Audit Decision Making: Rationale, Evidence, and Implications*, Research Monograph Number 6, The Canadian Certified General Accountants' Research Foundation (1983).
- Cushing, B. E. and J. K. Loebbecke, "Analytical Approaches to Audit Risk: A Survey and Analysis," *Auditing: A Journal of Practice and Theory* (Fall, 1983), pp. 23-41.
- Einhorn, H. J., "Expert Judgment: Some Necessary Conditions and an Example," *Journal of Applied Psychology* (October, 1974), pp. 562-571.
- Gaumnitz, B. R., T. R. Nunamaker, J. J. Surdick, and M. F. Thomas, "Auditor Consensus in Internal Control Evaluation and Audit Program Planning," *Journal of Accounting Research* (Autumn, 1982), pp. 745-755.
- Joyce, E. J., and R. Libby, "Behavioral Studies of Audit Decision Making," *Journal of Accounting Literature* (1982), pp. 103-123.
- Kinney, W. R., Jr., "Achieved Audit Risk and the Audit Outcome Space," *Auditing: A Journal of Practice and Theory* (Supplement, 1989).
- Loebbecke, J. K., M. M. Eining, and J. J. Willingham, "Auditors' Experience with Material Irregularities: Frequency, Nature, and Detectability," *Auditing: A Journal of Practice and Theory* (Fall, 1989), pp. 1-28.
- Morton, J. E., and W. L. Felix, Jr., "A Critique of Statement on Auditing Standards No. 55," *Accounting Horizons* (Forthcoming, 1990).
- Tabor, R., "Internal Control Evaluations and Audit Program Revisions: Some Additional Evidence," *Journal of Accounting Research* (Spring, 1983), pp. 348-354.
- Temkin, R. H., and A. J. Winters, "SAS No. 55: The Auditor's New Responsibility for Internal Control," *Journal of Accountancy* (May, 1988), pp. 86-98.
- Waller, W. S., "Towards a Data-Based Model of Auditors' Risk Assessment," presented at the *USC Audit Judgment Symposium* (University of Southern California, 1990).
- _____, and W. L. Felix, Jr., "Cognition and the Auditor's Opinion Formulation Process: A Schematic Model of Interactions between Memory and Current Audit Evidence," in S. Moriarity and E. Joyce (Eds.), *Decision Making and Accounting Research: Current Research* (University of Oklahoma, 1984), pp. 27-48.