1994

Auditing Symposium XII: Proceedings of the 1994 Deloitte & Touche/University of Kansas Symposium on Auditing Problems

University of Kansas, School of Business

Rajendra P. Srivastava

Auditing Symposium XII

Proceedings of the 1994
Deloitte & Touche/University of Kansas Symposium on
Auditing Problems

Edited by
Rajendra P. Srivastava

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Preface

The 1994 symposium was the 12th in the series of biennial auditing symposia held at the University of Kansas. It gives me great pleasure to acknowledge the continued financial and moral support of Deloitte & Touche for the University of Kansas Symposium on Auditing Problems. In particular, I would like to thank Ed Kangas, Chief Operating Officer of Deloitte & Touche International, David Hunerberg, Managing Partner of the Kansas City Office, and Howard Cohen, Partner in the Kansas City Office, for their enthusiasm and support.

Since I was on a one-year leave of absence from the University of Kansas during the 1993-1994 academic year to teach at the Institute for International Business Studies (IIBS) at Pordenone, Italy, taking care of the details for the symposium long-distance was a bit challenging. Special thanks to Linda Taylor, Division of Accounting and Information Systems, for her painstaking efforts in keeping the planning process smooth and free of problems. Also, I would like to thank my colleagues and Ph. D. students in accounting and information systems for their assistance and support. In particular, I would like to acknowledge the help of, amongst the faculty, Bruce Bublitz, Joe Coate, Mike Ettredge, and David Plumlee, and amongst the Ph. D. students, Peter Gillett, Keith Harrison, and Margaret Reed. Special thanks are also due to Val Renault and Jun Zhang for their editorial assistance.

Topics relevant to both academics and practitioners and the individuals who served as presenters and discussants were selected in consultations with faculty members at the University of Kansas, at other universities and with professionals in auditing practice. The 1994 Symposium was unique in one sense that Emeritus Professor Howard Stettler, the "Father of the Symposium," presented the first paper on "Accounting and Auditing History: Major Developments in England and the United States from Ancient Roots through the Mid-Twentieth Century." The symposium concluded with the paper "Evidence on Key Factors Considered in the Client Acceptance Decision Process." Maintaining the symposium tradition, we selected a practitioner to be the discussant for a paper by an academician and vice versa. All papers, except the keynote speech by A. A. Sommer, were distributed in advance and were formally critiqued by discussants at the symposium. Each paper was allocated about 90 minutes: 20 minutes for the presenter to summarize the results, 20 minutes for the discussant's remarks, and about 50 minutes for open discussion with the participants. As expected, the open discussion resulted in lively debate by the distinguished participants on many of the major issues confronting the profession. Each discussant's remarks are published in this proceedings following the corresponding paper. However, for the paper "Evidence on Key Factors Considered in the Client Acceptance Decision Process," I am sorry to report that written remarks by the discussant, Mr. Seymore Jones, are not available for publication because of health reasons. In fact, as I remember it, his remarks and his vibrant personality made this last session very exciting. I wish we had tape recorded his remarks for the proceedings.

About fifty-five invited participants were present each day of the two-day symposium. A roster of the participants is given before this preface. Also, a number of observers, such as doctoral students, faculty members from accounting and other disciplines, and practitioners in the area, attended parts of the symposium. If you are interested in attending the next symposium in 1996 please write to me indicating your interest.

Proceedings are shipped only on a prepaid basis. The 1994 symposium proceedings are priced at $20.00 each. The prepaid price covers mailing costs with the exception of orders outside of the United States and Canada, in which case an additional $3.00 for each copy should be included for surface transportation. For the last five symposia, we are listing below the papers included in each of the proceedings, the authors, and the prepaid price of each volume for the benefit of the users.

The proceedings of each of the symposia except the first one are still in print and may be purchased by sending your request along with a check of appropriate amount payable to The University of Kansas to:

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Rajendra P. Srivastava
Professor and Deloitte & Touche Faculty Fellow

Auditing Symposium VII (1984) $8.00

1. The Origins and Development of Materiality as an Auditing Concept
   David C. Selley
2. Auditor Reviews of Changing Prices Disclosures
   K. Fred Skousen, and W. Steve Albrecht
3. The Case for the Unstructured Audit Approach
   Jerry D. Sullivan
4. The Case for the Structured Audit
   John Mullarkey
5. An Analysis of the Audit Framework Focusing on Inherent Risk and the Role of Statistical Sampling in Compliance Testing
   Donald A. Leslie
6. Current Developments in U.K. Auditing Research
   David R. Gwilliam
7. Let's Change GAAS!!!???*&#@
   Robert Mednick, and Alan J. Winters
8. Self-Regulation: How It Works
   R. K. Mautz

Auditing Symposium VIII (1986) $10.00

1. Historical Perspective-Legal Liability
   Paul J. Ostling
2. Assertion Based Audit Approach
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3. Product Differentiation in Auditing
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5. The Impact of Emerging Information Technology on Audit Evidence
   Gary L. Holstrum, Theodore J. Mock, and Robert N. West
6. Is the Second Standard of Fieldwork Necessary?
   Thomas P. Bintinger
7. Interim Report on the Development of an Expert System for the Auditor's Loan Loss Evaluation
   Kirk P. Kelly, Gary S. Ribar, and John J. Willingham
8. The Role of the Special Investigations Committee in the Self-Regulatory Process
   R. K. Mautz

Auditing Symposium IX (1988) $10.00

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   Robert H. Ashton, and John J. Willingham
2. Audit Theory Paradigm
   Jack C. Robertson
3. Why the Auditing Standards on Evaluating Internal Control Needed to be Replaced
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   Glenn Shafer, Prakash P. Shenoy, and Rajendra P. Srivastava
5. Reports on the Application of Accounting Principles- A Review of SAS 50
   James A. Johnson
6. Auditor Evidential Planning Judgments
   Arnold Wright, and Theodore J. Mock
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   Norman R. Walker, and Michael D. Doll
8. Accounting Standards and Professional Ethics
   Arthur R. Wyatt

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4. Expert Systems and AI-Based Decision Support in Auditing: Progress and Perspectives
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   Roger R. Nelson, and James K. Loebbecke

Auditing Symposium XI (1992) $15.00

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   Jim Gaa
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   Jerry Sullivan
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   Wanda Wallace, and David A. Scott
8. Internal Control: Progress and Perils
   Dan Guy, and Alan Winters

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What's Really Wrong With The Accounting Profession?

Keynote Speech

A. A. Sommer, Jr.
Chairman, Public Oversight Board

It is a great pleasure and honor for me to be able to speak at this distinguished and respected symposium which has gained such stature within the accounting profession and which, over the years, has provided a means for exploring the important issues confronting the accounting profession. The topics on the program this year evidence the continuing commitment of the sponsors of this program to the discussion of themes which are of tremendous practical, as well as theoretical, importance to the profession.

When I was asked for a title for my remarks, I thought for a few seconds and suggested, "What's Really Wrong with the Accounting Profession?" Only as I reflected on that title later did I fully realize that it might raise expectations different from what I intended to say. It is not my intention to "dump" on the profession or the fine people who practice accounting. What I am really going to talk about is how the financial reporting process may be strengthened and the dangers to professionalism I see in the present climate mitigated. For the most part I won't cover the ground the POB did in its March, 1993 Report.

Strengthening Financial Reporting

I am a fervent believer in disclosure as the foundation of our securities regulatory system in this country. At the core of meaningful disclosure is financial information - reliable, timely, relevant, useful and understandable financial information. That truism, long-accepted, was reiterated in the 1973 Report of the Study Group on the Objectives of Financial Statements prepared under the aegis of Robert M. Trueblood, a distinguished partner of one of the predecessor firms of the co-sponsor of this conference. The importance of communicating that information was underscored by the Long-Range Objectives Committee of the AICPA some years ago:

> A satisfactory system for communicating financial and other economic data is an essential condition for the accumulations of capital from widespread sources in single enterprises – i.e. for a successful industrial economy. Persons who have an interest in resources are in varying degrees of remoteness from them and from the factors affecting them. The greater this remoteness, the greater the need for communication of data... *In fact, without assurance of reliable economic data, the remote investor or creditor probably would not supply capital to the enterprise...* (Emphasis in the original)

The auditor's role in the "reliability, timeliness, relevance, usefulness and understandability" formula is principally the assurance of reliability and those assurances enhance the usefulness of the information. Along with the information itself, the extent to which the information may be relied upon must be effectively communicated. I would say that while the quantum and quality of information about issuers that is being communicated to shareholders and investors have steadily improved (witness the SEC's recent rule changes concerning disclosure with respect to executive compensation), there has been scant improvement in communicating the extent to which the information is reliable.

In 1978 the AICPA-organized Commission on Auditors' Responsibilities published its report. A significant part of that report discussed the contents of the auditor's report on financial statements. In the course of its discussion of this subject it quoted the report of the auditors of the United States Steel Corporation in 1903. It is informative, detailed and provides an interesting contrast to the sterile and boiler-plate style which has prevailed since at least 1933 in various iterations.

The Cohen Commission (the popular appellation for the Commission on Auditors' Responsibilities) included in its report an illustration of what it perceived to be a desirable form of auditor's report. It took up more than an eight-and-a-half by eleven page in the report (and the type was relatively small) and included eight meaty and informative paragraphs. The Auditing Standards Board, in response to the Report, undertook revisions of the standard report. What was the result? Instead of two stereotyped paragraphs, we now have three stereotyped paragraphs that *nobody, but nobody,* reads or heeds.

Amid all the consternation (justified, I might add) within the profession about auditors' exposure to litigation, I would suggest that means at hand to significantly reduce that exposure are being ignored. Let me elaborate.

Every line in a balance sheet, income statement, cash flow statement looks like every other line. "Cash" looks just like "inventory", looks just like "property, plant and equipment" which may include huge amounts of "soft costs" that have been included on that line in the expectation of future benefits that are by no means assured of realization. And to the laymen, including some sophisticated users of information, the auditor's opinion is as much an assurance of the reliability of any line as it is of the "Cash" line.

I have on occasion only half-facetiously suggested that financial statements should be prepared in varying shades of grey. Dark, dark ink and bold typeface should be used for cash. Inventories should be slightly lighter; capitalized costs uncertain of realization should be, not in disappearing ink, but in very light ink and type. And then the auditor's opinion should explain the significance in the degrees of shading.

I would suggest to you that some of the woes of the accounting profession flowing from the savings and loan debacle in this country might have been avoided if the auditor had communicated the limits of extent to which people could rely on the financial statements of the savings and loans. How about this as a paragraph in the opinion of an auditor of a savings and loan:

> $_____ of the assets of the company (____%) consist of loans secured by mortgages with no provision for recourse against the borrower. Thus the company's ability to realize on these assets depends upon the ability of the borrower to make timely payments and the continued value of the underlying asset. While the documents in the files of the company indicate that the value of the real estate underlying the mortgages is presently in excess of the amount of the loans and that the cash flows from the properties (with respect to loans in the amount of $_____ cash flows have not commenced) will be sufficient to assure orderly amortization of the debt, there is no assurance that these conditions will continue.

There is presently developing in securities law a doctrine called "bespeaks caution." In the words of one court,

> ...The essence of the [bespeaks caution] doctrine is that where an offering statement, such as a prospectus, accompanies statements of its future forecasts, projections and expectations with *adequate cautionary language,* those statements are not actionable as securities fraud (Emphasis supplied).

While this is a relatively new doctrine and one that does not yet enjoy the imprimatur of the Supreme Court (although it has been approved by the Second Circuit

Court of Appeals, the preeminent commercial court in the country), it should provoke a renewed consideration by the accounting profession of how, through effective communications, it can enjoy the benefits of "bespeaks caution." This would entail a careful delineation of the uncertainties inherent in financial statements, a statement tailored to the issuer's statements, not new boilerplate.

The POB in its report urged the Auditing Standards Board to revise the auditor's standard report to make the prospective nature of certain accounting estimates clear, including a caveat that the estimated results may not be achieved. This communication should not be written as a defensive retrenchment by the auditing profession, but rather as a more realistic and reasonable explanation of the limitation of assurance that can be provided on certain accounting estimates.

Happily the Auditing Standards Board's Auditing Soft Information Task Force has undertaken consideration of this proposal. A significant step toward better communication with regard to these matters has been the approval recently by the Accounting Standards Executive Committee of its slightly modified exposure draft on risks and uncertainties. The POB in its report last year strongly advocated adoption of this statement and we are most hopeful that the FASB will now approve it.[†] While the application of the statement is somewhat narrower than I would like, I believe this statement will give a powerful tool to accountants in compelling client disclosure of important risks and uncertainties related to the business. I would hazard a guess that had this statement been in effect ten years ago some of the problems associated with the audits of savings and loans could have been avoided.

The preliminary report of the AICPA Special Committee's Study of the Information Needs of Today's Users of Financial Reporting (the Jenkins Committee) indicates that "Users want companies to disclose information about the estimates and assumptions used to determine material assets and liability amounts."

I am informed that this desire of users will probably be reflected in one or more recommendations of that Committee. The problem then will be to develop the necessary consensus to implement the recommendation. That is the toughest task. Congressman Edward Markey of Massachusetts has recently asked the General Accounting Office to review the various reports which have been prepared by accounting bodies since 1975 and report on the extent to which the recommendations in them have been acted upon. While in many respects the profession has responded earnestly, I fear this study may reveal that other important recommendations have been ignored or only partially implemented. I will cite as Exhibit A the matter I referred to earlier, the failure of the Auditing Standards Board to come to grip adequately with the recommendation of the Cohen Commission that the auditor's report be made more meaningful.

I think it is imperative that top management assume greater responsibility for the internal controls and the internal auditing function of their companies, and that the external auditors assume greater responsibility for those controls and internal audit functions. I understand that the Committee of Sponsoring Organizations (COSO) of the Treadway Commission and the General Accounting Office have reached agreement on what a management statement with respect to internal controls should embrace. This a great step forward, and I hope it will be followed by action from the SEC *mandating,* one, management reporting on internal controls in accordance with the COSO Report, *Internal Control - Integrated Framework,* and, two, external auditor reporting on the validity of management's representations.

[†] It has approved the Statement of Position.

In arguing against any requirement that the external auditor report on internal controls, Robert A. Bowman, executive vice president and chief financial officer of ITT Corporation and the spokesman for the Financial Executives Institute, at the hearing held by Senator Dodd of Connecticut on private litigation under the securities laws in July of last year said,

> Any public accounting firm, any firm, that suggests to you and this committee that it does not understand a company's internal controls and they still sign that letter of opinion we think is engaging in sophistry.
>
> We would not expect any public accounting firm to sign its name without understanding *fully and completely* the internal controls of a company, large or small. (Emphasis added)

I respectfully suggest that if Mr. Bowman is correct, then there should be no problem - or significant added expense - in requiring auditors to opine on management's representations with respect to the company's internal controls. I would therefore reiterate the recommendation which the Public Oversight Board made in its March 5, 1993 report: a company's auditors should be required to report on the representations of management with respect to their company's internal controls. The SEC has indicated an unwillingness to mandate this. I would urge that some responsible large companies voluntarily move in this direction and pioneer a healthy and needed additional safeguard for investors - and themselves.

Dangers to Professionalism

The second problem I perceive with the accounting profession is one related to professionalism and emanates from a society-wide circumstance. Competition has always been present in the accounting profession, but I suspect it has never been as intense, as tough, *as dangerous,* as it is now.

More intense competition has infected every corner of our society; my own profession is experiencing a measure of competition it has never before seen. Where the intensification of competition originated is not clear. Some ascribe it to the onset of more international competition which compelled enterprises in this country to sharpen their claws; others say it is an inevitable progression in a market economy.

In the professions, I think there may be some unique circumstances. For one thing, I think professionals have become more concerned with their incomes than with their status as professionals. Sol Linowitz, a distinguished lawyer and former government official, in his recent book, *The Betrayed Profession,* which deals with events in the legal profession, quotes a young lawyer in a mid-size law firm: "The practice of law changed forever when lawyers decided they should be making as much money as their clients." That quote, I think, is equally applicable to accountants.

When the increasing concern with income combines with the increased transparency with respect to economic information concerning firms and their members, there is bound to be increased pressure on the management of firms to maximize the returns to their partners lest they lose them to seemingly more prosperous competitors or other kinds of occupations which can use their skills.

Another factor, reenforcing these competitive forces, has been the determination of the federal regulatory authorities and the courts to regard the professions as no different from other ways of making a living. Thus, measures and rules once thought to be safeguards against unethical and unprofessional conduct were thrown out without any discerning examination of whether professions should be considered just other businesses. It was scant consolation when I heard a sitting FTC Commissioner at a bar meeting suggest that the FTC had grievously erred when it went down that road.

The more intense the competition, whatever the source of that intensity, the more pressure there is on law compliance, on ethics, and on *judgment.* We read daily of businessmen who cross the line between legal and illegal. They don't make that crossing because they are evil or malicious or indifferent; they often do it because they feel they must if they are to compete effectively and meet the expectations of their superiors. How much more fragile and elastic are the boundaries of ethics. And how much more easily infected is professional judgment.

I have often posited the case of the rising young partner in a major firm who manages an office of his or her firm in, to bring it close to home, let's say Kansas City. He is also the engagement partner of the office's largest client which accounts for about a quarter of the revenues of the office.

The financial statements prepared by the client classify as restructuring costs certain items which the young partner believes should be recurring period costs. He expresses this opinion to the chief financial officer, who challenges him to point to the accounting literature which compels that the costs be classified as recurring period costs. The young partner says he cannot point to such authority, but in his professional judgment the proper treatment is to classify the items as recurring period costs. The CFO mentions that he casually discussed this at a cocktail party with a partner of a competing firm, one which young partner knows has been lusting after the business, who indicated he agreed with the CFO as to the proper accounting treatment.

The young partner's dilemma is clear. If he loses the client a substantial number of staff in the office will, at least for some time, be underutilized. He *hopes* the management of the firm will realize that he has lost the client on a matter of principle and will not penalize him in his career, and hopes, in fact, they will back him. But what about next year if the staff is still underutilized and no new clients have filled the void? And the year after, and the one after that? It is not difficult to empathize with the agony of that young partner.

One would hope that if he acquiesced in the insistence of his client and opined on the financial statements as prepared by the client that the concurring partner would block approval, or that one or the other would consult on the issue. If the end of the process is that the client walks because of either the engagement partner taking a tough stand, or the concurring partner or consulting partner doing so, the problem confronting the young partner is the same: how to fill the void?

I would hope that in this sort of situation the top management of the firm would set a "tone" by assuring that insistence on good accounting and financial reporting does not *ever* penalize a partner. I was told once of the head of a major firm who, at a partner's meeting, singled out a partner who had lost a major client because of an accounting disagreement and hailed him as the "partner of the year."

There is no question that auditors today are more willing than before to take tough stands even at the risk of losing clients, and increasingly they state forthrightly the reasons for their departure in connection with the client's Form 8-K. But I fear there are still a troubling number of occasions when my scenario is a real one and an undesirable accounting practice not clearly contrary to an articulated principle is accepted by the auditor. The number of such instances can only be reduced if it is made clear by the top management of firms that not only are those who generate and perpetuate business amply rewarded, but so are those who on reasonable grounds refuse to go along with corner-cutting clients.

And I would urge that a firm which is approached to take on a client which has deserted another auditor because of an auditing or accounting disagreement consider carefully whether it really wants to reenforce the belief that exists in many quarters

that accounting principles and auditing standards are "for sale." Accounting is not and probably never will be exact and reducible to formulas so precise that there can not be disagreement among honest accountants. But I would suggest that the case for acquiescing in a potential client's wishes who is changing auditors because of disagreement should be an overwhelmingly compelling one before the auditor accepts the client.

Audit committees, which have been a particular matter of interest and concern to the POB and to me personally, are important both from the standpoint of sound financial reporting and professionalism. I believe their potential for assuring honest financial reporting has been little realized and I believe the realization of that potential can only be accomplished by auditors. In undertaking that task I think auditors may not only contribute to sound corporate governance, but also reduce their exposure to liability. It is not enough for auditors to publish booklets on audit committees, excellent as those pamphlets generally are. In my experience, few audit committee members read them and study them and conform their conduct to the advice contained in them.

I have urged in the past, and I urge again, that the auditor of every publicly held company with an audit committee arrange to meet with the audit committee for two or three hours to outline how an audit committee should function, the duties it should assume, the concerns it should have. The superb report prepared by Price Waterhouse for the Institute of Internal Auditors Research Foundation, *Improving Audit Committees: What Works Best,* would be an excellent guide for such a presentation. Also helpful would be the matrices in Appendix E of the POB's Report, *In the Public Interest,* and in the Price Waterhouse report, both of which are based on the Treadway Commission Report. These matrices provide the means for an audit committee to do a searching analysis of its practices and compare them to the excellent recommendations of that Commission. But I am convinced that without the initiative of the external auditors that sort of self-analysis simply will not occur. If audit committees did what they should, they would be immeasurably better able to assess the fairness of the presentation proposed by management, monitor disagreements between management and the auditors, and provide an additional level of assurance that management is honest with its auditors.

Let me close by remarking upon the response to the POB's Report, *In the Public Interest.* Soon after its publication, the AICPA and the "Big Six" endorsed all of its recommendations. This has been most gratifying to the members of the Board. Even more gratifying is the alacrity with which the SEC Practice Section has undertaken initiatives to strengthen the ability of auditors to detect fraud (a consequence of an audit expected by the overwhelming number of users of financial statements) and to use the information secured in the course of inquiries by the Quality Control Inquiry Committee to warn the profession of pitfalls they should avoid.

Again, let me repeat how privileged I feel to have had this opportunity to meet with all of you and express a few thoughts of someone who, while closely associated with the accounting profession in a number of capacities for many years, is still just a lawyer and, from your viewpoint, a layman.

References

Committee of Sponsoring Organizations of the Treadway Commission (COSO). 1992. *Internal Control-Integrated Framework* (Revised Draft February 1992, further revised based on recommendations of the April 13, 1992 COSO Advisory Committee meeting).

Public Oversight Board (POB). 1993. *In The Public Interest: A Special Report by The Public Oversight Board of The SEC Practice Section, AICPA.* Stamford, Connecticut.

2

Accounting and Auditing History: Major Developments in England and the United States from Ancient Roots Through the Mid-Twentieth Century[1]

Howard Stettler
Professor Emeritus, University of Kansas

Summary

The history of accounting and auditing, as inextricably entwined disciplines concerned with the communication of information about economic events affecting governmental or private entities, is traced from the beginning of recorded history to recent times. Both disciplines have developed as a response to emerging needs of the times, and both have facilitated the development of capital markets that have supplied the tremendous amounts of capital to satisfy the demand that was an outgrowth of the Industrial Revolution. Closely associated with the development of the two disciplines has been the emergence of the accounting profession, playing a key role in more recent times in advancing the state of the art in both professional practice and in the development of accounting and auditing standards.

The following chronological synopsis of major developments in accounting and auditing constitutes the framework for the more extensive treatment the paper gives to the evolution of the two disciplines. The rationale underlying these developments is likewise considered.

Major Developments	Principal Causes
Means of communication	Communal activities
Writing	Need for a record of economic goods
Accounting and auditing	Accountability for tribute exacted by ruling authority
Accounts of transactions with others and of trading activity	Economic benefits of trading activity arising from the development of private property
Accounting for owner equity–double entry	Measurement of the increase in wealth from trading
Formation of stock companies and reporting of results to third parties	Demand for capital to extend trading abroad
Chartering of companies with limited liability and subject to specified reporting requirements	Extension of the need for capital accumulation generated by the Industrial Revolution

[1] An earlier version of this paper was presented at the Haskins Seminar in conjunction with the Third International Congress of Accounting Historians in London in 1980.

Audited financial information for third parties	Extended development of limited companies with widespread ownership facilitated by stock exchanges
Professional organizations of accountants and auditors	Increasing number of accountants in response to growth and complexity of business operations
Shift of accounting emphasis from the balance sheet to the income statement	Reliance on income as the source of dividends and capital growth
Accounting and auditing standards; securities regulation	Growth in Big Business and the ensuing Great Depression; dependence by investors on reported financial information
Performance auditing	Quest for improved efficiency and effectiveness in all large organizations, including government and not-for-profit organizations

Introduction

> By understanding the past, we incorporate it into our present thought and enable ourselves by developing and criticizing it to use that heritage for our own advancement.
>
> - Historian R. G. Collingwood

> Each new generation must learn for itself. But each new generation will think more intelligently if it knows what its predecessors have thought and done.
>
> - John R. Wildman, in his Foreword to Green's *History and Survey of Accountancy*

This historical account of the development of accounting and auditing is dedicated to the precepts expressed by Collingwood and Wildman. As background for the account that follows, it should be recognized that in common with other skilled occupations, accounting and auditing evolved in response to the needs of an increasingly complex and interdependent society; however, because the pursuits are intellectual as well as practical, accounting and auditing merit classification as a profession rather than as a trade. Early in the development of a profession that involves an element of skill, the emphasis tends to be on the practice of those skills: how to perform the necessary actions; only later do the professional aspects of knowledge, understanding, and judgment become evident. During those early stages of development, the training of neophytes likewise tends to reflect the preeminence of practical skills, with emphasis on what is to be done and how it is to be done. In the case of accounting and auditing, even when on-the-job training under the tutelage of a master gave way to classroom instruction, the principal change that occurred was in the environs rather than the instructional approach. Gradually, however, the description of procedures and techniques was supplemented with consideration of the objectives of the procedures, and eventually emphasis shifted to the professional, stressing knowledge, understanding and judgment.

In tracing these and other developments related to accounting and auditing, attention first is directed to the roots from which accounting and auditing emerged as a response to the needs of the times, and a conscientious effort has been made whenever possible to indicate the probable causes of change along with presenting a description of the major changes and developments that occurred.

An Accountant's View of History

The historical account that follows is clearly an accountant's view of history rather than an historian's view of accounting, and highlights the fact that accounting and auditing would seem to have played a more significant role in our economic development than is often recognized–a role that can be traced from the beginning of recorded civilization to the present day. To facilitate comprehension of a sweep of such vast dimension, 6,000 years of history are subdivided into eras marked by milestones that are the more significant factors and events in the development of accounting and auditing:

Forty centuries B.C. to fifth century A.D. – the development of writing and records.

Fifth century A.D. to 1500 – the introduction of Arabic numerals and place value and subsequent use of that number system in the development of the double entry system of bookkeeping.

1500 to 1790 – from Pacioli's *Summa* to the beginning of the Industrial Revolution.

1790 to 1900 – from the Industrial Revolution to the period of mergers and "Big Business."

1900 to 1930 – the development of Big Business and its relapse with the onset of the Great Depression.

1930 to the present – the advent of regulation in the United States; development and maturation of accounting, auditing, and the public accounting profession.

Forty Centuries B.C.–Counting and Writing

With the development of the ability to communicate through spoken language and the cooperation that communication made possible, people banded together and thereby became susceptible to some form of governance and control. Invariably the power of the ruling authority was used to exact tribute from the governed, and the resulting accumulated wealth presented problems of control that exceeded the ability to keep track mentally of what had been collected. Adequate control depended on a record of what was received and disbursed, and was probably a contributing factor to the development of writing. Indeed, Eric Hoffer (1966) was prompted to observe that writing was developed not to *write* books but to *keep* books.

Some of the earliest known writings originated in the Mesopotamian Valley of the Middle East about 4000 B.C. (Keister 1965), and appear to be commercial records created to account for physical things by marks scratched into clay tablets. The writing and associated counting to record the quantity of things were representational in the form of pictographs–pictures of objects or parts of objects with each picture of an object representing a count of one. It is evident that the object of such writing was to keep track of accumulations of things (wealth), and it is the accounting for wealth that has ever been the focus of the keeping of records.

Early records were scratched into stone or inscribed on tablets of moist clay, which were then dried in the sun to preserve them. Some records were made on the Egyptian-developed papyrus, but papyrus was more expensive and less permanent, so few papyrus records are available for study.

Later, to simplify writing, whole pictures of objects were reduced to characteristic parts of objects, and ultimately curved lines were reduced to short straight wedged

lines to facilitate recording on the moist clay with the stylus, resulting in what we know as cuneiform writing, from the Latin *cuneus,* meaning wedge. At this point, representational counting was in the form of a tally system, with one mark for each object. The literal system of Roman numerals is a further development of the tally system, with other characters substituted for groups of straight lines in the interest of economy.

Developing along with writing was the scribal profession–a most vital and respected occupation, for the scribe was usually the only person in the community who could read or write. The brightest children were selected to become scribes and were sent to the temple to learn reading and writing, as well as arithmetic, law, and moral precepts. Such learning had a strong commercial orientation, for the scribes were most often employed in temples and palaces to prepare and read the records of the religious and economic events that had occurred. These scribes were, of course, the forerunners of today's accountants.

Control systems were developed to assure accountability and accuracy, and a "program flow chart" in picture form, found in the tomb of Chnemhotep, illustrates such a system. This picture shows corn being brought to a storehouse, weighed under the supervision of an overseer, and placed into sacks, with a record of the sacks prepared by a first scribe. Then, as the sacks are carried to the roof of the storehouse and emptied, a second scribe prepared a record of the sacks at that point (Brown 1905, 21). Although the pictures do not show the two records being compared, it appears that the purpose of the second record was to serve as a check on the first, thus providing the basis for subsequent audit verification.

Brown observes that similar checks occurred as grain would be issued from the storehouse. Issues required a written order, and as the requisitioned grain was measured out and released, a scribe recorded these events, with the written order serving as the supporting check of the recorded issues and providing the final element of a complete and verifiable stores record of all movements of the grain. Author ten Have (1976, 25) observes that such records of the quantity of goods made it possible to audit the custodians in terms of the quantity of goods received and the quantity on hand.

Moving ahead to the time of the Romans and their audit activities, Brown (1905, 32) states that "The quaestors (who handled all public funds) on demitting office rendered an account to their successors of the state of the funds and of the condition of the registers, and they also submitted accounts of their administration to the senate," (presumably for review and acceptance). Brown also mentions that the extensive government operations to be accounted for resulted in the creation of a central accounting office called the *tabularium,* where the work was carried on under a superintendent by a host of bookkeepers or *tabularie* and their assistants, who were often slaves.

The Greeks, at an earlier date, showed prescience in the use of published "financial statements." The cost of constructing the Parthenon, a storehouse and temple to the goddess Athena constructed 447-432 B.C., was chiseled on a marble column placed on the Acropolis in Athens (ten Have 1976, 25).

Fifth Century A.D. – Arabic Decimal

Notation and Place Value

Although early records seemed to pertain almost entirely to the large accumulations of wealth by rulers or governments, private wealth also existed in limited

amounts where a parallel system of private property made that possible. Private property existed primarily at the sufferance of the ruler or central authority to the extent that producers were permitted to retain that portion of the fruits of their labor that remained after the collection of taxes. Private property coupled with personal freedom to engage in activities of the individual's choosing in countries fortunate enough to enjoy those privileges opened the door to the abundance of material things enjoyed in many parts of the world today, and constitute what Weaver (1953) calls "The Mainspring of Human Progress."

Trading was a natural concomitant of private property and provided the opportunity to increase satisfaction and wealth. Although trading originated on a local basis, it gradually extended to distant locations in order to add to the supply and variety of goods available locally. One of the commodities frequently traded was gold because of its universal appeal, with the use of gold as a medium of exchange eventually leading to the development of money in standard units of value. When occasionally transactions were consummated on the basis of future money settlements, this use of credit (from the Latin *credere,* to trust) provided further facilitation of trading activity.

Records of property inflows and outflows that had been developed for heads of state were found to be equally useful for the early traders of the Mediterranean area. "Accounts" of their trading activities in the form of narrative records were kept by means of tallies or cuneiform characters, but these eventually gave way to other systems, such as Roman numerals, as more efficient means of keeping track of the money amounts representing the ownership and movements of goods. Similar records of money itself were maintained in the case of banks, developed as "storehouses of money" and for the exchange of the various kinds of money in circulation.

But arithmetic operations performed on Roman numerals were most cumbersome, and it was easier to count on one's fingers, or to convert the numbers to the place value symbols of the abacus and to perform the operations by that means than to perform the operations mentally (ten Have 1976). The breakthrough to the more efficient and manipulable base-ten system that we know as the Arabic system of decimal character notation and place value is credited to the Babylonians (Cooley 1937), although Babylonian traders may have brought back knowledge of the system from their trading with the Hindus of India. Especially important to this system is the incorporation of the symbol for zero to replace the blank space representation of the absence of anything sometimes used by the Mesopotamians (Keister 1965), and has prompted one wag to remark, "thanks for nothing."

The Babylonian system was carried by their traders to Spain, and eventually introduced to all of Europe in the twelfth century as the system was copied from the Arabs of Spain. Dissemination of information about this new system was aided by a book on the Arabic system of numerals and their use in computation written by Leonardo of Pisa in 1202 (Littleton 1933).

Italian merchants were said, however, to have been resistant to the new system at first because Arabic records and documents were easier to alter than those in which Roman numerals were employed (ten Have 1976). The use of Roman numerals also persisted in official and public documents for many years, since that was often considered to be the only proper form for important matters of public interest (Brown 1905).

1494 – Pacioli and Double Entry

The first readily recognizable accounting milestone appeared in 1494 with the publication of Frater Luca Pacioli's 210-page treatise *Summa de Arithemetica, Geometria, and Proportioni et Proportionalita* (Everything about Arithmetic,

Geometry, and Proportion) which included 36 segments on bookkeeping (Green 1930, ten Have 1976). Worthy of note in this connection is the indication that accounting was considered a part of the study of mathematics; that characteristic of the church as the center of learning, the book was written by a Franciscan friar; and that the significance of the book is suggested by the fact that it was one of the early books set by the movable type system invented by Gutenberg about 1450. (Note that the Pacioli Society, in celebration of the quincentennial of the publication of Pacioli's treatise is planning a "pilgrimage" to Sansepolcro, Italy (the birthplace of Pacioli) in June of 1994, where a symposium on accounting history will be presented by scholars from throughout the world).

Although as a result of the bookkeeping section, Pacioli is sometimes referred to as the "father of double entry bookkeeping," Pacioli in preparing the book was largely engaged in writing down what was already known. Indeed, de Roover (1938) states that the Pacioli work was essentially a copy of a contemporary manuscript circulating in the schools of Venice, and that in many ways practice in the fifteenth century was far ahead of the theory reflected in what had been reduced to writing.

Development Factors

In some of the earliest record systems only personal "accounts" were kept, and a narrative form was common. The narrative form is perhaps traceable to the "log" maintained by trading ship captains. The principal function of the log was in determining and recording the ship's position by "dead reckoning" on the basis of direction and distance traveled. At regular half-hour intervals based on the sounding of the ship's bells according to the ship's chronometer, direction of movement was determined from the ship's compass and recorded. Distance traveled was determined by the ship's speed of movement, which was calculated by throwing overboard a log to which was attached a line with knots tied at fixed intervals. By counting the knots payed out as the ship moved away from the log during a given period of time, the speed in "knots" could be determined and recorded in the ship's log–which derived its name from the jettisoned log that established the starting point for the calculation.

All major shipboard happenings were likewise recorded in the log, such as the hands signed on for the voyage, storms encountered, injuries or deaths that occurred, ports visited, supplies and wages issued to members of the ship's crew, and most important from our accounting point of view, the inventory of trading goods taken aboard at the beginning of the voyage, and the exchanges of goods that took place at the ports of call. The managerial role of the ship captain thus extended to operating the ship, looking after the safety of crew and cargo, effecting advantageous trades, and keeping a meticulous record of all noteworthy events so that at the termination of the voyage the profit (in the form of goods) could be determined and allocated among the venturers who had financed the voyage.

These "accounts" of trades and other transactions eventually came to be maintained under a bifurcated system, with the narrative pertaining to increases in an account (historical record) of related transactions entered at the top of the page and decreases entered on the lower portion of the page (ten Have 1976). To this system was eventually added the convention of arranging the narrative so that amounts expressed in terms of money appeared in columns to facilitate addition of the figures (ten Have 1976).

Among the developments that gave rise to the double entry system was the growth of merchant trading and banking in Italy during the Middle Ages. The promise to pay, or credit, was sometimes used in obtaining financing, but entrepreneurial capital was

mostly the result of personal accumulation. "Personal" accounts were maintained of credit transactions. Subsequently, impersonal accounts for things were added to the system, as well as an account to keep track of the merchant's own affairs–the amount invested and the results of household and trading operations.

At about the time that impersonal accounts and the merchant's investment account were being added to the personal-account-only records, the advantages of a bilateral arrangement of each account became evident. To clearly distinguish between *debitor* accounts (he owes) and *creditor* accounts (he trusts), increases in the former were entered on the left side of the account and increases in the latter accounts were entered on the right. As perhaps the more important of the two accounts to the merchant trader, debitor accounts appeared first in the ledger, and since writing proceeded from left to right, it was apparently natural to have increases in the important debtor accounts on the left, with increases in the opposite type of account on the right. Although no contemporary rationalization has been found for the convention of debits on the left, the suggested relationship to the left-to-right writing convention is supported by the fact that in Arabic-language countries the custom is to record debits on the right, corresponding to the right-to-left convention of the written language.

The technical terms *debit* and *credit* appear to be related to be two basic classes of accounts, with debits being increases to *debitor* accounts and credits being increases to *creditor* accounts. This debitor/creditor account system holds the explanation for the neophyte's confusion that readily attributes the abbreviation *cr.* to credit but leaves *dr.* unattributable to debit, whereas the terms are apparently abbreviations derived from creditor and debitor.

Other Features

One feature of the all-inclusive self-balancing system described by Pacioli was the "Memorial," or day book. A major purpose of this record was to show the conversion of barter transactions and transactions expressed in "foreign" monies to the particular currency chosen as the standard for succeeding entries in the journal and ledger (Green 1930). We no longer find such a record in accounting systems of today inasmuch as barter has been replaced by money exchanges, and the accounting for foreign branch and subsidiary operations has been decentralized, with currency translation handled as a worksheet operation associated with the preparation of consolidated statements. Foreign transactions entered into by a domestic unit are converted to local currency directly on source documents before the transactions are recorded in the journal.

Another feature of the records of Pacioli's day was the validation of the bound books of account by the impressing of the state seal by the consul or other city official (Green 1930). This procedure was followed to establish the official nature of the books before they were "opened," with the importance of that act indicated by the fact that the record of the indebtedness of another in such official records could be sufficient to hold the party for a debt at law.

The forerunner of this notion of the credence of books of account is suggested by the record of trial involving one Roscius, who was defended by the renowned Cicero against a debt claimed to be owed to a C. Fannius Chaerea. Cicero makes a major point of the fact that Fannius was unable to produce a record of account showing that the amount in question was owed by Roscius (ten Have 1976, 28). To further establish the authenticity and correctness of legal documents in banking transactions, a witness to the transaction might be noted on the record, as an outgrowth of the practice described by ten Have (1976, 26): "It is probable that the evidence of the existence of

a credit relationship was generally not furnished by the existence of notes or bookkeeping entries, but rather by witnesses who were present at the time that the credit relationship originated."

As has already been mentioned, the major advance in record keeping of the period under discussion was the addition of accounts other than personal accounts, with the key account being the record of the proprietary interest of the owner of the business. With the closing of the circle, double entry and the equality of debits and credits had become a reality. The earliest known records reflecting the double entry concept are the ledgers of Renieri Fini & Brothers (1296-1305) and Giovanni Farolfi & Company (1299-1300)(Lee 1977, 79).

Proprietary Equity

Merchant trading was but the outgrowth of simple peddler activity, but on an expanded scale and ever more widely ranging. Acquiring goods from distant places gave rise to agency arrangements, with agents entrusted with goods or money to carry on trading activities on behalf of their principal. If the capital to engage in such expanded activities was not available from personal sources, not infrequently the entrepreneur would seek additional resources by entering into partnership with others.

Double entry bookkeeping incorporating the concept of the proprietary equity was developed to accommodate the entrepreneurial need for information about the expanding multiplicity of goods, activities, and relationships. Foremost among these were needs for records of the goods owned, credit transactions, and agency and partnership relationships, with the proprietary accounts necessary to make the record complete. It was not uncommon in these early days of double entry to include the owner's household transactions in the owner's capital account, suggesting that the household was the economic unit being accounted for. Green (1930) points out, however, that some merchants kept two sets of books - one for the home and one for the shop, and Littleton (1933, 36) notes that with the growth of trade there developed the practice of trading through agents or partners, with the attendant records likely containing only business transactions.

The multitude of transactions in the owner's equity account suggested the desirability of separately classifying and recording similar transactions and gave rise to the introduction of "nominal" accounts, which Lee (1977, 88) dates to the first half of the fourteenth century, and which in contrast to the "real" accounts in the ledger, were accounts in name only.

In maintaining the ledger, as the page for an account became filled the balance of the account would be transferred to a new page and the record continued thereon, so that there was little order within the bound ledger. The books often were not "closed" until completely filled and a new book was opened, although closing the books at the end of the year was sometimes recommended (Green 1930). Closing the books involved the transfer of all nominal account balances to a profit and loss account, and the transfer of the profit and loss balance to the owner's capital account. All real accounts were then summed, balanced, and the balance transferred to a page of balances (balance sheet). If the totals of debit and credit balances agreed, the books were considered balanced and closed, at which point the balances of the real accounts were entered below the balanced and ruled amounts, ready for the next cycle of transactions and entries.

Joint venture and partnership arrangements began to emerge during the period of Pacioli as a means of assembling additional capital and entrepreneurial skills, and hence Pacioli set down the principles and recommended entries for the conduct of

partnerships as well as sole proprietorships (Green 1930). A partnership arrangement increased the importance of maintaining complete records that included the proprietary interest, in order to ascertain the division of profits (or losses) among the partners, and of course the partnership records would contain only the results of transactions of the partnership, and not household transactions as in merchant trader records.

English Developments to the 15th Century

Accounting development in England in some ways paralleled the developments in countries of the Mediterranean region, although England's remoteness from the major trade routes tended to delay the introduction of the innovations of the merchant traders. Much of the following information is drawn from Michael Chatfield's (1968) own essay "English Medieval Bookkeeping: Exchequer and Manor" included among the collected readings in his *Contemporary Studies* as given in the references.

Public Records

In common with the situation in other areas of civilization, there existed the need for records of the public revenues to support the government. The earliest surviving accounting record in English is the sheepskin Pipe Roll or "Great Roll of the Exchequer." The Pipe Roll was prepared each year from the *Domesday Book,* a census and record of real properties and the taxes assessed thereon, based on a survey in 1086 after William the Conqueror took title to all property in the name of the crown. The Pipe Roll is a narrative covering seven hundred years, relating to taxes and other levies due the king, the amounts of such taxes collected and remitted by the county sheriffs to the Court of the Exchequer, and the expenses incurred in collecting the taxes.

The Pipe Roll was maintained in the department of the Upper Exchequer as an accounting for all receipts and payments. The Upper Exchequer had the authority to examine the Lower Exchequer or Treasurer's Department that received all monies and payments in kind, either directly or through the sheriffs, who were the king's representatives. It is from the relationships between the two divisions of the Court of the Exchequer and the sheriffs that we have obtained our word "audit" (hearing), even though the verification or checking functions performed are of much earlier origin.

The sheriffs brought to Exchequer sessions at Westminster at Easter the portion of the year's taxes and rents for the king's lands collected to that time. The monies and payments in kind were paid into the Lower Exchequer and notched incisions were made in a "tally stick" to record the amounts. The stick was then split along its length, with the stock or larger piece taken by the sheriff as a receipt for the amounts deposited, and the smaller foil kept by the treasurer as a "carbon copy" for the Exchequer archives. At Michaelmas, the sheriff would bring the additional amounts of revenues collected since Easter and submit to an audit. Final settlement for the year took place across a chequered cloth patterned after the chess board, and it is after this chequered cloth that the Exchequer is named. The treasurer would read from the Exactory Roll (based on the Domesday Book) the amounts due for that year from each farm in the sheriff's county. An official called the "calculator" would place "counters" on a row of squares equal to the amounts called by the treasurer. Both sheriff and treasurer had to agree on the results of this operation, which showed the amount with which the sheriff had been charged. Then, on a row of squares pertaining to the sheriff, the calculator would lay out counters equal to the installment paid at Easter as shown by the matched pieces of the tally stick record that had been made earlier. On other rows, counters were placed for the Michaelmas collections being

remitted and for the amounts of the sheriff's expenses and allowances as evidenced by writs warranting those amounts. When the counters for the amounts due were fully balanced by counters for the payments made, the entire operation having been observed by all parties based on the hearing (audit) of the accounts, the sheriff was "quit" and the audited amounts were recorded by the Upper Exchequer on the Pipe Roll in summary form.

Disbursements from the treasury were authorized by "writ" of the Exchequer, a written order to pay, and it is apparently from this practice that we derive the popular term for bank drafts as orders to pay, with the English referring to the draft as a "cheque" and Americans as a "check."

Brown (1905, 75) reports the keeping of separate records as a check of one against the other, such as the Exchequer's Pipe Roll, the roll kept by the Chancellor's clerk, and a third by a special representative of the king. At the end of the year the records were compared and footed by the auditors, with the probatum abbreviation "Pb^{t}" inserted beside each amount and sum so verified.

Manorial Records

In the private sector of England, the key activity on which the keeping of records focused was the landed estates or manors, rather than merchant activities as in the Mediterranean region. These sizable estates held by titled persons presented a major management challenge, and records were needed to aid in the functioning of the manors. Management of these large feudal estates often encompassing hundreds of people was normally placed in the hands of stewards, and the lord depended on the keeping of accounts as a check on the honesty and performance of the stewards. Thus, two major aspects of the manorial system were the charge and discharge statement pertaining to the principal/agent relationship and the management use of accounting information. The earliest developments of internal check (as a fundamental aspect of internal control) for private activities seem to have occurred in these circumstances. The lack of a double entry system in these records is probably attributable to the absence of the profit motive that propelled the trading activity of the Mediterranean region. As a consequence, the prime need was for accountability, and there was apparently little interest in or need for any accounting for changes in ownership equity.

The accounting use of "to charge" as the equivalent of "to debit" is probably attributable to the English influence, as reflected in the manorial responsibilities of the stewards and the meaning of the verb "debit:" to charge with, as a debt. The manorial audit involved an approach much closer to the audit of modern times than was true of the audit of public records, which involved more of a form of internal checking. For instance, Chatfield (1968, 37) writes:

> Even six hundred years ago it was realized that an auditor's opinion had more value if he stood independent of the parties at interest. He began by carefully examining the accounts of all officers who handled money, checking their arithmetic and the reasonableness of expenditure warrants. If it had not already been done, he then combined these accounts into a charge and discharge statement for the whole manor, sometimes putting his initials beside subtotals and writing below the last balance, "heard by the auditors undersigned."
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> Finally came the annual Declaration of Audit. The charge and discharge statement as verified by the auditor was read in the presence of the lord and the assembly of stewards whose discharge of duties was under scrutiny. Each might be called on to answer questions and substantiate facts from his personal knowledge. One reason for an oral summary of accounts is obvious: the manor, like the Exchequer, had to be tuned to the realities of a largely illiterate society. But a public hearing...also offered special protection against fraud, since the facts were being laid simultaneously before all those qualified to recognize omissions and errors.

It was, of course, necessary to train practitioners in the art of keeping accounts and making audits. Oschinsky (Littleton and Yamey 1956, 93-94) mentions 20 treatises on manorial accounting compiled for clerks and auditors. Although dating of treatises is difficult to establish, Oschinsky (Littleton and Yamey 1956) concludes that four of the treatises were compiled prior to 1270. The manorial treatises generally contained specimen account forms, instructions for keeping the accounts, and guidance for auditors engaged in checking the accounts, including references to determining such things as the amount of salt to be allowed for salting specified amounts of meat and to investigating expenses for indication of possibly excessive eating and drinking by employees. Such was the need for manorial clerks that Oschinsky (Littleton and Yamey 1956) reports that teaching of manorial accounting was evidently a regular branch of the *arsdictandi* at Oxford by the end of the thirteenth century.

From Pacioli to the Industrial Revolution

During the period following the time of Pacioli, the activities of merchants, of the English manors, and later of the guilds, gradually increased in scope and volume. The accompanying accounting and auditing developments were similarly gradual and for the most part represented refinements of existing techniques.

Significant economic developments were the initiation of joint ventures to conduct trading on a more extensive scale and for periods of time beyond the duration of a single venture. The English (as well as the Dutch), denied for geographical reasons early access to the trade routes to the East, later formed large scale companies which were granted monopolistic rights to exploit trade with the East. Also, of course, in England there was the rapidly developing trade with New World colonies.

People in England who migrated from the feudal estates to the cities sought employment in the guilds that controlled hand making (manufacturing) of such necessities as cloth, iron cooking utensils and tools, and leather goods, and here, too, economic development had its influence on accounting.

Bookkeeping after Pacioli

Although Pacioli, in describing the bookkeeping system of Venetian merchants that emerged as early as the thirteenth century (Previts and Espahbodi 1977, 74) emphasized double entry and the method that incorporated the proprietary capital account, the merchant orientation of the system was largely toward the early idea of maintaining an historical record of assets and liabilities and the various events that affected the business. The setting of the keystone in the form of the capital account was more for the purpose of symmetry than for information to manage the business.

Although Pacioli recognized that the books might be closed periodically, he emphasized the notion of closing the books only when they were filled and it became necessary to begin a new record. Previts and Espahbodi attribute to Pacioli major refinements in the Venetian system, most important of which was setting forth the basic elements of a balance sheet. Pacioli's instructions included preparation of this rudimentary statement in the form of a periodic trial balance, but it was "extra-compatible" and intended solely to prove the equality of debits and credits to indicate whether bookkeeping accuracy had been achieved.

Some merchants of that day had expanded their activities to the point where they established factors (agents) in other locations, but the regular statements required of the affairs of a factor seemed primarily for the purpose of recording the results of the factor's activity in the books of the merchant who was the principal and were apparently put to no additional use.

As had been pointed out in the previous section, however, the operation of English manors involved considerable managerial use of the accounting records through the charge/discharge aspects and the efforts to control remotely conducted operations.

Progress toward the preparation of periodic statements from records maintained under the Italian system of Pacioli is evident in the Flemish Ympyn's *New Instruction* published in 1543 (ten Have 1976, 60), although Ympyn recommended closing only every two to four years. The principal advance advocated by Ympyn was the incorporation of a balance account as a formal part of the system. The emphasis at that time was, however, still on the balancing aspect to prove bookkeeping accuracy.

Other important advances were advocated subsequently by another Flemish writer, Simon Stevin in his *Hypomnemata Mathematica* (mathematical traditions) published in 1605 (Brown 1905, 137). Stevin, like Pacioli, was a famous mathematician and wrote in his national language (rather than the more formal Latin) in the hope of disseminating knowledge more widely among his countrymen. In his youth, Stevin served as a bookkeeper and cashier, and for a period was an instructor at the University of Leiden. The breadth of his interests is suggested by the fact that he was a defender of the teachings of Copernicus, one of the first to make use of decimal fractions "by which we can operate with whole numbers without fractions," inventor of a form of locks for canals, and author of a treatise on fortification that was long a standard.

In his work in accounting, he advocated the use of double entry records in public administration and the segregation of business and private capital. He viewed bookkeeping as a sorting technique involving first a chronological recording and then posting on a systematic basis to accomplish the sorting. He also viewed business and its attendant bookkeeping as a continuous process, with a survey of affairs to be prepared as an "extra-compatible" matter whenever desired and disassociated from closing the books, thus suggesting the management orientation of these activities. User orientation is likewise evident in Stevin's early efforts at classification of items and in his advocacy of an annual reckoning, as observed by Woolf (1912, 130): "Interesting innovations to be noted are the grouping of items and the balancing of the Profit and Loss Account at the close of the year, instead of at the end of each enterprise or venture, which as we have seen, formerly obtained."

In Stevin's balancing process, he computed the net worth on the *staet,* a separate sheet of paper on which was listed all the real accounts (assets and liabilities), with the credit amount needed to balance representing the net worth. The profit (or nonprofit) was then calculated as the increase or decrease from the balance on the previous *staet.* He then prepared the *staet proef,* which was a listing of all the profit and expense accounts and which must balance with the profit calculated by comparing the two *staeten* balances to complete the proof.

Debits on the Right

Curiously, in the *staet,* Stevin listed liabilities on the debit side and assets as credits, the excess credits being net worth, (ten Have 1976, 65), but he gave no explanation for this reversal from customary practice. Of special note is the fact that the English followed an identical convention. It is uncertain whether the English purposely followed Stevin's arrangement in deviating from the arrangement of the accounts in the books, or whether this is simply English individualism comparable to driving on the left side of the road, the non-metric system of weights and measures, and the non-decimal system of money. Among other explanations are that the English followed their manorial system of charge and discharge in business affairs, with the sources of capital representing the amounts for which the management stewards were

charged and the discharge being the assets in which the capital had been invested. A related explanation is that these amounts with which the management stewards were charged were of primary importance and were therefore listed in reading order beginning on the left. Yet another possibility is that the English chose to use the "new" sheet of balances looking to the year ahead rather than to the "old" sheet of balances portraying past results. The new balance account has been recommended as a proof of the balances in opening a new ledger, with the balances being shown reversed to offset the balances carried forward to the individual accounts in opening the new ledger.

The Pattern is Set

Whatever the reason for the "English" balance sheet, the pattern was set in 1657 after Cromwell required the East India Company of London to value its assets at particular times and publish a report thereof (ten Have 1976, 67), for the company used the English arrangement. That arrangement was also specified two hundred years later in Exhibit B of the English Companies Act of 1862, indicating the persistence of the practice, and by adding the force of law, making the practice well nigh immutable.

The East India Companies

Of prime importance in the interregnum between Pacioli and the Industrial Revolution were the chartering of the London East India Company in 1600 and the Dutch East India Company in 1602. Both represented monopolies granted to exploit the growing trade with distant regions, an activity which eventually involved sending abroad fleets of ships suitably protected against the incursions of high seas piracy, the assembling of large amounts of goods and precious metals as the basis for trading activity, and the construction of fortified settlements abroad to protect what was wrested from the local populace when the demand for goods became so strong that voluntary exchange could not be effected (ten Have 1976, 53). It is quite possible that the development of these enterprises of substantial magnitude can be attributed to the influence of the model offered by the large-scale manorial operations that were unique to England. The trading companies and the guilds in turn may have been the impetus for the development of manufacture and the Industrial Revolution, and it is likely that these developments together were what propelled England into its position of leadership in economic matters as well as in the development of accounting and auditing.

Originally, the English East India Company operated under a system of terminable joint stocks, with each voyage involving separately subscribed capital. Littleton (1933, 210) reports 113 such distinct voyages between 1600 and 1617, with the terminable arrangement continuing until 1657. The simplicity of venture accounting was fully applicable, with the assets divided among the venturers at the completion of a voyage. During this period, however, the function of the ship captain diminished from that of full responsibility for the venture including the trading activity and all accounting, to that of paid manager responsible only for the running of the ship and maintaining records of shipboard activities.

Liquidation of the capital at the end of each voyage made it possible for those who so desired to drop out, with others admitted to take their place. The result was a form of quasi-permanent capital and continuity with the attendant problems of valuing those "remains" of the voyage to be utilized in succeeding voyages: the ships themselves, warehouses at each end of the route to store the goods, and the allocation of joint administrative costs. The distribution of capital to be effected–the sum of the original capital (or what remained if the voyage was unsuccessful) plus the profits of the voyage—was apparently accepted on faith in most cases, especially if the voyage

was profitable, equaling or exceeding expectations. As a joint venturer however, each venturer presumably had a right to inspect "his" books if any question arose.

Further indication of permanency was evident in 1613, when the capital called up was subscribed for four years, with one-fourth to be paid in each year for the fitting out of ships during that year, and was the first step away from the "share-in-the-goods" interest in affairs and toward the idea of capital as an invested sum represented by transferable shares of specified amount. "The bookkeeping skill of the day was unequal to the task of successfully juggling the assets and profits of a dozen distinct trading ventures in various stages of completion. The need for a policy of long-time investments was thus indicated as a prerequisite to intelligent current management." (Littleton 1933, 211)

The full scale change came about in 1657 when the company secured a new charter based on non-terminable stock to be valued initially at the end of seven years, and then every three years thereafter. On the basis of such valuation, a shareholder who wished to withdraw was entitled to have his place taken by another, and that arrangement opened the way to trading in the shares of the joint-stock company.

Trading in the shares of the Dutch East India Company began in Antwerp the year the company was formed, and shortly thereafter in Amsterdam, but did not occur in the shares of the British East India Company until the latter part of the 17th century (Shultz 1942, 1), apparently sometime after the permanent capital arrangements of the 1657 Charter became effective. The important distinction between capital and income became apparent when in 1661 the governor of the company stated that "...future distributions would consist of the profits earned (dividends) and not 'division,' as in the past." (Littleton 1933, 211)

Permanent capital was a new development, however, only in the sense that it was applied to otherwise terminable activities. Permanency of investment was a natural consequence of such longer term undertakings as Mines Royal chartered in 1568 and New River Company, chartered in 1609 to bring spring water to London by conduit (Littleton 1933, 212).

As there was no accepted definition of income, even though 19th century English statutes limited the distribution of dividends to income, differences of opinion over the matter were taken to the courts for resolution. "The courts were thus called upon to consider issues which were of importance to accounting before accounting literature (as contrasted with *bookkeeping* texts) began to appear." (Littleton 1933, 214)

The South Sea Company

Yet another major trading company was formed in 1711 to exploit trade in the South Seas and other parts of America. A secondary purpose of establishing the company was to convert the large floating debt of England into a funded debt by providing that holders of the debt could convert it into South Sea Company stock at par, with the interest paid on the company-held debt being added to the profits of the company (Hasson 1932).

Trading activities ended when war broke out with Spain in 1718 and all company property in Spanish-American ports was seized. Subsequently, the acquisition of other state debts through exchange for stock occupied the company, as well as raising funds through the floating of bonds and sale of shares of stock. Offers of exchange for the various debts began at a conversion price per share of 114 pounds sterling and rose to a maximum of 1050 pounds, supported by rumors of profit potential and large dividends, plus the paper profits of investors resulting from the increase in the speculative trading of the stock.

The bubble burst when the South Sea Company persuaded parliament to investigate other companies that had been formed, often without obtaining a charter, since these companies were competing for investment funds. At this point speculators in the various stocks began to sell, and 1720 saw the bubble burst that had been inflated earlier that year, leaving the realization that little more than air had supported the bubble. Our interest in this sordid affair is in the reference to a Mr. Snell in the title of Hasson's article, which is discussed shortly.

Reporting to Shareholders

As has been pointed out earlier, merchant traders kept their own books and referred to the books for any desired information. Although an "extra-comptable" trial balance might be prepared, or an account of balances and an account of profit and loss might appear as pages in the ledger, these were primarily to prove bookkeeping accuracy and were apparently seldom consulted for information. With the fragmentation of ownership that occurred with the inception of the East India companies however, changes were necessary. "The charter of the Dutch East India Company provided...for a 'general accounting' every ten years. But the autocratic early-capitalistic merchants brazenly ignored this. Profits (which were undefined) were distributed and that was all...(these amounted to) about 18 percent distributed annually between 1602 and 1798." (ten Have 1976, 54)

The 1657 charter of the British East India Company issued during Cromwell's protectorate required the preparation of a statement of balances (balance sheet) after seven years, and after every three years thereafter, with the statements to be available to anyone who desired to inspect them. These requirements were met, and copies of the statements exist in minutes of the company that have been preserved (Sainsbury 1925).

The trading of shares that followed the inception of "permanent" ventures was largely speculative, and although a shareholder might have the right to inspect the books, that right was seldom, if ever, exercised. Instead, trading was based largely on the prospect of profits from rising prices of the shares of stock, or perhaps in a few cases on the annual distributions of profits. In time, reliance on such periodic distributions increased as a more meaningful basis for investment, and with that increased reliance there was growth in the importance of the calculation of the profit on which the distributions were based. Likewise, consideration was given to limiting distributions to the amount of calculated profit so that investors would not be misled by capital that was paid out in the guise of profit distribution. These were, however, developments of the next milestone era and are discussed in a subsequent section.

Auditing

The earlier hearing of the accounts gave way in time to the practice of reviewing the accounts after they had been prepared, although the two approaches were sometimes carried out conjointly, as suggested by the "report" resulting from the City of Aberdeen audits, 1586-1587: "Heard, seen, considerit, caculat, and allowit by the auditors" and "futit, calculat, and endit by Auditors," which appears in another auditors' docquet (Brown 1905, 85). The latter statement is characteristic of the review of the records of manorial units by the lord's auditors, culminating in the preparation of the charge and discharge statement bearing the auditor's approval. In both situations it should be understood that the auditors were essentially officers of the person or organization for whom records had been kept and who desired assurance of the accuracy of those records.

The auditor who offers his services to the public seems to have been an outgrowth of the development of the joint-stock companies and their widely dispersed ownership, as stated by ten Have (1976, 54), "In England...an auditing system was installed by an expert to be selected by the stockholders, and out of this 'auditor' there developed later the accountant with public responsibility."

It is about this time that the Mr. Snell referred to earlier enters the scene. Hasson (1932, 128) writes that after the bursting of the South Sea bubble and the losses of millions of pounds by investors, "A parliamentary investigation resulted in the confiscation of property of many who had acted in bad faith. Charles Snell, a writing master and accountant, made a special audit and his report was published. It is interesting because it is perhaps the oldest English audit report of its kind."

Although Snell is primarily remembered for his special South Sea Company audit work, he was a writing master who also taught accounts. In this capacity, he was the author of four texts on writing and eleven on bookkeeping, one of which could also have established his place in history, for the text was entirely in verse!

The Industrial Revolution

With the concept and framework of widespread ownership of company stocks established by the British and Dutch trading companies, the way had been shown to satisfy the voracious demand for capital generated by the Industrial Revolution, generally considered to have begun about 1760 but to have reached full bloom about 1790. Important in the transition from hand crafting to mechanized production were such inventions as the spinning jenny in 1767, the cotton gin in 1792, and James Watt's steam engine in 1769, which was a marked improvement over Thomas Newcomen's engine of 1705.

Early companies formed to profit from the advantages of the use of machines in manufacture were joint-stock companies operating under charter of the crown. These companies apparently involved unlimited liability on the part of joint-stock members, but in 1825 the crown was empowered to grant charters with specific provisions regarding the liability or nonliability of members (Littleton 1933, 252). In 1844 Parliament simplified the formation of joint-stock companies by substituting registration for the formal chartering required to that time, but no provision was made for limiting the liability of stockholders for the debts of the company. However, an 1855 act of Parliament made it possible for companies registered under the 1844 act to obtain certificates of limited liability.

The Companies Act of 1862 consolidated the British law on the formation of companies, providing for limited liability and requiring that the company use "Limited" or "ltd." as the last word of the corporate name, thus opening the doors to the limited form of incorporation that is the basis for most privately organized economic activity throughout the world today.

Developments were also occurring in the United States, where the Buttonwood Tree Agreement of 1792 established a formal arrangement for the "Purchase and Sale of Public Stock" by the twenty-four brokers who signed the agreement (Shultz 1942, 2). Early trading activity was concentrated in government bonds issued to refund Revolutionary War debts and in the shares of bank stocks, supplemented later by state and city bonds issued to finance such projects as the Erie Canal, the stocks of fire and marine insurance companies, and the stocks of railroad companies. By 1837, trading was taking place in the stocks of twenty-three different companies (Shultz 1942, 5). The securities of private companies were issued under charters of incorporation granted by the states on a more available basis than the earlier English charters

granted by the sovereign, but the arrangement was not unlike the registration requirements of the 1844 English Companies Act. The earliest statute for freely incorporating business enterprise was enacted by North Carolina in 1795 (Littleton 1933, 254). This and other statutes pertaining to incorporation under specified formal requirements for registration generally granted limited liability to the stockholders of all companies except banks. Usually the company was required to include "Incorporated," "Inc.", "Corporation," or "Corp." in its name to place others on notice that liability was limited.

With the advent of continuing organizations and the notion of capital as a permanent contribution as opposed to a sum to be divided and distributed at the termination of the enterprise, attention was focused on maintaining such capital intact, distributing "dividends" rather than effecting divisions of the final capital, and this to maintaining a distinction between contributed capital and the income generated therefrom, with dividends to be paid only from such income.

English Reporting Requirements

Companies were not only required to observe the above legal requirements, but to issue reports so that all concerned might be able to ascertain that the requirements had been satisfied. Thus, the reporting requirements and related auditing requirements of the English Companies Acts are especially important. The following discussion of these reporting and auditing requirements is based largely on the article by Edey (1956) and an essay by Edey and Panitpakdi in Littleton and Yamey (1956). The Joint Stock Companies Act of 1844 specified that companies must keep books of account and present a "full and fair" balance sheet at each meeting of the shareholders, such balance sheet to be filed with the Registrar of Companies. There was no requirement for submission of a profit and loss account, although 1844 legislation pertaining to banks did require the submission of a profit and loss account as well as a balance sheet. Also absent was any specification of the content or arrangement of the balance sheet, and there was no grant of power to the Registrar to enforce the reporting requirement, possibly because the disclosure of company financial information was considered to be a matter to be decided between the shareholders and the directors.

A surge of opposition to government regulation resulted in the striking of these accounting and reporting requirements in the Companies Act of 1856. The Act did include, however, as a supplement in Table B, a model set of articles of association containing exemplary clauses pertaining to the following matters:

- The payment of dividends only out of "Profits."
- The right of directors to set aside out of Profits, before recommending a dividend, sums reserved for contingencies, equalizing dividends, or repairing or maintaining the "Works connected with the Business of the Company."
- The keeping of "true Accounts...upon the Principle of Double Entry...(the accounts to be) open to the Inspection of the Shareholders during the Hours of Business."
- The requirement that the directors "...lay before the Company in General Meeting a Statement of the Income and Expenditures for the past year" and also a balance sheet to "...contain a Summary of the Property and Liabilities of the Company arranged under the Heads appearing in the Form annexed to this Table..."

It is in the balance sheet form of Table B, which is classified and with suggested captions, that we see listed on the left as "Dr." capital and liabilities and on the right under "Cr." the following items in this order: property, debts owing to the company, and cash and investments. Worthy of note from Table B is 1) that the statements are to be something more than mere copies of the sheet of balances appearing in the ledger, 2) the modern labeling of the income statement, 3) the position of the reference to the income statement ahead of the reference to the balance sheet, and 4) the retention of the idea from the earliest days of commercial activity that the account books be accessible for inspection by the owner.

The general company law was consolidated in the Companies Act of 1862, but there was no material change in the accounting provisions except to move the model articles from Table B to Table A. Subsequent attempts to reinstate mandatory provisions for accounting and publication of financial statements were unsuccessful except in the case of special legislation pertaining to banking and insurance companies, railroads, and gas and electric utilities. Company law remained essentially unchanged until 1900, which marks the beginning of the next milestone period.

Reporting Requirements in the United States

The reporting requirements of the various state incorporation statutes varied widely, although considerable similarity with English developments is evident, as for example that regulation and reporting requirements were more prevalent with respect to banks, insurance companies, railroads, and public utilities in recognition of the substantial public interest in such enterprises.

Hawkins (1963) reports that by 1900 about half of the state incorporation statutes provided for either periodic reports to stockholders or reports to be issued at the demand of the minority stockholders. Of the other statutes, some required reports to a public authority (often the office of the secretary of state, which also issued corporate charters), but such reports were generally considered to be confidential communications between the state and the corporation and not available for public inspection. In other instances little more was required than the name and residence of the agent upon whom process might be served and the names of the directors. Competition between the states to attract the lucrative incorporation fees and taxes may have accounted for the reluctance in some instances to impose requirements that might be considered burdensome or objectionable.

In the *laissez faire* economy of a developing nation, there was also much inclination to the privacy of affairs such as was prevalent during the time of the early merchant traders, and there was no tradition of financial publicity. The public was considered to have no right or interest in such confidential matters, and managers felt that revealing financial information might be of benefit to competitors (an attitude that still exists today, as indicated by business opposition to FTC line of business disclosure requirements), and there was a feeling that *caveat emptor* was as applicable to buyers of securities as to buyers of horses. As a notable exception to the general inclination toward secrecy, Bookholdt (1978, 9) notes that the railroads were one of the first businesses to have extensive investments in long-lived assets, necessitating massive amounts of outside capital, and were likewise one of the first to report on the custodianship of corporate management. He (Bookholdt 1978, 10) states that a report was issued by the Utica and Schenectady Railroad covering the period from its opening in 1836 until January 1, 1841, and that the report was partially reprinted in *Hunt's Merchants Magazine.*

Although in the U.S. a relative vacuum existed concerning government pressure for good accounting and financial reporting such as was evident in the Companies Acts, the New York Exchange sought to fill at least part of that gap. Shultz (1942) reports that the Exchange formed a Committee on Securities in 1861 that attempted to obtain information about securities on the trading list of the Exchange, and in answer to one such request in 1866 received the often quoted response, "The Delaware Lackawanna & Western R.R. Co. make no reports and publish no statements, - and have not done anything of the kind for the last five years."

In 1869 the Exchange's Committee on Stock List adopted a policy to the effect that listed companies should agree to publish an annual financial report, although few companies endeavored to follow the recommendation. The Exchange was reluctant to attempt to enforce its policy because of the possible adverse effect on its trading activities, and in 1885 created the Unlisted Department — which placed no requirements on the issuers of stock being traded – in order to attract additional stocks for trading. The first listing agreement to include the reporting requirement was signed in 1897 by the Kansas City (MO) Gas Company (Shultz 1942, 14). The Exchange was more forceful on another matter, however, when in 1869 as a result of the overissuance of shares of stock in the fight for control of the Erie Railroad, it was resolved that the shares of all active stocks should be registered at some satisfactory agency, and, when the Erie did not comply, its stock was removed from the trading list.

Developments in Accounting Theory

The displacement of the merchant trading proprietorships and terminable joint stock ventures by organizations having the prospect of continuing existence and financed by absentee owners who had limited liability for the debts of the enterprise induced a number of important accounting changes. Foremost among these was the need to chop the income stream into discrete segments in order to ascertain what dividends might be paid. Valuation of inventories, recognition of potential losses in the realization of receivables and inventories, the effect of deferred and accrued income and expense, and the limited life of the complicated machines of the Industrial Revolution all presented problems to the accountants of that day.

Although Littleton (1933) recognizes evidence of the emergence of the accrual system in a book by Savary as early as 1712, and Lee (1977, 90) notes that the Farolfi ledger of 1299-1300 contains an account "Prepaid Rent," considerable time elapsed before the methodology of adjusting for accrued and deferred items became reasonably well developed. Littleton (1933) cites a book by Pilsen in 1877 as an example.

On the whole, accruals and deferrals, inventory valuation, and depreciation were considered primarily in terms of their effect on the balance sheet. The balance sheet was the most complete statement, for it also contained the balance of the profit and loss account, it showed the accounting for the stewardship that had been placed in the hands of the company managers, and it displayed the various amounts to be taken into consideration in making a dividend distribution. In this view, what the stock of inventory would be likely to bring, and the effect of depreciation on the property listed as an asset are matters of prime importance, as suggested by a bookkeeping text by Harris published in 1842 in New York and the book by Pilsen in 1877. Bookholdt (1978, 10) quotes from *The Railway Times* (England) of 1841, "The declaration of a dividend without making allowance for depreciation of stock, cannot in our opinion be regarded as other than fallacious." Littleton (1933) reports legal cases in 1879 and 1880 that involve an allowance for depreciation in calculating profits available for dividends.

Auditing Requirements

Previously noted has been the growing importance of financial information abstracted from the books of account and used in connection with decisions by both directors and investors. Given this change, it would be expected that the center of interest for auditing would shift from the books themselves to the statements prepared from the books, although a change in audit approach would not necessarily be implied. The functioning of the auditor as an integral part of the entity being audited gives way during this change to the auditor as a practicing professional providing auditing service to clients. These professionals were also handwriting and bookkeeping experts who stood ready to teach others the art of writing and bookkeeping or to assist merchants who were unable to keep their own records. Since these professionals could prepare an exemplary set of records, they could obviously determine the correctness of the records prepared by someone else, and it is out of this situation that the specialist in accounts and the auditing thereof emerges as a *public* accountant.

Prior to the Companies Act of 1844, the joint-stock company organized under a specific charter granted by the crown was subject only to such reporting and auditing requirements as were specified by the charter. With the relatively simply registration requirements to form a company set by the 1844 act, it was deemed desirable to establish certain controls over the companies so formed. Some of these controls were for the protection of investors since their relationship with the company was a relatively impersonal one.

A certificate of registration was to be issued only if the shareholders in their original agreement appointed one or more auditors. Subsequent auditors were to be appointed at the annual shareholders' meeting. The directors were required to make up a "full and fair balance-sheet," sign it, and deliver it to the auditors. Subsequently, the directors were to send a printed copy of the balance-sheet to the shareholders prior to the general meeting.

A revision of the 1844 act the next year provided that "Every auditor shall have at least one share in the undertaking; and he shall not hold office in the company, nor be in any other manner interested in its concerns, except as a shareholder." Sec. 108 of the act provided for the employment of outside experts by the shareholder-auditors:

> It shall be lawful for the auditors to employ such accountants and other persons as they may think proper, at the expense of the company, and they shall either make a special report on the said accounts, or simply confirm the same; and such report or confirmation shall be read together with the report of the directors at the ordinary meeting.

The stated provision is reminiscent of the earlier English situation when the lord of the manor would hear the audited accounts of his stewards. As in the earlier day, the typical audit consisted largely of ascertaining that a supporting voucher existed for every payment, marking those vouchers and the corresponding entries to show that they had been audited, proving the accuracy of the bookkeeping, and ascertaining that the directors' balance sheet agreed with the balances in the ledger (Littleton 1933, 290).

The Companies Act of 1856 and the consolidating Act of 1862 which replaced it included essentially the same audit provisions as the 1844 act, but they appeared only in Table A accompanying the act that set forth the model set of bylaws. An important addition to the wording of the earlier act was that the auditors were to report "whether in their opinion the balance-sheet is a full and fair balance-sheet containing the particulars required by these regulations and properly drawn up so as to exhibit a true and correct view of the state of the company's affairs."

The 1862 act was the last act of that century of general significance, and at this point attention is directed to auditing developments in the United States.

U.S. incorporation statutes made no reference to required audits, and hence auditing developed purely as a service activity, available to those who sought such services. Most early audit activity in the United States was by English accountants sent here to look after the interests of English companies that had established operations in the colonies. These visits were in circumstances not unlike the audits for the lord of the manor at the location of his various lands. Bankruptcies were, however, another matter, and often the visits by the English accountants were in connection with the winding up of the affairs of unsuccessful English companies which had invested in operations in the States, or unsuccessful U.S. corporations in which the English had invested.

Richard Brown (1905, 198) mentions the commercial crisis in Glasgow in 1777 that resulted from the revolt of colonies in America and the close relationship of Glasgow to trading in that part of the world, suggesting that accountants may have been involved in visits to America even in that early day.

Professional Development

City directories help to pinpoint the entry of accountants into public practice. The following counts of listings of accountants in English directories selected from Littleton's tabulations (1933, 269) suggest the timing and scope of this emergence:

City	Year	Accountant Listings
Edinburgh	1773	7
London	1776	1
Glasgow	1783	6
London	1820	44
Edinburgh	1821	58
London	1840	107

The first issue of *The New York Directory* in 1786 contained an accountant listing according to Edwards (1960, 44), and he states that there were fourteen accountant listings in the 1850 edition of that directory and thirty-one in 1880. The Philadelphia directory for 1850 contained four listings, and the Chicago directory for 1865 listed only two names (Edwards 1960, 46).

Edwards (1960, 48-9) mentions the formation of the firm Veysey and Veysey in New York in 1866 by the Englishman William H. Veysey. The firm Barrow, Wade, Guthrie and Company was established in New York in 1883 after Guthrie had come to the U.S. as receiver for a bankrupt financial concern in England. Guthrie's firm was apparently the first to accept engagements in other locations, and hence the first "national" firm. The English firm of Price Waterhouse & Co. undertook work in the U.S. as early as 1863, and in 1890 opened an office in New York (Edwards 1960, 50). Edwards also mentions security offerings in the *New York Times* in 1890 that contained an indication that the accounts had been certified by Price Waterhouse & Co.

With the appearance of public accountants, organization of societies for the mutual benefit of the members and advancement of the profession could be expected to follow, and such has been the case. The first steps toward formation of The Society of Accountants in Edinburgh were taken in 1853, and the Royal Warrant for incorporation was given in 1854. The Incorporated Society of Liverpool Accountants was formed in 1870, and shortly thereafter in that year the Institute of Accountants in

London was formed. As an outgrowth of these activities, The Institute of Chartered Accountants in England and Wales was granted a charter of incorporation in 1880.

The Scottish and English societies were responsible for the publication of the first accounting periodicals. The Society of Accountants in England, formed in 1873 and one of the several forerunners of the Institute of Chartered Accountants, began publishing *The Accountant* in 1874 as a monthly newspaper that was shortly changed to weekly publication and has continued on that basis (Brown 1905, 245). The Scottish societies joined together to begin publishing *The Accountants' Magazine* in 1897 on a monthly basis.

Outside this "cradle of the accounting profession," The Association of Accountants in Montreal was incorporated under the statutes of the province of Quebec in 1880, The Institute of Chartered Accountants of Ontario was incorporated by an act of the legislature of the province of Ontario in 1883, and the Canadian Institute of Chartered Accountants was incorporated by an act of Parliament in 1902 (International Practice Executive Committee 1975, 110). In the United States, the American Association of Public Accountants was incorporated under the laws of the state of New York in 1887. The Association was instrumental in obtaining the first CPA law in the United States, passed by the state of New York in 1896. Certificates recognizing qualified candidates as certified public accountants were authorized to be issued by the Board of Regents of the University of New York.

Textbooks on auditing also made their appearance during the period under consideration, and as with the earlier textbooks on accounting, they were written by practitioners to assist in teaching the art to others. *Auditors, Their Duties and Responsibilities* by F. W. Pixley was published in London in 1881, and *Auditing* by Lawrence R. Dicksee of the London firm of Price and Dicksee was published in 1892. Although the next book of interest was not published until the next milestone period, it is mentioned here because of its association with the Dicksee text. Robert H. Montgomery (1939) prepared an American Edition of Dicksee's *Auditing* that was published in 1905, and his own *Auditing Theory and Practice* fully reflecting U.S. practices was published in 1912.

1900-1930: Accounting and Auditing Come of Age

The seeds of accounting, planted when writing was developed to keep records, germinated during the merchant trader era of Pacioli's time, emerged during the period of the Industrial Revolution, and reached their final stages of development by the time of the Great Depression.

Industrial activity outgrew the limitations of the simple corporate form developed to accommodate the demands of the Industrial Revolution, just as extensive merchant and foreign trade activity outgrew the limitations of the sole proprietorship. The scene of major developmental activity that had shifted from Italy to England shifted once again–this time to the United States, which by 1900 was revealed to be an awakening industrial giant that had hitherto gone relatively unnoticed.

Notable among the many developments of the post-1900 period was the merger movement to form giant industrial complexes–often for the purposes of gaining monopolistic control over a major group of products. Mega-corporations created during this period included United States Steel, General Motors, and International Harvester Company.

Beginning about the turn of the century, the pace of all development increased rapidly, with accounting and auditing sharing in that increased pace. Accounting became recognized as an essential tool of successful industrial management and as the

source of information which could serve as the basis for more rational credit and investment decisions. Auditing, as a companion activity, was seen to be vital as a means of assuring the reliability of the reported financial data used by all parties who were external to the business organizations whose affairs were of interest to them.

With the above brief introduction, the discussion considers some highlights of the many developments that occurred within this milestone period.

Accounting Theory

During this period the focal point of accounting slowly but inexorably shifted from the balance sheet to the income statement. The offering of securities to finance the voracious demand for capital brought a realization that the important question was not the legality of dividends in terms of their source (whether they were paid from profits or by a return of invested capital), but rather the annual amounts of that source - the profits generated by operations. Littleton (1953, 22) asserts in his *Structure of Accounting Theory* that the determination of income is the central purpose of accounting and offers the hypothesis "That the extensive need for dependable determination of periodic net income makes the income statement the most important product of enterprise accounting." Similarly, Sanders, Hatfield, and Moore (1938, 1) begin their landmark work *A Statement of Accounting Principles* with the observation that "The distinction between capital and income...is fundamental in accounting."

In addition to the interest of investors and theorists in the determination of income, the appearance of a tax on the income of individuals and corporations in the United States in 1913 made believers of any who had not yet recognized that the determination of income was of signal importance.

Attendant questions that had to be faced and resolved were the distinction between capital and revenue charges - whether expenditures resulted in additions to the capital assets of the business or were directly related to the generation of current revenues and to be charged against those revenues. Accounting for the allocation of capital costs to the revenue generated in the form of depreciation charges and the allocation of the cost of goods purchased to inventory and cost of goods sold were matters of particular importance. Merger activity and the appearance of holding companies and parent/subsidiary relationships introduced questions about the determination of income on a consolidated basis and the presentation of consolidated financial condition.

Internally, efforts by management to control the escalating costs of production led to the development of cost accounting, which also had important implications for income determination through inventory costs. Meaningful determination of production costs on a job or process basis involved questions of cost allocation, predetermined burden rates, and estimated and standard costs.

Internal control (internal check as it was called in those days) also increased in importance as management became separated from the control of liquid assets and their attendant inflows and outflows, as well as from all other aspects of operations. Interest in this aspect of management was, of course, simply an extension of the question of maintaining control by management in the face of separation from the site of day-to-day operations as experienced by the lords in the English manorial system. Interestingly, there is little indication of management interest in internal control; the principal interest was indirect in the form of references to the subject in the auditing literature, where it was recognized that when it existed, internal control could simplify and reduce the auditor's testing of the records.

Financial Reporting

As the nineteenth century drew to a close matters were stirring in the area of financial reporting in both England and the United States. In England, 1900 marked the end of the swing away from government regulation instituted with the Companies Act of 1856. The Companies Act of 1900 made an annual audit obligatory for all registered companies, and by implication imposed an obligation to prepare an annual balance sheet (Edey and Panitpakdi 1956, 371). Although there was growing interest in requiring that "annual accounts" be prepared, such a requirement was not introduced until the Companies Act of 1907. One of the reasons for hesitancy over requiring compulsory filing of annual accounts with the Registrar of Companies was reticence about making generally available through such filings information about what were essentially family businesses operating in corporate form. These "private" companies were subsequently exempted from the filing requirements of the 1907 act (Edey and Panitpakdi 1956, 372). The 1907 act also provided that any shareholder should be entitled to obtain, upon payment, a copy of every audited balance sheet laid before the general meeting of the company, and extended the same right to debenture holders except in the case of private companies.

The Companies Act of 1929 contained a provision requiring for the first time that an annual profit and loss account as well as a balance sheet be laid before the company in general meeting. However, only the balance sheet was required to be filed with the Registrar, and thus the profit and loss account remained restricted information. Also required was disclosure in the prospectus for a new stock issue of a report by a company's auditors of the past profits and dividends of the company and on the past profits of any business to be acquired. The act also defined a holding company and required disclosure of the manner in which profits and losses of subsidiaries were accounted for, but did not require disclosure of the amount of such profits (Edey 1956, 141).

Developments in the United States

The growth of public ownership of industrial corporations is perhaps best indicated by figures reported by Hawkins (1963, 256). He reports an estimated 500,000 corporate stockholders in 1900, 2,000,000 in 1920, and 10,000,000 in 1930. The interests of stockholders and others were recognized as early as 1900 in the *Preliminary Report of the Industrial Commission on Trusts and Industrial Combinations* (1900, 6), which made recommendations that did not become realities until some thirty years later:

> The larger corporations–the so-called trusts–should be required to publish annually a properly audited report, showing in reasonable detail their assets and liabilities, with profit or loss; such report and audit under oath to be subject to Government inspection. The purpose of such publicity is to encourage competition when profits become excessive, thus protecting consumers against too high prices and to guard the interests of employees by a knowledge of the financial condition of the business in which they are employed.

A major obstacle to financial disclosure requirements was the fear referred to previously that disclosure of information considered to be confidential could be detrimental through providing helpful information to competitors. This attitude toward confidentiality may also be traced back to the days of the merchant trader, when the information memorialized in his books of account was accepted as being for his use and for his use alone. Consequently, managers believed that the public had no right of access to information on such matters, and some cavalier managers even failed to perceive any real difference between the general public and those members of the

public who had provided capital for the business enterprise in question. As mentioned earlier, the doctrine of caveat emptor seemed to apply to securities as well as to tangible items of property and to relieve managers from any responsibility for disclosure.

In marked contrast to these views was the announced decision of United States Steel Corporation to present comprehensive financial information to its stockholders, as exemplified by the thirty-five page report presented at the first annual meeting of its stockholders in 1902. The condensed general balance sheet in this report was audited by Price Waterhouse & Co., the auditors reporting the statement to have been "Audited and found correct" (Previts and Merino 1979, 176). In issuing the report, Judge Gary, Steel's first president, stated "Corporations cannot work on a principle of locked doors and shut lips" (Griedinger 1950, 4). At the same time and reflecting the prevailing view, McLaren (1947, 5) states that between 1897 and 1905, Westinghouse Electric and Manufacturing Company neither published an annual report nor held an annual meeting.

The New York Stock Exchange was a significant force seeking to obtain financial disclosure, although in a discussion of the activities and developments of the Exchange, Hawkins states that the threat of government regulation was a motivating force behind some of the Exchange's actions. Hawkins also points out that beginning with the Exchange's policy set in 1869 that listed companies should agree to publish an annual financial report, and the first inclusion of such a requirement in the listing agreement with Kansas City Gas Company in 1897, all new listing agreements thereafter were to include such a provision. Its Unlisted Department was created, however, to permit trading in stocks not subject to the reporting requirements of the Exchange's listed stocks, but the department was abolished in 1910. Therefore, the Exchange actively sought to improve the reporting practices of its listed companies. Noteworthy in this regard was the agreement by General Motors in 1916 to publish semiannually a consolidated income statement and balance sheet. In 1924 Inland Steel Company agreed to issue quarterly statements of earnings, and two years later the Exchange officially recommended the publication of quarterly reports by all listed companies.

Most such requirements were by individual agreement with the companies, and Hawkins reports the following status of these agreements in 1926 with respect to the 957 listed companies:

242 making quarterly reports
79 reporting semiannually
339 issuing annual reports
297 no agreements with respect to the issuance of financial statements

The Investment Bankers Association of America encouraged minimum standards for financial disclosures in prospectuses, but the Association had no leverage by which to gain acceptance of its recommendations, and many investment bankers apparently preferred to continue the nineteenth century practice of selling securities on the sole basis of the investment banker's reputation rather than on the merits of the security issue itself (Hawkins 1963).

Auditing Requirements

The Companies Act of 1900 made an annual audit obligatory for all registered companies, the intention of this provision apparently being to assure such audits for the protection of shareholders. The auditors were required to sign a certificate at the foot of the balance sheet stating whether or not all of their requirements as auditors

had been met and to make a report to shareholders on the accounts that had been examined and on every balance sheet laid before the general meeting during their tenure of office (Edey 1956).

The Companies Act of 1907 required that an audited balance sheet be filed with the Registrar of Companies. The auditor's report was to state whether the balance sheet was a "true and correct view of the state of the company's affairs," and the auditors were to state whether the balance sheet was presented "according to the best of their information and the explanations given to them, and as shown by the books of the company" (Edey 1956). The act also required that no new auditor might be appointed without due notice of intention to nominate the auditor being given to the company by a shareholder. The company had in turn to give due notice of such intention to all shareholders and to the retiring auditor.

The Companies Act of 1928 required not only the disclosure of past profits in connection with a prospectus, but also a report by the auditor on those figures. Although the act also required that a profit and loss account be laid before the company in general meeting, there was no requirement that the profit and loss account be audited (other than as an element of the shareholders' year-end equity) and confidentiality was maintained in that the profit and loss account did not have to be filed with the Registrar of Companies. The act also stated that the auditors were to be allowed to attend the general meeting at which the audited accounts were presented and to make any statement about the accounts that they desired.

In the United States, the main pressure for independent audits of financial statements came from the New York Stock Exchange. May (1926, 322) reports that by 1926 most listed companies had adopted the practice encouraged by the Exchange of issuing annual reports covered by the opinion certificate of an independent auditor. It was not until 1933, however, that the audit requirement was made mandatory by the Exchange.

Auditing Practice Developments

Audit emphasis continued on bookkeeping accuracy and agreement of financial statements with the books, with the detection of any fraud in the accounts a major auditing concern. Training of auditors was primarily on the job, but books by practitioners describing auditing practice made their appearance in the United States, following the lead in England. Robert H. Montgomery of Lybrand, Ross Bros. & Montgomery (now Coopers & Lybrand) prepared an American edition of Dicksee's *Auditing* published in 1905, but Montgomery concluded that sufficient differences in terms of the amount of audit work being done in the United States justified writing his own book, and his *Auditing Theory and Practice* was published in 1912 (Montgomery, 1939). Reflecting the changes occurring in his own book, Montgomery (1939, 91) quotes from a *Journal of Accountancy* review of the second edition in 1916: "It is evident that the day of the old system of 'holler and tick' (as graphically epitomized by a late revered leader of the profession) is passing rapidly. It is not enough for the modern auditor to check, verify and state that the accounts are correct. He must be able to tell the connected and lucid story revealed to him by the figures; in other words, he has become, or should become if he thoroughly grasps the principles of auditing expounded in this book, a translator, or better, an interpreter."

Other important books by practitioners were *Principles of Auditing* by John R. Wildman of Haskins & Sells, published in 1916, and *Auditing* by William H. Bell of the same firm, published in 1924. Other books published about that time and written by men who were as much teachers as they were practitioners were Auditing by Eric

L. Kohler and Paul W. Pettengill published in 1924 and *Auditing Procedure* by Dewitt Eggleston published in 1926.

The use of testing, or sampling, rather than complete inspection of all entries began to make its appearance in the last decade of the nineteenth century in both England and the U.S., but rapidly became widely accepted with the increasing size of business concerns, especially the giant corporations formed as a result of the extensive period of merger activity at the turn of the century (Brown 1962, 698). The 1892 edition of Dicksee's *Auditing,* however, includes no mention of testing in the tracing or vouching of transactions, although Brown (1962, 698) cites the London and General Bank case of 1895 as approving the notion of sample selection of items for detailed examination when there is nothing to excite suspicion.

Dicksee is equally silent on internal check, but in the 1905 American edition of Dicksee, Montgomery states that a proper system of internal check will frequently obviate making a detailed audit of all transactions.

The suggestion that the auditor might wish to go beyond the books themselves and supporting documents appears as early as 1882 in G. P. Greer's *Science of Accounts,* where he refers to seeking proof outside the books that the balances shown in debtor and creditor accounts are correct (Moyer 1951, 4).

Professional Developments

The English professional associations had reached their essentially final form by 1900, but much change was still evident in the United States. The American Association of Public Accountants, formed in 1887, became the American Institute of Accountants in 1917, but continued to admit both CPA's and non-CPA's to membership until 1937. In 1905, the Association began publication of the *Journal of Accountancy,* and in 1916 formed its Board of Examiners, which was charged with the responsibility for preparing an examination to be used in evaluating applicants for membership in the Association, in much the same manner as in England. The first examination in 1917 and succeeding examinations were also offered to state boards of accountancy for use as the examination for the CPA certificate, with the encouragement that state candidates who passed the Board examination would automatically be admitted to membership in the by then American Institute of Accountants. The first examination was offered in seven states (CPA Examination Appraisal Commission 1961, 1). The Commission's report (1961, 71) states that by 1926 thirty states were using the uniform examination prepared by the Board of Examiners.

As a result of the introduction of CPA legislation and the administration of either state or Institute Board of Examiners examinations, the Commission on Standards of Education and Experience for Certified Public Accountants (1956, 5) reported the following estimated numbers of CPA's:

1900	243
1920	4,997
1930	13,560

Accounting education at the collegiate level in the United States also developed during this period. The Wharton School of Finance and Commerce was founded prior to the period under study, in 1881, and the School of Commerce, Accounts and Finance of New York University was founded in 1900. The formation of both schools was closely tied to the developing accounting profession, and accounting was the veritable backbone of these schools (Stettler , 1979). Other schools also developed, and by 1926 there were 60 schools that recognized an accounting major for the baccalaureate

degree and 30 schools that accepted credit in accounting courses for the masters degree. These schools offered a total of 106 courses in auditing, and 335 courses in accounting (Stettler 1979).

During this period a number of highly regarded university professors began exploring the logic and theory underlying accounting practices and writing on this subject. Especially notable in this regard during this period were William Morse Cole and Henry Rand Hatfield. Montgomery, in his *Auditing Theory and Practice,* dealt extensively with accounting matters, as auditors came to realize that a fair presentation of a company's affairs depended heavily on how transactions were treated in the accounts, the reasonableness of estimates and other year-end determinations that had to be made, and the manner in which information was presented in the financial statements.

Similar concerns were reflected in a project undertaken by the American Institute of Accountants at the behest of the Federal Trade Commission, which in the course of its investigations of business matters had become concerned about the lack of uniformity of balance sheet audits and financial reporting (Hawkins 1963). A report of recommendations prepared by an Institute committee chaired by George O. May received the approval of the Commission, and presumably to give the report wider acceptance by the banking community, was published by the Federal Reserve Board in 1917 under the title *Uniform Accounting.* The pamphlet was reissued in 1918 under the more descriptive title *Approved Methods for the Preparation of Balance Sheet Statements.*

Despite the balance sheet accounting orientation of the title, much of the pamphlet related to the conduct of audits and covered the audit of the income statement as well as the balance sheet. The pamphlet also included suggested forms for comparative balance sheets and income statements.

The major concern of the Federal Reserve Board in improving the usefulness and reliability of financial statements submitted in support of applications for bank credit is suggested by the Institute's revision of the original pamphlet. The revision was published by the Board in 1929 under the title *Verification of Financial Statements,* the new title indicating the emphasis of the revised pamphlet on auditing.

1930 to the Present Date - Continued Growth and Maturation

The Great Depression brought a rude awakening to all segments of the highly interrelated world-wide economy that had evolved. A consequence of this experience was the realization that in addition to outright speculation, one of the factors that led to the runup of prices in the stock market (at least in the United States) related to the financial information used in making investment decisions. Although there were many examples of both good and bad reporting, attention was concentrated on the situations where the financial information reported was inadequate, incomplete, or downright misleading. An important contributing factor in this situation was the still prevailing philosophy that financial information was essentially confidential and likely to be of more value to competitors than to investors or creditors.

Yet, despite this natural reluctance and resistance, recognition of the importance and usefulness of historical financial information has resulted in continuing advances and improvements in financial accounting and the related reporting and disclosure practices. Government influence on behalf of the investing public has played an important part in these advances; sometimes through overt action, and other times through pressure backed by the threat of overt action.

These accounting problems were further compounded by the increasing complexity of business financing and operations, as well as innovative methods of

financing developed to obtain needed capital funds. Some financing and accounting schemes were developed with the accompanying objective of presenting company affairs in a highly favorable manner, as the results would be viewed by the financial community. These efforts directed toward the appearance of financial soundness and operating results were based on the recognition that reported financial information was playing an increasingly important role in financial analysis as a basis for investment and credit decisions.

The focal point in this final section on the historical development of accounting and auditing shifts almost entirely from England to the United States. Not only does the U.S. represent the environment within which this account is being written, but England with its earlier start and premier position seemed to have reached a point of relative maturity and willingness to accept things as they were. As a consequence, the U.S. with its vigorous and highly competitive economy became the hub for change, but before proceeding to the developments that occurred there, one major development in England demands attention.

The Companies Acts of 1947-8 and 1967

The foundation for the 1947 act was laid by the Cohen Committee on Company Law Amendment, which in its 1945 report (as quoted by Edey 1956) stated:

> We consider that the profit and loss account is as important as, if not more important than, the balance sheet, since the trend of profits is the best indication of the prosperity of the company, and the value of the assets depends largely on the maintenance of the business as a going concern.

As a consequence of this concern, the act of 1947 specified in considerable detail the content of the profit and loss statement as well as the balance sheet and required holding companies to prepare group accounts. All such statements were to be audited and filed with the Registrar of Companies and hence became public information.

An important new provision of the 1947 act was to limit the persons eligible for appointment as auditors to "a member of any body membership of which has been designated by the Board of Trade as qualifying its members to audit the accounts of companies" or to persons "designated by the Board of Trade as qualified to audit the accounts of companies." The act also defined a "private company" and exempted such companies from the above limitation on the auditors eligible for appointment, but the exemption was removed by the 1967 act.

The 1948 act also changed the formerly specified wording of the auditor's report that the company's statements were "true and correct" to "full and fair," but the requirement was retained that the report should state whether the statements are in agreement with the books of account (Hein 1978, 78, 138, 157, 176).

Private Sector Action in the U.S.

Although a primary objective of publishing *Uniform Accounting* was to encourage banks to insist on audited statements prepared in conformity with the recommendations of the pamphlet, Hawkins (1963, 268) states that banks were reluctant to insist on audited statements for their customers out of the fear that doing so would cause customers to go to other banks that were more lenient, thus acting in accordance with a creditors' version of Gresham's Law. Business managers were equally reluctant to disclose the amount of information prescribed by *Uniform Accounting.* Nevertheless, by 1926 George O. May (322) was able to state that it had become almost universal among prominent industrial companies to have audits (and presumably to make the disclosures called for by *Uniform Accounting* and its subsequent revisions).

The stock market crash of 1929 and the resultant urgings of May and J.M.B. Hoxsey, the executive assistant on stock list of the New York Stock Exchange, resulted in the appointment of an American Institute committee in 1930 to cooperate with the Exchange in consideration of problems of common interest to investors (Hawkins 1963, 269). This committee was chaired by May, and understandably considered views that May had expressed earlier. One of these was that the time had come for the American Institute to render a higher service to the community by bringing about the adoption of the disclosure standards of the English Companies Acts. May did not favor the direct legislative approach, however, and instead championed cooperative efforts with other interested groups, such as the stock exchange.

The report of May's committee was published in 1933 under the title *Audits of Corporate Accounts,* and included among the recommendations for the universal adoption of certain broad principles of accounting was a belief that May continued to hold that there should be no restrictions on the right of corporations to select the methods of accounting deemed by them to be best adapted to their business, but that corporations should disclose the accounting principles that they had elected to follow. As a result of the committee's report, the Exchange announced on January 6, 1933 that henceforth corporations seeking listing must submit financial statements audited by independent public accountants, and that all future reports to stockholders must likewise be audited (Hawkins 1963).

In general, however, there was no power to force reforms on those who opposed them, but that deficiency was remedied by the Securities Act of 1933 and the Securities Exchange Act of 1934. Early in 1933, President Roosevelt had requested Congress to enact a federal securities bill that would supplement the doctrine of *caveat emptor* by requiring the *issuer* of securities also to beware–of the consequences of failure to fully and fairly disclose all information that would be essential to the distribution of securities sold in interstate commerce. The 1933 act pertaining to the issuance of securities (stocks or bonds) and the 1934 act pertaining to securities traded on the organized exchanges were the result.

The Securities and Exchange Commission, created by the 1934 act to administer both acts, was given broad authority to state and enforce accounting rules for registered companies and to require that the reports be audited. When the 1933 act was under consideration, the Congress was persuaded, largely through the testimony of George O. May and Col. A. H. Carter, President of the New York Society of Certified Public Accountants, that financial statements relating to a proposed issue of securities should be audited and that the public accounting profession rather than government auditors should most logically be designated to provide the audits quickly and economically. Accordingly, the 1933 act gave the Federal Trade Commission authority to require the certification of financial statements to be filed with the Commission, and similar authority was included in the 1934 act (Rappaport 1972, see chapter 1, p. 5 and chapter 8). Subsequent regulations of the SEC (created by the 1934 Securities Exchange Act) implementing this requirement provided only that the certifying accountant must be *independent;* there has been no regulatory reference to the professional qualifications of the certifying accountant.

Numerous disclosure requirements have, however, been specified in great detail in the registration and reporting forms required to be submitted to the SEC, and in the related *Regulation S-X* governing the preparation and submission of those forms. In addition, various accounting and auditing matters have been covered in an increasingly frequent stream of *Accounting Series Releases.*

American Institute Activities

Somewhat paralleling the activity generated by the securities acts has been the ever-widening scope of the activities resulting from the voluntary assumption of professional responsibility by the American Institute of Accountants which as a result of restricting membership to Certified Public Accountants beginning in 1936, changed its name in 1957 to American Institute of Certified Public Accountants to more clearly identify its membership and professional concerns.

In response to the formal adoption by the Institute of the recommendations of its Special Committee on Cooperation with Stock Exchanges, *Verification of Financial Statements* was revised and published, this time by the Institute itself, in 1936. To more accurately reflect the absence of certitude inherent in both the accounting underlying the preparation of financial statements and in the process leading to the auditor's professional report on the statements, the revision was entitled *Examination of Financial Statements.* Another important response was to constitute in 1939 a continuing Committee on Accounting Procedure which was to deal with accounting problems in an effort "to narrow areas of difference and inconsistency in accounting practices, and to further the development and recognition of generally accepted accounting principles."

During the period of its existence, the committee issued a series of fifty-one *Accounting Research Bulletins* until 1959, when it was supplanted by the Institute's Accounting Principles Board. The new Board was created to give the Institute's accounting rulemaking body broader representation, and through an extensive research program, hopefully to gather more widespread support for its efforts to identify acceptable accounting principles and further narrow areas of difference. The resulting pronouncements by the Board were thirty-one *Opinions of the Accounting Principles Board* and four *Statements of the Accounting Principles Board.*

The most recent development reflected the reemergence of many of the problems of the Committee on Accounting Procedure, including dissatisfaction with the progress being made and dissension over the positions taken in some of the pronouncements. Such dissension frequently reflected the complaints of "those whose ox was being gored." In recognition of the renewed disenchantment with the Institute's accounting rulemaking machinery, the Institute appointed, under the chairmanship of former SEC Commissioner Francis M. Wheat, a blue-ribbon group to study the means of establishing accounting principles. The report of this group, which became know as the Wheat Report, resulted in the formation of the independent Financial Accounting Foundation in 1972. The Foundation was to be supported by financial contributions from all segments of the accounting profession, including recognized professional associations of accountants, and financial executives and analysts in industry and education. The trustees of the Foundation were empowered to appoint the seven full-time, adequately compensated members of the Financial Accounting Standards Board. This Board was charged with directing the investigation and research that would serve as the basis for the issuance of *Statements of Financial Accounting Standards* after full and open consideration of underlying issues and the opinions of all interested parties. The euphoria that greeted the launching of the APB was repeated in the case of the FASB, but the seas encountered have been equally stormy and some of the same disenchantment has arisen – tempered only by the realization that this is probably the final opportunity to retain the responsibility for the determination of accounting principles in the "private sector."

Auditing Developments

The pace of change in auditing has been equally as rapid as in accounting in this period beginning with the 1930's. The auditor's report in the U.S. changed from wording that stated that an audit had been made and "I certify that in my opinion" that the statements had been properly prepared, to the form that has become today's standard. A major change was first proposed in the Institute pamphlet *Audits of Corporate Accounts* issued in 1934. The first paragraph of the report referred to the scope of the auditor's *examination* (rather than audit), including a statement indicating that testing was employed rather than the traditional detailed audit of transactions. The second paragraph stated the auditor's opinion as to whether the statements "fairly present," "financial position and results of operations," in accordance with "accepted principles of accounting consistently maintained."

A 1939 modification set forth in *Extensions of Auditing Procedure* issued by the Institute as a consequence of the monumental fraud perpetrated within McKesson & Robbins, Incorporated, added a phrase indicating that the auditor had reviewed the client's system of internal control and another phrase that stated (if such was the case) that the auditor's examination had been made "by methods and to the extent we deemed appropriate." As a further aftermath of the McKesson case, SEC *Regulation S-X* in 1941 required that the "accountant's certificate" must state "whether the audit was made in accordance with generally accepted auditing standards."

Various other modifications in the auditor report followed, all of which are fully recounted in the paper by Carmichael and Winters (1982) in Auditing Symposium VI. The most recent major revision in the standard form of auditor's report was introduced in 1988 by *Statement on Auditing Standards No. 58.*

In the 1920's, American auditing had changed from the British preoccupation with the detection of fraud and accounting errors to a primary concern for whether the financial statements fairly presented the financial condition and earnings of an enterprise. Also, the increasing size and activity of major business enterprises had led to the introduction of testing, and subsequently a recognition that the amount of such testing should appropriately depend on the internal check (now internal control) present within the client's accounting system (Brown 1962).

As a direct result of the McKesson & Robbins fraud, the American Institute membership voted to require that audits intended to result in the expression of a favorable opinion on a concern's financial statements must include confirmation of receivables by correspondence with the concern's debtors and observation of the client's physical inventory taking. The 1939 pamphlet *Extensions of Auditing Procedure* was the vehicle for publishing these new requirements and became the first of a series of *Statements on Auditing Procedure* to be issued by a newly formed Institute Committee on Auditing Procedure charged with recommending any needed changes in auditing procedure. Through its life the committee, which paralleled the Committee on Accounting Procedure formed about the same time, issued a total of fifty-four such statements, including a codification of the statements in 1963 organized around its 1954 publication *Generally Accepted Auditing Standards.* The latter publication was a direct result of the need to delineate the standards after the SEC required the auditor's certificate to state whether an examination had been made in accordance with such standards.

In 1973 the Committee on Auditing Procedure was supplanted by the Auditing Standards Executive Committee. The new committee continued essentially the same activities as its predecessors, but its pronouncements have been published as

Statements on Auditing Standards. In 1978 the committee was modified slightly in structure and renamed the Auditing Standards Board to indicate more clearly its function and to parallel the title of its by then independent counterpart, the Financial Accounting Standards Board.

Other developments related to the matter of auditing standards include changes made at the time of the extensive restatement of the AICPA Code of Professional Ethics adopted by the Institute membership in 1973. Especially worthy of note is a new Code section "Competence and Technical Standards" that requires members to comply with (1) the general standards of practice stated in the Code, and (2) in audit engagements to comply with generally accepted auditing standards promulgated by the Institute, as well as with generally accepted accounting principles promulgated by any body designated by the Council of the Institute (currently the Financial Accounting Standards Board), unless financial statements would thereby be made misleading.

Somewhat parallel developments with respect to standards were also occurring in England, although at a later point in time. In 1942 the Taxation and Financial Relations Committee of the Institute of Chartered Accountants began preparing a series of "Recommendations on Accounting Principles" which were submitted to the Institute's Council for approval. Once approved and published, the recommendations became guides as to what was regarded as preferred practice, but the recommendations were not binding on Institute members. After the committee had issued 15 such recommendations by 1953, the function of preparing the recommendations was transferred to the Research and Publications Committee. In 1970 the Institute formed the Accounting Standards Steering Committee to prepare "Statements of Standard Accounting Practice." Members of the Institute were expected to abide by these standards after their formal adoption (Benston 1976, 30-33).

With respect to auditing practice, prior to 1960 the Institute Council "...felt that official guidance on auditing would be an improper intrusion into the sphere of the auditor's professional judgment" (Zeff 1972, 26). However, this attitude gave way to a position similar to that of the AICPA in the U.S., and in 1960 the Council began issuing "Statements on Auditing" as a continuing series.

Reflected in both U.S. and U.K. auditing practice and in the official pronouncements of the professional bodies of both countries were a number of important changes which are enumerated below and listed in the approximate sequence of their occurrence:

1. Displacement of the detailed audit by one utilizing testing.
2. Increase in reference to external evidence in support of financial statement figures, rather than relying solely on verifying the recording of transactions and related supporting vouchers.
3. Recognition of the importance of internal check and control in generating reliable accounting records and as a basis for determining the extent of auditing testing of supporting evidence.
4. The use of statistical techniques in setting sample size based on a quantification of the reliability and precision desired from the testing process.

These developments, in what is generally referred to as commercial auditing, are directly related to the constant growth in the magnitude and complexity of the enterprises subject to audit. Similar organizational growth was occurring in the government sector. A concomitant of such growth in both the private and government sectors was to force managers and legislators to place increasing reliance on reports of finances

and operations for the units with which they were concerned. To provide assurance of the representativeness and accuracy of such reports, internal or intra-organizational audits of the reports and underlying accounting processes were introduced by most large private and public organizations. Subsequently, some of the more aggressive service-oriented audit groups recognized other opportunities to assist management in the exercise of control, and there emerged an audit function that was broadly concerned with all organizational activities. Analyses, appraisals, and recommendations concerning efficiency and operating controls were typical outputs of such service-oriented comprehensive audits. In the government sector, where the discipline of the marketplace and the profit motive were lacking, yet another audit function emerged: appraising the effectiveness of the programs developed by the various agencies being funded by the legislative body (Churchill et al. 1977).

Although such expanded audit activity invariably retained the fundamental concern with the appropriateness and accuracy of reported financial information, emphasis on the performance of the unit being audited in terms of efficiency and effectiveness rapidly became the primary concern of these comprehensive intra-organizational audits. Largely responsible for this shift in emphasis were the constructive benefits of the performance audit, in contrast to the passive benefits of audit activity directed only to the propriety of financial reports.

Professional Developments

The U.S. profession continued to grow at a rapid rate, with the long-term growth rate in the number of CPA's estimated to be about six percent per year (Stettler 1968). The large CPA firms continued to grow in size nationally, and the largest firms became international in scope. A 1960 *Fortune Magazine* article by T. A. Wise originated the appellation "Big Eight" (now the "Big Six") to designate the largest of these.

Preparation for entrance into the profession also underwent substantial change. From the earliest days, training was accomplished "on the job," or under tutelage of practicing members of the profession. As some indication of that state of affairs, Webster (1938) reports that of the 7,371 CPA candidates in the state of New York in the years 1929-1934, only 604 held a college degree. By 1953 the situation had changed to where the American Institute reported that 74 percent of the candidates were college graduates (Commission on Standards of Education and Experience 1956, 57). Later figures show 88 percent with college degrees in 1966 and 95 percent in 1970 (National Association of State Boards of Accountancy 1971, 31).

With the growing importance of higher education in preparation for accounting and auditing careers, the writing of textbooks on auditing shifted from practitioners to educators. Although the auditing texts by Kohler and Pettengill published in 1924 and by Eggleston published in 1926 were transitional, in that these authors were engaged both in practice and in teaching, *Auditing Principles and Procedures* by Arthur W. Holmes was the first popular text written by an educator for use in college classrooms, and henceforth nearly all of the auditing texts published were written primarily by educators, although sometimes with the collaboration of practitioners.

Internal auditors, who are in a sense the descendants of the English manorial auditors, formed an international organization in 1941 to advance their professional interests and development: The Institute of Internal Auditors, Inc. In 1974, through its Board of Regents, that Institute began offering its two-day examination leading to the designation *Certified Internal Auditor.* In 1978 the Institute published *Standards for the Professional Practice of Internal Auditing,* a document that had been in prepara-

tion since 1974 by the Institute's Professional Standards and Responsibilities Committee.

Within the U.S. federal government, the long-established General Accounting Office became the auditing arm of the Congress–an evolutionary process that began with the Government Corporation Control Act of 1945 and the establishment of the Corporation Audits Division of the GAO. In 1949 the Comprehensive Audit Program was established by the Comptroller General, whereby the GAO began divesting itself of activities not directly related to audit and control. In 1950 the GAO was instrumental in forming the Federal Government Accountants' Association, now the Association of Government Accountants. In 1972 the Comptroller General published *Standards for Audit of Governmental Organizations, Programs, Activities & Functions,* which has set the standard for government auditing worldwide and fostered the development of performance auditing.

Meanwhile, the American Institute concluded that given the vast amount of change manifested since the thirties, it would be desirable to take stock in the form of an independent review of private sector auditing. Accordingly, a blue ribbon panel of knowledgeable and interested persons was assembled for the Commission on Auditors' Responsibilities under the chairman ship of Manuel F. Cohen, onetime chairman of the Securities and Exchange Commission. The report of the Commission was published in 1978 after Cohen's death, but is generally referred to as the "Cohen Commission Report." This highly significant report is directed "toward improvements in the future auditing environment," as stated in an explanatory paragraph that introduces the Commission's *Report, Conclusions, and Recommendations.* The report received much attention and has had a continuing influence on developments in the field of independent audits.

The attention that has been devoted to the performance of the audit function, both within and outside the public accounting profession, is an indication of the importance of this function in an increasingly complex financial and economic environment. Additional indicators of that importance are present in the investigations of the public accounting profession completed in 1977, by the Subcommittee on Reports, Accounting, and Management of the Senate Committee on Governmental Affairs, conducted under the chairmanship of the late Senator Lee Metcalf, and by the Subcommittee on Oversight and Investigations of the Commerce Committee of the House of Representatives, conducted under the chairmanship of Representative John E. Moss and continuing into 1978 at the time of Moss' retirement from the House.

An especially significant outgrowth of the Metcalf committee hearings and of pressure from the SEC was the creation of a practice division of AICPA with two practice sections, each of which is designated to set standards of practice and oversee the activities of section members. The SEC Practice Section includes a Public Oversight Board of prominent public figures intended to assure responsiveness to the interests of the public, and the Private Companies Practice Section addresses itself to problems associated with the audit of clients that are privately held–in other words, not subject to SEC jurisdiction. For the first time, it is possible through the policing actions of these oversight bodies to impose sanctions or censure a firm of accountants rather than individual Institute members, and both bodies have established mandatory peer review and mandatory continuing education requirements. The primary objective of both sections is quality assurance in the provision of public accounting services.

Some Concluding Observations

Communication has been essential in the development of civilization, and the invention of accounting as a specialized means of communicating information about sets of economic events has contributed to that development. The central role of communication in the practice of accounting and auditing has created an interesting contrast with most other professions in that professional services in most instances involve doing something directly to or for a client, whereas financial accounting and auditing involve communicating a result to third parties.

Accounting and auditing have attained their prominent position through the ability of the members of the profession to cope with the constant challenges presented by an increasingly complex business environment throughout the long history of the profession. Accounting information, as the service provided by the accounting profession, has been invaluable to business profitability on an internal basis by helping to identify inefficiency and by aiding in the control of widely dispersed operations. Supplementing the direct use of accounting information by management has been the development of performance auditing. On a macro basis, communication of reliable information about profitability has contributed to the productivity of capital and to economic well being by helping to channel capital to the most profitable (and hence most productive) opportunities. Furthermore, the availability of comprehensive reliable financial and operating information to those who supply business with capital has fostered confidence in the selection of investment opportunities and thereby helped to entice the vast amounts of capital needed to finance the industrial complex that resulted from the Industrial Revolution. The consequence of these interactions has been a tremendous outpouring of goods and services for the satisfaction of human wants and needs in an ever expanding society with constantly rising expectations.

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Discussant's Response to "Accounting and Auditing History: Major Developments in England and the United States from Ancient Roots Through the Mid-Twentieth Century"

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Summary

Professor Stettler's paper on accounting and auditing history is a fascinating historical account. I believe it should be required reading for any business student; particularly those specializing in accounting. In fact, as a frequent lecturer and part-time faculty member, I would use this paper in my classes. This historical account is very well written. And, unlike many academic and research oriented papers, the grammar and terminology is very reader friendly.

I really liked this paper. It made me feel proud to be a member of the accounting profession. Indeed, the reader comes away with a rich understanding of the origins of the profession. However, while the paper certainly gives a thorough historical account through the 1970's, it does not develop the significant environmental changes facing the profession in the 1980's and 1990's. As a result, the student may be left wondering how this historical account relates to a current environment which looks so different.

Many believe, and I agree, that our profession is at a crossroads. With the dramatic changes in the environment in which we practice, accountants and auditors have little choice but to change their historical behavior described in this paper. Students will benefit greatly from a strong link of the historical base to the current environment. To do so gives the student an appreciation for the past, an enriched understanding of the present, and the tools to face the significant challenges that lie ahead.

This is an excellent historical account. Yet, there is an opportunity to make it even richer by expanding the discussion, bringing the historical account current, and linking the historical account to the challenges and opportunities of the profession. This will ensure the relevance of the paper to the business and accounting student.

A Fascinating Historical Account

The first known commercial records came from the Mesopotamian Valley around 4000 B.C. Some were scratched into stone; others were recorded on Egyptian papyrus. These records evidence the development of writing which evolved from a need for a record of economic goods. The "scribes" of the day were the forerunners of today's accountant. Later, financial statements were used by the Greeks. And, double entry bookkeeping emerged, attributed by many to Pacioli.

All of this, along with the many historical facts thoughtfully developed in this paper add a richness to the student's understanding of the roots of the accounting and auditing disciplines. Reading this paper helps to give a student perspective, a perspective that includes the role of the accountant in the capital formation process, the

elements of public trust and professionalism, and how accountants and auditors help to satisfy the need for financial information.

Must Reading For Business Students; Particularly Accounting Students

I would encourage any business student to read this paper. As mentioned above, it brings perspective to the role of accounting and auditing in today's business environment. In particular, it thoroughly develops the relationship of auditing to accounting. In my experience, this relationship is one that business students often struggle with. Many students have told me that their auditing classes are amongst their most demanding. In particular, students have difficulty relating auditing, which involves the examination of someone else's work, to accounting, which involves only original performance. The historical account helps to bridge this gap by developing the historical link between the two. Once a student gains an improved understanding of this link, the role of auditing in modern society is easier to put into perspective.

This Paper Is Very Well Written

Many academic papers are written in very technical terms. Often their audiences are other academics or specialists with appropriate credentials to understand the technical presentation. This paper, however, is written in a way that is suitable for the layman and the student. Professor Stettler does an outstanding job of writing this paper using a very readable style. In fact, the writing style develops the historical account much like a well written novel. This style significantly enhances the ability of this paper to be used in a classroom setting.

I Really Liked This Paper; It Made Me Feel Good, Maybe Too Good

In addition to being easy to read, this paper inspires a very positive feeling towards the accounting profession. The descriptions of the important role of accounting and auditing in the capital formation process are eloquent. As I read this paper it made me feel proud to be an accountant. For students, the paper is motivational. The positive spin on the importance of accounting and auditing will no doubt encourage students to consider the accounting profession as an attractive career opportunity.

Yet, I found that the paper made me feel a bit too good. After all, I was aware of the enormous litigation problem facing the profession. And, I was aware of a somewhat diminished stature of the auditor in the public's mind. Also, the expectations gap, despite sincere efforts to narrow, continues to be a challenge. I knew that there were many needs and expectations of users of financial information that were going unmet. Relatedly, I knew the relevancy of historical-cost financial statements and the value of an audit to credit and investment decisions is on the decline. But, I also knew that the profession was taking important measures to begin addressing these critical issues.

Importantly, none of this awareness came from this paper, but from my own research and experience. It made me wonder if the feeling you get from studying this paper was consistent with the realities of the environment in which the profession operates today. I concluded that it was not. Yet this made sense to me since it was clear that Professor Stettler's paper was not intended to venture into the present. But, would this satisfy the curiosity and information needs of a student? In my opinion, the student would react very positively to the historical account, but would immediately

wonder how that relates to the current environment. To be most relevant, students will want to understand how the history of accounting and auditing links to the present; and where appropriate use that linkage to point to the future. I believe there is a significant opportunity to expand this paper to bring the historical account current, provide the linkage from past to present and set the stage for the future. And, there is an opportunity to identify how the profession has responded to past expectation or performance gaps.

An Opportunity To Expand the Discussion

Most business students, particularly accounting majors, will be aware of some of the significant challenges facing the accounting profession. They will have learned of the expectations gap, the litigation problem and diminishing value of traditional financial statement information and the related auditors' report. By picking up where the paper presently leaves off, it would be possible to explore the roots of the problems now facing the accounting profession. In particular, the consolidation of the big firms could be examined, the litigation explosion considered, legislative developments could be discussed, the expectations gap could be further developed and the profession's response to these issues described. And, the further development of the historical account could be linked to the challenges facing the accounting profession in the future.

I suggest expansion of this work in the following areas:

1. Consolidation – The paper could discuss how the Big 8 became the Big 6, the failure of several large firms and expansion into broader consulting services in the midst of a "mature" audit business.
2. Litigation – The litigation explosion should be explored, including how it is affecting the profession and capital formation, why it occurred and how the profession is responding. For example, such a discussion could include consideration of the accounting profession's role in the S & L crisis in the U.S.
3. Legislative – The discussion of legislative developments could be expanded to include the only significant enacted legislation affecting auditors, the FDICIA and how it has impacted practice. It could also mention the various proposals in Congress to further regulate the profession.
4. Expectations Gap – The expectations gap should be explored, including what it is, how it arose, how it has broadened over time and how the profession has responded.
5. Profession Activities – The profession has been involved in numerous activities addressing many of these issues. They include the issuance of new accounting and auditing standards, tort reform efforts, the AICPA's Special Committee on Financial Reporting, the McFarland report in the U.K., the Cadbury Committee on corporate governance, responses to the POB report including the Kirk report, and the AICPA's Special Committee on Assurance Services.

Truly, the profession is at a crossroads. A very significant chapter in the history of the accounting profession has been written in the last fifteen years. The changes in the environment have been dramatic. To expand this paper to include this period and deal with these changes will greatly enhance its relevancy to today's business and accounting students.

Concluding Remarks

I believe "Accounting and Auditing History...." is an important paper. It gives the student a sense of history that helps put the role of the accounting and auditing disciplines in perspective. It is both thoughtful and well written. However, I see a significant opportunity to broaden its scope, to delve into the last fifteen years, to link the past with the present, and to leave the reader with a sense of what all this means to the future of the accounting profession.

3

An Exploratory Analysis of the Determinants of Audit Engagement Resource Allocations

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Introduction

The purpose of this study was to gain a better understanding of characteristics that impact total audit work performed on domestic financial statement audits. Prior studies have investigated the determinants of audit fees (see, e.g., Elliott and Korpi (1978) and Ashton, Elliott and Willingham (1989)). A more recent study by O'Keefe, Simunic and Stein (1994) (hereafter OSS) examines how client characteristics affect both the amount and mix of labor used on financial statement audits. OSS estimated five regression equations using as the dependent variables each of four types of labor input hours and total audit fees. Our study uses the same data as used by OSS–data from the period 1986 through 1989 for 249 clients of a large international accounting firm with primary operations in the manufacturing, merchandising and high technology industries.

Our study extends the OSS and other prior studies in the following ways. OSS studied the determinants of total (domestic plus foreign) audit hours for four different personnel levels (partner, manager, senior and staff hours) and total audit fees. We limit our investigation to *domestic* audit hours for the following reasons: (1) statutory audit requirements may differ across jurisdictions, (2) differences in legal environments could affect the extent of audit work across jurisdictions, (3) differences in audit market conditions may exist across jurisdictions (e.g., fixed vs. variable fee markets), and (4) technology (e.g., audit processes) may differ across jurisdictions even within the same audit firm.[1] We expect the existence of client foreign operations will impact the quantity of domestic audit work performed. Even though domestic auditors might not perform the actual audit work on foreign subsidiaries, consolidation of these subsidiaries into a domestic parent's financial statements could lead to additional domestic audit work, especially administrative work dealing with the coordination of the full audit.

OSS estimated separate models for each of the four labor inputs mentioned above. We primarily focus on *total* domestic audit hours aggregated across all personnel

[1] For example, we know that the calculation of planning materiality for certain foreign jurisdictions differs from the domestic calculation for the firm whose data are being studied. This could directly affect sample sizes and the resulting extent of audit work performed.

Table 1

Relationship Between Client Size and Total Audit Hours–Average and (Standard Deviations)

Size Interval	Total Domestic Assets (Thousands of Dollars)	Total Domestic Sales	Domestic Audit Hours and Percent of Hours @ Rank to Total Hours									Total Domestic Audit Hours Per $1000 of Total Domestic Assets	Domestic Audit Fees Billed	Average Fee Per Hour
			Partners		Managers		Seniors		Staff		Total			
Smallest 10%	1,330 (578)	1,854 (1,958)	19.0 (15.9)	7%	47.3 (41.7)	18%	109.4 (43.0)	43%	80.9 (34.0)	32%	256.6 (106.1)	.193	15,446 (7,628)	59.96 (13.21)
10% - 20%	2,627 (322)	5,568 (2,981)	16.0 (9.0)	5%	45.0 (19.6)	13%	151.6 (56.7)	44%	135.1 (92.1)	39%	347.7 (153.9)	.132	19,123 (7,002)	57.42 (14.30)
20% - 30%	3,941 (437)	8,867 (4,857)	21.0 (8.6)	5%	56.3 (25.0)	15%	156.7 (55.8)	41%	152.3 (69.9)	39%	386.3 (119.0)	.098	20,509 (8,964)	54.35 (16.43)
30% - 40%	6,428 (1,017)	14,512 (9,331)	20.3 (12.8)	5%	53.1 (26.2)	13%	159.4 (52.2)	39%	170.8 (95.9)	42%	403.6 (140.1)	.063	25,494 (12,482)	62.20 (15.64)
40% - 50%	10,168 (1,224)	17,249 (7,913)	24.5 (13.1)	5%	66.6 (25.6)	13%	208.7 (88.5)	40%	227.4 (126.2)	43%	527.2 (224.4)	.052	35,122 (18,887)	66.33 (15.32)
50% - 60%	16,378 (2,680)	40,238 (51,871)	42.0 (40.3)	6%	86.5 (63.7)	13%	235.5 (90.4)	34%	320.6 (121.7)	47%	684.6 (266.6)	.042	44,121 (18,877)	65.80 (16.72)
60% - 70%	24,241 (2,765)	44,652 (27,061)	39.3 (25.7)	5%	105.3 (52.3)	14%	284.8 (101.1)	37%	348.7 (188.7)	45%	778.1 (300.7)	.032	49,377 (21,888)	63.88 (14.85)
70% - 80%	40,331 (7,604)	81,679 (57,829)	55.3 (33.7)	6%	131.5 (86.4)	14%	318.5 (160.7)	34%	428.8 (384.0)	46%	934.1 (585.6)	.023	60,972 (40,888)	65.73 (13.54)
80% - 90%	100,423 (43,380)	145,438 (135,024)	74.9 (42.9)	6%	162.2 (78.0)	12%	350.7 (129.2)	27%	726.2 (418.4)	55%	1314.0 (603.7)	.013	88,323 (45,921)	66.74 (13.21)
Largest 10%	1,016,002 (1,189,569)	1,407,242 (1,595,802)	292.7 (279.0)	5%	684.7 (583.1)	12%	1585.4 (1702.6)	28%	3137.1 (3695.5)	55%	5699.9 (5835.0)	.006	421,235 (418,251)	73.02 (15.82)

Note: Each size interval comprises ten percent of total sample and intervals are arrayed from ten percent of sample clients to largest ten percent.

levels. We tested (reported later) whether the four-equation modeling approach provided more explanatory power than the model estimated using aggregate hours and found no significant difference in proportion of explained variability in total audit hours.

Finally, prior studies of audit production and pricing have applied the logarithmic transformation to both the dependent variable and the client size variable (and other independent variables) to linearize the relationship between client size and total audit hours. We tested several different functional forms of the size relationship and observed that both a two-equation approach (separate linear models for small and large clients) and a linear model using the square root of client size outperform the log model for our sample data.

The remainder of the paper contains sections reporting on (1) the relationship between client size and audit hours, (2) the functional form of this size relationship, (3) the relationship between residual audit hours, after controlling for client size, and other engagement characteristics, and (4) multivariate models of total audit hours for small and large clients. The paper concludes with a summary and discussion of our research findings.

Relationship Between Client Size and Total Audit Hours

Prior studies have documented the predominance of client size as the most significant determinant of the extent of audit work performed on financial statement audits. Table 1 presents details of this size relationship for our sample of 249 audit engagements. In Table 1, the sample has been separated into ten equal intervals ranging from the smallest ten percent of the sample, as measured by total domestic assets, to the largest ten percent. For each interval, averages are presented for: client total domestic assets and total domestic sales, domestic audit hours by personnel rank and in total, total domestic audit hours per $1,000 of client total domestic assets, and domestic audit fees billed and average fee per hour.[2]

Table 1 shows that total audit hours are increasing in client size, but at a decreasing rate. For the smallest ten percent of the sample whose average assets is $1.3 million, the average time required to perform audits was 257 hours. For the largest ten percent of the sample whose average assets is $1 billion, the average time required to perform the audits was 5,700 hours. On the smallest engagements, about 1/5th of an hour of audit work is performed for each $1,000 of assets. For the largest engagements, this amount declines to six one-thousandths of an hour, or about 6 hours per $1 million in assets. The two right hand columns in Table 1 indicate that audit fees billed and average audit fee per hour both increase with client size.

Table 1 also indicates that the mix of labor hours is different for small and large clients. For the smallest clients, partners and managers performed 25 percent of the total audit work, seniors 43 percent and staff 32 percent. For the largest clients, partners and managers performed 17 percent of the total audit work, seniors 28 percent and staff 55 percent. Figure 1 illustrates the change in labor mix across the 10 size intervals.[3] The figure reveals that, except for the smallest size interval, the proportion of partner and manager time remains roughly constant as size increases. The propor-

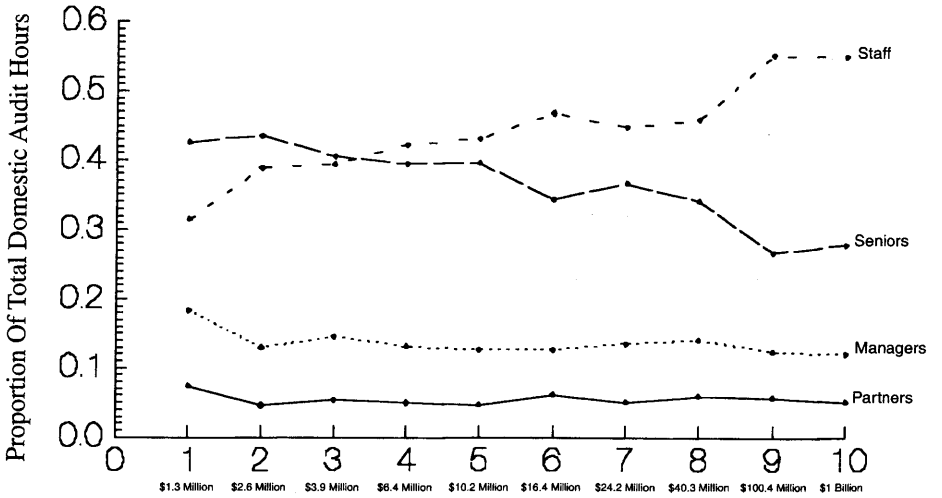
[2] For the remainder of the paper, reference to "total assets" or "total audit hours" implies domestic amounts only.

[3] OSS document this change in labor mix and test the stability of regression model coefficients across the four models. We investigate differences in models by personnel rank in a later section. However, we do not perform direct tests of the homogeneity of coefficients.

tion of staff time steadily increases with size up to $100 million in assets. Based on discussions with auditors, this phenomenon can be explained as follows.

Figure 1

Relationship Between Client Size and Proportion of Total Domestic Audit Work Performed by Different Levels of Personnel



For small clients, most of the work performed by seniors is procedural in nature–tests of details and workpaper documentation. Little time is spent by seniors in a supervisory capacity, as the audit is too small to warrant cost-effective use of staff with an intermediate layer of supervision. As clients (and audits) increase in size, the senior's role changes to one involving more supervision and less procedural work. The expected result is that by employing a greater proportion of lower-cost staff and intermediate supervision, profit is increased.[4]

In the next section, we investigate alternative functional forms of the relationship between size and total audit hours.

Functional Form of Relationship Between Client Size and Total Audit Hours

Different transformations can be employed to linearize a relationship that increases at a decreasing rate. In this section, we evaluate models of the relationship between client size and audit hours using three transformations and a two-equation approach involving the separate linear modeling of small and large engagements. Prior studies have used what we will call the *log model* to estimate the nonlinear relationship between audit hours (or total fees) and client size.[5] The log model involves taking the

[4] Auditors have expressed concern that this staff "leveraging" approach will not continue to be a profit increasing approach. Clients' internal audit operations continue to expand. The quality and accuracy of electronic processing of routine transactions has improved greatly over the last 20 years. As a result, large sophisticated clients are becoming less willing to pay for staff time involving the testing of routine transactions where audit differences seldom arise.

[5] See, for example, Ashton, Elliott and Willingham (1989) and O'Keefe, Simunic and Stein (1994).

natural logarithm of both the dependent variable (hours) and the independent variable (size), as shown in (1) below:

$$\ln(\text{Hours}) = \alpha + \beta * \ln(\text{Assets}) \qquad (1)$$

Taking the antilog of both sides of this equation shows its functional form expressed in terms of the original dependent variable, audit hours, i.e.,

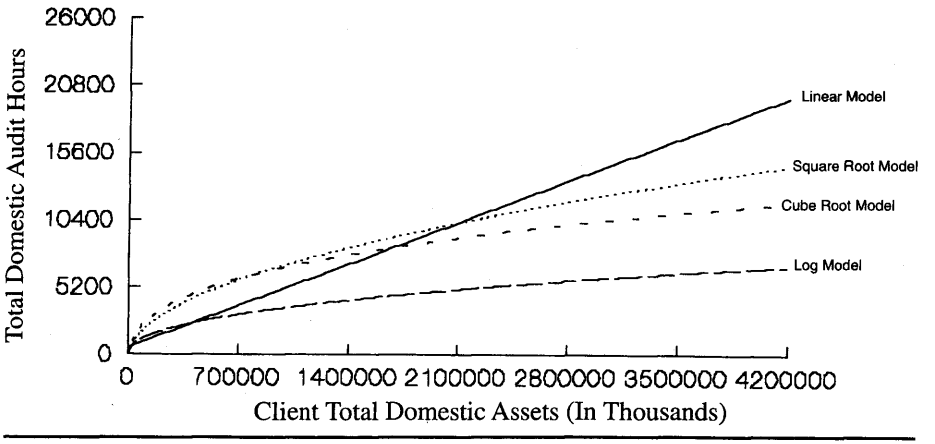
$$\text{Hours} = e^{\alpha} * (\text{Assets})^{\beta} \qquad (2)$$

When expressed as a function of hours, instead of ln(Hours), the log model contains no intercept, and involves the multiplication of a slope (e^{α}) times assets raised to the power β.[6] Therefore, the log model is similar to a no-intercept model with the independent variable being transformed by taking its nth root.[7]

We compare the explanatory power of the log model and two other transformations–taking the square root, and the cube root, of assets and leaving the dependent variable, hours, in its original form. The three functional forms, as estimated on the sample data using these three transformation methods, are depicted in Figure 2 along with a plot of the linear model.[8] As shown in Figure 2, the estimated log model dampens to the greatest extreme. The square root and cube root models fall above the linear model up to a client size of about $2 billion, after which they fall below the linear model. The log model falls below the linear model at an asset size of about $600 million.

Figure 2

Four Alternative Functions Estimating Relationship Between Client Size and Total Audit Hours



[6] The log model, as estimated using ordinary least squares regression, requires the assumption that errors are normally distributed, as is customary. This implies that the distribution of errors from the multiplicative model given in equation (2) is log normal.

[7] $\beta>1$ implies a relationship that is increasing at an increasing rate, and $\beta<0$ implies a decreasing relationship. Therefore, we expect $0<\beta<1$ if the size relationship is to increase at a decreasing rate.

[8] Sample data points have been excluded because most of the client data points would cluster near the y-axis in this plot. This is because a few very large clients greatly expand the plot scale. Data points are presented in Figures 3 through 8 where small and large segments of the overall sample are separately plotted together with the estimated functions.

In addition to the transformations described above, we estimated a covariance model of the size relationship–2 different linear models, one for small and the other for large clients. Determination of the size cutoff was made by examining various plots of the relationship between hours and size. We defined small clients as those 163 clients with total assets below $25 million, with the remaining 86 clients being defined as large.

Table 2 presents the model slope and the R^2 measure of goodness-of-fit for the linear, log, square root, and cube root models estimated on the total sample of 249 clients, and for the two-equation model separately estimated on the small and large samples. Models of each form are also presented for different personnel ranks.

The R^2 for the log model is not directly comparable to the R^2s for the other models because it expresses the proportion of explained variation in the log of hours whereas the others express the proportion of explained variation in original hours. So, we computed a quasi-R^2 for the log model by using the antilog of the right hand side of the estimated log model equation to estimate audit hours. Residuals were then computed using these estimates, and the resulting quasi-R^2 was computed by:

$$R^2 = 1 - (ESS/TSS) \qquad (3)$$

where ESS is the error (residual) sum of squares, or the unexplained variation in hours and TSS is the total variation in hours. The adjusted R^2 for the two-equation model was calculated using the squared residuals from a full covariance model where the model intercept and slope on size are allowed to change for large clients.[9] Since this full covariance model contains two additional independent variables, the adjusted R^2 is presented in Table 2.[10]

Table 2 shows that the two-equation model has the highest R^2s, both for total audit hours and for the four models of total hours by personnel rank. The R^2s for the linear model estimated on the total sample are very close to those for the two-equation model. The poorest model in terms of proportion of explained variation in total hours is the log model. Although the proportion of explained variation in ln(hours) is close to the other models, when we compute residuals for original hours using the antilog of this model, the proportion of explained variation significantly diminishes. The square root model performs equally as well as the two-equation model for manager hours, and almost as well for total hours and other models by personnel rank. Incidentally, the size exponent estimated from the log model ranges from .36 to .52, which is not substantially different from the square root power of .5. Presumably, the square root model fits better than the log model because it allows for estimation of an intercept, which also changes the estimated slope coefficient. Goodness-of-fit is lower for the cube root model, although it still outperforms the log model.

Figures 3 through 5 illustrate the dispersion of total audit hours around plots representing the linear model, the separate small and large client models, and the log model. Figure 3 contains the subsample of all 163 small clients. Figure 4 contains 51 of the large clients with total assets ranging from $25 million to $100 million, and Figure 5 contains the remaining 35 largest clients with assets ranging from $100 million to $4.2 billion. The plot was separated into these three segments so that we could clearly depict the points representing each client.

[9] This is equivalent to using the combined sum of the squared residuals from the small and large models as the ESS in equation (3), with the usual adjustment for two additional independent variables to derive the adjusted R^2.

[10] Both the dummy variable that captures a shift in the model intercept for large clients and the slope adjustment on assets for large clients are significant in the covariance model at the .10 level.

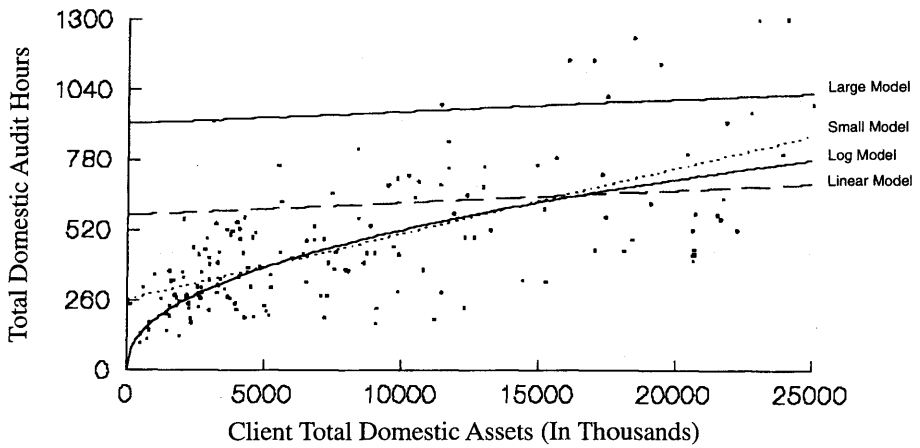
Table 2

Five Alternative Functions Estimating Relationship Between Client Size and Total Audit Hours (Models Estimated on Total Sample of 249 Audit Engagements)

	Linear Model		Log Model		Antilog of Log Model			Square Root Model		Cube Root Model		Two-Equation Model		
	Slope	R-Sq	Slope	R-Sq	Slope	Exponent	Quasi R-Sq	Slope	R-Sq	Slope	R-Sq	Small Slope	Large Slope	Adj. R-Sq
Total Audit Hours	.0046	.82	.4406	.76	8.9990	.44	.55	7.2378	.75	80.5705	.66	.0242	.0044	.83
Total Partner Hours	.0002	.75	.4480	.62	.4199	.45	.55	.3561	.73	4.0147	.66	.0012	.0002	.76
Total Manager Hours	.0005	.74	.4132	.61	1.4993	.41	.56	.7969	.76	9.0476	.70	.0027	.0004	.76
Total Senior Hours	.0012	.72	.3635	.67	6.8582	.36	.44	1.9192	.66	21.3648	.58	.0076	.0012	.73
Total Staff Hours	.0027	.76	.5161	.71	1.7826	.52	.53	4.1656	.68	46.1434	.59	.0127	.0026	.77

Figure 3

Relationship Between Client Size and Audit Hours for 163 Clients with Total Domestic Assets Less Than $25 Million

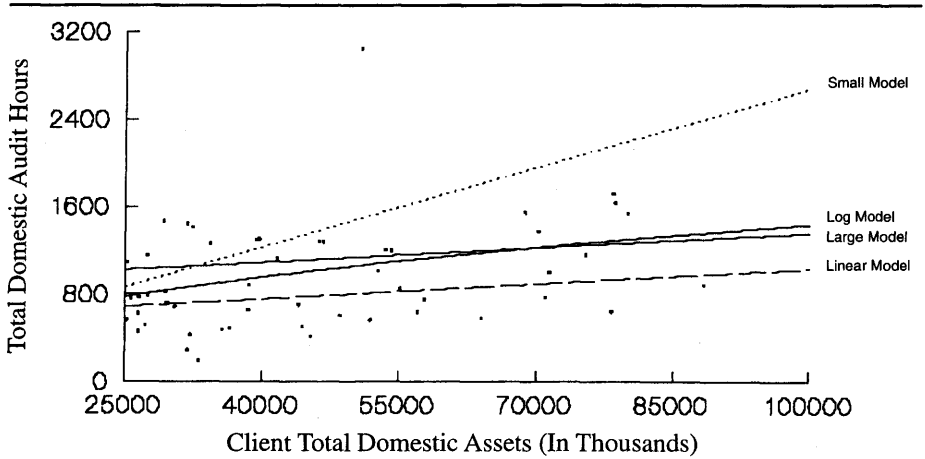


Legend: Large Model Fit on 86 Clients with Over $25 Million in Total Domestic Assets
Small Model Fit on 163 Clients with Total Domestic Assets Less Than $25 Million
Log Model is Antilog of Log Model
Linear Model Fit on All 249 Client Observations

Figure 3 shows that the log model and small model follow essentially the same path through the center of the client data points. The log model passes through the origin whereas the small model has an intercept at about 264 hours. The ratio of the

Figure 4

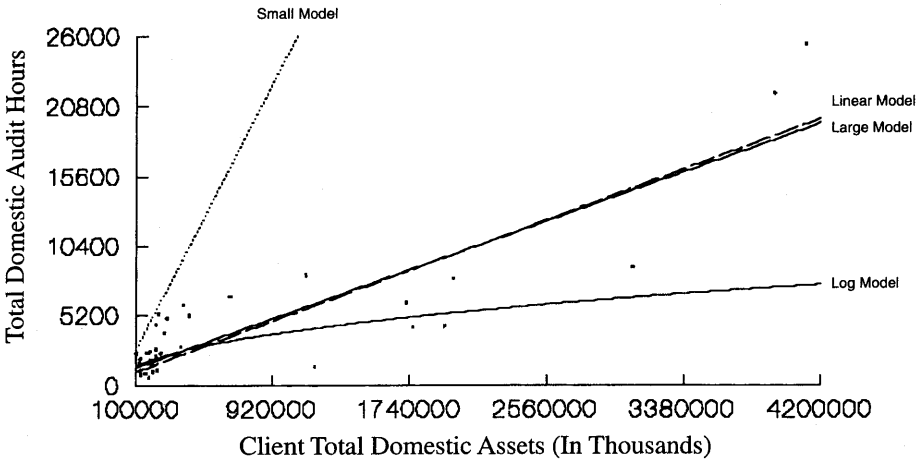
Relationship Between Client Size and Audit Hours for 51 Clients with Total Domestic Assets Between $25 Million and $100 Million



Legend: Large Model Fit on 86 Clients with Over $25 Million in Total Domestic Assets
Small Model Fit on 163 Clients with Total Domestic Assets Less Than $25 Million
Log Model is Antilog of Log Model
Linear Model Fit on All 249 Client Observations

Figure 5

Relationship Between Client Size and Audit Hours for 35 Clients with Total Domestic Assets Over $100 Million



Legend: Large Model Fit on 86 Clients with Over $25 Million in Total Domestic Assets
Small Model Fit on 163 Clients with Total Domestic Assets Less Than $25 Million
Log Model is Antilog of Log Model
Linear Model Fit on All 249 Client Observations

small model to log model residual sums of squares is .98 for these 163 small clients, which confirms that the small model minimally outperforms the log model over this size range. Clearly, both the linear model and the large model tend to overestimate hours for small clients.

Figure 4 shows that the small model, when extended into the large client range, significantly overestimates total audit hours. The large model has roughly the same slope as the linear model, but its intercept is about 350 hours higher. The log model is closer to the linear model when client size is just over $25 million, and it passes through and closely approximates the large model toward the upper end of this range where size approaches $100 million in assets. The ratio of the large model to log model residual sums of squares is 1.14 over this range, indicating that the log model has a better fit over the lower range of large client sizes.

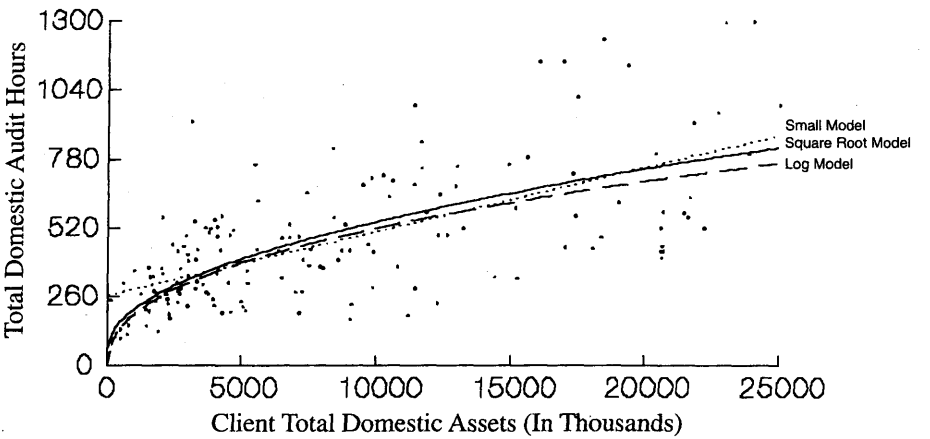
Figure 5 shows that the log model significantly dampens at the extreme upper end of the range of large clients, indicating that it is not descriptive of the relationship between size and hours for the very largest audit clients. The linear model and the large model trace similar paths over this upper range for the largest clients. The ratio of the large model to log model residual sums of squares is .36, confirming the inferiority of the log model in this upper range of size.

Figures 3 through 5 indicate that the two-equation model and the log model are approximately equivalent in terms of proportion of explained variation in audit hours for all but the very largest clients. The two largest sample clients "swamp" the models in that total hours are more than twice that of any other sample client. The log model is the least sensitive to these two observations. In fact, the sum of the two squared residuals for these observations when estimated using the log model (in antilog form) account for 82 percent of the residual sum of squares from that model in this upper size range. We investigated the sensitivity of results to these two "mega-clients" by

temporarily dropping them from the sample and recomputing the R^2s for all models. Both the two-equation and log models explain 69 percent of the total variation in audit hours for the remaining 247 clients. The linear model explains 62 percent of total variation, which is significantly lower than the two-equation and log models. The square root model had the best fit on this truncated sample with an $R^2 = .76$.

Figure 6

Relationship Between Client Size and Audit Hours for 163 Clients with Total Domestic Assets Less Than $25 Million



Legend: Small Model Fit on 163 Clients with Total Domestic Assets Less Than $25 Million
Log Model is Antilog of Log Model Fit on 247 Client Observations
Square Root Model Fit on 247 Client Observations

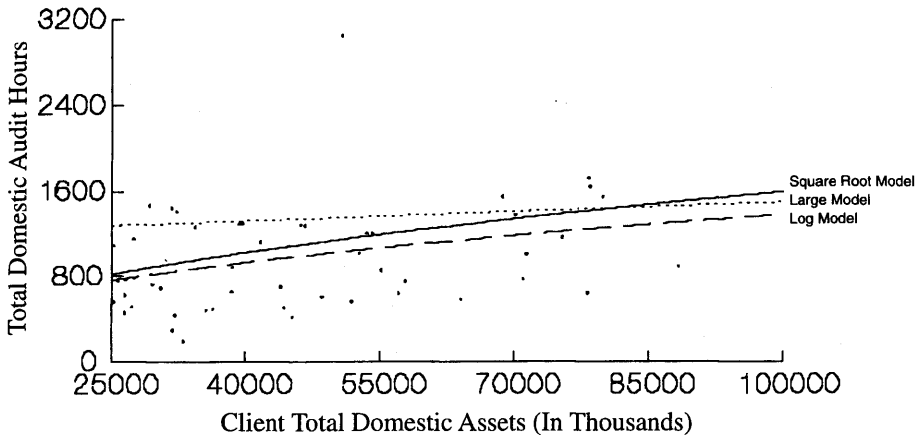
Figures 6 though 8 illustrate the dispersion of actual total audit hours around plots for the separate small and large client models and the log and square root models when estimated on the truncated sample of 247 observations. All three models appear nearly identical for the subset of 163 small clients depicted in Figure 6. In Figure 7, the square root and log models appear similar for the subset of 51 clients with assets between $25 million and $100 million. The large model appears to slightly overestimate hours within this range. For the remaining 33 large clients with assets greater than $100 million, the square root model depicted in Figure 8 appears to outperform the other two models.

Based on the analyses presented in Table 2 and Figures 3 through 8, we make the following observations. First, R^2s should be cautiously interpreted when transformations are made to a dependent variable, as in the case of the log model. Reliance on the proportion of explained variation in the transformed dependent variable may be misleading. Second, the estimated two-equation model fits the relationship between client size and audit hours at least equally as well as the log model, and better when the largest clients are not truncated from the sample. Third, the square root model significantly outperforms both the two-equation and log models for all but the largest "mega-clients".

We utilize the two-equation model for our remaining analyses of the impacts of other engagement characteristics on residual audit hours because it explains the largest proportion of total variation in the complete sample. We do not wish to exclude "mega-clients" from our analysis because other characteristics may explain some of

Figure 7

Relationship Between Client Size and Audit Hours for 51 Clients with Total Domestic Assets Between $25 Million and $100 Million

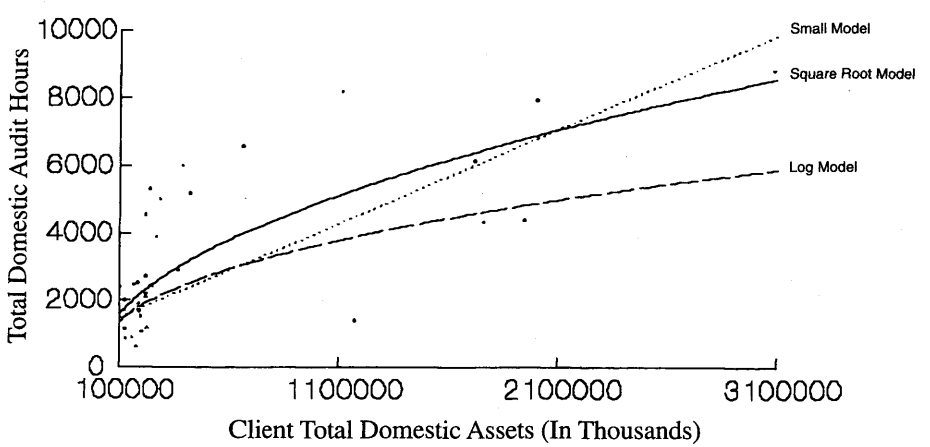


Legend: Large Model Fit on 84 Clients with Total Domestic Assets Greater Than $25 Million
Log Model is Antilog of Log Model Fit on 247 Client Observations
Square Root Model Fit on 247 Client Observations

their residual variance. However, we recognize that the square root model may provide slightly better control for the effect of client size on audit hours for the majority of clients in the sample. In the next section, we analyze the relationship between other engagement characteristics and residual audit hours after controling for client size using the two-equation model.

Figure 8

Relationship Between Client Size and Audit Hours for 33 Clients with Total Domestic Assets Over $100 Million



Legend: Large Model Fit on 84 Clients with Total Domestic Assets Greater Than $25 Million
Log Model is Antilog of Log Model Fit on 247 Client Observations
Square Root Model Fit on 247 Client Observations

Relationship Between Residual Audit Hours and Other Engagement Characteristics

In order to investigate the association between characteristics other than size and total audit hours, we computed residuals from the two-equation size model and coded each residual as negative or positive for both the small and large models. Negative residuals indicate the size model overestimates hours and positive residuals indicate underestimation of hours. Next we examined the association between other engagement characteristics and residual signs for the small and large clients. Significant associations provide preliminary indications of the existence of other characteristics that may help explain over- or underestimation of audit hours based on size alone. For example, consider two clients of approximately the same size, with one having significant foreign operations and the other having no foreign operations. If the existence of foreign operations necessitates more audit work, we would expect total audit hours to be greater for the client with foreign operations. Assuming both of these observations influenced the intercept and slope of the size model, it is reasonable to expect that the model would overestimate hours for the client with only domestic operations, and underestimate hours for the client with foreign operations.

Twenty-seven engagement characteristics were investigated in the manner described above–17 qualitative indicators and ten continuous measures. Table 3 reports the association between the 17 qualitative characteristics and residual signs for small and large clients, and for the total sample taken as a whole. Characteristics have been grouped into the following categories: client complexity, client controls and assistance, risk characteristics[11] and audit characteristics. For each qualitative characteristic, Table 3 reports the proportion of clients with negative residuals exhibiting the characteristic, the proportion of clients with positive residuals exhibiting the characteristic, and the probability for a Pearson χ^2 test for significant differences in observed and expected frequencies. Characteristics whose proportions are significantly different for negative and positive residuals at the .05 level have been highlighted in Table 3.

Table 3 indicates that qualitative client complexity measures are significantly correlated with residual audit hours for large clients, but not for small clients. A significantly higher proportion of large clients with positive residuals exhibit the existence of foreign operations, of a partially or fully decentralized accounting and financial control system, and of a high degree of operational complexity, as compared with large clients with negative residuals. For example, sixty-three percent of those large clients with positive residuals have a high degree of operational complexity, compared to only 22 percent of large clients with negative residuals.

Table 3 indicates that neither quality of, and extent of reliance on, client internal controls nor client assistance are significantly associated with residual audit hours for either small or large clients. However, several risk characteristics appear to affect total audit hours. A significantly greater proportion of large clients that are public companies have positive residuals.[12] A significantly larger proportion of small clients with excessive employee turnover have positive residuals. A higher proportion of large clients with low overall inherent risk have negative residuals, and a higher proportion

[11] This paper does not investigate the issue of whether, or how, auditor business risk impacts audit fees. See Bell, Lansdman, and Shackelford (1994) for a detailed analysis of this related topic.

[12] Obviously, many of the client and audit characteristics could be assigned to more than one category. For example, a public company typically is a more complex client than a private company, e.g., SEC filings would require additional audit work. However, we include this characteristic in the risk category for obvious reasons.

Table 3

Relationship Between Residual Audit Hours and Client and Audit Characteristics — Qualitative Variables (Sample Proportions Reported for Subsets of Clients with Negative vs. Positive Residual Audit Hours)

Engagement Characteristics	163 Small Clients Neg.	Pos.	Prob.	86 Large Clients Neg.	Pos.	Prob.	All 249 Clients Neg.	Pos.	Prob.
Client Complexity									
Client Has Foreign Operations (DFOROPS)	4%	11%	.103	**24%**	**45%**	**.039**	**11%**	**23%**	**.009**
Client's Accounting & Financial Control Is Partially or Fully Decentralized (DCENTRAL)	11%	14%	.579	**24%**	**51%**	**.011**	**15%**	**27%**	**.023**
Client's EDP Environment is Complex (DEDP)	5%	5%	.954	29%	38%	.382	13%	17%	.411
Operational Complexity, as Measured by the Number and Location of Operating Units and Diversification of Product Lines, is Fairly or Very Complex (DCOMPLEX)	2%	6%	.258	**22%**	**63%**	**.000**	**9%**	**26%**	**.000**
Client Controls & Assistance									
Client Has Poor or Virtually No Controls (DCTRL)	8%	10%	.646	7%	3%	.377	7%	7%	.962
Reliance on Internal Controls is Moderate to Extensive (DICRELY)	3%	4%	.770	22%	20%	.843	9%	10%	.930
Assistance from Internal Audit is Moderate to Extensive (DIAST)	1%	1%	.867	17%	13%	.528	7%	5%	.689
Client Assistance is Moderate to Extensive (DCLNAST)	69%	61%	.278	74%	70%	.687	71%	64%	.273
Risk Characteristics									
Client Is Public Company (DPUBLIC)	8%	15%	.125	**15%**	**58%**	**.000**	**10%**	**30%**	**.000**
Client Is New Company (DAGE)	3%	4%	.770	2%	0%	.348	3%	3%	.909
Client's Employee Turnover is Not Low (DTURN)	**42%**	**58%**	**.049**	36%	57%	.061	**40%**	**58%**	**.007**
Overall Inherent Risk is Low (LOWIRISK)	36%	26%	.179	**57%**	**23%**	**.001**	**43%**	**25%**	**.003**
Overall Inherent Risk is High (HIIRISK)	**3%**	**11%**	**.048**	2%	5%	.476	**3%**	**9%**	**.041**
Consolidated Shareholders' Equity is Negative (DEQUITY)	9%	11%	.621	4%	3%	.641	7%	8%	.828
Audit Opinion is Other Than Unqualified (DOPIN)	21%	26%	.409	13%	15%	.794	18%	22%	.425
Audit Characteristics									
Audit Procedures Primarily Performed Subsequent to Client's Fiscal Year-End (DTIMING)	100%	97%	.108	74%	62%	.267	91%	84%	.111
Number of Overtime Hours for Engagement is Moderate to High (DOVER)	18%	28%	.163	**40%**	**84%**	**.000**	**26%**	**48%**	**.000**

Boldface Indicates Pearson Chi-Square Test is Significant at the .05 Level.

Table 4

Relationship Between Residual Audit Hours and Client and Audit Characteristics — Continuous Variables (Means Reported for Subsets of Clients with Negative vs. Positive Residual Audit Hours)

Engagement Characteristics	163 Small Clients			86 Large Clients			All 249 Clients		
	Neg.	Pos.	Prob.	Neg.	Pos.	Prob.	Neg.	Pos.	Prob.
Client Complexity									
Percentage of Foreign to Total Assets (FORASST)	**0.23%**	**2.51%**	**.018**	4.11%	7.58%	.203	**1.53%**	**4.32%**	**.016**
Percentage of Foreign to Total Sales (FORSALES)	**0.18%**	**2.11%**	**.015**	5.09%	9.68%	.164	**1.83%**	**4.81%**	**.021**
Total Number of Separate Audit Reports for This Engagement (TREPORTS)	**1.4**	**1.9**	**.020**	3.9	5.3	.479	2.2	3.1	.224
Audit Characteristics									
Number of Years as a Client (CLYRS)	8.3	8.8	.758	12.5	13.4	.690	9.7	10.4	.559
Number of Years Current Partner Has Worked on This Engagement (PTRTOT)	4.2	4.3	.952	5.1	4.7	.699	4.5	4.4	.884
Number of Years Current Manager(s) Has Worked on This Engagement (MGRTOT)	2.4	2.7	.510	3.4	3.0	.453	2.8	2.8	.986
Number of Years Current Senior(s) Has Worked on This Engagement (SNRTOT)	1.7	1.6	.520	1.8	2.4	.104	1.8	1.9	.537
Number of Calendar Days Between Client's Fiscal Year-End and Date of the Audit Report (URGENCY)	67.2	78.4	.121	62.7	53.3	.184	65.7	69.4	.492
Domestic Audit Fees Billed Divided by Domestic Audit Hours (FEEPERHR)	62.42	59.25	.208	67.28	69.61	.430	64.05	62.95	.579
Risk Characteristics									
Book Value of Total Liabilities Divided by Total Assets (LEVERAGE)	.747	.687	.554	.590	.622	.534	.694	.664	.662

Boldface Indicates t-test for Differences in Means is Significant at the .05 Level.

clients with low overall inherent risk have negative residuals, and a higher proportion of small clients with high inherent risk have positive residuals.

Finally, Table 3 indicates that timing of the performance of audit procedures, i.e., whether significant interim work is performed, does not appear to significantly impact residual audit hours from the size models. However, a significant amount of overtime is spent by the engagement team on large clients with positive residuals.

Table 4 reports means for characteristics measured on continuous scales for clients with negative and positive residuals, and the probability from t-test 's for significant differences in observed means.[13] Characteristics whose means are significantly different for negative and positive residuals at the .05 level have been highlighted. Table 4 indicates that none of the characteristics measured on continuous scales are significant for large clients. Three client complexity characteristics are significant for the small client subsample. These are: percentage of foreign to total assets, percentage of foreign to total sales, and the number of separate audit reports issued for the engagement. For each of these complexity measures, small clients with positive residuals have significantly larger means.

OSS test for auditor learning effects by evaluating the incremental contributions of a set of dummy variables capturing the tenure of the audit firm with the client. They find no evidence of the effect of audit firm learning on total audit hours. We supplement their learning tests by investigating the tenure of current *audit personnel,* as opposed to audit firm tenure. In Table 4, we report tests for significant differences in the mean number of years personnel have worked on the current audit engagement for clients with negative and positive size-model residuals. The learning hypothesis would imply that audits being staffed by the same personnel for several years should take less time to complete, compared to audits with a less experienced engagement team. The section in Table 4 labeled "Audit Characteristics" reports the mean number of years partners, managers, and seniors have worked on the current engagement. These average experience measures are not significantly different for clients with negative and positive residuals, regardless of size, indicating that familiarity with the client's operations does not result in a reduction of audit hours.

Summarizing to this point, preliminary tests for identifying engagement characteristics impacting total audit work performed indicate that client complexity and certain audit risk characteristics are significantly associated with residual audit hours after controlling for client size. No initial evidence exists that quality of client internal controls, level of client assistance on the audit, or other audit characteristics (except overtime) significantly impact total work performed on financial statement audits. In the next section, we report the results of tests of multivariate models of total audit hours.

Analysis of Multivariate Equations of Total Audit Hours for Small and Large Clients

The analyses presented in the previous section provide a preliminary indication of those engagement characteristics other than client size that might provide significant incremental explanatory power in multivariate models of total audit hours. In this section, we report the results of our specification of a final model of total audit hours. We also investigate those engagement characteristics most significantly associated with the allocation of audit hours for different personnel ranks.

[13] Pooled within-groups standard deviations are used where warranted.

Table 5
Multivariate Models for Total Domestic Audit Hours and Hours by Personnel Rank (Signed Coefficient t Statistics and Model R-Squares)

Client & Audit Characteristics	Total Domestic Audit Hours		Partner Hours	Manager Hours	Senior Hours	Staff Hours
	Slope	t-Statistic	Signed t-Statistics			
Large Clients						
Total Domestic Assets (In Millions)	1.06	3.33	**1.31 (NS)**	**1.72 (NS)**	**.56 (NS)**	3.30
Total Number of Separate Audit Reports	78.45	4.91	8.12	5.22	5.79	**.81 (NS)**
Low Inherent Risk (Shifts Intercept)	–669.83	–3.10	**–1.26 (NS)**	**–.94 (NS)**	**–.65 (NS)**	–3.14
High Operational Complexity (Shifts Intercept)	738.05	3.24	2.40	2.33	**1.85 (NS)**	2.20
Slope Adjustment on Total Domestic Assets for Public Cos. with Foreign Operations	3.60	12.00	6.27	5.52	6.90	9.55
Sub-Model R-Square	.94		.87	.83	.83	.90
Small Clients						
Total Domestic Assets (In Millions)	23.08	11.00	5.36	6.96	9.16	9.87
Total Number of Separate Audit Reports	16.12	**1.61 (NS)**	**1.46 (NS)**	**.81 (NS)**	**1.14 (NS)**	**1.42 (NS)**
Public Company (Shifts Intercept)	118.95	2.74	5.01	5.88	**.99 (NS)**	**1.25 (NS)**
Percentage of Foreign Sales	8.72	3.20	2.50	3.52	3.05	**1.81 (NS)**
Slope Adjustment on Total Domestic Assets for Clients with High Inherent Risk	20.90	3.16	**.54 (NS)**	3.76	**1.03 (NS)**	3.33
Sub-Model R-Square	.54		.31	.44	.40	.46
Combined Model R-Square	.95			.95		

(NS) = Not Significant at the .05 Level.

Table 5 reports our final multivariate models of total audit hours for small and large clients. We tested many combinations of engagement characteristics, including interactions among characteristics, using our analyses of residual hours to guide our choices. However, we did not limit our search for significant incremental variables to those significant variables identified in the preliminary residual analysis. All of the 27 engagement characteristics were given a chance to enter the final model in various forms.

The large client model presented in Table 5 contains a set of client complexity measures, including size, and a low inherent risk indicator variable. All variables are incrementally significant at the .05 level and coefficient signs are consistent with our intuition. The model indicates resources are allocated to large audit engagements in the following manner. For each $1 million in total assets, one hour is added to total audit hours. Each audit report issued for a large engagement results in the addition of 78 hours to the audit. On average, if a large client is rated as exhibiting low inherent risk, total audit hours decline by 670.[14] On average, if the client exhibits a high degree of operational complexity, 738 hours are added to the audit. Finally, for those large public clients with foreign operations (22 percent of our sample of 86 large clients), total audit hours increase by about five for each $1 million in total assets. The large client model explains 94 percent of the total variation in total audit hours for the 86 large clients.

The lower section of Table 5 reports our final model estimated on the 163 small clients. As with the large client model, this model contains a set of client complexity measures, including size, and an inherent risk indicator variable (slope adjustment on size for high, instead of low, inherent risk). All variables are incrementally significant at the .05 level except for total number of separate audit reports (t-test probability = .11), and all coefficient signs are consistent with our intuition. The model indicates resources are allocated to small audit engagements in the following manner. For each $1 million in total assets, 23 hours are added to total audit hours. Each audit report issued for small engagements results in the addition of 16 hours to the audit. On average, if a small client is a public company, total audit hours increase by 119. For each percentage point of foreign sales to total sales, audit hours increase by nine. Finally, for those small public clients with high inherent risk, total audit hours increase by about 21 for each $1 million in total assets. The model explains 54 percent of the total variation in total audit hours for the 163 small clients.[15]

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[14] Dummy variables that shift the model intercept capture "average" effects on hours for the entire subset of clients exhibiting the characteristic. In reality, the effect would likely vary across engagements depending on the size of the client and the existence of other engagement characteristics. For some characteristics our model only includes a term that captures the intercept shift because additional variables that attempt to capture related slope changes were not statistically significant.

[15] Table 5 indicates that the large model explains a much higher proportion of total variation in hours for the 86 large clients as compared to the proportion of total variation explained with the small model for the 163 small clients. We can only guess as to why this is true. One explanation is that the two "mega-clients" discussed in an earlier section contribute a large proportion of the total variation in hours for large clients, and influence model fit to the extent that much of this variation is explained. We dropped the two largest clients from the large sample and re-estimated the final large model. The R^2 dropped to .79, still significantly higher than for the small model. Based on discussions with auditors, we suspect the principal cause for higher unexplained variability in hours on small clients relates to the high degree of variability in the quality of the accounting support function within small clients. Some small clients have implemented high quality reporting systems, and others have not. For those clients who have poor systems or none at all, a large portion of the total audit work involves accounting work. This characteristic is virtually nonexistent for large clients.

The R^2 for the full two-equation model is .95 (adjusted R^2 = .94).[16] If we delete the two "mega-clients" from the large sample, the R^2 for the full two-equation model drops to .84 (adjusted R^2 = .84), but the coefficient signs and significance levels are unaffected. We also estimated the full two-equation model using the square root of assets as the client size measure. The R^2 for this model (not shown is Table 5) is .89 when estimated on the full sample of 249 clients, and .88 when estimated on the truncated sample of 247 clients. These results indicate that the two-equation model with total assets used as the client size variable performs slightly better than the two-equation square root model for the full sample of 249 clients, but the two-equation square root model performs slightly better on the truncated sample of 247 clients.

Table 5 also reports the t-statistics for coefficients in separate models of partner, manager, senior and staff hours. Client size for those large clients that are not public companies with foreign operations is not significant in determining the allocation of partner, manager and senior hours. Size most significantly impacts the allocation of staff hours for large clients. The same phenomenon exists for the low inherent risk characteristic for large engagements–staff hours are the only hours that are significantly reduced. Partner, manager, and senior hours are significantly increased by the total number of separate audit reports, but staff hours are not significantly affected by this characteristic. For large clients with a high degree of operational complexity, allocations of hours for all four personnel ranks are significantly positively impacted, but for seniors only marginally (t-test probability for seniors = .06). Allocations of hours for all personnel ranks is significantly impacted by size for those large public clients with foreign operations.

For small clients, Table 5 indicates that allocations of hours for all personnel ranks are significantly impacted by client size. The total number of separate audit reports does not significantly impact allocations of hours for any rank of personnel. Sixty-nine percent of the sample of 163 small clients have only one audit report, whereas 74 percent of the large clients have more than one audit report. We included the variable in the small client models because it was marginally significant for the total hours model (p = .11) and because the preliminary analysis of residual hours (reported above) indicated significance. Partner and manager hours are significantly higher for publicly traded small companies, but allocations of senior and staff time are not significantly impacted by this characteristic. For each percentage point of foreign sales to total sales, audit hours for partners, managers and seniors are significantly increased, but not for staff. Finally, allocations of hours for managers and staff are significantly impacted by client size for those small clients with high inherent risk, but not allocations of hours for partners and seniors.

In order to investigate whether the use of separate models by personnel rank might explain more of the variation in total audit hours, we estimated total hours using these separate models for small and large clients, and computed the proportion of total variation in total audit hours explained by the aggregate estimates. Estimated hours for each personnel rank were first summed for each sample client, yielding an estimate of total audit hours. Residuals were then computed by subtracting these estimates from actual hours. The squared residuals were then summed and the R^2 for total audit hours was computed using equation (3) given above. As indicated in Table 5, this R^2 is .95 and is not significantly different from the R^2 resulting from application of the total hours model without concern for personnel ranks. In fact, the residual sums of squares for both approaches are almost identical.

[16] See footnote 9.

Summary

In this study, we investigated the association between many audit engagement characteristics and quantity of work performed on domestic financial statement audits to better understand the determinants of audit resource allocations. We observed that for a sample of 249 manufacturing, merchandising, and high technology clients, different characteristics appear to impact quantity of audit work performed for small and large engagements. For small engagements with total assets up to $25 million, client size, ownership status, the percentage of foreign to total sales, and whether the client exhibits high inherent risk appear to significantly impact the quantity of work. For large engagements with total assets over $25 million, client size, the total number of audit reports, a high degree of operational complexity, whether the client exhibits low inherent risk, and whether the client is a public company with foreign operations appear to significantly impact the quantity of work.

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Discussant's Response to "An Exploratory Analysis of the Determinants of Audit Engagement Resource Allocations"

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Introduction

The authors provide a thought-provoking analysis of the determinants of labor hour allocations on audit engagements and I thank Raj for asking me to serve as a discussant. I view my role as one of providing a critical analysis of the research. Thus, although I do believe the research is interesting and important, my comments center on ways in which the research could be made even more interesting and useful. I begin by focussing on the lack of motivation for the research question and on the relation between this research and the O'Keefe, Simunic and Stein (OSS; 1992) work.[1] Finally, I provide detailed comments on the research design and data analysis.

Importance of the Question

This paper is an extension of earlier work by O'Keefe, Simunic and Stein. In the OSS work, the authors provide four reasons why research investigating the determinants of the allocation of audit hours is important.

1. To validate previous work on the determinants of audit fees,
2. To increase the power of tests for "learning effects" and "knowledge spillovers,"
3. To aid in understanding the supply side of the market for audit services, and
4. To fuel the interest of those who want to analyze the audit production process.

In the paper being reviewed, there is no discussion of the importance of the question. One of the reasons I enjoy auditing research is that it has the potential to have real-world effects. As I was reading this paper, I kept asking myself, what effect will this have on practice? This paper describes characteristics of resource allocation decisions. Is the purpose an academic exercise or is there potential for audit firm impact? Is the question interesting in and of itself? Is the question interesting as a test of economic theory? Is this theory-building research? Will the results allow as to set standards for the most efficient and/or effective allocation of labor resources? Would one expect differences across firms? The auditing firm that provided the data did so at a cost. What were they expecting from the analysis?

Whatever the case, in making attempts to bridge the research-practice gap, the research should be motivated by discussing its direct or indirect effects on practice.

Relation With Previous Research

There are three basic differences between this paper and the OSS paper. First the authors focus on total *domestic* hours while OSS combine foreign and domestic hours. Second, this paper investigates different functional forms of the client size relationship

[1] Oss used the same sample and focused on similar issues.

while OSS used only the log transformation, and third, the focus in this paper is on total hours aggregated across the personnel levels while OSS estimate separate equations for each personnel level. There are also other differences in the two papers such as the use of residual analyses by Bell, Knechel and Willingham, but I want to focus this part of my discussion on the three differences that are most likely to affect the results.

Domestic versus foreign hours

Although the reasons given by the authors for deleting foreign hours are reasonable, I find it very difficult to accept. The purpose of the study is to analyze the determinants of audit engagement resource allocations. For this particular sample, foreign hours were part of the resource allocation and should not be omitted. At this early stage of research on the audit production process, it would perhaps be best to begin the analysis with a sample of clients for whom only domestic hours were used. After the basic framework is developed, more complex situations using a sample of clients, such as used in this paper, with both domestic and foreign hours, could be investigated.

Nonetheless, as this paper stands, I would like to see a better link between the OSS paper and this work. Some descriptive statistics on the amount of foreign hours across the categories would have been useful information as well as some specific tests and discussion of what differences were forced by the removal of foreign hours.

Differential form of the size relation

I have no problem with exploring different functional forms of the size/audit hours relation but I would like to discuss the use of the two equation model. The two equations distinguish between small and large clients with the cutpoint at $25,000,000, determined by examining various plots of the relation between hours and size. OSS do not distinguish between small and large clients but did examine the relation between size and hours. They found that partner and manager hours remained relatively constant over client size categories while senior and staff hours varied with the intersection of the two curves occurring at about $12,000,000. Why the difference in cutpoints? Is it due to the removal of foreign hours?

Regardless of the cutpoint used, I would like to see some sensitivity analysis. How much does the cutpoint influence the results? How much different is a company with $24,000,000 in assets from a company with $26,000,000? In this research, the former would be considered small and the latter, large. In the end I believe much power is lost by categorizing the observations as small and large and believe that it should not be done.

Total versus disaggregated hours

OSS develop an *a priori* model and test it on each personnel level. They then test for differences of regression coefficients across labor categories and conclude:

> The fact that different grades of labor are not used in fixed proportions as certain client characteristics vary implies that it is inappropriate to use a simple sum of labor hours as the dependent variable in the type of tests performed.

In this research, the multivariate model is developed by testing many combinations of variables. The R^2s are then compared across total hours and the separate levels of labor and no differences are noted. First, I do not understand why the OSS results were ignored and second, I believe no differences were found in this work simply

because of the design. Again, I would like to see a better link between this paper and the OSS paper and some careful analysis of the differences between the two papers.

Research Design and Analysis

I would like to turn my attention now to some questions I have on the research design and analysis including issues related to variable choice and measurement and data analysis.

Variable choice and measurement

There is no theory which guides the choice of variables for testing the determinants of audit engagement resource allocations and thus we must rely, for the most part, on intuition and expertise. Although I acknowledge that many of the variables are obvious choices, I do believe that time should be spent on motivating and justifying the variable choices. In addition, I believe there are some alternative variables and measurements which should have been considered.

Hours: Although it is not made clear, hours appear to be actual hours *charged* to an engagement rather than budgeted. It would seem that hours budgeted would be more reflective of basic labor resource allocation decisions. Any variance would then be reflective of unanticipated problems encountered in the course of the audit or anticipated problems not encountered. A separate analysis of the budgeted and actual would give more insight into factors affecting labor resource allocation decisions and responses of the firm to unanticipated labor allocations.

Industry: Companies from the high tech, manufacturing and merchandising industries are included in the sample. I see no reason to believe that total audit hours for a standard audit would necessarily be the same across these industries. Industry differences will surely affect the results and evidence should be provided on industry effects or the lack thereof. OSS did test for industry differences and found that high tech companies were weakly significantly different than manufacturing and merchandising firms. They do not clarify what they mean by weakly significant, but nonetheless, evidence should be provided in this paper on industry effects.

Client Size: Although both OSS and this paper use assets as a client size measure, I am wondering if sales might not provide a better measure of the effect of size on labor resource allocation decisions. Some justification should be provided for the use of assets rather than sales and a sensitivity analysis should be conducted indicating that it does or does not make a difference.

Learning Effects: This paper uses the tenure of an individual on the audit to measure learning effects while OSS used audit firm tenure. It seems to me that learning effects would be related to tenure within a given *industry* and not within a given company. Just as a rose is a rose is a rose, a standard audit in a given industry is a standard audit in a given industry is a standard audit in a given industry! If a firm concentrates and is an expert in the merchandising industry, for example, there is no reason to expect significant learning effects if they take on a new merchandising client.

Opinion Variable: A variable is used to indicate when the opinion is other than unqualified and is found to be insignificant in the multivariate analysis. Surely an audit which results in an nonstandard opinion will result in more total labor hours, *ceteris paribus,* than the standard audit resulting in an unqualified opinion. I believe that an analysis which is designed to help us better understand the audit production process should initially be confined to the standard audit which results in the standard unqualified opinion. After learning about labor resource allocation decisions on stan-

dard audits the analysis can then be expanded to determine effects of an nonstandard audit. A sample of companies receiving nonstandard opinions could be then compared to similar companies receiving standard unqualified opinions. This design would help not only to determine the specific effects of a nonstandard audit but also would ensure that a sufficient sample of nonstandard audits would be available for analysis.

Years: In the paper by OSS they note that the data are from audit firm engagements in 1989. The same data are used in this research and are described as being from engagements spanning the period from 1986 to 1989. That obviously needs to be clarified. If, however, the data span the 1986 to 1989 time period, then I wonder if there may be time period effects. As we move into 1989 there are increasing competitive pressures to cut costs and changes in audit technologies. These changes could affect resource allocation decisions across the years.

Inherent Risk: Although clearly the assessed level of inherent risk for a given client will affect the labor resource allocation decision, I hesitate to consider the inherent risk measurement used in this research to be informative. I understand the problems but I find it difficult to accept the assumption that a client with inherent risk just below average is similar to a client with little if any inherent risk or that a client with inherent risk that is just above average is similar to a client with inherent risk significantly above average. We must find a way to develop a continuous measure of inherent risk and to use it not only in academic research but also in audit planning.

Data analysis

The part of the data analysis I find very troublesome is the data mining in the multivariate analysis. I believe it is inappropriate to use the sample to determine the variables of importance and then to use the same sample for the multivariate analysis. Such an approach clearly inflates the R^2s and they should not be relied upon as a valid measure of the explanatory power of the model. A holdout sample technique should be used where one sample can be used to investigate variables and the other can be used to test the validity of the resulting model.

Conclusions

In conclusion, I return to my initial comment that the authors provide a thought-provoking analysis of the labor resource allocation decisions. I do believe, however, that a more careful and rigorous approach to the design and analysis will lead to important and useful insights into the audit production process.

Finally, I would like to return to comments made by Richard Kreutzfeldt (1992) when he was discussing a paper on time pressures encountered in an audit during the 1992 Deloitte & Touch/University of Kansas Audit Symposium. In discussing strategic choices such as staffing decisions made by auditing firms he suggested that the research agenda should be expanded to investigate strategic choices.

> It would seem appropriate to begin with descriptive studies of the strategic choices. For example, there are many rich variables considered in staffing decisions. An interesting research project would be to interview staffing directors at various firms to learn about the considerations that go into staffing decisions-considerations such as the risk level of the engagement, industry experience of the individuals, auditing experience, continuity on the engagement, availability of personnel, leveling of schedules between individuals and over the year, etc. Once this descriptive information is obtained, it could be used in further studies of time pressure (Kreutzfeldt 1992, 94).

Kreutzfeldt also comments that audit firms know a tremendous amount about strategic choices. I do not have access to a copy of the questionnaire used to gather data for the Bell, Knechel and Willingham research nor do I have information on how

the questionnaire was developed. OSS do comment, however, that the objective of the original questionnaire was to develop a database on audit engagements for internal purposes, independent of their research. It would seem to me that the first step in gathering information on the audit production process should be indepth interviews prior to the collection of client data. Researchers should rely on the "tremendous knowledge" of practitioners to formulate research questions, to develop research programs and to help us all better understand the audit process and to investigate ways of improving both its effectiveness and efficiency.

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4

An Investigation of Adaptability in Evidential Planning

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A growing body of research (e.g., Mock and Wright 1993; Bedard 1989) has examined evidential planning decisions in auditing, reflecting the importance of these decisions to the design of an efficient and effective audit. Accordingly, auditing standards (SAS 31 and 47) stress the importance of adaptability[1] in program planning. This study examines the effect of two pervasive factors in the audit environment that may significantly impact evidential planning: client industry and required procedures.

Prior research suggests that the level of risks, changes in risks, and evidence diagnosticity are likely to vary by industry. In addition, the incidence, magnitude, direction and cause of audit errors differ cross-sectionally (Maletta and Wright 1993). Thus, the importance of considering industry setting in evidential planning is widely recognized in auditing. However, little empirical findings exist as to the level of adaptability of evidential planning in practice to industry conditions.

In contrast to industry factors, generally considered functional in appropriate planning, required procedures may impair program planning. The performance of required procedures, which can be quite time consuming, may serve to limit the auditor's ability to adapt to unique client risks. Further, these procedures may be over relied upon, since their sanctioning may imply greater diagnosticity than provided.[2]

Specifically the following two broad questions are examined. Are program planning decisions tailored to the client's industry? Further, do required procedures inhibit planning adaptability? This research studies evidential planning decisions as reflected in the working papers of a sample of 155 actual engagements. Two industries (manufacturing and merchandising) and accounts (accounts receivable and accounts payable) are examined.

The findings suggest that auditors adapt the nature of procedures to be performed to the client's industry. However, planning decisions were not found to be strongly linked to the level of and changes in risk. This finding has important implications for audit efficiency and effectiveness and suggests that additional training and/or the use of decision tools may be needed.

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[1] Adaptability, for purposes of this study, reflects the extent to which auditors develop their evidential plan in response to the level and changes in risk, as well as, evidence diagnosticity and competency associated with the client's industry and the audit area being examined.

[2] The data utilized in this study was collected prior to the issuance of Statement of Auditing Standards Number 67 "The Confirmation Process" which provides additional guidance on the use of confirmations.

The level of planning adaptability was not significantly affected by the need to perform required procedures. However, a disproportionate amount of audit effort appears to be devoted to these procedures (confirmations), which have been found to be of limited diagnostic value in detecting errors (e.g. Hylas and Ashton 1982). This finding suggests a need to reevaluate the cost/benefit associated with such procedures.

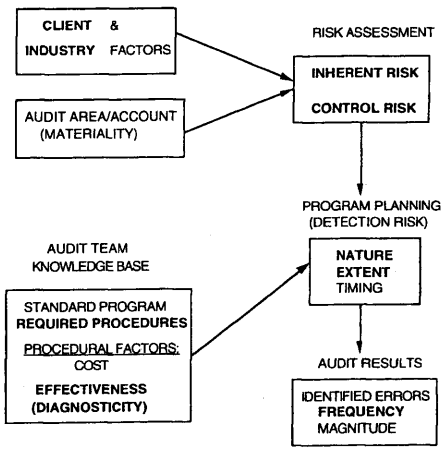
The remainder of the paper is presented in four sections. The next section introduces a simplified model of adaptability and identifies the research questions to be addressed. The method of investigation and findings are then presented. The final section describes the implications of this study for practice and future research.

Adaptability in Evidential Planning

Figure 1 presents a simplified model of adaptability in evidential planning, which serves to set the stage for the research questions. In this model evidential planning is depicted as a function of the auditor's risk assessments and knowledge base. The risks noted (inherent and control risks) are those suggested by the Audit Risk Model advanced in auditing standards. However, there is little knowledge concerning the extent to which program planning decisions in practice are tailored to risk assessments. Two archival studies have examined this issue. Bedard (1989) found that audit programs varied little over time. Rationale statements suggested that extent seemed to be the primary mechanism for adapting to changes in risks. However, data regarding actual risk assessments were not gathered.

Figure 1
Adaptability In Evidential Planning
(Audit Risk Model Perspective)

Note: Variables In Bold Face Are Examined In This Paper



Mock and Wright (1993) examine the relationship between program planning decisions and risk assessments over a two year period from data abstracted from the working papers. Table 1 provides an overview of the results of that study. Three of the findings are particularly noteworthy, First, audit programs were found to be quite stable over time, corroborating the findings of Bedard (1989). Second, extent was related to the level of a number of risk factors, especially the existence of prior errors.

This finding suggests the intertemporal link in program planning decisions. That is, an audit appears to be a sequential learning process, since the audit results from a prior year indicate areas of risks. Finally, changes in risks over time were not found to be significantly associated with revisions to extent. In sum, these findings raise questions of whether evidential planning decisions in practice are sufficiently adaptive to the level of and changes in risk.

Table 1
Summary of the Research Findings of Mock & Wright (1983)

RESEARCH QUESTIONS	RESULTS	
	ACROSS CLIENTS	OVERTIME
DO AUDIT PROGRAM DECISIONS (NATURE AND EXTENT) VARY?	NATURE WAS SIMILAR (70%-75% COMMON TESTS) BUT EXTENT VARIED.	THERE WAS LITTLE CHANGE IN TYPES OF TESTS (95% COMMON TESTS) FROM YEAR TO YEAR. EXTENT DID VARY TO A LIMITED DEGREE.
DO RISK ASSESSMENTS VARY?	THERE WAS A WIDE RANGE AND VARIANCE IN RISK ASSESSMENTS.	LIMITED CHANGE WAS PRESENT IN RISK ASSESSMENTS; i.e. NO CHANGE IN 90% OF MICRO IR; 76% OF MACRO IR; AND 94% OF IC RELIANCE JUDGMENTS.
WHAT IS THE RELATIONSHIP BETWEEN AUDIT PROGRAM DECISIONS AND RISK ASSESSMENTS?	SOME SIGNIFICANT ASSOCIATIONS WERE FOUND FOR A/R EXTENT DECISIONS BUT NONE FOR A/P.	EXTENT WAS LARGELY DEPENDENT ON THE PRIOR YEAR'S PLAN/ACTUAL. MIXED/LIMITED FINDINGS RÉGARDING THE ASSOCIATION BETWEEN PLANNED EXTENT AND RISK CHANGES.

NOTES:
1. Common tests are those that are done across clients or across time (this year & last year)
2. Micro IR: inherent risks for an account/cycle
3. Macro IR: inherent risks at the engagement level (e.g. going concern problems)
4. A/R = Accounts Receivable; A/P = Accounts Payable

Figure 1 also identifies elements of the auditor's knowledge base that are likely to influence program planning decisions. Standard audit programs and required procedures (e.g. confirmations of accounts receivable) are decision tools that suggest evidence to be gathered. Additionally, through experience the auditor is expected to gain knowledge of the costs and relative effectiveness of various procedures.

The Bedard (1989) and Mock and Wright (1993) studies provide important insights concerning program planning decisions. However, they do not explicitly consider the impact of industry and required procedures on evidential planning, the focus here.

The pattern of errors (Hylas and Ashton 1982; Ham et al 1985; Kreutzfeldt and Wallace 1986) and their magnitude and cause (Maletta and Wright 1993) significantly differ across industries, suggesting areas of audit exposure vary cross-sectionally. Further, the level of inherent risks associated with different assertions may differ across industries. For instance, the collectibility of accounts receivable (valuation) may be more problematic for a merchandiser than a manufacturer due to the larger number and greater diversity of customers. Finally, the availability, reliability and cost

of gathering evidence can differ across industries. For example, Caster (1990) suggests that confirmations sent to vendors in a manufacturing environment are more diagnostic than those received from consumers for a retailer. Thus, one would expect auditors of manufacturing clients to devote a larger percentage of audit time to confirmations than auditors of merchandisers, *ceteris paribus.*

Given the importance of industry factors, as described, the following exploratory research questions are examined.

Q1: Does evidential planning (nature and extent of procedures) vary across industries?
Q2: Are there industry differences in the relationship between evidential planning and the level of risks?
Q3: Are there industry differences in the adaptability of evidential planning to changes in the risk over time?

The second variable examined here is the impact of account differences on program planning. The reliability and cost of gathering evidence may vary across accounts. Additionally, key assertions and inherent risks may differ. The findings of Mock and Wright (1993) suggest that adaptability to risk at the account level may be limited. The present study examines a potential explanation for this finding, the effect of procedures required by professional standards. Wright and Mock (1985) argue that given a competitive environment, the time consuming nature of required procedures such as accounts receivable confirmation may limit the auditor's ability to adapt to the unique risks and evidence of a client. That is, required procedures reduce planning flexibility in that auditors have limited resources available to deal with specific risks, and required procedures absorb some of these resources irrespective of the level of risk present. The diagnosticity of such required procedures as inventory observation and accounts receivable confirmations has been found to be quite low (Hylas and Ashton 1982; Sorkin 1977; Warren 1973). Required procedures may, thus, provide a false sense of confidence in that auditors perceive such evidence to be of greater diagnostic value than is actually provided. Lin et al (1991) provide evidence supporting this. The final research question examines the effect of required procedures on adaptability of program planning, an issue not explored in prior research.

Q4: Do required procedures inhibit adaptability in program planning?

Method

This study is based upon actual evidential planning judgments abstracted from audit working papers. The study focuses on planning decisions in two accounts (and related cycles): accounts receivables (revenue and receipts cycle) and accounts payable (purchasing and disbursement cycle). These accounts were selected for several reasons. First, these accounts are material on most audit engagements. Auditors, therefore, can be expected to have had frequent experience in planning these areas. Second, prior research suggests these areas contain a relatively high incidence of errors (Maletta and Wright 1993; Wright and Ashton 1989; Kreutzfeldt and Wallace 1986). A final rationale is the need to compare the planning judgments for an account that has a required procedure to one that does not (Ques. 4). The confirmation of accounts receivable is required by professional standards while no such requirement exists in the accounts payable area.

This research examines engagements in two industries: manufacturing and merchandising. Maletta and Wright (1993) report that of the industries studied, the

mean number of errors was highest for the manufacturing and merchandising companies, with the manufacturers having the largest errors. Additionally, error causes varied across the manufacturing and merchandising companies. Importantly, accounts receivable and accounts payable are normally material accounts for companies in both of these industries.

A random selection was made from one Big 6 firm's client list, with an equal number of manufacturing and merchandising companies. Two sample criteria were employed. The company had to (1) be an audit client and (2) have been audited for at least one prior year. The second criterion was to address the responsiveness of evidential planning to changes in risks (Ques. 3). This selection criterion limited the sample to 345 engagements, of which 46 percent responded. Given the extensive information sought on each engagement, this response rate was considered satisfactory. The final sample comprised 155 audits: 84 manufacturing and 71 merchandising.

Table 2 presents financial data on the sample, indicating a wide range of companies in terms of size. Audit "gauge" is reported, which is the participating firm's operational determination of planning materiality. Gauge equals the greater of revenues or assets to the 2/3 power. On average, both the accounts receivable and accounts payable areas were quite material.

Test Instrument

A test instrument[3] was developed to obtain information on the nature and extent of audit procedures (planned and actual) for the two most recent years in the accounts receivable and accounts payable areas. Risk data were also obtained for this period. The test instrument was pilot tested by six audit managers and minor modifications were made.

The instrument was completed by the auditor in charge of the engagement and was reviewed by the manager and partner on the engagement for thoroughness and accuracy. Participants had an average of 4.1 years of experience, with 85 percent at senior level or higher. Respondents, therefore, are expected to have a good level of understanding and experience in evidential planning. The instrument was administered as close to the completion of the current year's field work as possible, minimizing completion time and also enhancing the accuracy of responses.

The nature of planned evidence was determined by requiring the auditors to submit a copy of the current and prior year audit program. The firm's standard audit program had been used on 95 percent of the selected engagements. Coding of audit evidence was, thus, objective and efficient, as the auditors indicated by their initials those standard procedures planned for the audit. Additional procedures were also noted. The coding for these procedures was independently completed by 2 individuals. The level of agreement was 78 percent, with all discrepancies jointly discussed, resolved and coded accordingly.

The extent of evidential planning was measured based upon total audit hours. Sample size was not used as many evidential sources (e.g. client inquiry) do not involve the selection of a sample. The audit effort and cost of equally sized samples are also not necessarily equivalent.

Total audit hours (planned and actual) for accounts receivable and accounts payable were taken directly from the working papers. A measure of extent by broad procedural area[4] was also needed. Auditors were asked to consult the working papers

[3] A copy of the instrument is available upon request.

[4] Disaggregation of audit time by individual audit test was determined, from consultation with firm personnel and pilot testing, to be extremely time consuming and not likely very accurate.

Table 2
Financial Data
(in thousands of dollars)

		Manufacturers (n=84)		Merchandisers (n=71)	
		Current Year	**Prior Year**	**Current Year**	**Prior Year**
Total Assets	Mean	$70,642	$66,470	$183,577	$140,473
	Range	$419-2,664,879	$300-2,452,968	$404-7,443,877	$404-4,840,311
Total Revenues	Mean	$62,442	$71,616	$252,461	$245,726
	Range	$300-1,277,790	$294-2,041,745	$587-8,225,326	$562-7,774,480
Audit Gauge	Mean	$426	$427	$551	$491
	Range	$9-5,300	$7-5,839	$12-12,000	$4-11,000
Net Income (Loss)	Mean	$4,978	$4,975	$4,028	$8,002
	Range	$(23,889)-206,583	$(35,583)-226,599	$(15,012)-109,302	$(5,185)-231,300
Accounts Receivable	Mean	$11,645	$12,144	$16,039	$15,557
	Range	$77-352,344	$102-459,980	$17-426,927	$5-478,701
Accounts Payable	Mean	$7,266	$8,352	$24,625	$27,082
	Range	$5-276,128	$25-397,267	$4-1,023,905	$9-1,151,426
Accounts Receivable/Gauge	Mean	25	25	21	21
	Range	2-134	2-162	0.15-151	0.26-116
Accounts Payable/Gauge	Mean	16	17	24	21
	Range	0.28-203	0.62-249	0.01-461	0.14-12

Note: No significant differences ($p \leq 0.10$) across industries.

and use their professional judgment in allocating the total audit hours in each account to broad procedural areas. These areas are presented in Exhibit 1 and were determined from discussions with executive office personnel and review of the firm's audit manual. A pilot test revealed that the broad procedural areas were familiar to and understood by the participants.

Exhibit 1
Broad Procedural Areas by Account

Account		Procedural Area
Accounts Receivable	–	Analytical procedures
	–	Confirmations
	–	Collectibility procedures
	–	Detailed procedures
	–	Cutoff
	–	Financial statement disclosures/methods
	–	Tests of controls
Accounts Payable	–	Analytical procedures
	–	Confirmation (vendors' statements)
	–	Cutoff
	–	Review accruals
	–	Detailed procedures
	–	Financial statement disclosures/methods
	–	Test of controls

Risk data were also obtained. Several inherent risk factors were identified from the literature (Kreutzfeldt and Wallace 1986; Willingham and Wright 1985) which appear to be significant. Table 3 presents these "macro" and "micro" level risk factors. "Macro" level risk factors relate to the engagement overall, whereas the "micro" level risks are account specific. All risk factors, with the exception of the number of audit differences, were measured on a 7 point scale.

Assessments of risk were derived from the audit working papers. Planned reliance on accounting controls for each account was also determined directly from the working papers. A four point scale was used reflecting the procedure employed by the participating firm in practice. Controls were assessed as strong, moderate, weak, or not relied upon.

Findings

Prior to examining the research questions an analysis was performed to ascertain whether the industry groups were on average of comparable financial size and risk. This analysis was necessary so that any differences in evidential planning across industries could be attributable to industry classification and not to initial variations in size and or risk. The industry data were compared through t tests. No significant differences ($p \leq .10$) were noted for the financial variables and only one significant difference was noted for a risk variable in Table 3 (change in management's level of aggressiveness).[5]

[5] Engagement or macro level risks individually or in aggregate did not significantly vary across industries ($p \leq .10$) for both years. A significant difference was noted concerning the change over the two year period in management's level of aggressiveness in committing the entity to high risk ventures or projects. The mean level of change in management's aggressiveness was 1.88 for manufacturers and .00 (no change) for merchandisers. This difference was significant at $p = .04$.

Table 3
Inherent and Control Risk Factors

Engagement (Macro) Risk Factors	Scale End Points	Manufacturer's Mean (St. Dev.)	Merchandiser's Mean (St. Dev.)
Level of knowledge of the entity's accounting personnel (i.e., controller and staff) in terms of awareness and understanding of accounting principles and practices and how to apply them.	Extremely high knowledge- Extremely low knowledge	2.93 (1.08)	3.06 (1.29)
Accounting personnel's general attitude in accomplishing their responsibilities.	Extremely conscientious- Unconscientious	2.27 (0.94)	2.37 (0.94)
Degree the entity's financial information system(s) changed in the fiscal year in terms of input, output, or the degree of computerization.	Significant change- No Change	2.36 (1.44)	2.25 (1.30)
Degree the entity's financial information system(s) are computerized.	Completely computerized- Completely manual	2.41 (1.20)	2.69 (1.35)
Overall level of general controls, including potential for management override. Consider factors such as organizational structure, documentation policies, existence of budgets and comparisons of budgets to actual results, and existence of an internal audit department.	Extremely strong general controls- Extremely weak general controls	3.00 (1.07)	3.32 (1.25)
Management's (i.e., CEO, CFO, and other operating officers) aggressiveness in committing the entity to high risk ventures or projects.*	Extremely aggressive- Extremely conservative	3.44 (1.27)	3.08 (1.33)
Extent of high level management turnover (i.e., CEO and other key operating officers).	Extremely high turnover- No turnover	2.08 (1.45)	1.97 (1.45)

* Significant at $p \leq 0.10$.

Note: With the exception of the last risk variable (number of differences) all risk assessments were on a seven point scale with verbal end - points as noted above.

Table 3 (cont'd)
Inherent and Control Risk Factors

(AR = Accounts Receivable, AP = Accounts Payable) **Account (micro) risk factors**	**Scale End Points**	**Manufacturer's Mean (St. Dev.)** **AR**	 **AP**	**Merchandiser's Mean (St. Dev.)** **AR**	 **AP**
Degree to which judgment (including estimates) was required in arriving at the entries to the accounts receivable (account payable) and related allowance for uncollectible accounts.	Extreme judgment required- Little or no judgment required	3.38 (1.25)	2.06 (0.87)	3.35 (1.41)	2.07 (1.07)
Degree of complexity underlying entries made to accounts receivable (accounts payable) and related allowance for uncollectibles.	An extremely high level of complexity- Little or no complexity	2.42 (0.96)	2.34 (1.04)	2.46 (1.25)	2.32 (1.15)
Relative number of unusual transactions (including related party transactions) included in accounts receivable (accounts payable) and related allowance for uncollectibles, as compared to similar clients in the industry.	A significant number of unusual transactions- Very few or no unusual transactions	2.31 (1.36)	1.80 (0.89)	2.25 (1.31)	1.93 (1.10)
The total number of prior audit differences found affecting the accounts receivable (accounts payable) and related allowance for uncollectible accounts (include all differences whether waived or not).	(1) Number of differences: P&L effect	2.36 (4.55)	1.81 (2.47)	2.22 (2.58)	1.92 (2.41)
	Reclassification	0.87 (1.19)	0.73* (0.98)	1.19 (2.41)	1.60* (2.06)
	(2) Number of differences: P&L effect	0.16 (0.55)	0.16 (0.51)	0.19 (0.64)	0.10 (0.45)
	Reclassification	0.20 (0.48)	0.11 (0.35)	0.14 (0.39)	0.24 (0.57)

* Significant at $p \leq 0.10$.

Note: With the exception of the last risk variable (number of differences) all risk assessments were on a seven point scale with verbal end - points as noted above.

Nature and Extent of Evidential Planning Across Industries (Q1)

To examine variations in the nature of planned tests, chi-square tests were done for each audit procedure, comparing the frequency with which it was performed in one industry versus another. There were significant differences ($p \leq .05$) for 12 out of 24 common tests in accounts receivable and only one out of 20 tests in accounts payable. These findings suggest that the nature of planned tests does differ by industry for accounts receivable.

In the accounts receivable area, five out of the 12 different procedures were related to confirmations, an additional five related to collectibility, with the remaining differences attributable to analytical procedures. In all cases, the frequency with which these procedures were performed was greater for manufacturing clients than merchandisers. Based on the number and diverse nature of the customers in a merchandising environment, one might expect greater frequency in performing a portfolio of collectibility procedures for merchandising clients as compared to manufacturers. Additional research is needed to further explain this finding. In the accounts payable area, analytical review procedures were performed more often for merchandisers than manufacturers.

The percentage of engagement hours devoted to each account was compared for the manufacturing and merchandising companies as a test of the differences in the extent of planned procedures across industries.[6] Total planned hours for accounts receivable as a percentage of engagement hours did not significantly differ across industries ($p = .36$). The mean percentage of engagement hours devoted to accounts receivable for manufacturers and merchandisers was 11.7 percent and 14.0 percent, respectively. Total planned hours for accounts payable as a percentage of engagement hours did significantly differ at $p = .02$. For manufacturers, the mean (standard deviation) percentage of total engagement hours devoted to accounts payable is 7.4 percent (5.2 percent). This percentage for merchandisers is 9.7 percent (6.9 percent).

To further investigate differences in the extent of planned procedures, tests were performed comparing planned hours by broad substantive auditing area as a percentage of total engagement hours. In the accounts receivable area, significant differences ($p = .03$) across industries were noted in the confirmation area. The mean (standard deviation) percentage of engagement hours planned for the confirmation of accounts receivable was 5.1 percent (6.3 percent) for merchandisers and 3.3 percent (2.5 percent) for manufacturers. This finding is interesting, considering that confirmation procedures for a merchandiser is likely to provide less diagnostic evidence than that obtained through confirmations for a manufacturing firm. Additionally, from the risk data obtained, perceived risk did not significantly differ between the industry groups. The additional hours spent by auditors in the confirmation area for merchandisers may be due to the number of confirmations requested and/or, for example, the need to reconcile differences between the clients' records and the confirmation responses. No significant differences in the percentage of engagement hours across other substantive areas in accounts receivable were noted.

In comparing the percentage of engagement hours devoted to substantive audit areas for accounts payable, two significant differences were found. The mean (standard deviation) percentage of engagement hours planned for the confirmation of

[6] Since the focus of this study is on evidential PLANNING judgments, extent measures reflect planned or budgeted hours rather than actual hours. However, planned and actual extent were very highly correlated (average correlation $r = .90$). The primary findings were the same when either planned or actual extent measures were employed in the analyses.

accounts payable was 2.5 percent (2.3 percent) for merchandisers and 1.6 percent (1.6 percent) for manufacturers. This difference is significant at p = .05. A significant difference (p = .02) was also noted in the area of accounts payable cutoff; 1.3 percent of planned engagement hours were devoted to cutoff procedures (1.1 percent) for merchandisers versus 1.0 percent for manufacturers (0.6 percent).

Industry Differences in Responsiveness of Evidential Planning Decisions to the Level of Risk (Q2)

Table 3 provides descriptive data by industry on the assessment of macro and micro level risks. Risk measures were compared between manufacturing and merchandising firms through t-tests and except for one variable (number of prior errors) were not significantly different. Importantly, the relatively high standard deviations present suggest variation in risk across clients. Generally one would expect that as risk differs across clients, the appropriate number of tests and/or the variety of tests needed to detect potential errors also would differ.

Nature of Procedures

A regression analysis[7] was performed (See Table 4) to examine differences in the nature of audit procedures selected for accounts receivable and accounts payable as a function of the client's industry and risk characteristics. The nature of tests was represented by the number of procedures selected.

In the accounts receivable area, the model was significant at p = .001, R^2 = .32. Industry and five account specific inherent risk factors were significant p ≤.10. These factors were level of knowledge of accounting personnel, management's aggressiveness, degree of judgment, number of unusual transactions, and prior errors.

In the accounts payable area, the model resulted in little explanatory power (R^2 = .05) with no significant industry effect noted. The one significant account specific inherent risk factor was management turnover.

The results presented above suggest that industry and level of risk offer little explanatory power with respect to the selection of accounts payable procedures. Auditor's evidential planning decisions in the accounts receivable area appear somewhat adaptive to the client's industry and selected risk factors.[8]

Audit Extent Decisions

To examine the responsiveness of evidential extent decisions to industry and level of risk, a regression analysis was performed in which the percentage of engagement hours devoted to accounts receivable and accounts payable was examined as a function of the client's industry and risk characteristics.

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[7] The model tested was as follows:

Nature and extent of evidential planning = f(Industry, engagement inherent and control risks, account-specific inherent control risks, internal control reliance, and materiality of account)

Based upon the current level of knowledge concerning the relationship between specific macro and micro level risks to audit planning and the possibility that risk factors could be offset, an additional model was also tested. This model may be represented as:

Nature and extent of evidential planning = f(Industry, total macro risks, total micro risks, and materiality of account)

The findings of the regression analysis for this model did not significantly vary from the results reported and indicate the robustness of the research findings.

[8] Logit analysis were also performed on an individual audit procedure basis. Industry and the various risk factors served as the independent variables. The results are consistent with those described.

As presented in Table 4 in the receivable area, the model was significant at p = .001, R^2 = .61. However, industry was not a significant predictor. Significant ($p \leq .10$) engagement level risk factors included: the market in which shares are traded, the degree to which the entity's financial information system changed, and management's aggressiveness. The only significant account-specific inherent risk factor was the number of prior errors affecting accounts receivable. Materiality of the account was highly significant at p = .001.[9]

Table 4
Regression Results For Responsiveness of Evidential Planning Decisions

	Accounts Receivable		Accounts Payable	
Independent Variables	No. of Audit Procedures Planned	Percentage of Engagement Hrs in Account	No. of Audit Procedures Planned	Percentage of Engagement Hrs in Account
Intercept	16.58	–5.01	12.88	2.09
Industry	–2.72*	.61	.10	1.03
Trading Market (Private or Public)	–.72	3.23*	–.19	2.68*
Engagement Inherent and Control Risks				
Knowledge of Personnel	.52*	–.21	.15	–.37
Attitude	.07	.58	.10	.26
Change in System	.02	.83*	.02	.18
Computerization	.21	–.36	–.33	.05
General Controls	.01	–.37	.07	.10
Management's Agressiveness	–.48*	–.81*	.04	.03
Turnover	–.30	.39	–.39*	–.16
Account Specific Inherent and Control Risks				
Judgment	1.40*	.39	.26	.03
Complexity	.01	.24	.11	.29
No. of Unusual Transactions	.56*	.34	.09	–.41
Prior Errors—No. of	–.01	1.04*	–.01	.21*
Prior Errors—No. Exceeding Materiality	–.79*	–.24	–.00	.27
Internal Control Reliance	–.10	–.09	.21	–.98*
Materiality of Account	.02	.14*	.00	.04*
MODEL R2 (p)	.32(.00)	.61(.00)	.05(.97)	.27(.00)
ADJUSTED R2	.24	.57	–.07	.18
N	146	148	144	147

*Significant at $p < 0.10$

In the accounts payable area, the model was significant at p = .001, R^2 = .27. Industry was not a significant predictor. The only significant engagement level risk factor was the market in which the client's shares are traded (p = .002). Significant account-specific inherent risk factors included the number of prior errors and internal control reliance. As in the accounts receivable area, materiality of the account was significant at p = .02.

The findings suggest some adaptability in the extent of evidential planning to the level of selected risk factors. Significant risk factors varied by account area and included both macro and micro level risks. The extent of evidential planning did not

[9] To investigate the extent of multicollinearity among the risk factors, the variance inflationary factor (VIF) was computed. VIF values were generally in the 1 to 2 range and, in all instances, did not exceed 4. Marquandt (1980) states that only if VIF values exceed 10 is there likely to be a multicollinearity problem.

vary by industry and suggests that the extent of audit testing is dependent upon the level of risk associated with an engagement, rather than the client's industry classification.

Industry Differences in Responsiveness of Evidential Planning Decisions to Changes in Risk (Q3)

Evidential planning decisions are also expected to be responsive to changes in risk. In examining the responsiveness of planning decisions to changes in risk, no directional expectations are posed. In the regression analyses the dependent variables were: number of new procedures, number of deleted procedures, and mix of planned procedures (referred to as "common tests" and calculated as the percentage of procedures included in both the current and prior year audit program).

As presented in Table 5, in the accounts receivable area, all three regression analyses revealed no significant industry effect ($p \leq .10$). Significant ($p \leq .10$) risk factors in the regression analyses, with number of new tests ($R^2 = .24$) and percentage of common tests ($R^2 = .23$) as the dependent variables, were changes in the overall level of general controls and an increase in total revenues. An increase in total assets was also a significant predictor for the number of new tests. Significant predictors for the number of deleted tests ($R^2 = .34$) was an increase in accounts receivable and a change in management's aggressiveness and turnover.

In the accounts payable area, industry was a significant predictor of the number of new tests and the percentage of common tests. The following macro level inherent and financial risk factors were found to be significant ($p \leq .10$) for the regression analyses in which the number of new tests ($R^2 = .35$) and percentage of common tests ($R^2 = .40$) were the dependent variables: change in the financial information system, increases in total revenues and an increase in the number of accounts payable accounts. Also significant for the number of new tests in the accounts payable areas was the change in level of knowledge of accounting personnel. Changes in the overall attitude of accounting personnel and general controls were significant predictors of the percentage of common tests. A significant predictor for the number of deleted tests ($R^2 = .18$) and percentage of common tests was an increase in the accounts receivable balance.

To examine the response in extent judgments to changes in risk, a regression analysis was performed. The percentage of engagement hours in the account served as the dependent variable. In the accounts receivable area, this model was marginally significant at $p = .10$, $R^2 = .36$ for the merchandising industry. The only significant micro level risk factor was the change in the number of audit adjustments resulting from reclassification. In the accounts payable area, no significant results ($p \leq .10$) were obtained for either industry.

Overall, the responsiveness of evidential planning across industries to changes in risk appears to be extremely limited[10] and was noted only in the accounts payable area in terms of the nature of tests performed. However, in interpreting these findings, one must consider that the participating engagements exhibited limited variation in risk across the two year time period examined.

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[10] However, on average, the percentages of participants who assessed no change in risk over the two year period examined were:

Macro - Engagement level risks – 78.3%
Micro - Account specific risks – 90.4%
Internal control reliance – 94.3%

These assessments appear to reflect the belief that audit clients are quite stable over the two year time period examined.

Table 5

Regression Results For Responsiveness of Evidential Planning Decisions to Changes in Risk

Independent Variables	Accounts Receivable			Accounts Payable		
	No. of New Test	No. of Deleted Tests	Percentage of Common Tests	No. of New Test	No. of Deleted Tests	Percentage of Common Tests
Intercept	.94	1.20	.96	–.13	.95	1.00
Industry	.07	.02	–.01	–.73*	.39	–.04*
Trading Market (Private or Public)	–.86	–1.27	.06	.38	–.89	–.01
Engagement Inherent and Control Risks						
Knowledge of Personnel	.47	.04	–.03	.66*	.18	–.04
Attitude	–.09	–.12	.01	–.18	–.07	.01*
Change in System	.23	.15	–.02	.39*	–.07	–.02*
Computerization	.65	.74	–.04	.57	.46	–.03
General Controls	–.76*	–.14	.05*	–.45	–.53	.02*
Management's Aggressiveness	.07	–1.12*	–.00	.21	–.33	–.02
Turnover	.01	.38*	–.00	–.11	–.02	.01
Account Specific Inherent and Control Risks						
Judgment	–.11	–.24	.01	.58	.46	–.04
Complexity	–.18	.49	.01	–.18	–.38	–.00
No. of Unusual Transactions	.40	–.16	–.03	–.53	.49	.05
Prior Errors—No .of	.04	.05	–.00	–.05	.04	.00
Prior Errors—No. Exceeding Materiality	.03	.03	–.00	.10	.05	–.00
Internal Control Reliance	–.24	.07	.01	.58	–.16	–.03
Materiality of Account	.02	.03	–.00	.01	.05	–.00
Financial Measures						
Increase in Total Assets	1.24*					
Increase in Accounts Receivable		–4.22*			–4.20*	.13*
Increase in Total Revenues	–.33*		.02*	.61*		–.04*
Increase in Accounts Payable Accounts				–41.13*		2.81*
MODEL R2 (p)	.24(.28)	.34(.01)	.23(.33)	.35(.01)	.18(.70)	.40(.00)
ADJUSTED R2	.04	.17	.30	.17	–.04	.24
N	116	116	116	113	113	113

* Significant at $p < .10$

Effect of Required Audit Procedures on the Adaptability of Evidential Planning (Q4)

As described earlier, the requirement to perform confirmation procedures in the accounts receivable area may limit auditor's adaptability. Analyses were performed to compare the nature and extent judgments of accounts receivable (containing the required confirmation procedure) versus accounts payable (no required procedure).

The regression results presented earlier in Tables 4 and 5 do not reflect a clear pattern of greater responsiveness to risks for accounts payable than accounts receivable. Additional measures of adaptability are the variability in the nature and extent of selected procedures at a point in time as well as over time, *ceteris paribus,* lower adaptability would suggest less variation.

The results presented in Table 6 do not suggest significantly greater variability in the nature of selected procedures in the accounts payable area than in accounts receivable. In addition, this table reports descriptive statistics on the extent judgments in each of these areas and changes in extent. F tests for equality of variance were not significant ($p \leq .10$), indicating the relative level of variation in extent judgments across accounts was similar. Additionally, the high standard deviations for accounts receivable confirmations relative to the means suggests auditors adapt the extent of this procedure to reflect the engagement needs. Therefore, the findings do not support the notion that required procedures, per se, inhibit adaptability in evidential planning.

Table 6
Extent Judgments Across Audit Areas

	Accounts Receivable		Accounts Payable	
Extent Judgments	**Mean**	**St. Dev.**	**Mean**	**St. Dev.**
Planned Hours/ Engagement Hours	12.7%	14.7%	8.3%	6.1%
Current Year Planned Hours/ Prior Year Actual Hours	93.0%	30.0%	93.0%	30.8%
Change in Planned Hours/ Engagement Hours	–0.03%	3.6%	-0.4%	2.2%
Planned Confirmation Hours/ Engagement Hours	4.1%	4.6%	2.0%	2.0%
Change in Planned Confirmation Hours/Engagement Hours	–0.1%	1.3%	–0.1%	0.7%

Differences in planned audit hours by broad substantive audit area for accounts receivable and accounts payable were also compared across industries utilizing a multivariate analysis of variance. To control for client size, audit hours by substantive area were examined as a percentage of total accounts receivable (or accounts payable) hours and as a percentage of total planned engagement hours. The level of risk was also statistically controlled. In the accounts receivable area, no significant differences were found in planned audit hours by area as a function of industry. The only marginally significant industry difference ($p = .10$) was found in the accounts payable area in

comparing planned hours for tests of controls as a percentage of total planned hours for this area.

As described, prior research studies (Caster 1990; Sorkin 1977; Warren 1973) suggest confirmations are unreliable in identifying misstatements. Recent field studies (Hylas and Ashton 1982; Ham, Losell and Smieliauskas 1985; Wright and Ashton 1989) have found similar results.

Table 7 provides comparative data of the extent judgments in this sample and the empirical findings. Four broad types of evidence are evaluated here because of data limitations. The field studies cited above provide a further disaggregation of evidence. However, a breakdown of audit hours into such detail is not performed in practice. Thus, based on the pilot test, audit extent was requested for broad procedural areas, which generally fall into the four evidence categories in Table 7.

Table 7
Evidential Extent and Diagnosticity

	Tests of Details	Confirmation	Analytical Procedures	Other Procedures
Accounts Receivable				
Planned Hours/Account Hours	23.1%	32.4%	10.5%	34.0%
Actual Hours/Account Hours	22.9%	32.8%	10.1%	34.2%
Accounts Payable				
Planned Hours/Account Hours	59.5%	23.2%	14.9%	2.4%
Actual Hours/Account Hours	56.9%	23.1%	14.3%	5.7%
Diagnosticity (Wright & Ashton, 1989)*	47.5%	0.0%	15.5%	37.0%

Notes:
(1) Data above represents the aggregate mean for all engagements in the sample.
(2) Hours/account hours reflect the relative time spent within the particular area of the audit.
* Percent of errors detected by type of evidence as reported in this study.

The findings in Table 7 indicate that, although confirmations detected virtually no errors in the field studies noted, a substantial proportion of audit time is devoted to performing this procedure. This finding is especially pronounced in accounts receivable, where almost 1/3 of the audit time in the account is spent performing this test.

Discussion and Implications

This research examined the adaptability of evidential decisions to industry differences and the level and changes in risk associated with the engagement. A summary of the results is presented in Table 8 and suggests that auditors adapt the nature of procedures to be performed to the client's industry. However, the level of adaptability varied by audit area with greater variability in the planning of accounts receivable procedures than accounts payable. This finding appears to suggest that the reliability, availability and cost of gathering evidence may be differentially affected by industry classifications across audit areas. One might expect the make up and risk characteristics of accounts receivable to vary more by industry than accounts payable. Therefore, more "standard" procedures may be employed in the audit of accounts payable.

Table 8
Summary of Research Findings

RESEARCH QUESTIONS	RESULTS	
	ACCOUNTS RECEIVABLE	ACCOUNTS PAYABLE
Q1: DOES EVIDENTIAL PLANNING VARY ACROSS INDUSTRIES? [Disscussion pages 10-13]	SIGNIFICANT DIFFERENCES WERE PRESENT FOR 12 OUT OF 24 COMMON PROCEDURES AND IN PLANNED EXTENT IN THE CONFIRMATION AREA.	ONLY ONE SIGNIFICANT DIFFERENCE FOUND OUT OF 20 TESTS. PLANNED EXTENT VARIED FOR CONFIRMATION AND CUT-OFF TESTS.
Q2: ARE THERE INDUSTRY DIFFERENCES IN THE RESPONSIVENESS OF EVIDENTIAL PLANNING DECISIONS TO THE LEVEL OF RISK ACROSS CLIENTS? [Table 4]	NATURE OF TESTS WAS SIGNIFICANTLY IMPACTED BY INDUSTRY AND SEVERAL RISK FACTORS. EXTENT WAS AFFECTED BY SEVERAL RISK FACTORS BUT NO SIGNIFICANT INDUSTRY EFFECT.	NATURE OF TESTS IMPACTED BY MANAGEMENT TURNOVER BUT NOT INDUSTRY. EXTENT WAS AFFECTED BY RISK FACTORS BUT NOT INDUSTRY.
Q3: ARE THERE INDUSTRY DIFFERENCES IN THE RESPONSIVENESS OF EVIDENTIAL PLANNING DECISIONS AND CHANGES IN RISK OVER TIME? [Table 5]	NATURE WAS SIGNIFICANTLY AFFECTED BY SEVERAL RISK FACTORS BUT NO INDUSTRY EFFECT WAS PRESENT. EXTENT WAS MARGINALLY IMPACTED BY INDUSTRY.	NATURE FOUND TO BE SIGNIFICANTLY AFFECTED BY SEVERAL RISK FACTORS AS WELL AS INDUSTRY. THERE WERE NO SIGNIFICANT ASSOCIATIONS FOUND BETWEEN EXTENT AND INDUSTRY OR CHANGES IN RISK.
Q4: WHAT EFFECT DO REQUIRED PROCEDURES HAVE ON ADAPTABILITY IN EVIDENTIAL PLANS? [Table 6 & 7]	RESPONSIVENESS TO RISKS SIMILAR FOR A/R AND A/P. THE VARIABILITY IN EXTENT WAS SIMILAR ACROSS ACCOUNTS, SUGGESTING REQUIRED PROCEDURES DID NOT RESTRICT ADABILITY.	

The extent of procedures to be performed in the accounts receivable areas was responsive to the level of risk associated with several risk factors. Responsiveness to changes in risk was, however, not dependent on industry classification in the accounts receivable area. Several "macro" level risks were important predictors of the nature of procedures to be performed. Of interest for future research would be an examination of the evidential planning decisions of engagements which have experienced significant changes in risk. In addition, a longitudinal study that traces such decisions over an extended period of time would aid our understanding of how and when auditors adapt to changes in risk.

The pattern of results, thus, suggest that the nature of planned procedures is somewhat adaptive to the client's industry. Variations in the extent of testing does not appear to change as a result of a client's industry but is reflective of the level of risk associated with the engagement.

This pattern is intuitively appealing and logical. Evidence (*nature*) first must be determined to be sufficiently relevant and credible to address the assertion being examined. This determination is likely to differ by industry, since the availability, cost, and diagnosticity of evidence varies not only across industries, but across account areas within the industry classification. Once this determination is made, the *extent* of work to be performed is tied to the risk associated with the engagement. Therefore,

the selection of "what" procedures to perform appears to be adaptive to the client's industry but how "much" is done is driven by the level of risk associated with the client.

Overall, the results suggest adaptability in the nature of procedures to be performed to industry classification. However, as discussed, such adaptability is dependent upon the audit area being examined. This finding is intuitively appealing and suggests that the differential reliability, availability, and cost of gathering evidence does not uniformly vary by industry across all accounts. The limited response in evidential planning to the level and changes in risk, although consistent with prior research, deserves further study. Such future research might consider the audit implications of combining macro and micro risks to arrive at an overall pattern of risk. This tendency in practice to combine risks was noted in Waller (1993), Janell and Wright (1991) and Graham (1985). As discussed in Note 7, the results of this study did not significantly vary when the regression models were based upon total macro and micro risks.

The findings regarding limited adaptability in evidential planning also has implications for practice and suggests that auditors might benefit from additional training or the use of decision tools in assessing risk and linking such assessments to audit planning decisions. If auditors are not responsive to such factors, the efficiency and effectiveness of the audit is likely to diminish.

Several limitations of this and prior research in the area need to be acknowledged. As noted, evidential planning decisions are examined over a short term. Auditors may not respond to changes in risk over such a brief period. In addition, auditors may intuitively require that changes in risk exceed a certain threshold before the audit plan is substantially revised. This belief may stem from the use of a fairly "standard" set of procedures that are considered robust in detecting errors for most client situations. Participation in this study was also limited to one firm. The effect of firm structure on adaptability is a fruitful avenue for future research. This research also did not examine the relationship between risk assessment and evidential planning at the assertion level, an important area for future research.

Adaptability in evidential planning was also examined on an account basis in response to the requirement by professional standards to perform certain procedures, namely in this study, the confirmation of accounts receivable. This required procedure did not appear to inhibit adaptability. Nonetheless, a considerable amount of audit effort is devoted to these procedures which are of limited diagnostic value. It is unclear whether this is because auditors outweigh the value of such evidence due to its sanctioning by the standards, due to defensive measures in the event of litigation, and/or because confirmations are disproportionately time consuming to perform. Future research is needed to identify the cause.

However, the results here suggest a reappraisal of evidential planning for this form of evidence may be needed. The relative diagnosticity of confirmations does not appear sufficient to warrant the audit intensity devoted to it in the accounts receivable area. In addition, 23.2 percent of the audit time in accounts payable is also devoted to confirmation procedures. This procedure was included in the planning of all but two of the sample engagements.

These findings suggest that confirmation of accounts payable, although not required by auditing standards, has become, perhaps, a *"de facto"* standard in practice. This finding is interesting and worthy of further study since little is presently known about the diagnosticity of confirmation procedures in this area. In addition, a useful insight for standard setters would also be to understand how and why such

practices develop and what the impact of requiring the confirmation of accounts receivable has had in the accounts payable area.

Required procedures and those included by firms in standard audit programs may serve to inhibit the level of adaptability of evidential plans. These tests potentially induce framing effects, a phenomenon that has been widely documented in behavioral research (Kida 1984; Aston and Ashton 1988; Asare 1992). That is the presence of required or standard tests serve to frame evidential planning in a different manner than if planning is viewed as an open process. An important avenue for future research would be to examine the extent to which potential framing effects of such tests impact program planning decisions.

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Discussant's Response to "An Investigation of Adaptability in Evidential Planning"

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Whether audit plans reflect differences in risk characteristics between industries as well as changes in risk over time for specific enterprises is a subject of interest to practitioners in the accounting and auditing profession. If audit plans do not reflect such differences in risk, serious questions arise as to both the effectiveness and efficiency of the audits performed pursuant to the plans.

While the research questions addressed by the authors of the paper are of interest, several factors diminish the usefulness of the results of the research and the paper generally from a practitioner's perspective.

First, the industry selections of merchandising and manufacturing are awfully broad. The former, which presumably is synonymous with retailing, would include everything from food to appliances to clothes to drugs to autos to recorded entertainment to building products to toys to jewelry to PC's and so on. Similarly, manufacturing could include production of many of the products referred to above (drugs, autos, toys, clothes) as well as steel, airplanes, mainframe computers, pulp and paper and so on. The risk characteristics for the more narrowly defined industries may differ substantially. However, when aggregated under the general headings of merchandising and manufacturing, such differences may be blurred and insight for the practitioner lost. Frankly, a more direct approach to the research might have been to select individual audits in more narrowly defined industries which are known to have distinctive risks for comparison of the audit plans. While the approach taken has statistical validity, the potential for more enlightening results may have been sacrificed.

Similarly, the research approach to the question of whether audit plans for specific enterprises reflect changes in risk over time is not the most direct, i.e., what is the likelihood that dramatic changes in risk will have occurred in the sample of enterprises during the two years for which an audit plan is being evaluated?

It would seem more appropriate to identify enterprises where inherent risk has obviously changed over some appropriate period and then evaluate the audit plans for the same period to determine whether and how responsive they were to the changes in risk. This is acknowledged on page 21.

With respect to both the question of industry definition and changes in risk over time, the research approach employed may have been driven by the relative availability of and access to audit plans and personnel and the need or requirement for a sufficient sample size to meet academic publication expectations. Either way, the practitioner's interest in the issues is not well served.

A second area where the research could be crisper is with respect to the use of operating cycles for the comparisons. Risk factors typically impact financial statement components and the individual financial statement assertions within those components but rarely do they impact all the assertions and financial statement components involved in the broad concept of an operating cycle (e.g., purchasing, accounts

payable, payments). Whether an assertion specific approach to the research would have produced significantly different results is not known. However, practitioners are increasingly relating risks to specific assertions to determine the most efficient and effective audit procedures to reduce those risks to acceptable levels.

A third area where the research approach limits the usefulness of the results is the use of audit plans from a single audit firm. Evidence that the results may not be representative of audits generally can be found in the extensive use of accounts payable confirmations. Such a procedure is not routine in my firm nor is it in certain other firms.

Further, the fact that the audit plans were from a firm that makes extensive use of "standard" programs may have had significant "firm effects" on the results.

Finally, from an editorial perspective, the language used in the paper could have been more practitioner friendly. The meaning of a phrase such as "adaptability of evidential planning" is at best unclear and sounds at least slightly antithetical to an audit. That is, an auditor doesn't *plan* evidence. Rather, an auditor plans to *perform* procedures and *obtain* evidence.

The concepts of inherent risk and control risk are confused in the paper. For example, Table 3 (and page 79) refer to inherent risk but Table 3 clearly lists control risk factors in the detail; page 84 identifies internal control reliance as a specific inherent risk factor; and page 82 refers to inherent and financial risk factors, the latter not defined.

Further, in Table 3, "reclassifications" are referred to in the context of account payable and accounts receivable. In practice, the definition and significance of reclassifications can vary significantly and further explanation of the use of that terminology would be useful. Similarly, on pages 87 and 88, "tests of controls" are referred to as a "*substantive* audit area" which is confusing.

Many of the points noted above are acknowledged in the paper. If they are addressed in future research the results will be more useful to practitioners in assessing the efficiency and effectiveness of audits in varying risk environments.

5

The Acme Financial Statement Insurance Company Inc.: A Case Study

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Prologue

At the 1992 Kansas Symposium I made some serious judgmental errors, particularly during the discussion of Jerry Sullivan's article on Litigation Risk Broadly Considered. I made the silly observation that in this quagmire of auditor litigation, there was a business opportunity. It seemed to me that the auditing profession was running an insurance business while not really having any idea as to what the loss ratio was. Why not form an insurance company to offer financial statement insurance rather than audit opinions? After all, the market seemed to want someone to pay for their losses and the auditor was apparently the only party left with any money in a financial failure.

It seems when I open my mouth I often get something caught in it. Almost a year ago, Raj Srivastava asked me to develop the idea more formally and present it at the 1994 Symposium. I accepted the invitation. So much for common sense. Well, here is the result of that analysis, a case study built around a business plan for a financial statement insurance company.

If one considers the number of audits performed on an annual basis, one can only conclude that auditors actually make very few mistakes. In fact, as reported by Palmrose (1988) in her studies of auditor litigation the actual rate at which auditors fail in such way as to cause financial loss is extremely low, much less than one percent of the time. Notwithstanding this remarkable performance, the costs of auditor litigation, including direct payments, legal costs, and liability insurance premiums (when available), have risen to amounts that are now very significant costs for public accounting firms. As reported by Mednick in a speech at the American Accounting Association's 1993 Annual Meeting, the litigation costs of major U.S. auditing firms have risen to 11 percent of revenues in 1992 and continues to trend upward. This cost does not include the costs that are being added to each and every audit as audit firms react to the increasing exposure by seeking increasingly burdensome auditing standards and by following defensive auditing strategies.

Should auditor legal costs continue to grow, it will probably not be long before auditing becomes uneconomic. What will evolve to replace the existing framework? Before attempting to answer that question, it is important to recognize that the current litigation environment and the public's expectation of auditors do not exist in a vacuum but as part of society's evolution. In the past, auditor litigation often led the evolution of the audit both in technical terms but more importantly in terms of what should be expected of an audit. While the auditing profession's attempts at bridging the *expectation gap* are highly worthwhile, they may reveal a more fundamental issue, and that may be a need that the existing framework cannot satisfy.

The objective of this paper is to explore the possibility that society's evolving needs with respect to the reliability of financial statement information may require extending the audit framework and possibly abolishing the existing model and turning to something quite different. The idea of an insurance model for auditing is not new. For example, auditing firms have always considered their business risk in an audit engagement and many business processes and audit procedures are designed specifically to address those risks. However, these approaches do not go as far as viewing the audit as a form of insurance. Interestingly enough, Gunz and McCutcheon (1990) present an approach to the audit service that takes an insurance perspective but within the framework of the existing auditing firm model. Not surprisingly, many of the features of their proposal are quite similar to the insurance model that is developed in the case study below. But there are also some important distinctions in moving to a full insurance model.

The case study is organized in the form of a business plan for a financial statement insurance company, and therefore, includes discussion of the market for the service, how it could be sold, the product itself, how such a company might be expected to operate and what the financial consequences might be. The paper concludes with a brief review of some of the characteristic features of an insurance approach to enhancing financial statement credibility.

Acme Financial Statement Insurance Company Inc.: Business Plan 2001

The Company

The Acme Financial Statement Insurance Company, which was founded in 1999, has its head office in Litigant City, Somestate, USA and is the first insurance company of its kind in the world.

Acme's Business

Acme specializes in providing financial statement insurance. Companies that distribute their financial statements to the public or to specified third parties purchase a financial statement insurance policy in order to compensate users of the financial statements who suffer economic losses as a result of errors or misstatements in the distributed financial statements.

Acme's Distinctive Competencies

Acme is the first organization to offer financial statement insurance and is the first organization to apply insurance principles to enhancing the reliability of financial statements. The company plans to develop extensive databases on individuals, businesses, industries and financial information systems that is used as a basis for underwriting companies' financial statement risks. The company has superior investigative, investment analysis, claims handling, and financial skills drawn from several disciplines that operate in a coordinated way to ensure that unacceptable risks are declined, acceptable risks are accurately priced, legitimate claims are handled quickly and as fairly as possible and unwarranted claims are vigorously contested.

Market Analysis

The Market for Financial Statement Insurance and Outlook

Companies and other organizations that publicly distribute financial statements prepared in accordance with the requirements of the Financial Accounting Standards

Board often need to enhance the reliability of the information in those financial statements. This is particularly valuable when the information is provided to the public or to third parties such as banks and key ownership interests. Such users of the financial information can be expected to make financial decisions based on the information and therefore run a risk of financial loss in the event the financial information is incorrect or misleading. In the case of SEC registrants, such reliability enhancement is a requirement of registration.

Target Markets

Although our target market is ultimately all users of financial statements and related information, our initial target market will be non-public entities where the financial statements are provided to specified third parties. We will expand our operations once we have a firmly established base in this market segment. We believe there is significant potential in the public marketplace but recognize there will be a need to establish the product in a situation where we have direct access to financial statement users.

Competition

The dominant providers of reliability enhancement today are the public accounting firms, professional partnerships of CPA's who issue audit opinions on company and organization financial statements.

Audit opinions are professional opinions on the conformance of financial statements with generally accepted accounting principles as promulgated by the FASB and its predecessors. These opinions are based on audit examinations which are performed in accordance with what the accounting profession calls generally accepted auditing standards. According to the profession, an auditor's responsibility is to perform the audit examination in accordance with these standards and if this is the case, the auditor has no further obligation with respect to the examination.

Audited financial statements may contain errors or omissions that may be material and yet are not detected by the auditor. If the financial statement user incurs a loss as a result of relying on incorrect financial statements, there will be no recourse to the auditor if generally accepted auditing standards have been applied in the audit examination. The only hope for recovery from the auditor is through negligence actions which dispute the assertion that generally accepted auditing standards have been applied, except in certain cases where the auditor has statutory liabilities.

From the user perspective, this situation appears to be somewhat unsatisfactory. Although in practical terms, the auditor faces a difficult and often expensive task in proving that generally accepted auditing standards were applied in a particular audit engagement, the user must commit substantial time and resources to force the situation and must accept a significant risk of failure.

In the short run, the accounting profession will be a very strong competitor, particularly on price. However, in the longer term, price will not be successful. Accounting firms carry significant labor costs associated with the need to perform their examinations in accordance with generally accepted auditing standards.

Regulatory Restrictions

Acme is an insurance company registered in Somestate and is therefore bound by the requirements of the Somestate Insurance Law. These requirements limit the nature of operations and force the company to maintain a strong capital position relative to its insurance liabilities.

Marketing and Sales Activities

Overall Marketing Strategy

Acme's overall marketing strategy is a direct approach to the market. Existing insurance brokerage operations do not yet have experience with financial statement insurance, and therefore, it will be necessary for Acme to market directly using personal and non-personal methods. Our marketing focus will be on third party users of financial statements in our primary target market. These users will include bankers, pension funds, investment dealers and other investment operations. This strategy recognizes that such users are generally more accessible and likely to be more receptive to our sales approach than the companies whose financial statements we will be insuring.

We will also develop direct mail and a targeted advertising campaign, also focusing on third party users of financial information.

Sales Strategies

We will develop a full and part-time sales force who will call on potential third parties. The benefits of financial statement insurance, particularly the direct compensation for financial loss and the no hassle approach to claims handling are compelling reasons for these users to demand insurance over audit opinions.

Calls and inquiries arising from our direct mail and advertising campaigns will receive calls from our sales force to determine if personal follow up is worthwhile. Although our primary focus will be on third party users, we fully intend to follow up with companies and organizations that prepare financial statements if they respond to inquiries.

Product/Service

Financial statement insurance is a unique product. It is fundamentally an insurance product in that it is a contractual promise to pay a certain amount to a specified party in the event that party suffers a loss as a result of the occurrence of certain specified events.

The Financial Statement Insurance Policy

The key components of the financial statement insurance policy are the following:

Insured

The policy will clearly identify those parties, either corporate or individual, who are entitled to receive benefits in the event of a financial loss caused as a result of a financial statement error. Insureds may include, company management, company directors, common and preferred stockholders, holders of funded debt obligations, specified bankers and other lenders, and specified third parties such as purchasers and suppliers. In the latter cases, the policy should name the lender or third party explicitly.

Occurrences

A financial statement insurance policy will pay a claim when the following two conditions have been satisfied:

1. The financial statements contain one or more errors or departures from generally accepted accounting principles that, in aggregate, are greater than a specified monetary amount (i.e., materiality), and
2. The insured can demonstrate that a loss has been suffered as a result of relying on the inaccurate financial statements.

There will be several important exclusions in the standard policy. For example, management fraud that results in a deliberate misstatement in the financial statements will not be covered under the standard policy. Nor will the insurance cover financial statement errors arising from business or financial failure. Financial statements will normally be prepared on the going concern basis except in unusual situations. Policy extensions will be available to cover both of these exclusions from the standard policy, but at an additional premium.

Claims benefits

Insureds will be entitled to financial payments in the event of an "occurrence." The amount of the payment will be limited to the lesser of the insured's actual loss and the pro-rata share of the overall policy limit. In some cases, particular insureds may be entitled to unique policy limits which would be specified in a policy extension and therefore would not be subject to the pro-rata limitation. Payments under the policy will not be made until 60 days after the end of the policy term. This is necessary to ensure that all possible claims have been considered.

Policies will be issued with an explicit monetary overall policy limit that represents the maximum aggregate amount of claims benefits that would be paid under the policy. Aggregate losses in excess of this limit will not be covered. The policy contains benefit sharing percentages that are used to allocate benefit payments in the event the aggregate losses exceed the overall policy limit. In such a situation, an insured would receive at most the overall policy limit multiplied by that insured's benefit sharing percentage as defined in the insurance policy.

Policies can be written with a benefits redistribution clause that permits payments in excess of the insured's pro-rata share of the overall policy limit in cases where losses incurred by some groups of insureds are below their pro-rata limit. The excess limit would be shared pro-rata amongst the other insureds. This clause addresses the situation where one class of insureds, say lenders, do not suffer any loss whereas common stockholders do. Since it increases the insurer's exposure, there is obviously an incremental premium for this clause.

Premiums

The policy premium must be paid to activate the policy. Premiums will be based on underwriting criteria and will depend upon the risk rating of the particular entity financial statements, the materiality level chosen, the overall policy limits, the policy term and any other policy extensions or clauses that affect the insurance risk.

Policy Term

Policies issued on a set of financial statements will have a specific inforce term of up to three years from the date of the financial statements. Claims for losses suffered during this period are insurable provided the claims are submitted prior to the end of the policy term. Longer terms are expected to require significantly higher premiums than shorter terms and as a result, the normal situation will be a one-year term.

When an entity's financial statements are insured, there will be a Certificate of Insurance attached to the financial statements which alerts the users of the financial statements to the existence of the insurance policy. An illustrative Certificate is shown below:

Acme Financial Statement Insurance Company Inc.
Certificate of Insurance
X Co. Financial Statements
December 31, xxxx

The Acme Financial Statement Insurance Company Inc. has written financial statement insurance policy number 12345678 on the accompanying xxxx financial statements of X Co. This policy provides certain benefits to specified insured parties in the event these financial statements contain errors or departures from generally accepted accounting principles which in aggregate misstate the net income of X Co. for the year ended December 31, xxxx by more than $1,000,000 and the specified insured parties have suffered financial losses as a result. Claims for benefits under this policy must be submitted no later than December 31, xxxx+1.

This policy contains exclusions for deliberate misstatements by management and for subsequent financial failure of X Co.

The policy has an overall limit of $5,000,000 which applies pro-rata to the specified insured parties as outlined in the Schedule A of the policy documents.

This certificate does not constitute an insurance policy. Inquiries concerning the provisions of Policy Number 12345678 should be directed to Public Affairs Dept, X Co. Address and Telephone number.

Policy Development

We expect our initial policy offerings will undergo development as we gain experience with the needs of policyholders and insureds as well as the nature and magnitude of claims that arise.

Operations

Acme's operating structure will be similar to that of a specialty insurance company and will differ significantly from the operating structure typically found in public accounting firms.

Sales and Marketing

The sales force will consist of commissioned salespersons with specialized financial and insurance training. Sales force compensation will be based on commissions with adjustments for experience on the block of business handled by the salesperson.

For example, salespersons with blocks of business with excessive loss ratios will be paid reduced commissions whereas those with better than average loss ratios will receive bonuses. The salesperson benefits considerably from retaining clients that are good insurance risks.

The salesperson is the key customer contact and will be responsible for sourcing new business, negotiating insurance contracts, and day-to-day customer relations. The ideal salesperson will be a business generalist with a strong background in investment and financial analysis.

The marketing operation will use the sales force as a source of information on customer needs in order to develop new insurance and other products. Marketing will also take the leadership role in product innovation and development and manage multi-disciplinary teams with representation from sales, underwriting, claims and statistical and actuarial in order to develop new financial statement insurance products.

Underwriting

The objective of underwriting financial statement insurance is to first, distinguish those risks that are insurable from those that are not, and secondly, to properly rate the insurable risks so that an appropriate premium is charged.

We will use empirical methods to identify uninsurable situations and to develop rate tables for insurable situations. Existing market data will be used initially and this will be modified through experience.

The underwriting department will be multi-disciplinary with specialists in conducting private investigations, forensic accounting experts, systems experts, investment analysts, business operations specialists, and accounting experts. There will also be a group of technicians available for data collection. Where appropriate, industry specific experience and expertise will be used in the underwriting process.

The underwriting process begins with an initial screening of the potential customer by the salesperson. This includes inquiries regarding the customer's reputation and the integrity of key individuals in the customer organization. An initial assessment is made of the company's operations and degree of business success, as well as the management systems employed.

This initial underwriting phase is intended to identify clearly uninsurable customers such as those where the principals have questionable integrity, are incompetent, have hopelessly inadequate management systems, or are nearly bankrupt.

The initial screening is followed by a formal underwriting process that involves the following:

- A formal private investigation of key individuals including a credit check and a lifestyle analysis. This would be performed on all new customers and on a three year cycle for existing customers. Insurability is again assessed at this stage and a decision to proceed with further underwriting is made.
- An onsite investigation focusing on the business operations and management systems. This investigation is multi-disciplined and would normally include industry-specific experience. The objective is to identify risk areas in the operation that may lead to financial statement errors or misstatements. One result of this investigation will be the development of a specific investigation program to be conducted by underwriting technicians.
- Another assessment of insurability is made at this point in the process. At this time, a fixed non-refundable underwriting fee is agreed with the customer which

will be credited against the insurance premium should the customer buy a policy. The amount of this fee is set to cover the direct underwriting costs and is substantially lower than a typical audit fee.

- A detailed review of the accounting principles followed by the customer in preparing the financial statements is performed. Any and all errors and departures from generally accepted accounting principles identified would be considered in the underwriting decision. Inappropriate accounting principles would require adjustment.
- Conduct the specific investigation program. This may include typical audit procedures such as inventory count observation, tests of transactions, confirmation of certain items, etc. or possibly forensic investigation.
- Determine risk classification and rating.

Once the risk classification is determined, the salesperson negotiates the insurance contract details, including materiality, overall policy limit, policy term, policy insureds, and the premium. The premium is then collected and the insurance policy and certificate is issued.

Investments

Premiums received, after commissions and other acquisition costs, are invested to earn interest, dividends and capital gains. In view of the volatile nature of the insurance business, it would not be sensible to incur additional risks on the investment side of the business. Accordingly, a conservative investment strategy is planned with a focus on government bonds, high quality corporate bonds and preferred shares and blue chip common stocks. Our investment manager will adhere to a comprehensive set of investment guidelines so that risks in this area are minimized.

Claims

The objective of our claims operation is to ensure that all legitimate claims are handled fairly and promptly. To file a claim, the insured must describe the financial statement errors that misstate the financial statements and also provide proof of financial loss. When we are notified of a claim, the customer will be contacted and inquiries will be made to determine if a financial statement error has occurred. If it is concluded that an error is likely, an analysis will be conducted to determine the extent of the error and whether or not there are additional errors that may affect the financial statements.

If the net errors are material, then an evaluation of the proof of financial loss is conducted and the payment amount for the insured is determined. All payment amounts are accumulated and any policy limitations are applied before claims payments are made. The claims department uses forensic accounting specialists to perform the investigations and will also include lawyers on staff.

Statistical and Actuarial

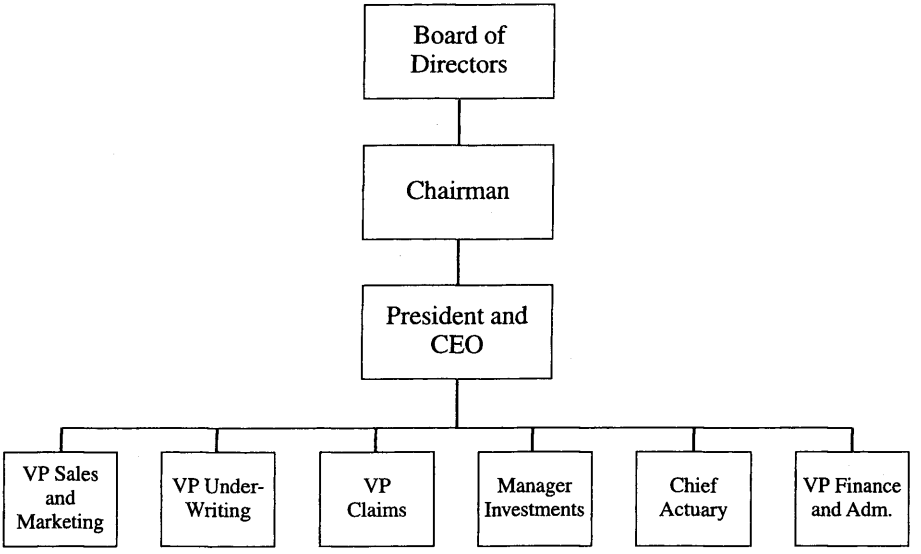
As claims data accumulates, it will be analyzed to identify patterns and other characteristics. The objective is to provide information that would assist the underwriting department in setting rates. In addition to the analytical responsibilities, the Statistical and Actuarial department is responsible for determining reserves for Incurred But Not Reported claims, claims development and the adequacy of statutory reserves for unpaid claims. The department will be staffed primarily by casualty actuaries and statisticians with financial experience and training.

Finance and Administration

The administration of the company will follow the usual structure with a support staff to administer finance, personnel, information systems, and general corporate activities.

Management and Ownership

Organization Chart



Acme's Legal Structure and Ownership

Acme is a widely held public insurance company. It is registered with the Somestate Commissioner of Insurance and has a licence to operate in all fifty states and in Canada.

Financial Projections and Capital Requirements

Projected Financial Data

The following table presents the projected financial results for Acme for the next five years. Key assumptions used in developing these projections are discussed below. Dollar amounts are in millions.

	Jan 1 xxxx	xxxx	xxxx+1	xxxx+2	xxxx+3	xxxx+4
Written Premiums		1000	1100	1250	1400	1600
Earned Premiums		500	1050	1175	1325	1500
Claims incurred		345	735	846	954	1050
Claims expenses		15	32	35	40	45
Underwriting		100	189	176	199	225
Commissions		50	105	118	133	150
Other expenses		60	84	82	80	90
		570	1145	1257	1405	1560
Insurance income		(70)	(95)	(82)	(80)	(60)
Operating ratio		114.0%	109.0%	107.0%	106.0%	104.0%
Investment income		79	147	184	210	238
		9	52	102	130	178
Taxes		4	21	41	52	71
Net income		**6**	**31**	**61**	**78**	**107**
Return on average equity		0.7%	3.7%	6.5%	7.3%	8.5%
Investments	360	1226	1714	1964	2230	2538
Fixed assets	40	40	40	40	40	40
Total assets	**400**	**1266**	**1754**	**2004**	**2270**	**2578**
Unearned premium		500	550	625	700	800
Unpaid claims		360	767	881	994	1095
	0	860	1317	1506	1694	1895
Capital	400	406	437	498	576	683
Risk ratio		2.5	2.5	2.5	2.4	2.3
Total liability and capital	400	1266	1754	2004	2270	2578
Assumptions						
Net loss ratio		69%	70%	72%	72%	70%
Claims expense ratio		3%	3%	3%	3%	3%
Commissions rate		10%	10%	10%	10%	10%
Underwriting exp		20%	18%	15%	15%	15%
Other expense		12%	8%	7%	6%	6%
Investment return		10%	10%	10%	10%	10%
Tax rate		40%	40%	40%	40%	40%

Projected Loss Ratio and other Significant Assumptions

The most significant assumption in projecting financial results is the loss ratio. A long term loss ratio of 72 percent with small fluctuations has been used in the above projections.

The loss ratio can be controlled through varying the premium level against the overall policy limits and the materiality level. The underwriting process itself can also affect the loss ratio in this case as it may identify financial statement errors prior to finalizing the financial statements. The underlying frequency of material error in financial statements is the key factor in setting loss ratios.

Over time, experience will provide Acme with a fairly accurate estimate of the frequency of material error. Furthermore, that information will be in sufficient detail so that frequency levels can be classified by the different types of entities that will be insured. Initially, however, it will be necessary to make a blanket assumption. An analysis by Kinney and Martin (1993) of audit-related adjustments across a 15 year period and over 1,500 audits indicates that material errors are detected in from 20

percent to 60 percent of the audits. On this basis, we propose to use an underlying frequency assumption of 60 percent. This means that we will assume that any set of financial statements of an insurable customer will have an inherent 60 percent probability of a material error before any formal underwriting is conducted.

We anticipate that underwriting will identify the material errors in 90 percent of the situations where material errors exist and therefore our net frequency of material error should be no more than six percent. It is further expected that claims payments will be equal to roughly 12 times the premium which gives the 72 percent loss ratio.

Although payments will only be made in the event of financial loss by insureds, we have used a conservative assumption that claims payments will be made in 100 percent of the cases where there is a material financial statement error. Emerging experience will be used to provide a more accurate estimate.

Other assumptions used in the projections are set as follows:

Claims expense ratio

> This has been set at three percent of earned premiums on the basis that there is considerable information available from the underwriting process. It relates entirely to the time spent by internal personnel on handling claims.

Commissions rate

> Set at ten percent of premiums.

Underwriting exp

> Initially set at 20 percent of premiums to reflect the learning curve and the development of a database of experience. It is expected to drop as this database develops. It is roughly equivalent to a large portion of the salary costs of a public accounting firm.

Other expense

> A guess. Again, there should be some start-up costs that will eventually disappear.

Indicated Capital Requirements

Initial capital has been set at $400 million which gives an underwriting capacity of roughly $1 billion if we allow a 2.5 to 1 underwriting ratio. The above projections indicate the capacity for ten percent growth in written premiums on an annual basis. There should also be some margin available for dividends.

Epilogue

It is instructive to compare the insurance model with the existing attestation framework. The following table outlines some of the significant differences in the features between an attestation service and an insurance model.

Feature	Attestation Framework	Insurance Model
Product or service	Audit opinion – a professional judgment	Insurance policy – a contractual obligation
Product features	Claims viewed as challenges to auditor reputation	Objective is to pay legitimate claims – *failure* to pay affects reputation
Nature of liability	Based on negligence laws	Based on insurance contract
Who can seek compensation	Duty of care doctrine – determined by common law	Specific insured parties as stated in the policy
Amount of compensation	Essentially unlimited – dependent on losses sustained	Contractually limited to a fixed amount
Period of exposure	Essentially unlimited, although limited by statements of subsequent periods	Limited to policy term
Key success factor	Adherence to professional standards	Effective underwriting and claims handling – auditing standards not relevant
Relationship with customer	Must be independent	Independence unnecessary
Pricing	Based primarily on time spent which is related to the risk – often fixed in advance	Based on insurance risk – determined by underwriting process
Role of judgment	An integral part of the audit process with pervasive effect	A similar role to auditing – important to underwriting
Operating structure	Professional training environment with focus on accounting and auditing	Specialists in diverse fields with analytical approach to business

While there are important structural differences between the two models, perhaps the single most significant difference is the attempt to replace tort law liability with a contractual form of liability. In many respects, this is essentially a return to the role of auditing at the turn of the century. Time is not reversible however, and the price that must be paid for this return to a contractual liability exposure is a willingness to pay claims when there are errors in financial statements, something auditors would have considerable difficulty with.

Is financial statement insurance a viable product? There does not seem to be any reason why insurance companies could not provide a similar form of insurance today. For example, fidelity bonding companies provide a form of loss coverage in the event

of fraud and one could argue that insurers of auditor liability provide something similar at the present time. But there does not seem to be anything on the market that is in essence a financial statement insurance product, other than audits. There are several possible reasons for this:

Legal

Audits are often required by statutes such as corporations acts and securities laws and it would be difficult to alter this historical structure. For example, the benefits of financial statement insurance would have to be clearly demonstrated before the SEC would find such arrangements an alternative to audits.

Economics

Financial statement insurance may not be economically viable as it may be too expensive. If one factors in all of the costs including loss ratio, etc. and this leads to a premium that is higher than would be spent on a conventional audit, it will be difficult to economically justify an insurance operation. If this is the case, there are some serious implications for the existing auditing framework.

Claims exposure

While one might attempt to limit the exposure through carefully worded insurance contracts, it is quite possible that almost every insurance policy will attract a claim on the basis there is nothing for the plaintiff to lose. This would add significantly to claims handling costs until the contractual provisions were enforced by the courts.

While one could continue to explore the nuances of financial statement insurance, this would take us away from our objective. The issue is whether the existing auditing framework still meets society's needs for enhancing the credibility of financial reporting at an economically viable cost. The case study provides an interesting alternative which has the added benefit of exposing some of the serious difficulties with the audit model. There can be no doubt that if litigation costs continue to escalate, this paper will become academic in a very real sense. Should the current growth rate in litigation costs continue for a five year period, litigation costs of the order of 30 percent of revenues will be the norm for accounting firms. We will then have a perverse form of financial statement insurance but have it provided by organizations that are not structured for that particular product. We may have the opportunity to witness a short term phenomenon.

Before this apocalypse occurs the profession must revisit some fundamental issues. We cannot afford to misinterpret an expectation gap as a failure to communicate the auditor's role. Is the rise in litigation a message to the profession that its existing product is no longer suitable? We need to explore what society needs and obtain a clear understanding of what they are asking for. The concept of financial statement insurance is one example of an alternative product that can be used to more accurately frame society's expectations of our profession. We need to listen. But we must also educate and inform.

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Discussant's Response to "The Acme Financial Statement Insurance Company Inc.: A Case Study"

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Before commenting on the Acme Case, it is useful to summarize the basic arguments Steve Aldersley makes in his paper, as I understand it.

Summary of Main Arguments

- The legal liability costs incurred by auditors are becoming so onerous – at least 11 percent of revenues and growing – that the business may soon become uneconomic. That is, the supply price will exceed the maximum amount buyers are willing to pay at all possible market quantities of the service.
- While auditors are doing good work – Steve cites evidence on the relative frequency of litigation developed by Palmrose (1988) – they are constantly being harassed in court to demonstrate their due diligence (lack of ordinary negligence). Auditors find this annoying.
- In addition, courts are seemingly holding auditors liable even in cases where residual audit risk has been reduced to an acceptably low level. That is, although reasonable assurance that the financial statements are free of material misstatement has been obtained, auditors are often held liable for losses suffered by investors, creditors, etc. In effect, courts are imposing *de facto* strict liability on auditors (i.e. demonstrating due diligence is no defense).
- Given this state of affairs, it would be better for all concerned if the "rules of the game" were clarified by acknowledging that auditors are really selling an insurance policy indemnifying financial statement users against losses incurred on account of reliance on materially misleading financial information.
- Therefore, let's set up a business form – an insurance company – which can:
  1. Contract with (somebody) to offer such insurance.
  2. Only insure against losses arising from unintentional financial statement errors as the base case, with policy riders available to cover misstatements arising from management fraud and/or business failure (inadequate disclosure, etc. of a business's going concern problems).
  3. Set specific policy limits (a liability cap).
- Finally, the paper seems to suggest that this insurance company will probably undercut the prices charged by public accounting firms and drive them out of business.

Overall Reaction

My initial reaction on reading Steve's paper was that the Acme Financial Statement Insurance Company was as much (perhaps more) a public accounting firm than an insurance company. That is, it could not set an appropriate insurance premium without performing an extensive investigation of the "client's" accounting system and financial statement assertions (more on this point later). The major difference, it seems to me, is that Acme is strictly liable for losses, while at the same time Acme can "pick

and choose" *what* it is liable for (source of material misstatement), *how much* it is liable for, and *to whom* it is liable. These are all luxuries not currently available to auditors!

Also, I was surprised that Steve limits the insurance to losses suffered on account of reliance on materially misstated financial statements. This does not seem to get at a major problem facing auditors in court: plaintiffs are often just trying to recover their investment losses even when the financial statements were not materially misstated at the time they were prepared, but may look questionable in hindsight after a business failure, the collapse of real estate values, etc. Auditors currently face this litigation problem, and so would Acme!

Turning to specifics, I have three major comments (with several related observations) on the paper, and a final personal observation on the auditor "litigation crisis" including the implausible economics which seems to characterize much of the discussion of that issue.

Comment 1: Acme is as much an auditing firm as an insurance company. It must perform the equivalent of an audit to set an appropriate premium.

This comment simply reflects the fact that a strictly liable insurer (auditor) would be motivated to expend some effort (incurring the costs of resources utilized) to determine a probability that the financial statements were materially misstated. The basic trade-off is the familiar one: more audit effort reduces the expected insurance payout (liability losses). Assuming an upward sloping "total cost of effort" function, and a downward sloping "expected payout" function, it is likely that some non-zero effort level minimizes Acme's expected costs. This is the efficient (minimum) insurance premium, given the risks faced. It is in Acme's self-interest to do the work, or risk losing the business to a competitor insurance company (auditor).

Note that if generally accepted auditing standards (GAAS) are such that this expected cost minimizing effort level constitutes a GAAS audit, then an auditor operating in competition with Acme in the existing legal environment (and other things held constant) could probably undercut Acme's price. This is because such an auditor need not charge a risk premium to cover the possibility that even though reasonable assurance has been obtained, the financial statements are actually materially misstated (audit risk). Thus, taken alone, the move to strict liability is cost-increasing, unless the courts are very inefficient in allowing auditors to establish a due diligence defense. But with strict liability, there is also the added cost of estimating an appropriate premium to cover the residual risk.

However, I don't think it is really possible to compare Acme's fees with today's audit fees. There is a major "apples vs. oranges" problem since real-world auditors are not able to pick and choose the nature of misstatements they are expected to uncover, they largely do not determine the specific parties to whom they are liable, and they do not operate with liability caps. Thus the products sold by today's auditors and Acme are not comparable.

Finally, while the importance of GAAS is clearly reduced in an insurance (strict liability) regime – since compliance with GAAS does not constitute a legal defense – there is still a role for technical professional standards in guiding the performance of an effective and efficient audit. Thus, I don't fully agree with Steve's claim on p.106 that "auditing standards are not relevant" to Acme.

Comment 2: There are many important incentive effects if (certain) financial statement users are insured against losses from material financial statement mis-

statements, and there is no other legal liability regime nor mandatory audit requirement in place. *(Steve's paper does not discuss these problems.)*

A major concern is that financial statement users who are insured against losses have no incentive to exercise reasonable care in relying on financial statements in making decisions. For example, a creditor may be motivated to place too much weight on financial statement information rather than other important characteristics of potential borrowers. Shavell (1980) showed that strict liability without a defense of contributory negligence is inefficient (wasteful of resources) because victims do not have an incentive to be careful in using a product or service. While a contributory negligence defense would presumably not be available to an insurance company, perhaps co-insurance provisions could be used to deal with the problem.

Problems also arise with management's incentives in an insurance regime. Even with a basic policy (coverage for unintentional errors only) management's incentive to maintain a well functioning internal control system is reduced, since the company is indemnified against losses suffered by "outsiders" on account of such errors. This affects the probability of error, the extent of the necessary "underwriting investigation" (the audit), and the appropriate premium.

Offering policy extensions to cover material misstatements arising from management fraud and/or business failure would likely create serious adverse selection problems – the offer of insurance will tend to attract the worst risks. Moreover, there are potential moral hazard problems in that the insurance may encourage more management fraud, and/or encourage management to undertake more risky investments – increasing the risk of business failure. The equilibrium level of audit effort and the appropriate insurance premium would be very difficult to determine in these circumstances.

Related to the previous point, changing from a mandatory audit regime to a voluntary contractual regime can be expected to change the nature of the "risk pool" facing insurers. Given the information asymmetry between insurers and management – management knows a lot more than Acme about its accounting systems and internal controls, its incentive to commit fraud and prospects for business failure – it is not clear how, if at all, the market would function. For example, if ethical viable companies were unable to convince insurers of their true type, the premium could be too high to induce them to purchase insurance voluntarily and the market could unravel (Akerloff 1970).

Finally, I assume Steve's insurance proposal entails a recision of the mandatory audit requirement. Presumably, this legal requirement arose because there are public good aspects of the audit service. That is, users of audited financial statements can benefit from the reduction in risk of material misstatement without affecting the use (consumption) of other financial statement users. Under a voluntary insurance scheme, there would presumably be a class of uninsured current or prospective shareholders, creditors, etc. who potentially benefit from the risk reducing aspects of an underwriting investigation (audit). These benefits are ignored in setting the terms of Acme's insurance contracts, resulting in a potential undersupply of the service.

Comment 3: There are a number of ambiguities in the Acme business plan.

Some of the more serious issues are:

- It is not entirely clear to me who would actually purchase the insurance and pay the premium – a company or specific financial statement users? If policies were sold to companies, how would the changing identities of stakeholders (share-

holders, creditors, etc.) be dealt with? If policies were sold directly to financial statement users, what incentive does a company have to submit to an "underwriting investigation"?

- When making a claim, how can users establish that a material misstatement has occurred without detail investigation of company records? It seems that the claims process could easily degenerate into extensive litigation. Moreover, the distinction between unintentional and intentional misstatements is not very clear when the application of accounting principles and disclosure judgements are at issue. Again, there is scope for litigation.
- With a prior probability of 60 percent that material misstatements exist in financial statements and a likelihood of detection of 90 percent, the Bayesian posterior probability of undetected material misstatements in "audited" financial statements is about 13 percent (assuming α-risk is zero), not the six percent used by Steve.

Concluding Comments

Steve has chosen an unusual way to address a complex social policy question: What is the welfare maximizing liability regime for auditors? Essentially he asks: Could a private company which provided insurance to certain parties in certain amounts in certain circumstances for losses suffered on account of what we now call "audit risk" (1– reasonable assurance) successfully compete against traditional public accounting firms? Unfortunately, I have no idea what the answer would be because there are just too many differences between the current regime and the proposed business, and the institutional background within which Acme would operate is unclear to me.

A more tractable question would be: Is strict liability preferable to a negligence regime? Shavell's analysis suggests the answer is generally, *No.* Moreover, using an experimental markets approach to compare strict auditor liability vs. negligence, Dopuch and King (1992) found that audit fees were so high under strict liability that auditors were frequently not hired, with potential auditees finding it preferable to restrict their investment plans because they were unable to convince potential shareholders of the value of those investments.

This raises the interesting issue that perhaps the major problem is not litigation itself, but the difficulties auditors have in pricing their services given the uncertainties arising in a litigious world. I find the argument made by Steve in the introductory parts of his paper that we should expect liability losses as a percentage of CPA firms' revenues to continue to grow until the firms are bankrupt, implausible.

The mandatory audit requirement for SEC registrants tends to make aggregate demand highly price inelastic, facilitating the "pass through" of auditors' costs. Moreover, I know of no evidence that audit firm partners earn less than a normal return on their invested human and financial capital. They probably earn a lower return than they would like (who doesn't?) and some might have earned more in the less competitive and less litigious past. But none of this portends the bankruptcy of the industry.

It seems to me that the problems of pricing audit services when catastrophic events can occur with very low probability is an interesting and important research issue. But the evidence from Dopuch and King's work seems to suggest that it is much more difficult to assess the expected cost of, hence properly price, a service under strict liability (a complex premium) than under a negligence regime (mostly labor costs).

Voluntarily assuming strict liability, even under the guise of insurance, does not seem to be the best cure for auditors' litigation and pricing problems!

To conclude, I found Steve's paper both interesting and thought provoking, and appreciate the opportunity to discuss it both at the Symposium and in these written remarks.

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6

A Behavioral–Economics Approach to Auditors' Risk Assessments

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Strict Bayesians are legitimately challenged to tell us where they get their numbers.
I. Levi

To establish a sound basis for a decision about the audit report, auditors process a variety of information which, in light of prior knowledge, sufficiently limits their uncertainty about misstatements in auditee assertions. As a frame for research on the problem of limiting such uncertainty, three general aspects may be distinguished: normative, descriptive, and prescriptive (Ashton *et al.* 1988). The normative aspect concerns the manner in which auditors, as unboundedly rational economic agents, should structure and solve the problem. The descriptive aspect concerns the manner in which auditors, as boundedly rational economic agents with limited cognitive capacity, structure and solve the problem in actuality. The prescriptive aspect concerns the ways in which boundedly rational auditors might improve on their current solution to the problem. This distinction is both important and problematic. It is important, because it reflects the dual role of auditing research, which is to understand and improve behavior in practical settings. It is problematic, because it raises difficult issues about how the three aspects relate to each other. Central to this relationship, in auditing as well as other areas of judgment and decision making, is the rational choice model, i.e., expected utility maximization under the subjective or Bayesian interpretation of probability (Savage 1954).

Applications of the rational choice model in specific economic domains tend to use one of four approaches: positivistic, decision-analytic, heuristic-and-bias, generalized. The positivistic approach adopts the view that understanding an economic agent's behavior requires the assumption that the individual is acting rationally with respect to his or her opportunities, beliefs, and desires (Schoemaker 1982). Economic agents *by assumption* are Bayesian expected-utility maximizers, and a goal of research is to explain behavior by inferring agents' utilities and subjective probabilities, without regard to the psychological reality of these constructs. Given this assumption, the positivistic approach effectively rules out the possibility of agent error (Einhorn and Hogarth 1981a). Apparent inconsistencies between agent behavior and the rational choice model are handled by re-specifying the model (e.g., adding arguments to the utility function) or the assumed conditions of the setting to which the model is applied (e.g., viewing the setting as strategic rather than parametric), not by relaxing the assumption of rationality. The decision-analytic approach uses the rational choice model prescriptively as a means for structuring a real agent's problem (Raiffa 1968). Unlike the positivistic approach's goal of inferring an agent's utilities and subjective probabilities, the decision-analytic approach seeks to *construct* these numbers so as to facilitate choice, with no attempt to describe or explain how the agent might otherwise

decide. The heuristic-and-bias approach uses the model as a normative benchmark for evaluating behavior (Kahneman *et al.* 1982). Inconsistencies are seen as errors or biases, which are caused by cognitive factors and dealt with by corrective devices that move behavior closer to the model. The generalized approach is an analytical hybrid that covers empirical regularities, including persistent inconsistencies, by relaxing one or more axioms of the rational choice model (Chew 1983; Machina 1982). Besides accounting for past observations, the generalized approach has produced new predictions and related empirical testing (Camerer 1989; Chew and Waller 1986).

To achieve *both* the descriptive goal of understanding behavior *and* the prescriptive goal of improving behavior, none of the above approaches is entirely satisfactory. At one extreme, so long as the positivistic approach assumes away the possibility of error, its prescriptive value is limited to changes in the environment to which rational agents adapt, with nothing to say about how real agents might better adapt to a given environment. At the other extreme, the decision-analytic approach is primarily prescriptive, despite an increased sensitivity to psychological research among decision analysts (Bell *et al.* 1988; von Winterfeldt and Edwards 1986). The heuristic-and-bias approach is limited by its implicit assumption that the evaluator and evaluatee share the same specification of the problem (Berkeley and Humphreys 1982; Cohen 1979). When this assumption is wrong, inconsistencies cannot be unambiguously classified as errors, and the approach loses its prescriptive value. Also, the heuristic-and-bias approach focuses on the adverse consequences of using heuristics, rather than taking a balanced view of the benefits and costs (Christensen-Szalanski and Beach 1984). Those who use the generalized approach typically do not tout their hybrid models as normatively correct. Axioms of the rational choice model are relaxed to account for empirical data, not to improve decisions (Edwards 1992). Finally, and especially important in auditing, none of the approaches systematically takes into account the effects of organizational policies and constraints on individual judgments and decisions.

This paper adopts an alternative approach to applying the rational choice model. As in complete versus simplified analyses (Demski 1980), the alternative approach stresses Simon's (1982, 1987a) distinction between unbounded and bounded rationality. The unboundedly rational agent effortlessly expresses all elements and implications of a knowledge base in terms of expected utility, producing a *complete* decision model as if analysis were a free good. For the boundedly rational agent, however, analysis is costly, leading to *simplifications,* e.g., partial mining of the knowledge base and heuristics for probability assessment. As a first approximation, persistent inconsistencies between agent behavior and models of unbounded rationality indicate not errors, but economizing on the cost of analysis (cf. Marschak 1968; Shugan 1980). Each simplification trades off saving analysis costs and incurring the opportunity cost of simplified analysis. The task for economic agents is to find the optimal simplification, despite the infeasibility of a higher-order, complete analysis. Facing the same constraint, the task for researchers is to explain, evaluate, and prescribe improvements in the simplifications used by real economic agents. A starting point for such research is observation of the standard practices of agents in specific economic domains by way of contrast with the rational choice model, without presuming that the current state of affairs is necessarily optimal or that models of unbounded rationality are necessarily appropriate for evaluation and prescription. Such observation provides a basis for hypotheses regarding agents' trade-offs between the analysis and opportunity costs of simplification, and for prescriptions of new simplifications with improved trade-offs. In line with Simon (1982, 1987b), this paper's approach is referred to as the *behavioral-economics (BE)* approach.

Although related to other approaches, the *BE* approach differs in important ways. Unlike the positivistic approach, the *BE* approach admits the possibility of agent error and improvement. Positivistic extensions of the rational choice model that include optimization given analysis costs lead to infinite regress, contribute minimally to the descriptive goal of understanding behavior, and implicitly endorse the status quo rather than contributing to the prescriptive goal of improving behavior. A complete analysis of alternative simplifications is infeasible, so there can be no guarantee that any particular simplification is optimal. Besides explaining standard practices, the *BE* approach intends to produce innovations with improved (not to say optimal) trade-offs, e.g., reducing analysis costs while holding opportunity costs constant. Unlike the generalized approach, the *BE* approach focuses on human information processing limitations as a causal determinant of behavior. Although the heuristic-and-bias approach has a similar focus, the *BE* approach differs by not presuming that inconsistencies *vis-a-vis* the rational choice model are errors, instead taking a balanced view of the benefits and costs of simplification. The *BE* approach differs from the decision-analytic approach by emphasizing that attempts to mimic the rational choice model may not be worth the costs, even for decisions in field settings where the stakes are high (March 1978). Because such attempts are a type of simplification, decision analysis may be subsumed under the *BE* approach. Finally, as demonstrated below, the *BE* approach easily covers cases in which simplifications are chosen by policy makers at the organizational or professional level. In such cases, individual judgments and decisions amount to policy execution, indicating a need for researchers to expand their attention to include explanation and evaluation of the policy, not just individual behavior.

In audit planning, auditors must assess the risk of material misstatement in the auditee financial statements, relative to generally accepted accounting principles. General policy and standard practices for auditors' risk assessments are stated in *AICPA Professional Standards, Volume 1, U.S. Auditing Standards* (referred to below as *Standards*). Contrasting such practices with the rational choice model is a starting point for descriptive and prescriptive research under the *BE* approach. The *Standards* contain various inconsistencies with Bayesian postulates (i.e., coherence, total evidence, and conditionalization) of the rational choice model: (1) risk is decomposed in ways that are inconsistent with coherence and total evidence; (2) risk is revised in ways that are inconsistent with conditionalization; (3) second-order uncertainty about risk assessments is dealt with in ways that are inconsistent with coherence and that confound belief and value. Each inconsistency may be explained in terms of trade-offs between the analysis and opportunity costs of simplification. For example, auditors' simplifications for assessing risk allow for second-order uncertainty, because constructing precise subjective probabilities would entail excessive analysis costs, relative to the gain from precision. In other words, second-order uncertainty is a proxy for economizing on analysis costs. For each inconsistency, the paper identifies issues for descriptive and prescriptive research under the *BE* approach.

The remainder of the paper is organized as follows. Section 1 briefly states the Bayesian postulates and their relevance to boundedly rational economic agents. Section 2 describes the audit risk model in the *Standards* and how it is implemented by a major public accounting firm.[1] Section 3 employs the *BE* approach to examine the three inconsistencies stated above. Section 4 provides some concluding remarks.

[1] Readers who are familiar with the audit risk model may prefer to skim or skip the second section.

Three Bayesian Postulates

An unboundedly rational agent's belief about the state of the world, M, conforms to three postulates: coherence, total evidence, and conditionalization (Seidenfeld 1979). *Coherence* requires that the agent's belief is representable as a unique subjective probability, $P_K(M)$, where K indicates that the subjective probability is based on the agent's knowledge at the time of assessment. *Total evidence* requires that K is a consistent, deductively closed knowledge base, the import of which is fully captured by $P_K(M)$. *Conditionalization* requires that changes in the agent's belief follow Bayes' theorem. Let E designate new evidence and K' designate the agent's updated knowledge base, i.e., the deductive consequences of K and E. Given $P_K(E) > 0$, conditionalization requires that:

$$P_K(M|E) = \frac{P_K(E|M) \bullet P_K(M)}{P_K(E)}, \tag{1}$$

and upon observing E,

$$P_{K'}(M) = P_K(M|E). \tag{2}$$

It is worth emphasizing that Eq. 1 (Bayes' theorem) provides a rule of internal consistency with respect to a fixed knowledge base, K, and Eq. 2 provides a rule of belief revision from K to K'. Further, Eq. 2 is tautological in that E must be the *entire* change in knowledge from K to K' (Weirich 1983).

For boundedly rational agents, conformance to these postulates entails analysis costs. Although decision analysts offer simple techniques for producing precise probability assessments (Spetzler and Stael von Holstein 1975), agents may conclude that the precision is imposed by the techniques rather than being a reflection of belief (Brown 1990). This conclusion highlights a problem in simultaneously satisfying the coherence and total evidence postulates: agents *know* their beliefs are less precise than the techniques' coherent measurement of them. The limited precision of real agents' uncertain beliefs has led theorists employing the generalized approach to relax coherence and use an *interval* of probability as a primitive in their axiomatizations (Fishburn 1986). Other problems with the total evidence and conditionalization postulates arise when human information processing limitations are considered (Goldman 1993). In this regard, Brown and Lindley (1982, 120) characterized the agent's knowledge base as a *psychological field:*

> which comprises the totality of his cognitive processes, experience, memory, or indeed anything which may be actually or potentially in his mind.... Usually (the agent) will only consider part of his psychological field but may extend this part by including extra material. Such an extension will be referred to as "digging" in his psychological field. This "digging" process may be contrasted with the process of (the agent) collecting data from his external world.

A problem for boundedly rational agents is that the "digging" tools (i.e., cognitive processes) from one part of the psychological field limit the material which can be dug from other parts. Information *in* their mind may not be *on* their mind when making probability assessments. Researchers employing the heuristic-and-bias approach emphasize such limitations (Kahneman *et al.* 1982). The computational burden of Eq. 1 may be severe, especially as the number of possible pieces of evidence increases (Harman 1986). Conditionalization requires agents to build a *protocol* representing not only the evidence actually observed, but also evidence that could have been observed (Shafer 1985), and to imagine for each possible piece of

evidence an *ex post* knowledge state which comprises all implications of the evidence conjoined with *ex ante* knowledge. Such requirements may be problematic even in stylized, textbook cases (Bar-Hillel and Falk 1982). In practical domains, the analysis cost of conformance to the Bayesian postulates raises doubt about the rational choice model's applicability for evaluation and prescription as well as description and explanation. The use of simplifications should be expected for real economic agents.

Audit Risk Model

The *Standards* and audit policy manuals of public accounting firms provide considerable guidance on risk analysis, including the conceptualization of risk and the factors to be considered when making risk assessments. Such guidance is based on the *audit risk model,* which represents the risk components that auditors assess or control through decisions about the nature, extent, and timing of test procedures. The key component is *audit risk (AR),* the risk that an auditee assertion contains a misstatement which is not detected by the auditor. A goal in auditing is to limit *AR* to an adequately low level. To achieve this goal, the audit risk model uses a decomposition strategy. At one level, *AR* is decomposed into *auditee risk (AER)* and *auditor risk (ARR). AER* is the risk that an auditee financial statement assertion contains a misstatement before the audit, and *ARR* is the risk that the auditor fails to detect a misstatement which is present. *AER* is assessed by the auditor, whereas *ARR* is controlled through the choice of test procedures. At a second level, *AER* may be decomposed into *inherent risk (IR)* and *control risk (CR).*[2] *IR* is the risk that a misstatement occurs, assuming the auditee has no related controls, and *CR* is the risk that a misstatement is not prevented or detected (and corrected) on a timely basis by auditee controls. The audit risk model relates these components as follows:

$$AR = AER \times ARR, \tag{3a}$$
$$AR = IR \times CR \times ARR. \tag{3b}$$

In audit planning, the auditor sets a target for *AR,* makes separate assessments of *IR* and *CR,* or a direct assessment of *AER,* and selects test procedures such that $ARR = AR/(IR \times CR)$.

The *Standards* allow for a variety of specific applications of the audit risk model. For concreteness, it is useful to describe the risk assessment task as performed by a major public accounting firm.[3] This firm operationalizes a material misstatement by computing a monetary amount at the financial statement level as a function of auditee size and allocating the amount to accounts and assertions *(tolerable error).* In audit planning, the auditor's task is to assess the risk that an assertion contains a misstatement exceeding tolerable error. This task is decomposed into separate assessments of *IR* and *CR. IR* is assessed on a verbal scale: low (IR_l), moderate (IR_m), high (IR_h). Auditors are told to consider many factors when assessing *IR,* such as misstatements detected by previous audits, the complexity and subjectivity of accounting procedures, the competence and integrity of auditee personnel, and other auditee characteristics (operations, industry, financing arrangements, profitability, and so on). The firm's audit policy manual indicates how each factor generally affects *IR,* but it also stresses the role of judgment by stating that no mathematical weighting of factors is appropriate, since each *IR* assessment depends on the circumstances.

[2] The *Standards* permit either separate assessments of *IR* and *CR,* or a combined assessment.
[3] The firm is KPMG Peat Marwick.

As a preliminary to assessing *CR* on a similar scale, the auditor evaluates and performs tests of auditee controls. As with *IR,* many factors are supposed to be considered when assessing *CR,* such as the auditee's segregation of duties, its protection of assets and records, and its management's operating style and philosophy toward controls. At this point, the auditor considers the decision of whether to rely on controls as a partial substitute for substantive tests, e.g., collecting for close scrutiny a sample of documents that underlie financial statement assertions. Such reliance involves a *CR* assessment below the maximum, CR_h, with a corresponding increase in *ARR* and reduction in substantive tests. Overall audit costs generally are lower when reliance on auditee controls is substituted for substantive tests. But, the reliance option requires additional, costly evaluation, documentation, and testing of controls to support the lower *CR* assessment. The nonreliance option requires no further analysis and implies a CR_h assessment. The latter option is selected if (1) controls are initially perceived to be weak or (2) the extra cost of analysis with the reliance option exceeds the possible benefit, i.e., a reduction in substantive tests.

Given assessments of *IR* and *CR,* the auditor consults a risk table mapping each combination of *IR* and *CR* on the verbal scale into *ARR* on a [0,1] scale, given a target *AR.* The *ARR* value affects the auditor's decision about test procedures, e.g., required sample sizes decrease as *ARR* increases, other things equal. The risk table implicitly relies on numerical point values of *IR* (IR_l = .36, IR_m = .67, IR_h = 1.00) and *CR* (CR_l = .18, CR_m = .44, CR_h = 1.00). To illustrate, when the auditor assesses IR_m and CR_m, $ARR = AR/(IR_m \times CR_m)$ = .04/(.67 x .44) = .14. Like many simplifications in auditing, the point values reflect a conservative bias. In an archival study of auditors' risk assessments in field settings, Waller (1993) reported that the rate of detected misstatements was .03 when auditors assess IR_l, .08 when IR_m, and .14 when IR_h, controlling for *CR.* Even if adjusted for reasonable estimates of undetected misstatements, the rate of misstatements for each level of *IR* would be far below the corresponding implicit point values in the risk table. In addition, the firm's audit policy manual instructs each auditor to interpret the verbal scale in terms of intervals rather than point values (.00-.40 for IR_l, .40-.60 for IR_m, .60-1.00 for IR_h, .00-.20 for CR_l, .20-.40 for CR_m, .40-1.00 for CR_h). The risk table's implicit point values are set near the upper limit of the corresponding interval. Audit policy makers incorporate such conservative biases to ensure effectiveness, i.e., reaching the proper conclusion about the presence or absence of misstatements, despite the possible inefficiency of excessive testing.

Auditors must assess *IR* and *CR* at the assertion level for each significant financial statement account or transaction cycle. In effect, risk is decomposed from the account to assertion level, such that a misstatement in any assertion implies a misstatement in the account. For example, regarding an asset account such as trade accounts receivable, auditors assess *IR* and *CR* for the following assertions: *completeness* (all exchanges that should be recorded by the auditee are recorded), *existence* (all exchanges recorded by the auditee are valid), *accuracy* (all exchanges recorded by the auditee are recorded accurately), *valuation* (items in the auditee financial statements are valued in accordance with generally accepted accounting principles), and *ownership* (the auditee has appropriate rights to items in its financial statements). For trade accounts receivable, auditors thus make ten separate risk assessments (two types of risk x five assertions). In principle, this decomposition strategy allows for fine-tuned decisions about test procedures on an assertion-by-assertion basis.

Inconsistencies Between Audit Risk Model and Bayesian Postulates

The *Standards* do not clarify the relationship between the audit risk model and probability theory. Even so, it is straightforward (to a point) to restate the audit risk model probabilistically. Consider the event sequence in Figure 1, where *M* is the event of a misstatement, *C* is the event of detection (and correction) of a misstatement by auditee controls, and *D* is the event of detection of a misstatement by the auditor (cf. Graham 1985). Based on this sequence, the risk of *M*, the risk of *-C* given *M*, and the risk of *-D* given *M* and *-C*, are represented by *IR*, *CR*, and *ARR*, respectively (but see below). As suggested by Eq. 3b, a misstatement in an audited assertion involves the conjunction of *M*, *-C*, and *-D*, the risk of which is represented by *AR*.[4] In Bayesian terms, an auditor's subjective probability of a component event, say *M*, may be represented as $P_K(M)$. For two component events, say *C* and *M*, $P_K(C|M)$ represents an auditor's subjective probability of *C*, given the assumption of *M*. Along these lines, Eq. 3a may be restated as:

$$P_K(M \,\&\, -C \,\&\, -D) = P_K(M \,\&\, -C) \times P_K(D|M \,\&\, -C). \qquad (4)$$

The first term on the right side of Eq. 4 is the auditor's prior belief about the presence or absence of a misstatement in an unaudited assertion, and the second term is the auditor's belief that planned test procedures will fail to detect a misstatement which is present.

Figure 1. Event Sequence.

M		*C*		*D*		*M & -C & -D*
Occurrence of misstatement? yes	→	Detection and correction by controls? no	→	Detection by auditor? no	→	Misstatement in audited financial statements? yes
•		•		•		
IR	x	*CR*	x	*ARR*	=	*AR*

Extending the Bayesian representation of audit risk beyond Eq. 4 reveals at least three inconsistencies in auditors' standard practices: the decomposition of *AER* as *IR* x *CR* is inconsistent with the postulates of coherence and total evidence; *IR* and *CR* assessments are revised in light of new evidence, but not via conditionalization; and, *IR* and *CR* assessments reflect second-order uncertainty, which is inconsistent with the coherence postulate, and often reflect analysis costs rather than beliefs, which is inconsistent with the distinction between value and belief in the rational choice model. Below, these inconsistencies are examined under the *BE* approach.

Decomposition

The rational choice model permits a decision problem to be structured in many equivalent ways, e.g., an agent's belief about a target event may be stated directly or in terms of component events. Under the positivistic approach, such flexibility has no relevance, since the behavior of unboundedly rational agents is invariant to the

[4] The *Standards* are equivocal regarding the concept of *AR*. Eq. 3b suggests the interpretation of *AR* as the risk of the conjunction of *M*, *-C*, and *-D*. Elsewhere, the *Standards* suggest the interpretation of *AR* as the posterior risk of *M* given *-C* and *-D*.

problem structure (Tversky and Kahneman 1986). In contrast, the decision-analytic approach exploits the rational choice model's flexibility:

> The spirit of decision analysis is divide and conquer: Decompose a complex problem into simpler problems, get one's thinking straight in these simpler problems, paste these analyses together with a logical glue, and come out with a program for action for the complex problem. Experts are not asked complicated, fuzzy questions, but crystal clear, unambiguous, elemental, hypothetical questions (Raiffa 1968, 271).

Decomposition is guided by two principles. First, there must be a theory-based link between components to permit a proper integration of separate assessments. The rules of probability provide the logical glue for integrating an agent's assessments of component events. Second, there must be an overall gain in effectiveness or efficiency from performing two or more assessment tasks, each with a relatively narrow focus, versus a holistic assessment.

Under the *BE* approach, decomposition is seen as a method for producing alternative simplifications which may affect an agent's analysis cost and degree of conformance to the Bayesian postulates. Decomposition of a target event into component events may allow a boundedly rational agent to partition elements of the psychological field by their relevance to each component event. Performing two or more assessments, each relating a component event with relevant knowledge, may increase conformance to the total evidence postulate, without increasing the cost of analysis (Armstrong *et al.* 1975). Also, by dividing a target event for which belief is imprecise into simpler events that can be reasonably assessed with greater precision, decomposition may increase conformance to the coherence postulate (Phillips 1973). Finally, the mechanical integration of assessments of each term on the right side of Eq. 1, in place of a holistic assessment of the left side, may aid conformance to conditionalization (Edwards and Phillips 1964).

The audit risk model includes the decomposition of *AER* into *IR* x *CR* (Eq. 3b). Curiously, this decomposition emerged gradually over time and is not based on formal theory (Colbert 1987). Conventional wisdom in auditing has long recognized the need to consider the inherent riskiness of accounts or transactions, e.g., such risk is higher for an inventory of gold than pyrite. Early policy statements on audit risk (AICPA 1972, 1981) nevertheless suggested that auditors suppress the effect of *IR* on *ARR:*

> The risk that monetary errors equal to tolerable error would have occurred in the absence of internal accounting controls related to the account balance or class of transactions under audit (*IR*) is difficult and potentially costly to quantify. For this reason in this model it is implicitly set conservatively at one, although audit experience indicates clearly that it is substantially lower (AICPA 1981, 17).

Subsequent policy statements (AICPA 1983, 1988) contrarily emphasized that *AER* includes *IR* as well as *CR*. Both risks must be assessed, separately or jointly, and an amendment to AICPA (1981) explicitly introduced Eq. 3b. Allowance for *IR* below the maximum has two positive effects. First, audit efficiency increases in that auditors may take credit for their knowledge about the inherent riskiness of misstatement in particular circumstances; Eq. 3b shows that *ARR* increases (and required testing decreases) as *IR* decreases. Second, performing the task of assessing *IR* causes auditors to consider risk factors that affect *IR* in addition to those that affect *CR,* increasing conformance to the total evidence postulate. Regarding analysis costs, early policy statements may have overstated the difficulty of assessing *IR,* e.g., misstatements detected by previous audits and unusual transactions for which auditee personnel lack familiarity are readily available, reliable cues of current misstatements (Houghton and Fogarty 1991). In sum, the decomposition of *AER* as *IR* x *CR* appears

to increase audit efficiency and conformance to total evidence, with little or no increase in analysis costs.

Unfortunately, not every division leads to a clear conquest (Burns and Pearl 1981; Chakravarti *et al.* 1979). Because the decomposition in Eq. 3b is not theory-based, it may lack the logical glue for integrating the components as intended. For comparison, consider a theory-based decomposition of $P_K(M \& -C)$ from Eq. 4:

$$P_K(M \& -C) = P_K(M) \times P_K(C|M). \quad (5)$$

Although Eq. 5 is superficially similar to $AER = IR \times CR$, it does not capture *IR* and *CR* as defined in the *Standards*. *CR* is the risk that controls fail to *prevent or detect* a misstatement that occurs. But, $P_K(C|M)$ reflects only the detective effect, and adding an event to Eq. 5 to represent the preventive effect does not achieve identity with Eq. 3b.[5] Unlike theory-based decompositions, Eq. 3b lacks a clear event sequence, such as detection cannot precede a misstatement which in turn cannot precede prevention. By including both the preventive and detective aspects of controls, *CR* confuses the temporal order of prevention and detection *vis-a-vis* the occurrence of a misstatement. Also, *IR* is the risk of misstatement, assuming there are no related controls, which fails to recognize that the preventive effect may precede the (non)occurrence of a misstatement. In Eq. 5, $P_K(M)$ does not make this assumption. On the contrary, since auditors normally have at least some information about controls when they assess *IR*, $P_K(M)$ entails rejecting the assumption. On this point, the Standards in effect compel auditors to violate the total evidence postulate, and, because there is no logical basis that supports $AER = IR \times CR$, auditors' conformance to the coherence postulate is open to question. The benefits of the decomposition in Eq. 3b are at least partially offset by its opportunity costs.

In seeking alternative simplifications for assessing *AER*, an important issue concerns the knowledge-based dependence between variables such as *IR* and *CR*. This dependence complicates a meaningful partition of elements in the auditors' psychological field by their relevance to the inherent riskiness of misstatement versus the perceived effectiveness of auditee controls. Kinney (1984, 129) gave the following example:

> (W)e might ask a gun control worker (at an airport) to assess the joint probability that a plane departing the airport has one or more guns on board. Alternatively, we might ask the worker to estimate the number that would, in the absence of all controls, carry a gun on board and the number that would be caught by the controls. The worker's response to the alternative question is likely to be "How should I know? I've never observed would-be passengers without the control."

Just as passengers' gun toting depends on expectations about airport screening, employees' behavior (e.g., negligence or fraud) is influenced by the effectiveness of auditee controls (Cushing and Loebbecke 1983). Obversely, auditee management normally would effect tighter controls over significant assets that are vulnerable to loss (Graham 1985). A simplification that overcomes the dependence problem is to avoid decomposition and instead require a holistic *AER* assessment, perhaps with the aid of a checklist that brings to mind key risk factors, and some public accounting firms have adopted this policy. Another simplification is to re-define *IR* and *CR* along the lines of Eq. 5. Based on prior knowledge and auditee-specific information (including preventive controls), the auditor would assess $P_K(M)$, the risk of misstatement prior to the application of detective controls, and $P_K(C|M)$, the risk that detective controls are ineffective assuming the occurrence of a misstatement. These assessments

[5] The Appendix shows a decomposition in which similar inconsistencies arise when the preventive and detective effects of controls are distinguished. See Leslie (1984) for a related discussion.

would be integrated via Eq. 5 and affect planning via Eq. 4. Conformance to coherence and total evidence similarly may be enhanced by decision-analytic simplifications that decompose *AER* or $P_K(M \,\&\, \text{-}C)$ in terms of causal or diagnostic factors in K (Ravinder *et al.* 1988; Kleinmuntz 1990), but such decompositions may significantly increase overall analysis costs. After identifying a set of alternative simplifications that by design ensure coherence, the general issue for prescriptive research under the *BE* approach is to evaluate the alternatives based on proxies for analysis costs (e.g., time taken), conformance to total evidence (e.g., number and type of risk factors taken into account), and effectiveness (e.g., calibration or accuracy). Such evidence would facilitate policy makers' choice of simplification.

Belief Revision

In the processing of observational events, conditionalization has static and dynamic aspects. Regarding the static aspect, an agent specifies the events and probabilities in Eq. 1, holding knowledge constant at *K*. The agent must not only assess each probability on the right side of Eq. 1, but also anticipate and incorporate into the event structure all possible observations on the basis of K. This analysis produces a set of preposterior conditional probabilities, e.g., $P_K(M|E)$ and $P_K(M|\text{-}E)$. Regarding the dynamic aspect, the agent specifies $P_{K'}(M)$ in Eq. 2 by selecting the conditional probability whose conditioning event has been observed.[6] The static and dynamic aspects are bridged by the assumption that either *E* or *-E*, as specified on the basis of *K*, constitutes the entire change in knowledge from *K* to *K'*. Without this assumption, the agent's belief revision may be affected by *extraconditional* information, i.e., differences between *K* and *K'* that go beyond *E* or *-E* (Waller and Mitchell 1991). It has long been recognized that conditionalization unravels when such information arises (Ramsey 1931). To rule out extraconditional information, unboundedly rational agents must not only exhaustively mine *K* when specifying Eq. 1, but also must know the external environment well enough to formulate an objectively correct model or protocol of what might be observed (Shafer 1985). In this regard, the Bayesian interpretation of probability is not entirely subjective, since it requires veridical beliefs about information that the external environment might reveal.

For boundedly rational agents, the bridging assumption is unlikely to hold. Costly analysis and limited knowledge prevent boundedly rational agents from formulating a subjectively complete, much less an objectively correct, model of what might be observed. Instead, these agents economize on analysis costs by employing conditioning events that are, and are perceived to be, abstractions of potentially observable information. Rather than specify all (known) possible observations in terms of Eq. 1 and update via Eq. 2, boundedly rational agents employ "wait and see" simplifications that (1) anticipate observation of, but do not pre-specify, information beyond *E* or *-E*, and (2) accomodate information that happens to be observed. Anticipation of *some* extraconditional information, along with the intention to accomodate relevant information as it is observed, sets the stage for inconsistencies with respect to Eq. 2. Such inconsistencies are not errors. Rather, conditionalization simply is not applicable for

[6] This interpretation differs from viewing belief revision as updating a prior, unconditional probability to a posterior, conditional probability in light of new information. Because $P_K(M|E)$ and $P_K(M|\text{-}E)$ are known or computable *ex ante,* the relation of $P_K(M)$ with either $P_K(M|E)$ or $P_K(M|\text{-}E)$ pertains to internal consistency with respect to *K,* not to belief revision from *K* to *K'*. Also, this interpretation does not suggest that the Bayesian apparatus cannot accomodate "surprises," i.e., unanticipated information. This can be done via retrospective conditioning (Diaconis and Zabell 1982).

evaluating the belief revision processes of boundedly rational agents. Consider an example based on Einhorn and Hogarth (1981b). A basketball coach is assessing her team's chances against an opponent to be played twice during the season. Knowing little about the opponent prior to game one (K), the coach assesses $P_K(G_1) = P_K(\text{-}G_1) = .50$ and $P_K(G_2|G_1) > .50 > P_K(G_2|\text{-}G_1)$, where G_i is the event that the coach's team wins game i. Unfortunately, the coach's team loses the first game. Besides absorbing the outcome $(\text{-}G_1)$, the coach intently watched the game itself, such that her updated knowledge base (K') contains considerable information about the opponent's style of play, and so on. The coach now assesses $P_{K'}(G_2) > .50$. The inconsistency of $P_{K'}(G_2) \neq P_K(G_2|\text{-}G_1)$ is not an error, because the change in knowledge from K and K' includes extraconditional information. The bridging assumption does not hold, and conditionalization is not applicable. The coach should plan the rematch given her beliefs based on K' rather than those based on K, consistent with the total evidence postulate.

Performing an audit may be divided into a planning stage and an evidence evaluation stage. In the planning stage, auditors rely heavily on the audit risk model: planned test procedures must have a sufficiently low *ARR* to achieve the target *AR*, given an *AER* assessment (where *AER*, *ARR*, and *AR* are *ex ante* with respect to observed evidence). In the evaluation stage, continued reliance on the audit risk model is problematic, because the event structure of Eq. 3a is underspecified relative to Eqs. 1 and 2. Taking an example from Kinney (1989), suppose an auditor has a target *AR* of .05, assesses *AER* at .40, and sets *ARR* at .125, using Eq. 3a. If test procedures do not detect a misstatement, then target *AR* presumably has been achieved. But, if achieved *AR* is defined as the posterior risk of misstatement (see note 4), then this presumption is true only under limited conditions. Although the audit risk model incorporates the risk of incorrect acceptance, i.e, *ARR* or $P_K(\text{-}D|M \ \& \ \text{-}C)$, it ignores the risk of incorrect rejection, i.e., $P_K(D|\text{-}M \ \& \ \text{-}C)$. Suppose $P_K(D|\text{-}M \ \& \ \text{-}C)$ is .10 for planned test procedures. Using Eq. 1, $P_K(M|\text{-}C \ \& \ \text{-}D) = .125 \times .40 / (.125 \times .40 + .90 \times .60) = .085$. Achieved *AR* exceeds target *AR*. This sort of specification problem has been emphasized in many critiques of the audit risk model (Cushing and Loebbecke 1983; Kinney 1983, 1984, 1989; Leslie 1984; Sennetti 1990).

Beyond these critiques, the crucial point under the *BE* approach is that analysis costs inevitably cause the belief revision processes of boundedly rational auditors to be underspecified relative to Eqs. 1 and 2. A consequence is that, in contrast with conditionalization, auditors' belief revision is open to information that is anticipated but not pre-specified in terms of exclusive and exhaustive observational events. In the audit risk model, the pre-specified observational event is D or $\text{-}D$, i.e., the auditor's detection or nondetection of a misstatement that exceeds tolerable error. This event is, and is perceived to be, an abstraction of what might be observed during the audit. Designating K (K') as the auditor's knowledge in the planning (evaluation) stage, changes from K to K' go beyond the observation of either D or $\text{-}D$. In particular, when the application of planned test procedures yields $\text{-}D$, auditors nevertheless consider the implications of other observed information for misstatements that may have escaped detection and, as deemed necessary, perform additional test procedures. To accomodate changes from K to K' that go beyond $\text{-}D$, auditors' belief revision processes must be more comprehensive, and less formal, than either Eq. 3a or Eqs. 1 and 2.

The *Standards* implicitly recognize this underspecification problem and require auditors to employ various "wait and see" simplifications for belief revision during the evidence evaluation stage. Consider two variants. First, in audit applications of statistical sampling, where the rules for accepting or rejecting auditee assertions are closely linked to the frequency or amounts of misstatements in the sample, auditors must

consider the qualitative aspects of detected misstatements such as their nature and cause. Instead of incurring analysis costs to pre-specify such qualitative features as part of the sampling plan, auditors employ a "wait and see" simplification in which they judgmentally evaluate misstatements observed in the sample. Such evaluation may lead to inferences that supplement the statistical inferences from sample results, e.g., auditee controls are weaker than expected. The analysis cost savings from this simplification may be partially offset, however, by an opportunity cost resulting from biased judgments about the nature or causes of misstatements (Burgstahler and Jiambalvo 1986). Second, and more generally, the *Standards* require auditors to consider whether a reassessment of *AER* (or, *IR* and *CR* separately) is needed in light of *any* information observed in the evaluation stage. Recognizing that the audit is a cumulative process of evidence collection and evaluation, the *Standards* note the possibility that the auditor's updated knowledge, *K'*, may include information that conflicts with *K*, the auditor's knowledge when assessing *AER* in the planning stage. In such cases, auditors must reconsider the adequacy of planned test procedures based on a re-assessment of *AER* given *K'*, instead of *K*. Such re-assessments are curious from a Bayesian perspective, since they involve retrospectively constructing, rather than updating, a prior belief in light of new information (but see Diaconis and Zabell 1982). They also pose the cognitively challenging task of renewed "digging" in an extended psychological field. In effect, the *Standards* establish an equivalence criterion: the adequacy of applied test procedures should be insensitive to whether risk-related information is processed during the planning or evaluation stage. Meeting this criterion may be complicated by human information processing limitations that cause differences in *AER* depending on the timing of assessment, e.g., a part of *K* that is easy to access during the planning stage may be relatively inaccessible, as part of *K'*, during the evaluation stage (cf. Moeckel and Plumlee 1989). Assessing the opportunity costs of "wait and see" simplifications that economize on analysis costs, e.g., whether they satisfy the equivalence criterion, is an important issue for empirical research under the *BE* approach. In any event, the conclusion remains that belief revision by boundedly rational economic agents cannot be reasonably evaluated against a model of unbounded rationality, such as Bayesian conditionalization, which suppresses analysis costs.

Second-Order Uncertainty

The coherence postulate requires that an agent's belief is representable as a *unique* subjective probability (Gardenfors and Sahlin 1982). To illustrate, suppose the goal is to measure an agent's uncertain belief about an event, *M*. A decision analyst might measure the agent's $P_K(M)$ with a *probability wheel,* i.e., a disk having two adjustable sectors (*S* and -*S*) with a spinner attached to its center. By adjusting the proportional area of the two sectors, the analyst can set the probability of the spinner stopping in *S* to any desired value, $P_K(S)$. With an initial setting of $P_K(S) = .50$, the agent is offered two bets: a prize of $10 if *M* occurs, versus a prize of $10 if *S* occurs. A preference for the first bet implies $P_K(M) > .50$; a preference for the second bet implies $P_K(M) < .50$. By repeatedly adjusting the wheel until the agent is indifferent between the bets, i.e., $P_K(M) = P_K(S)$, the analyst can measure the agent's belief to any desired precision. In effect, the coherence postulate requires that agents view uncertain events as comparable to risky events with known probabilities.

For boundedly rational agents, belief representation according to the coherence postulate has two problems. First, coherence *over*represents belief by imposing too much precision, as noted earlier. Under the probability wheel, an agent may be able to state a definite preference between the bets when $P_K(S)$ is .10 or .50, but not when

$P_K(S)$ is between .25 and .30. Stated differently, the agent may have second-order uncertainty about a precise measure of his or her degree of belief, which is costly if not impossible to eliminate through analysis of a fixed knowledge base. Second, coherence *under*represents belief by failing to reflect the quality of agents' knowledge. For any two knowledge states, K' and K'', so long as $P_{K'}(M) = P_{K''}(M)$, the rational choice model requires agents to act as if K' and K'' were equivalent. But, a voluminous psychological literature on ambiguity indicates that real agents are sensitive to K, controlling for $P_K(M)$ (for reviews see Camerer and Weber 1992; Einhorn and Hogarth 1985; Frisch and Baron 1988). In particular, second-order uncertainty is inversely associated with the quality of K, and actions are affected by second-order uncertainty.

Among the many relevant studies in philosophy and psychology, two early contributions are noteworthy here. Popper (1959) questioned the rational choice model's treatment of "ideal" evidence. Suppose M is the event that a coin lands "heads" on its next flip, where the coin may be fair or biased to any degree. A rational belief is $P_K(M) = .50$. Suppose E is "ideal" evidence from a large number of flips of this coin with exactly 50% being "heads". On the evidence, a rational belief is $P_{K'}(M) = P_K(M|E) = P_K(M) = .50$, where E is the entire change from K to K'. This is the *paradox of ideal evidence:* strong empirical evidence is irrelevant, because it has no impact on rational belief (Bar-Hillel 1982). Ellsberg (1961) also questioned whether agents' uncertain beliefs are captured by a precise subjective probability. Suppose there are two urns, each containing 100 red or black balls. A ball will be drawn at random from one of the urns. Let R_1 (B_1) designate drawing a red (black) ball from Urn 1, and R_2 (B_2) designate drawing a red (black) ball from Urn 2. An agent bets on a color and wins \$10 if a ball with her color is drawn. Available information about the urns varies: the proportion of red balls in Urn 1 is 50%, but the proportion in Urn 2 is unknown. The agent is asked about her preferences between betting on R_1 and R_2, and between betting on B_1 and B_2. Because the proportions are known for Urn 1, but not for Urn 2, she prefers R_1 and B_1. Such preferences imply beliefs of $P_K(R_1) > P_K(R_2)$ and $P_K(B_1) > P_K(B_2)$. But, $P_K(R_1) > P_K(R_2)$ implies $P_K(B_1) < P_K(B_2)$; her beliefs are inconsistent. This is a version of the *Ellsberg paradox.* Both paradoxes are explained by agents' sensitivity to the quality of K and the analysis that K supports. In the paradox of ideal evidence, limited *ex ante* knowledge may lead an agent to assume that "heads" and "tails" are equiprobable, absent a reason to believe otherwise, by the *principle of insufficient reason.* This principle is a notoriously weak basis for probability assessment, referred to by Popper (1957) as "probability magic or knowledge out of ignorance." In the Ellsberg paradox, agents similarly may be led to assume that all proportions (0% to 100%) are equiprobable for Urn 2; the average proportion is 50%. For Urn 1, however, agents can assess $P_K(R_1) = P_K(B_1) = .50$, by the stronger *principle of direct inference,* i.e., assign the probability for a general event class to a randomly drawn member of that class (Levi 1977). Agents conforming to these paradoxes apparently consider a probability assessment based on the principle of insufficient reason to be epistemically weaker than one based on knowledge of relevant frequencies or proportions, a difference in K that affects actions.

The *Standards* implicitly recognize auditors' second-order uncertainty about risk assessments and provide a variety of coping mechanisms. The *Standards* state that *IR* and *CR* may be assessed in quantitative or nonquantitative terms, leaving the desired precision to be set by the individual auditor or public accounting firm. As described in Section 2, firms use risk scales such as low, moderate, and high. Crude risk scales are a simplification that reduces auditors' analysis costs, i.e., time and effort spent to discriminate between possible risk values, and second-order uncertainty about risk

assessments. In an experimental study, Waller (1994) reported evidence confirming the straightforward prediction that second-order uncertainty is higher when auditors assess risk on a [0,1] scale versus a low-moderate-high scale. The analysis cost savings of crude risk scales presumably exceed the potential gain that precise risk assessments would provide via fine-tuned audit test decisions. The *Standards* state that auditors cannot rely completely on risk assessment. Regardless of the subjectively assessed values of *IR* and *CR*, auditors must perform at least minimal substantive tests that yield objective evidence for significant accounts and transaction cycles. Taking the extreme case, suppose an auditor assesses *AER*, or $P_K(M \ \& \ -C)$, to be zero. From a Bayesian perspective, no test procedure is worthwhile, since no new evidence could change the auditor's prior belief. By requiring minimal substantive tests, the *Standards* acknowledge the subjectivity of risk assessment and concomitant second-order uncertainty. The *Standards* emphasize that risk assessment entails analysis costs. In cases where analysis costs would outweigh the benefit of risk assessment, the *Standards* direct auditors to set risk at the maximum; i.e., when auditors are unwilling to incur the cost of analysis to reduce second-order uncertainty to an acceptable level, they must incorporate an extreme conservative bias. This confounding of analysis costs and risk assessments may be especially severe for *CR* assessments. In an archival study, Waller (1993) reported that over 80% of *CR* assessments were at the maximum. An explanation is that auditors typically emphasized substantive testing instead of performing and documenting a thorough analysis of auditee controls. Finally, the *Standards* state a general requirement that auditors must have adequate technical training and proficiency. Public accounting firms economize on the costs of information search and analysis, and limit second-order uncertainty, by assigning the risk assessment task to auditors with experience-based knowledge about the auditee and its industry. Such knowledge substitutes for costly search and analysis, decreases second-order uncertainty, and sometimes signals a need for further search and analysis (Mills 1993; Taylor 1994; Waller 1994). Although inconsistent with the coherence postulate, simplifications that cope with, rather than eliminate, second-order uncertainty should not be thereby considered errors. Under the *BE* approach, such simplifications may be reasonable means for boundedly rational auditors to economize on analysis costs when making risk assessments. Descriptive and prescriptive issues for empirical research under the *BE* approach include: How is auditors' second-order uncertainty affected by factors such as task experience and the completeness of case-specific information? How does auditors' second-order uncertainty affect test decisions? Relative to current standard practices, how do alternative simplifications for assessing risk (e.g., judgment aids that use base rates) affect auditors' second-order uncertainty, analysis costs, and effectiveness?

Concluding Remarks

Behavioral economics generally is concerned with the empirical validity of assumptions underlying neoclassical economic theory and, when the assumptions are empirically invalid, with the implications for explaining human behavior and the operation of economic institutions (Simon 1987b). Much of the *BE* literature addresses firm or market phenomena. For example, behavioral economists have been critical of the neoclassical assumption that firm decision makers possess the knowledge and computational capacity necessary to maximize profit. Given bounded rationality, there is a firm cost of profit-maximizing behavior. Drawing out the implications of costly profit maximization, the *BE* approach seeks to explain empirical observations at the firm level of simplified practices, or routines, such as cost-plus pricing (Cyert and

March 1992). Under the *BE* approach, the persistence and predominance of certain routines are seen, not as the solution to an optimization problem that includes all kinds of costs, but as the product of an evolutionary process whereby routines that improve a firm's actual profit, relative to the competition, tend to be selected for survival by the economic system (Nelson and Winter 1982). Similarly, the *BE* approach is applicable at the individual level. Drawing out the implications of costly analysis, descriptive research seeks to explain the simplifications of boundedly rational agents in specific economic domains in terms of trade-offs between analysis and opportunity costs. Also, because there can be no guarantee that the simplifications currently in use involve optimal trade-offs, innovation and improvement through prescriptive research are an open possibility. Finally, since individual judgments and decisions often are components of firm routines, e.g., auditors' risk assessments in producing a financial statement audit, applications of the *BE* approach at the individual level may inform, and be informed by, applications at the firm level.

In this paper, the *BE* approach was applied to examine inconsistencies between auditors' standard practices for risk assessment and Bayesian postulates of the rational choice model. The inconsistencies pertained to event decomposition, belief revision, and second-order uncertainty. A general conclusion was auditors use simplifications that economize on analysis costs, e.g., "wait and see" simplifications for belief revision that are open to anticipated but not pre-specified events and simplifications that allow for and control second-order uncertainty. This conclusion is meant to be descriptive and not to imply that the simplifications involve optimal cost trade-offs. On the contrary, there are flaws in the audit risk model's decomposition of *AER* into *IR* x *CR*, "wait and see" simplifications may have opportunity costs resulting from judgmental biases when processing observed events, and coping with second-order uncertainty by incorporating an extreme conservative bias is inefficient. Each inconsistency suggests descriptive and prescriptive research issues, consistent with the dual goal of understanding and improving behavior. In pursuing these issues, it is important to consider three implications of the *BE* approach. First, descriptive research should not merely document auditors' patterns of judgment and decision making, but seek to understand the reasons for their use in terms of analysis and opportunity costs. Second, evaluative research using normative models, which suppress analysis costs, as benchmarks must justify the models' applicability to boundedly rational auditors who economize on such costs. Third, prescriptive research should take into account the effects of auditors' bounded rationality. Recommendations which cannot be used by boundedly rational auditors, because of analysis costs, have no prescriptive value.

Appendix

Figure 2 presents an event sequence that separates the preventive and detective aspects of controls. The sequence has four events: *C'* is the event of prevention by controls; *M* is the event of a misstatement; *C''* is the event of detection by controls; and *D* is the event of detection by the auditor. Thus, a misstatement in audited assertions requires the conjunction of *-C', M, -C'',* and *-D*. It is straightforward to restate *AR* = *AER* x *ARR* as:

$$P_K(\text{-}C' \,\&\, M \,\&\, \text{-}C'' \,\&\, \text{-}D) = P_K(\text{-}C' \,\&\, M \,\&\, \text{-}C'') \times P_K(\text{-}D|\text{-}C' \,\&\, M \,\&\, \text{-}C''). \quad \text{(A1)}$$

It is not straightforward, however, to restate *AER* = *IR* x *CR*. Consider Eq. A2:

$$\begin{aligned} P_K(\text{-}C' \,\&\, M \,\&\, \text{-}C'') &= P_K(\text{-}C' \,\&\, M) \times P_K(\text{-}C''|\text{-}C' \,\&\, M), \\ &= P_K(M|\text{-}C') \times P_K(\text{-}C') \times P_K(\text{-}C''|\text{-}C' \,\&\, M). \end{aligned} \quad \text{(A2)}$$

Eq. A2 is inconsistent with *IR* and *CR* as defined in the *Standards*. $P_K(M|\text{-}C')$ assumes the condition of a prevention failure, which is not equivalent to the assumption of *IR* that there are no related controls. Also, unlike *CR*, Eq. A2 contains two measures regarding the effectiveness of controls: $P_K(\text{-}C')$ concerns prevention and $P_K(\text{-}C''|\text{-}C' \,\&\, M)$ concerns detection, and these do not generally combine into a single measure that corresponds to *CR*. The *Standards* define *CR* as the "risk that a material misstatement that could occur in an assertion *will not be prevented or detected* on a timely basis by an entity's internal control structure policies and procedures" (AICPA 1993, AU 319, italics added). The italicized phrase may be represented by the conjunction of *-C'* and *-C''*, so that $P_K(\text{-}C' \,\&\, \text{-}C'')$ would be a single measure corresponding to *CR:*

$$P_K(\text{-}C' \,\&\, \text{-}C'') = P_K(\text{-}C') \times P_K(\text{-}C''|\text{-}C'),$$
$$= P_K(\text{-}C') \times \{P_K(M \,\&\, \text{-}C''|\text{-}C') + P_K(\text{-}M \,\&\, \text{-}C''|\text{-}C')\},$$
$$= P_K(\text{-}C')\{P_K(\text{-}C''|\text{-}C' \,\&\, M) \times P_K(M|\text{-}C') + P_K(\text{-}C''|\text{-}C' \,\&\, \text{-}M) \times P_K(\text{-}M|\text{-}C')\}. \quad \text{(A3)}$$

Since $P_K(\text{-}C''|\text{-}C' \,\&\, \text{-}M) = 1$ and $P(\text{-}M|\text{-}C') = 1 - P(M|\text{-}C')$,

$$P_K(\text{-}C' \,\&\, \text{-}C'') = P_K(\text{-}C')\{[P_K(\text{-}C''|\text{-}C' \,\&\, M) - 1]P_K(M|\text{-}C') + 1\}. \quad \text{(A4)}$$

To achieve identity between Eq. A4 and the last two terms of Eq. A2, the former must reduce to:

$$P_K(\text{-}C' \,\&\, \text{-}C'') = P_K(\text{-}C') \times P_K(\text{-}C''|\text{-}C' \,\&\, M). \quad \text{(A5)}$$

Eq. A5 holds only in the special case where $P_K(\text{M|-C'}) = 1$, i.e., a prevention failure necessitates the occurrence of a misstatement. However, a misstatement normally requires conditions beyond a prevention failure, e.g., employee action.

Figure 2. Event Sequence with Prevention by Controls.

C'		*M*		*C''*		*D*		*-C' & M & -C'' & -D*
Prevention by controls? no	→	Occurrence of misstatement? yes	→	Detection and correction by controls? no	→	Detected by auditor? no	→	Misstatement in audited financial statements? yes
•	→	•	→	•	→	•	→	•

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Discussant's Response to "A Behavioral-Economics Approach to Auditors' Risk Assessments"

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Introduction

Let me begin by thanking Raj Srivastava for inviting me to act as practitioner discussant for Professor Waller's paper. Many of you know already that I am in the course of making a transition from practitioner to academic. Let me express the hope, then, that Raj's asking me to act as practitioner discussant is a reflection of his appreciation of my previous work, and not a comment on his perceptions of my progress in this transition.

I propose to discuss this paper by regarding it as an onion. By this I do not mean, of course, that it has a strong smell, that it leaves a bad taste in the mouth, or that it will make our eyes water. Rather, I mean that I intend to examine it in a number of layers, beginning with the outside.

The abstract tells us that real agents are rationally bounded, and that the audit risk model and auditors' risk assessments are inconsistent with a Bayesian rational choice model. I do not find the practitioner within me resisting these views at this level: I find this an acceptable onion.

However, as we peel off this outer skin in order to examine the onion within, we might note that it is a somewhat thin skin. I have not generally found that auditors as individuals are more rational than others, although they may be more analytical, and perhaps more professionally skeptical. Professional standards nowhere assert that the audit risk model is, or should be, consistent with a Bayesian rational choice model. The many potential causes of suicide, despair and divorce among audit partners do not, in my experience, include a deep-rooted concern that our risk assessments might fail to obey the normative canons of Bayesian thought. So it is fair (and may be reasonable) to ask whether these are important and interesting findings. Let us proceed to do so.

Economizing with the truth?

At the second layer of examination we find that Professor Waller is not content simply to identify the non-Bayesian nature of auditor decision-making regarding risk assessments, but is concerned to offer an alternative model: the behavioral-economic model. This model differs from strict rational choice models insofar as it recognizes that:

- Agent errors are possible.
- Choice processes can be improved.
- Convergence with a strict rational choice model may not be worth the agent's incremental costs.
- Divergence from a strict rational choice model need not be presumed to be error.

I like this inner onion too: indeed, I shall be happy to admit the possibility of auditor error, especially if Professor Waller can help us reduce our errors in the future. In this sense, I share with great enthusiasm his search for a model that is both descriptive and prescriptive. In common with a number of other practitioners, however, I should be happy to forgo a great deal of descriptive power in return for a prescription for improvement. This is a particularly salient issue, of course, in the development by auditors of decision aids: the objective is not to build models that emulate current decision making skills, but to provide tools to improve them.

Who among audit practitioners would argue with the view that neither audit decision making, nor the acquisition of information on which decisions might be based, are costless? Not I, certainly. What practitioners might hope is that effective decision aids can play a role in reducing the incremental costs of improved decision making (whether or not that turns out to be a closer approximation to the rational choice model).

As we remove this second layer, and proceed to consider some of the more detailed aspects of this paper, we might note that it, too, wears a little thin in places. For example, why should anyone suppose that any kind of rational choice model is appropriate for the audit context that Professor Waller has chosen to study? Scriptures do not require human activities to be rational: as Professor Waller makes clear, professional standards do not explicitly (and apparently not even implicitly) require rationality. Moreover, rational choice models are models of choice, and the account given in this paper is based upon revision of beliefs. The auditor's task, on the other hand, is to render an opinion, and there are questions of an epistemological and metaphysical nature that can be asked regarding the expression of an opinion:

- Can opinion formation properly be equated with the formulation (and possible revision) of a belief?
- Is opinion formation an act of choice?
- Ought opinion formation be rational?

I take an opinion, in the context of an audit, to be a professionally considered view, a professional judgment. If we find that certain models of belief revision do not correspond to processes used in reaching audit opinions, is this evidence that the opinion formation process is in some sense deficient? Or is it, rather, evidence that opinions are not exactly like beliefs, and that the canons for the formation of professional opinions are not necessarily those normatively prescribed by Bayesians? Auditors, clients, legislators and social scientists all recognize that audit information and audit decision making are not costless. Since society is not willing to wait an infinite time for an audit opinion, nor clients willing to pay infinite amounts, there is no reason to expect that audit decision making will be fully rational, in the sense of using all available information, in an optimal manner. Which of us can be surprised, then, at the idea that auditors might trade off the incremental value of additional information or analysis with their additional costs? Which of us thinks that auditors have infinite computational and processing abilities? Professional standards explicitly recognize the limited nature of the auditing process.

Although I do not propose to develop the point in detail today, we should also note that many auditor assessments (e.g., the assessment of internal control risk as maximum) explicitly do not represent auditor beliefs. They represent economic decisions not to incur the (audit) costs of developing a belief. See, for example, Waller (1993).

Auditors' Risk Assessments: Inconsistencies with Rational Choice

My argument is that auditors, clients, legislators and social scientists do not expect auditing to follow a strict rational choice model. When we examine the third level of our onion, to study the claimed inconsistencies between auditors' risk assessments and the rational choice model, we may do so with interest to see what inconsistencies are found. That there are such inconsistencies, of course, is not in the least remarkable.

"The audit risk model...decomposes risk in a muddled way that is inconsistent with the Bayesian postulates of coherence and total evidence," Professor Waller writes. What shall we say to this? *If you prick us do we not bleed?* Three questions spring at once to my mind:

- Is it muddled *because* it is inconsistent (with the Bayesian model), or is it muddled anyway *and* inconsistent?
- What does "muddled" actually mean in this context? Confused? Or merely not unboundedly rational?
- Can we not equally express this finding as: "The Bayesian rational choice model fails adequately to represent the decomposition of audit risk which professional standards urge upon auditors?"

This is not the place, and these are not the times, for a *rational* defense of the audit risk model. It has been subject to much criticism for over a decade (see, for example, Kinney 1983; Cushing & Loebbecke 1983; Jiambalvo & Waller 1984; Kinney 1989), and yet is still used by practitioners as a guide for planning decisions regarding alternate sources of audit reliance.

Professional standards themselves do not prescribe the functional form of the model. For example, "The model is not intended to be a mathematical formula including all factors that may influence the determination of individual risk components (AICPA 1981)." Similarly, "The way the auditor considers these component risks and combines them involves professional judgment and depends on his audit approach (AICPA 1983)." Nevertheless, the simple multiplicative approach described by Professor Waller has been widely used to operationalize the model, and appears *prima facie* to be vulnerable to the criticisms found in this paper.

Decomposition

Let us consider the criticism relating to decomposition. AICPA (1983) defines Inherent Risk in terms of the susceptibility to material misstatement, assuming there are no related controls. Control risk is defined in terms of whether material misstatements would be prevented or detected by controls. Professor Waller's comments regarding the difference in timing of preventive and detective controls (*vis-a-vis* occurrence of a material misstatement) are well made and to the point. They are not, however, new (see, e.g., Leslie 1985). The professional waters were further muddied (or should we say, "muddled") by the issuance of SAS 55 (AICPA 1989), which introduced the additional concept of the control environment.

Taking at face value the invitation in SAS 47 cited earlier: "The way the auditor considers these component risks and combines them involves professional judgment and depends on his audit approach (AICPA 1983)", a number of firms have elected to combine their assessments of Inherent Risk (as defined), the implications of the control environment, and preventive controls, so that what they actually assess (in a process sometimes called Environmental Assessment) is the overall susceptibility to material misstatement (see, for example, Grant Thornton 1990). Continuing with

Professor Waller's notation, let us call this *IR**. In like manner, the Control Risk assessment (often based on attribute sampling to test the effectiveness of detective controls) may be referred to as *CR**.

Now, while *IR* and *CR* do capture the concepts defined in professional standards, *IR** and *CR** capture the assessments operationalized by auditors; this recombination is intended to be legitimated by the flexibility incorporated in the standards. Of course, this is essentially what Professor Waller offers as an alternative simplification to reduce analysis costs. Contrary to his position in the present paper, however:

- This is a current operationalization rather than an alternative.
- *IR** may be taken as a primitive, rather than as a simplification – indeed, a strict interpretation of the coherence postulate as set out in this paper *requires* susceptibility to be assessed in the light of everything the auditor actually knows, and does not provide for counterfactual hypothetical assessments; however, if such hypotheticals were permitted, they could be constructed consistently with the three postulates.
- This approach does not, therefore, readily demonstrate the value of a behavioral-economics approach.

Belief Revision

Let us peel another layer off our onion. There still remains the question of how *IR** and *CR** might be assessed and combined, and here we can see behavioral-economics compromises at work in the use of a multiplicative model. The incremental cost of the Bayesian approach is relatively minor, and it is frustrating that, on the whole, auditors have not taken the next step to a discrete Bayesian model (see, for example, Leslie 1985). A little algebra and a few minutes work with a spreadsheet show that we can easily adapt Professor Waller's example to a Bayesian revision model. What is the auditor interested in? Presumably, using Professor Waller's notation it is $P_K'((M) = P_K(M|\text{-}D)$. In other words, audit risk is the risk that there is a material misstatement, given that we did not find one. (In common with Leslie and others, I presume that the auditor knows what to do if a material misstatement is discovered!)

$$P_K(M|\text{-}D) = P_K(M \,\&\, \text{-}D) \,/\, P_K(\text{-}D) = P_K(\text{-}D|M) \times P_K(M) \,/\, P_K(\text{-}D)$$

where $$P_K(\text{-}D|M) = P_K(\text{-}D|M \,\&\, \text{-}C) \times P_K(\text{-}C|M)$$

and $$P_K(\text{-}D) = P_K(\text{-}D|M) \times P_K(M) + P_K(\text{-}D|\text{-}M) \times P_K(\text{-}M) = P_K(\text{-}D|M) \times P_K(M) + (1 - P_K(M))$$

Letting $$P_K(M) = IR^*,\ P_K(\text{-}C|M) = CR^*, \text{ and } P_K(\text{-}D|M \,\&\, \text{-}C) = \text{Detection Risk } DR$$

gives $$P_K(M|\text{-}D) = (IR^* \times CR^* \times DR) \,/\, (1 - IR^* + IR^* \times CR^* \times DR).$$

Naturally, this gives different results from the usual multiplicative formula. However, assuming that given the changed semantics auditors would assign different values to the risks, it is easy to show that identical results for the required detection risk *DR* can be achieved by taking

$$P_K(M) = IR^* \,/\, (IR^* + 1 - P_K(M|\text{-}D)).$$

Figure 1 shows what values would need to be assigned to *IR** in the case of Professor Waller's example (page 118), in order for the Bayesian model to require the

same detection risk for an audit risk of 5% as the multiplicative model in the example did.

Figure 1

Figure 1a: Multiplicative Model. Detection Risks to give an Audit Risk of: 5%.

		Internal Control Risk		
		Low	Moderate	High
Inherent Risk		0.18	0.44	1.00
Low	0.36	0.77	0.32	0.14
Moderate	0.67	0.41	0.17	0.07
High	1.00	0.28	0.11	0.05

Figure 1b: Bayesian Revision Model. Detection Risks to give an Audit Risk of: 5%.

		Internal Control Risk		
		Low	Moderate	High
Inherent Risk		0.18	0.44	1.00
Low	0.27	0.77	0.32	0.14
Moderate	0.41	0.41	0.17	0.07
High	0.51	0.28	0.11	0.05

The data in the example, of course, is somewhat speculative, and Figure 2 shows a similar comparison for the published "definitions" of another firm (Grant Thornton 1990).

Figure 2

Figure 2a: Multiplicative Model. Detection Risks to give an Audit Risk of: 5%.

		Internal Control Risk			
		Limited	Moderate	Significant	Maximum
Inherent Risk		0.13	0.24	0.56	1.00
Low	0.50	0.75	0.42	0.18	0.10
Moderate	0.71	0.53	0.30	0.13	0.07
High	1.00	0.38	0.21	0.09	0.05

Figure 2b: Bayesian Revision Model. Detection Risks to give an Audit Risk of: 5%.

		Internal Control Risk			
		Limited	Moderate	Significant	Maximum
Inherent Risk		0.13	0.24	0.56	1.00
Low	0.34	0.75	0.42	0.18	0.10
Moderate	0.43	0.53	0.30	0.13	0.07
High	0.51	0.38	0.21	0.09	0.05

I am not claiming that either firm would, in fact, select these values in a Bayesian model. We can note, however, that the results for the two firms are comparable, and we can ask what meaning could be given to such values in the Bayesian interpretation.

It is interesting to note that even in this Bayesian model, behavioral-economics is still at work:

- As Leslie (1985) notes, this approach uses discrete approximations to continuous distributions.
- The analysis assumes that misstatements detected and corrected by controls are known to the auditor (as part of *K*); if it is assumed that controls detect and correct without auditor knowledge, the resulting formulae are more complex; if detected and corrected misstatements may or may not be known to the auditor, even more sophistication will be necessary.

Professor Waller further argues that extra-conditional information introduces additional inconsistencies with the rational choice model, and I see no reason to disagree.

Second-Order Uncertainty

We are now ready to peel away the last layer of our onion, and study the little piece in the middle. The coherence postulate of the rational choice model requires that beliefs be representable as unique subjective probabilities. You may think, as many do, that this is a limitation in the model itself, but that is a story for another day. Ignorance is a feature of the auditor's environment, and other formulations seek to address this directly (see, for example, Shafer & Srivastava 1990).

It is true that professional standards implicitly recognize second-order uncertainty. In practice, it may be the case that second-order uncertainty is a consequence of behavioral-economics, rather than an argument for this approach. In my experience, few auditors actually believe that client environments can be partitioned into just three isomorphism classes, or that the values for inherent risk used in their firms' approaches are representative of long-run frequencies. Behavioral-economics has caused auditors to develop methods that incorporate second-order uncertainties. It may well be, of course, that such uncertainties would have existed without current approaches to risk assessment - but Professor Waller does not show evidence for this, and nor shall I. The question remains, however: if my beliefs about client circumstances cannot be represented by unique subjective probabilities, does that fact exhibit shortcomings in me, in my beliefs, or in the applicability of the rational choice model that requires this representation?

Conclusions

Now that we have reduced this paper to a pile of onion rings, it may be time to take stock of what we have achieved via this tangential approach, before we break out the condiments of congratulations. Let me begin by noting that the paper presumes throughout that risk assessments are individual choices - and this is by no means the whole story. Professor Waller argues that auditors are (at best) boundedly rational. I believed this before I read this paper, and I believe it still.

He argues that professional standards and practices are inconsistent with Bayesian postulates for a rational choice model. It is not clear that professional standards are inconsistent with such postulates, although they neither mandate nor even encourage a Bayesian approach. However, I find my profession guilty as charged regarding common practices.

He argues that a behavioral-economics approach will help us to better describe and prescribe auditor performance and divergence from a rational choice model. As to description, I accept his point. As to prescription, I believe that in many places the profession is already making use of such an approach - although there are no doubt

further opportunities to be seized. Perhaps it would be equally valid to say that such an approach will assist researchers to better describe and prescribe the work of auditors.

It would be presumptuous indeed to suggest that the work of researchers is inherently more noble or important than that of auditors, and this is not my intention. I see the laying down of normative approaches without regard for practical feasibilities as somewhat sterile, and the documentary description of auditor shortcomings as a sorry and sordid affair. Researchers have the opportunity, through carefully considered prescription, to add value to the auditing profession and to society. In this sense, at least, Professor Waller clearly knows his onions! I congratulate him on an interesting and thought-provoking paper.

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7

Auditing for Fraud: Perception vs. Reality

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When you come to a fork in the road, take it.
Yogi Berra

Many people, both in and out of the accounting profession, would say that Mr. Berra's aphorism has guided the evolution of the auditor's responsibility to detect fraud. Throughout its history, the profession has taken various positions on this responsibility; sometimes adopting a position, abandoning it, and then returning to it.

This erratic evolution has been propelled largely by two factors. One factor is the vagaries of auditors' beliefs about (1) what degree of fraud detection responsibility is commensurate with an auditor's professional obligation and (2) what technical prowess auditors command to detect fraud. The other factor is what responsibility the public, in the form of users of the auditor's product; regulators and legislators; courts; and financial press writers, expect auditors to assume.

This paper begins with a summarized history of the evolution of the auditor's responsibility to detect fraud in financial statement audits, including both nonauthoritative and authoritative guidance and major influences outside the profession. We then provide a critique of the effectiveness of audit approaches for detecting fraud. Finally, we offer some suggestions for modifying those approaches and improving their effectiveness.

Progression of Professional Guidance– Nonauthoritative and Authoritative

From ancient times until around the turn of the twentieth century, auditing's primary objective was to detect fraud and the technique used was detailed examination rather than selective testing (Brown 1962). For example, the prevention and detection of fraud underlay the "hearing" of accounts during the Roman Empire as well as audits of companies during the Industrial Revolution (Brown 1962).

During the five years that preceded and followed the turn of the twentieth century, the primary objective of auditing began to shift. Contrasting passages from two prominent auditing texts issued seven years apart illustrate this shift.

"The object of an audit may be said to be three-fold:

1. The detection of fraud.
2. The detection of technical errors.
3. The detection of errors of principle." (Dicksee 1905)

* The views expressed in this paper are those of the authors and are not necessarily those of the AICPA or Deloitte & Touche.

"In what might be called the formative days of auditing, students were taught that the chief objects of an audit were:

1. Detection and prevention of fraud.
2. Detection and prevention of errors, but in recent years there has been a decided change in demand and service.

Present-day purposes are:

1. To ascertain actual financial condition and earning of an enterprise.
2. Detection of fraud and errors, but this is a minor objective." (Montgomery 1912)

In addition to the shift in audit objective, there was a move away from detailed examination of virtually every transaction toward selective testing. This change occurred because of the growing size of audited entities and the accompanying impracticability of detailed verification. Also, auditors began to recognize internal control and its relationship to testing and also to develop audit sampling techniques. Thus, both the objective of audits and the techniques used to perform them transformed.

The transition in the practicing profession's stance on the auditor's responsibility for detecting fraud continued until the first authoritative recognition of this responsibility in 1951 in Codification of Statements on Auditing Procedure (AICPA 1951).

Codification of Statements on Auditing Procedure: The Codification stated that an audit is not designed and cannot be relied on to disclose fraud. It emphasized that primary responsibility for detecting fraud lies with adequate systems of accounting and internal control. It also indicated that if the auditor becomes suspicious of the client's integrity, he or she must extend audit procedures to determine whether those suspicions are justified.

In 1961, SAP No. 30, Responsibilities and Functions of the Independent Auditor in the Examination of Financial Statements (AICPA 1961), set forth the auditor's responsibilities for fraud detection in substantial detail. That SAP, as codified in SAP No. 33, contained the following guidance:

- In an audit, the auditor is aware that fraud may exist.
- The auditor recognizes that, if a fraud is sufficiently material, it may affect the opinion and considers this possibility.
- An audit is not designed and cannot be relied on to disclose defalcations or misrepresentations by management; failure to detect fraud is only a problem insofar as it results from the failure to comply with GAAS.
- Detecting fraud is the responsibility of the accounting system and system of internal accounting control; the auditor evaluates the system of internal accounting control to determine the selection and timing of other auditing procedures.
- The cost of searching for fraud would be prohibitive and the exercise would, in some cases, be futile.
- If the auditor suspects fraud, he or she needs to determine the possible magnitude.
- If the magnitude is likely to be material, the auditor should reach an understanding with the client as to who will investigate it and determine its magnitude.

- If the magnitude is not likely to be material, the auditor should refer it to the proper representatives of the client with the suggestion that they follow up.
- Subsequent discovery of fraud does not necessarily indicate substandard audit work; the auditor has fulfilled his or her responsibility if the audit was performed with due care and skill in accordance with GAAS.

This discussion was carried forward to SAS No. 1, section 110.05-.08.

Statement on Auditing Standards No. 16: In the early to mid 1970's, the Auditing Standards Executive Committee (AudSEC) reconsidered the auditor's responsibility to detect fraud. This reconsideration was spurred by, among other things, the report of the AICPA's Special Committee on Equity Funding and the growing recognition that the public considered fraud detection an important objective of an audit. As a result, AudSEC, in 1977, issued SAS No. 16, The Independent Auditor's Responsibility for the Detection of Errors or Irregularities (AICPA 1977).

SAS No. 16 made the following changes to authoritative literature:

- Expanded guidance to address errors in addition to irregularities.
- Added the concept that financial statement users look to internal control together with audits to provide assurance about the financial statements.
- Restated the auditor's responsibility affirmatively; that is, rather than state what the auditor is not responsible for, state what the auditor is responsible for–to plan the audit to search for material errors and irregularities.
- Added the concept of professional skepticism
- Added a discussion of the interrelationship of controls and errors and irregularities, compliance testing (reliance) and substantive testing (from SAS No. 1, section 320).
- Included warning signals–circumstances suggesting the potential for errors or irregularities.
- Added discussions of the importance of management integrity and warning signals suggesting potential for management misrepresentation, but not that, absent information to the contrary, the auditor may assume no misrepresentations (or overriding of controls) has occurred.
- Strengthened the discussion of the inherent limitations of an audit and stated that, no matter how much work the auditor does, he or she will fail to detect some types of irregularities or misrepresentations.
- Made more specific the auditor's obligations and procedures when the auditor suspects material errors or irregularities. Whereas SAP No. 30 only required that the auditor reach an understanding with the client as to who will investigate them, SAS No. 16 specified the level of management to be contacted, requirements to obtain evidential matter, implications for the auditor's report, and further actions.
- Specified to whom the auditor should report immaterial errors or irregularities and stated that the auditor should consider their effect on other facets of the audit.

SEC Reaction to SAS No. 16: All of the SEC's comments on the exposure draft of SAS No. 16 were incorporated in the final standard except one. The SEC believed "it would be useful to include a comment to the effect that many errors and irregularities will be discovered by an auditor standing back from the detail and considering an enterprise, its environment, and its financial statements in the overall." Although that guidance was not specifically incorporated in SAS No. 16, SAS No. 23, *Analytical Review Procedures,* noted that analytical procedures may be performed at or near the

conclusion of the engagement as an overall review of financial information. Subsequently, SAS No. 56, *Analytical Procedures,* removed the option and required that analytical procedures be used in the overall review of the financial statements in the final review stage of the audit.

Cohen Commission: In 1978, the Commission on Auditors' Responsibilities: Report, Conclusions, and Recommendations, (Cohen Commission 1978) was published–about a year after SAS No. 16. The report made a number of recommendations regarding the auditor's responsibilities to detect fraud:

- Provide explicit guidance on the appropriate exercise of professional skill and care concerning fraud detection. For example, if an audit is conducted with due care, the auditor will discover certain types of irregularities, should they exist. A reasonable search for irregularities is necessary to provide an important service. A standard of professional skill and care is needed to evaluate the performance of auditors.
- Require periodic review of existing clients for determination as to continuance. If there is any doubt about management integrity, the auditor should take all reasonable actions to resolve the doubt because, if management is not trustworthy, there is a significant likelihood that an audit cannot be performed. (SAS No. 7 requires investigation when taking on a new client. There are no GAAS requirements concerning existing clients. Quality Control Standard No. 1 requires consideration of policies regarding continuance of clients.)
- Require auditors to study and evaluate internal controls that have a significant bearing on the prevention and detection of fraud.
- Form a special AICPA to analyze fraud cases and advice on their effect on auditing standards.

Subcommittee on Fraud: The Standing Subcommittee on Methods of Perpetration and Detection of Fraud was charged to study and publish analyses of fraud cases to consider how such cases affect the need for revised or new auditing standards. The subcommittee was created as a result of the Cohen Commission recommendation discussed in the previous section. Although the subcommittee accumulated a large data base of reported cases, its only tangible product was a list of 16 warning signals of fraud, which was published in the May 12, 1979 *CPA Letter.* In addition, the subcommittee advised other AICPA components, for example the CPE division, on projects involving fraud and it reviewed the research that was eventually published as the Report of the Study of EDP-Related Fraud in the Banking and Insurance Industries.

The subcommittee disbanded in 1981 due, in large part, to its inability to obtain specific information from CPA firms regarding frauds detected. When the AICPA's Special Investigations Committee was established, it had the ability to obtain that information more effectively than the subcommittee and the latter was deemed unnecessary.

SAS No. 53, The Auditor's Responsibility to Detect and Report Errors and Irregularities: During the early 1980's, several events occurred that prompted the Auditing Standards Board (ASB) to reconsider its authoritative position on the auditor's responsibility to detect fraud and on related technical guidance. The two predominant events were a number of well-publicized business failures and the Dingell hearings, which were kindled by those failures as well. These events caused the profession to question whether it had accepted sufficient responsibility to find fraud and whether it had been effective enough in uncovering it.

The ASB's response to these questions was SAS No. 53 (AICPA 1988). That SAS expanded the auditor's responsibility to detect fraud. In simple terms, the SAS elevated this responsibility by changing it from one of looking for fraud to one of detecting it. In the more precise language of the standards, SAS No. 16 required the auditor to plan the audit to *search for fraud,* while SAS No. 53 requires the auditor to *provide reasonable assurance of detecting it.*

The overall tone of the two standards also differs. SAS No. 53 couches the auditor's responsibility in a much more affirmative manner than SAS No. 16 by deemphasizing the inherent limitations of an audit. It also discarded the SAS No. 16 notion that auditors could assume management was honest unless there was information to the contrary. It replaced this notion with a requirement that the auditor make a specific assessment of the risk of management misrepresentations–assuming neither management's honesty nor dishonesty.

SAS No. 53 also provided much more specific guidance about the effect of fraud on auditors' reports and on their communications both within and outside the entity. In addition, SAS No. 53 strengthened the guidance about planning and performing the audit and evaluating audit results. Because these latter requirements are discussed extensively in the another section of this paper, they are not detailed here.

National Commission on Fraudulent Financial Reporting: The National Commission on Fraudulent Financial Reporting (National 1987) was a private sector initiative jointly sponsored by the American Institute of Certified Public Accountants, American Accounting Association, Financial Executives Institute, Institute of Internal Auditors, and Institute of Management Accountants. Its objective was to identify the incidence, causes, and potential remedies relative to fraudulent financial reporting and consider the roles of relevant bodies, including independent auditors, entity management and employees, educators, and regulatory and enforcement agencies.

The Treadway Commission was formed in large part as a response to public concerns, including those of legislators, about business failures in which fraudulent financial reporting was believed to be involved. The Commission performed a large part of its work concurrently with the development of SAS No. 53, and, as a result, the SAS incorporated to some extent most of the Commission's recommendations as they related to the independent auditors' detection of fraud. These recommendations were:

- Restate the auditor's responsibility for detecting fraud to require reasonable assurance that it is detected.
- Provide guidance to improve the auditor's ability to detect fraud.
- Strengthen the quality of audit management.
- Improve communications with users about the nature, scope, and limitations of an audit.

Public Oversight Board: The Public Oversight Board (POB) is the most recent of the profession's bodies to issue recommendations concerning the auditor's responsibility to detect fraud. In a 1993 report (POB 1993), the POB said "...to a greater extent than it now does, the profession must accept responsibility for the detection of fraud by management." To that end, the POB made the following specific recommendations:

- The profession should develop a process to analyze alleged audit failures to determine their causes and to develop enhanced risk assessment and procedural guidance.
- The profession should strengthen its emphasis on professional skepticism.

Other Recent Initiatives: Recent actions concerning the auditor's responsibility to detect fraud confirms that its evolution is continuing–that concern and confusion about the nature and adequacy of the guidance in SAS No. 53 remains. In May 1992, the AICPA held an Expectations Gap Conference to assess the progress of the nine expectation gap standards issued in 1988. The discussion of SAS No. 53 during that roundtable (Albrecht and Willingham 1992) indicated that SAS No. 53 may not be adequately addressing fraud detection.

The AICPA's Board of Directors issued a report in 1993 (AICPA 1993) stating that "The public looks to the independent auditor to detect fraud, and it is the auditor's responsibility to do so." This statement was intended not only as a response to lingering public concerns about auditors' detection responsibility, but also as a reminder to the profession about what its responsibility is. That report also supported the POB's recommendations pertaining to fraud detection, cited above, and pledged action to implement them.

In a related step, the January, 1994 CPA Letter, contained a discussion of fraud because "it is clear that some members are still confused about their responsibility–and some commentators have objected to the position of the AICPA Board of Directors on the matter."

As a culmination to continuing skepticism about SAS No. 53, the ASB recently appointed a fraud task force to reexamine that SAS and determine whether it should be revised or supplemented.

Influences Outside the Accounting Profession

A number of groups outside the accounting profession have influenced professional guidance pertaining to the auditor's responsibility to detect fraud. They include audit report users, legislators and regulators, the courts, and the financial press. These groups have often interacted with each other, one group fueling the concerns of others. Almost without exception, the concerns and actions of these groups were triggered by financial losses suffered by investors and creditors that, at least in part, were blamed on fraudulent financial reporting and failed audits.

Initiatives from these groups have taken a wide variety of forms including investigations by three Congressional subcommittees, proposed legislation, legal decisions, and *op ed* pieces in prominent financial and business publications. Although a review of these initiatives is far beyond the scope of this paper, their collective effect demonstrates the public perception that auditors should detect fraud.

Actions by these groups have, indeed, influenced the profession's consideration of its fraud detection responsibility. The timing of the Moss (1976) and Metcalf (1977) hearings and the issuance of SAS No. 16 in 1977 was not coincidental. Neither were the Dingell hearings in the mid 1980's, the Treadway Commission deliberations of that same period, and the issuance of SAS No. 53 in 1988 random events. The public has influenced the evolution of the auditor's responsibility to detect fraud, and it continues to.

The Risk Model and Fraud Detection

SAS No. 53, *The Auditor's Responsibility to Detect and Report Errors and Irregularities,* employs the audit risk model to frame the auditor's responsibility to detect fraud. The auditor is required to assess the risk that errors and irregularities may cause the financial statements to contain a material misstatement. The SAS requires the auditor to consider factors that influence this risk (hereafter referred to as fraud risk factors). It provides examples of these factors that the auditor may consider that

pertain to both the financial statement level (all or several financial statement components) and the account balance or transaction class level (individual financial statement components).

The Theory of Fraud Risk Factors

The fundamental theory underlying fraud risk factors (also referred to as red flags, indicators, characteristics) is that their presence may portend an increased likelihood of fraud induced misstatements in the financial statements. This theory underlies the risk model approach set forth in SAS 53.

A respectable amount of research, both in academia and professional practice, has been devoted to the theory and application of fraud risk factors (for example, Albrecht, et al 1980; Albrecht and Romney 1986; Albrecht and Willingham 1992; Campbell and Parker 1992; Loebbecke et. al. 1989; National Commission on Fraudulent Financial Reporting 1987; Pincus 1989). Research efforts directed toward this theory have addressed various aspects of fraud risk factors including identifying them, classifying them, weighting them, combining them, and testing their predictive effectiveness.

The bulk of research, practice experience, and anecdotal history indicates that fraud risk factors–those in SAS No. 53, as well as other combinations–are undependable as cues for fraud induced misstatements. This body of evidence challenges the adequacy of the guidance in SAS No. 53 and strongly suggests that additional or, perhaps, alternative guidance should be developed.

Limitations of Fraud Risk Factors

A number of attributes limit the reliability of fraud risk factors, and therefore the audit risk model, in predicting fraud induced misstatements. The following discussion briefly describes what we believe to be the most significant limiting attributes. Recognition and consideration of these attributes potentially can aid in improving audit guidance for fraud detection.

Inappropriate Risk Factors: Several research studies have addressed the question of which fraud risk factors are most effective in predicting fraud induced misstatements (for example, Albrecht and Willingham 1992; Loebbecke et al 1989; and Pincus 1989). Most of these studies have concluded that SAS No. 53 contains some risk factors that are not effective predictors and excludes some factors that are. Research, however, has not yet constructed a set of risk factors with sufficient predictive ability to correctly categorize frauds and nonfrauds in an audit. Therefore, auditors applying No. SAS No. 53 are faced with a relatively long list of risk factors with varying degrees of predictive success, many of which are always present in an audit client. As a result, we believe, many auditors doubt the credibility of fraud risk factors in detecting fraud.

Further, some auditors have expressed concern that a requirement to consider imprecise fraud risk factors raises their exposure to litigation substantially more than it increases their likelihood of detecting fraud. In their view, this added legal risk arises when they have dutifully considered risk factors, responded with appropriate audit modifications, not detected fraud induced misstatements, and, after issuing an unqualified opinion, fraud is discovered.

Combining and Weighting Risk Factors: In addition to the issue of which risk factors are accurate indicators of fraud, the question also exists as to how to combine or categorize these factors and what relative weights to assign them. SAS No. 53 states that the factors should be combined, but provides no related guidance. Some

research has delved into the combination issue by creating classes or categories of factors, such as situational, opportunity, and personal honesty (Albrecht et al 1980) and conditions, motivation, and attitude (Loebbecke et al 1989). However, these research results have not been refined and tested sufficiently to demonstrate their effectiveness as fraud predictors.

Even if relevant fraud risk factors can be identified, their application is limited by the auditor's lack of knowledge about their relative significance in diagnosing fraud induced misstatements. The only study we are aware of that addressed "weighting" risk factors is Albrecht and Willingham, 1992, which used statistical models to evaluate weightings. That study concluded that "The weight that should be assigned to each relevant fraud indicator in combining them is a very complex problem. Based on research results, guidance about combination of fraud indicators is beyond the capability of an SAS.... [W]hile the models are somewhat accurate at both the very low and very high risk levels, they are significantly less accurate when the risk is determined to be low, moderate, and high. In every risk case, misinterpretations about whether fraud existed were present."

Some public accounting firms avoid the issue of combining risk factors by requiring a response to any risk factor present. In essence, this approach requires the auditor to consider whether "other conditions" might offset or augment the likelihood of fraud.

We believe the practical problems of combining and weighting fraud risk factors is a significant limitation of the utility of the risk model approach in SAS 53. We hope that future research will address these problems and help alleviate them.

Inability to Target Specific Misstatements: Fraud risk factors, those in SAS No. 53 and others, are intended to predict the presence of fraud. If and when a set of relevant, properly combined and weighted risk factors is developed, it can, at best, only accurately predict that fraud has occurred. These factors cannot direct the auditor to financial statement components where fraud induced misstatements exist. SAS No. 53 implicitly recognizes this limitation by the guidance it provides concerning the auditor's response to a significant risk of misstatement. That guidance instructs the auditor to exercise a heightened degree of professional skepticism by considering the appropriateness of the experience and expertise of audit staff assigned to the audit; the extensiveness of audit supervision that may be necessary; and the modification of the nature, timing, and extent of auditing procedures to provide more persuasive evidence.

The auditor, however, still faces the perplexing problem of where to aim this added audit intensity. Often the spectrum of financial statement components susceptible to fraud induced misstatements is so broad that a massive portion of the financial statements must be subjected to utmost scrutiny. We believe that the additional time, cost, and risk related to detecting specific misstatements when risk factors point to fraud has caused an increased tendency for auditors to withdraw from audit engagements or decline to accept clients where these factors are present. In these circumstances, auditors' concerns about management integrity and the need to rely on management representations, particularly concerning the completeness assertion, requires switching to a "fraud audit" audit strategy. Because such a strategy is extremely costly, the auditor usually cannot contract to do the necessary work. Thus, the auditor withdraws from the engagement. While these actions are not necessarily inappropriate, they do emphasize the need for risk factors that are better able to target specific financial statement components.

Management Manipulation of Risk Factors: Fraud risk factors are subject to management manipulation. Management is aware of the factors auditors consider in assessing the risk of fraud–in many cases CFOs or other top executives have been

auditors with CPA firms–and is able to distort or play down risk factors to mislead auditors. A recent example of risk factor manipulation occurred in the ZZZZ Best Co. where the CEO led auditors to address risk areas that really were not risky. This directed auditors away from legitimate risk areas and helped perpetuate the concealment of fraudulent financial reporting.

SAS No. 53 "Misstatement" Risk Factors: In addition to the limitations of fraud risk factors discussed above, the manner in which SAS No. 53 guides the auditor's use of risk factors creates other limitations. SAS No. 53 discusses risk factors as indicators of potential *misstatements.* Misstatements defined in the SAS include both errors and irregularities, the latter being subdivided into management fraud and defalcations. Because SAS No. 53 presents risk factors as signals of potential misstatements, the auditor must decide whether a particular combination of risk factors indicates errors (unintentional misstatements) or irregularities (intentional misstatements). If the auditor concludes that irregularities are likely, then he or she must make an additional judgment about whether they take the form of management fraud or defalcations.

The condition–error, management fraud, or defalcation–causing the misstatement is significant. It affects how the auditor should respond to achieve reasonable assurance of detecting the misstatement. When the underlying cause of the misstatement is intentional, as with management fraud and defalcations, the auditor's response should consider that accounting principles and audit evidence may have been manipulated to conceal or support the misstatement. When, on the other hand, the underlying cause is unintentional, as with errors, the auditor generally has less concern about the credibility of audit evidence. In addition, the audit approach to respond to expected management fraud is likely to differ from the approach to respond to expected defalcations. Neither SAS No. 53 nor research on risk factors provides adequate guidance about how such factors might indicate the underlying cause of misstatements.

SAS No. 53 does contain a brief discussion of management fraud. It requires a specific assessment of the risk of management misrepresentation. This assessment is in addition to and secondary to the requirement that the auditor assess the risk of material misstatement. The SAS provides additional factors that an auditor may consider that pertain specifically to this risk. Presumably, the auditor should incorporate this secondary risk assessment–risk of management misrepresentation–into the formation of the primary risk assessment–risk of material misstatements. However, the SAS does not mention the interrelationship of the two risks, much less provide guidance about integrating them.

The Risk Model, Reasonable Assurance, and Nature of Misstatements

SAS No. 53 requires the auditor to understand the characteristics of errors and irregularities and their interaction when assessing the risk of misstatement. Those characteristics–materiality, level of involvement, concealment, internal control structure, and financial statement effect–(discussed in the Appendix to the SAS) are discussed in the context of how they influence the auditor's ability to detect misstatements. The discussion states that the existence of some of these characteristics may make some misstatements extremely difficult, if not impossible, to detect.

By introducing these characteristics into the auditor's risk assessment, SAS No. 53 raises the question as to whether the auditor is able to detect all misstatements, whatever their characteristics, with the same level of assurance. We believe that the SAS and a substantial majority of auditors take the position that all misstatements, whatever their nature or characteristics, cannot be detected with the same level of assurance.

On the other hand, the auditor's standard report, prescribed in SAS No. 58, *Reports on Audited Financial Statements,* requires a statement that the audit provides reasonable assurance about whether the financial statements are free of material misstatements. Neither SAS No. 58 nor the standard report, differentiate among levels of assurance for misstatements by nature or characteristics.

These two standards send different messages. We think that report readers believe that the auditor is responsible for and can detect all misstatements, irrespective of whether they are errors, management fraud, or defalcations, with the same level of assurance, while auditors do not. In other words, auditors believe that what is a "reasonable" level of assurance for detecting a misstatement varies with the nature of the misstatement while report readers believe that this "reasonable" level of assurance is the same for all misstatements. This certainly widens the expectation gap and, we believe, should be specifically addressed in auditing standards.

Improving the Auditor's Fraud Detection Capability

In this section we present some suggestions for strengthening the auditor's ability to detect fraud. These suggestions concern both changes in auditing standards and changes in practice and, in varying degrees, involve practitioners, standard setters, and academics in their implementation. Some of these suggestions are being considered by the ASB's newly formed fraud task force.

Unambiguous Statement of Responsibility to Detect Fraud

We believe many auditors are still unsure or unaccepting of the responsibility for detecting fraud that is set forth in SAS No. 53. On the historical timeline, as noted earlier, the responsibility to detect fraud is new. Changing the old, entrenched belief among auditors that they are not responsible for detecting fraud will require additional effort. We believe one effective method would be to specifically use the term "fraud" in auditing standards. Using the term irregularities and lumping it into misstatements has obscured the auditor's understanding of the responsibility SAS No. 53 imposes.

We also believe that a restated responsibility should help the public to better understand the auditor's responsibility to detect fraud. The public needs to understand that detecting all material fraud induced misstatements is beyond auditors' capability. Auditors should have an affirmative responsibility to detect fraud, but it should be articulated in a manner that clearly explains the concept of reasonable assurance and, to the extent possible, sets forth that concept in an operational manner. We believe the responsibility to detect fraud is analogous to the responsibility of police officers to find criminals. It would be absurd for police officers to deny such a responsibility, but it would be unreasonable to expect them to always find criminals. We believe that the public understands and accepts this for police officers but not for auditors. Restating the auditor's responsibility for fraud more precisely and coherently in professional standards could help achieve this understanding and acceptance.

Refining the Audit Risk Model

Despite the limitations of the audit risk model discussed in the preceding section, we do not advocate its abandonment. We believe that continued research and distillation of practice experience to attenuate the limitations are critical to enhancing the auditor's ability to detect fraud.

The highest priority should be given to identifying factors that are relevant and reliable predictors of fraud. We hope that factors could be identified that correlate specifically with fraud instead of fraud and error combined. In addition, we believe

that fraud risk factors capable of reliably predicting the risk of fraud in specific financial statement components can and should be developed. Knowledge about such factors would significantly improve the effectiveness of the risk model approach in detecting fraud.

In addition to considering fraud risk factors for specific financial statement components, we believe that auditors should simply ask themselves which financial statement component(s) would be a desirable area for executing fraud. This differs from merely considering specific risk factors in that the auditor attempts to identify the area where he or she would conceal a fraud if one were to be perpetrated. It has the added benefit of not being directly related to risk factors and, therefore, not as susceptible to the client's anticipation of where the auditor might focus additional audit effort. In addition, it would help compensate for the client's knowledge of the audit approach gained when firm staff accept positions with client entities.

Evidence About Fraud

In a number of circumstances involving fraudulent financial reporting, auditors had ample evidence of fraud but failed to adequately recognize its implications or follow-up on the questions that evidence raised. We believe that additional professional guidance is needed about audit evidence implications and evaluation.

One important area this guidance should address is evidence manipulation in fraud schemes. Knowledge of the characteristics, indicators, and methods of distorting manipulated evidence would sharpen the auditors' evaluation of audit evidence and help to concentrate their attention on specific financial statement components where fraud induced misstatements may exist. In addition, this knowledge would help in developing audit procedures directed specifically toward determining whether evidence has been manipulated.

We believe that two fruitful sources of information about manipulated evidence are the SEC's *Accounting and Auditing Enforcement Releases* and litigated fraud cases. Both of these sources have been used in identifying fraud risk indicators. They could be used in a similar fashion to glean knowledge about evidence manipulation. In addition, the process recommended by the POB involving analyzing information in CPA firm workpapers about alleged audit failures is another important source of information. Both practitioners and academics could contribute significantly to developing this knowledge.

We also recommend that the profession create a formal process for collecting and disseminating information from individual CPA firms about the audit techniques that have been successful in detecting fraud. We believe that much useful information could be captured by studying the profession's success stories in detecting fraud in the thousands of audits that do not end up on the front pages of the business and financial press. Identifying and publishing how these frauds were devised, the techniques employed to perpetrate them, and the evidence and auditing procedures that led to their detection during the audit would enable the profession as a whole to gain from these experiences. In addition, this process would better position the profession to answer its critics who focus on the shortcomings of the audits that were not successful.

The recent KPMG Peat Marwick fraud survey (KPMG Peat Marwick 1993), using companies rather than CPA firms, is an example of how such a process might be established. That survey provided information from companies about the frequency of fraud, types of frauds, how they occurred, and how they were discovered, among many other fraud attributes. Similar information from CPA firms would be a fertile source of knowledge for the profession.

Auditor Response to Risk Factors

When risk factors indicate a risk of fraud induced misstatements, auditors often respond by strengthening the nature, timing, or extent of audit procedures. One response is to apply analytical procedures to help target potential financial statement components. Experience suggests that such procedures often are not effective because management is able to respond with explanations that can be corroborated and yet misleading.

Another common response to the risk of fraud is to strengthen tests of details. This approach, however, has also been ineffective. Often, these tests fail because the transactions or events used to perpetrate fraud occur late in the fiscal year. Auditors have examined many such items already and found no problems. Thus, they are lulled into complacency by past positive experience and fail to recognize the very items they are looking for.

We believe SAS No. 53 should be revised or supplemented to provide more specific guidance about appropriate audit testing responses and their application.

Audit Staffing

We also believe that changes in approaches to audit staffing might be beneficial in improving the auditor's ability to detect fraud. The profession has developed and used specialists for quite some time in individual industries. Today, there is increased emphasis on training and using such specialists. We believe the notion of specialization should be expanded. Public accounting firms should consider creating staff specialization in certain financial statement areas. This specialization would pertain not just to specific industries, but also to specific financial statement components, such as valuation of certain assets or liabilities. Such specialities would provide expertise that would enhance the auditor's ability to detect fraud.

We believe such specialization would be helpful because today's audits are analogous to an assembly process where junior staff get experience in a particular audit area, such as receivables and inventory, by participating in audits of those areas for two or three clients. They then are assigned to other financial statement components in other audits to gain experience in those areas. It is not uncommon for a staff person to become a senior and have been exposed to a particular financial statement area only once.

This process often does not provide sufficient exposure to audit areas to adequately prepare junior staff to recognize circumstances that may involve fraud. Yet frequently the work that is critical to detecting fraud is the basic auditing performed by these staff members. A lack of depth of experience in specific audit areas may cause them to overlook important matters relevant to fraud that, therefore, will not be brought to the attention of more senior staff who could bring their greater expertise to bear on these matters.

We recognize that this training approach may be impracticable to change, but we believe that specialization in financial statement areas could help overcome some of the disadvantages associated with this approach.

Summary

There is an old adage that a primary reason for studying history is to avoid repeating it. The profession's history of defining the auditor's responsibility for detecting fraud already contains too much repetition. A trend, however, is developing and there does not seem to be room for a U turn–auditors are responsible for detecting fraud.

This is a hefty responsibility and it must be defined in the context of the auditor's capability to detect fraud. The profession has had mixed success in achieving a reasonable blend of responsibility and capability. We believe that continued research and practice experience to refine the audit risk model, better analysis of audits involving fraud (successful as well as unsuccessful), a clearer definition and description of the auditor's responsibility to detect fraud, and changes in staff training and specialization can help make responsibility commensurate with capability.

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What We Can Learn From Yogi Berra

Discussant's Response to "Auditing for Fraud: Perception vs. Reality"

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As a baseball fan, I appreciated that Alan Winters and John Sullivan began their paper, *Auditing for Fraud–Perception vs. Reality,* with a quote from Yogi Berra. They ended their paper with a comment that the profession's history of efforts to grapple with fraud detection already contains too much repetition, calling to mind another famous phrase often attributed to Yogi: It was *déjà vu* all over again. So, in my turn at bat, I plan to follow Alan and John's lead and consider what audit practitioners, educators and researchers can learn from Yogi Berra.

My comments address four questions that Alan and John's paper made me think about, the first two dealing primarily with audit practice, and the other two related more to audit education and research: (1) Why do auditors miss fraud clues or fraud itself? (2) How much assurance is reasonable assurance? (3) Does audit education begin too late? and (4) Do auditor characteristics matter?

Why Do Auditors Miss Fraud Clues or Fraud Itself?

In the body of their paper, Alan and John present a large number of thoughtful observations and interesting suggestions about auditing for fraud. Many of their observations address the implicit question: Why do auditors miss fraud clues or fraud itself? Consider, in response to this question, George Bush's favorite Berra quote concerning Yogi's reason why the Yankees lost the 1960 World Series to the Pirates: "We made too many wrong mistakes."

Let me briefly review four "wrong mistakes" I think auditors make that lead them to miss fraud clues or fraud itself and compare and contrast my views to those expressed in Alan and John's paper.

The first wrong mistake: expecting too much of the fraud risk model

First, auditors make the wrong mistake of looking too hopefully at the fraud risk model for strong predictive relationships. Alan and John focus most of their criticisms on the fraud risk model and I find most of their criticisms well taken, as well as their conclusion that the risk model, as currently expressed in the literature, can and should be significantly improved based on what we've learned since SAS #53. But, I also think we must recognize that even if we improve the fraud risk model in every feasible way, there will still be a limit to the predictive ability it can provide us.

Let me put on my hat as an educator for a moment to explain why this is so. One of the challenges that faces us as teachers of auditing is to explain to our students, who have never been on an audit, what we mean when auditors talk about becoming "satisfied" about an audit objective, or feeling "comfort" about an audit conclusion. What

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we're trying to communicate, of course, is the notion of second order uncertainty that we were discussing earlier today in conjunction with Bill Waller's paper. So, I create a very simplified explanation for my students. I tell them that audits involve a multitude of decisions and that the decision tasks fall roughly into three groups.

The first and largest group–knowledge tasks–contains those tasks where there's an almost deterministic relationship between the available evidence and the decision at hand. Examples of knowledge tasks include deciding whether depreciation expense was calculated correctly and deciding whether the inventory count was accurate. When you make these decisions as an auditor, you can never be 100% guaranteed you are right, but you're close enough to certainty for all practical purposes.

The second group—which is smaller than the first, but which has more value-added and thus is what we get paid more for—contains judgment tasks. For judgment tasks, there's a more probabilistic relationship between the available evidence and the decision at hand, as, for example, when an auditor decides whether the net book value of accounts receivable is collectible. The relationship is predictable over many clients, or for a single client over the long run, but for any individual client in an individual year, the auditor must live with more than a minimal level of uncertainty.

In terms of a more formal model, what we're talking about here is second order uncertainty: the auditor will always experience greater second order uncertainty for judgment tasks than for knowledge tasks. And here's where the rub is: many error detection tasks are knowledge tasks, but fraud detection is now–and will always be, no matter how close to optimal we make the fraud risk model–a judgment task. There is a limit to the degree of satisfaction auditors can feel about fraud detection that will always be lower than the degree of satisfaction we can feel about error detection. So, my warning is that we shouldn't oversell improvement of the fraud risk model. We can take a step forward, but not the entire journey.

By the way, in case you're curious, the third group of decision tasks–which, fortunately, I believe is rare (though not non-existent) on an audit–is guessing tasks, tasks where there is little or no relationship between the available evidence and the decision at hand. My usual example for students of a guessing task is the decision about whether tax law changes in the next five or ten years will affect the amount that should be recognized today in the long-term deferred taxes accounts.

The second wrong mistake: failing to remember "too" normal may be a red flag

The second wrong mistake auditors make is being too focused on looking for abnormalities. Focusing on deviations from expectations works better for error detection than for fraud detection. For instance, abnormal results from analytical procedures can help the auditor find the dumb frauds, but they're not much help finding the smart ones–the ones where the fraud perpetrators are at least as smart as (or, in some cases, smarter than) the auditors and deliberately set out to deceive the auditors.

Auditors too often forget the simplest rule of manipulation: Make it look normal. As Barry Minkow, architect of the ZZZZ Best fraud, says in a videotaped interview produced by the Institute of Certified Fraud Examiners, "The number one thing we had to do as a fraud team was CONSISTENCY." Thus, auditors shouldn't focus only on abnormalities, but should also look for results that are *too* consistent, too normal, or too good to be true. That doesn't mean that auditors should be skeptical of everything–but it does mean they should recognize that deviation from expectations isn't the only warning signal to watch for on an audit.

Consider another teaching example. If a student hands in a homework problem that comes pretty close to the solution manual, as a teacher, I'm happy. But if that student

keeps on handing in homework that always tracks the solution manual, pretty soon I begin to suspect that maybe the student *has* the solution manual. To ignore that possibility would be naive.... and that's true even though no one's likely to sue me if I miss a manipulation.

The famous ZZZZ Best fraud, which Alan and John refer to in their paper, provides an illustration of how auditors can miss a manipulation by failing to notice the too good to be true. For example, the auditors examined one-page building restoration contracts worth millions of dollars. While one might fervently wish to encourage simplification of legal jargon, the one-page contract seems too good to be true. How many multi-million dollar legal contracts have you seen without pages and pages of specifics? Or, consider that when the auditors went to observe the work at a building being restored after fire damage, they found the building in almost pristine condition, with no real evidence of remaining damage and little evidence of continuing work. Even for an almost completed project, this would be too good to be true. Real life is rarely seamless; seamless evidence may not be real.

The fraud risk model, as currently expressed in the practice and research literature that Alan and John discuss, reinforces the auditors' tendency to focus on deviations from expectations. Consider that even the term "red flags," the popular name for fraud risk indicators, refers to something which jumps out at you as different than normal. If we want to improve fraud detection, we need to expand our notion of fraud clues to include the too good to be true, as well as the abnormal deviations. Moreover, even if we improve the risk model, we still need to consider improving education and firm training of auditors to improve auditors' ability to focus on the too good to be true, as well as observed abnormalities. One way to do this might be to build more observation exercises into the college classroom and firm training programs, with care taken to include cases with abnormalities, normal cases, and too good to be true cases. It is also important to consider the too good to be true problem when teaching about performing analytical procedures. Too often, the sole focus of analytical procedures is looking for material deviations from expectations, which is very helpful in locating errors. But if the books have been cooked, one sign may be ratios and trends with too little deviations, another case of too good to be true results.

The third wrong mistake: insufficient industry/benchmarking knowledge

Another wrong mistake auditors make may be found in the fraud cases where better industry knowledge and better benchmarking could have provided clear red flags that the books were being cooked. To use the ZZZZ Best case again as an example, remember that ZZZZ Best hid material losses from their legitimate carpet cleaning business in mounds of false profits from a phony fire restoration business. In this case, the auditors examined fictitious restoration contracts for $7 to $8 million apiece, but failed to see the red flag as they were unaware of industry data which reported that the largest restoration jobs on record were in the $2 to $3 million range.

Mistakes related to insufficient industry/benchmarking knowledge are not just a recent phenomenon. When I was an undergraduate auditing student back in the 1960s, audit texts often used the example of the "Great Salad Oil Swindle," an inventory fraud case that could have been detected earlier by better use of industry knowledge and benchmarking. In this case, a subsidiary of American Express created fictitious inventory at a New Jersey storage tank farm by floating a layer of salad oil on top of tanks filled mostly with water. When the auditors observed and tested the tanks' content, they saw and smelled salad oil, and thought the tanks were full of oil. But, had the auditors been aware of published industry data, they would have known that

the amount of salad oil claimed to be stored in this one New Jersey location was a highly unreasonable amount in comparison to the previous year's world production.

With the advent of advanced technology and the greatly increased access to industry information via electronic databases, more sophisticated industry knowledge and benchmarks should be much easier to create than in the past. Yet, as the ZZZZ Best case reveals, auditors keep repeating the same "wrong mistake" of not taking advantage of available information. In addition to improving the fraud risk model, we must also improve the use of industry knowledge and benchmarking when auditors conduct analytical procedures.

The fourth wrong mistake: not leading with the strongest hitters

In the game of baseball, it's generally considered good planning to lead off with some of your strongest hitters. Yet, on audit teams, we tend to bat our rookies at the top of the order when it comes to field work. Yogi would not approve.

The traditionally-structured audit team made sense in the era when it was first created. At that time, the focus of an audit was more on error detection than on fraud detection and accounting systems (and audits) were largely manual. This environment required small armies of accounting clerks to create the books and small armies of audit laborers to perform the kind of tedious testing that went by such monikers as "tick and tie." But with advanced technology, accounting systems are now largely computerized from automated data entry via barcode scanners and electronic data interchange, through electronic processing, storage and reporting. Many of the computational tests in the audit process have likewise been computerized.

In this electronic information environment, increased input accuracy and built-in error checking have become the norm for accounting systems. Consequently, errors are less frequent than they were in manual systems. On the other hand, electronic information systems create new opportunities for manipulation, broadening the range of potential frauds. Thus, as technology has changed, error detection has become relatively less important and fraud detection has become relatively more important. Moreover, audit technology has removed most of the laborious tick and tie tasks from human hands to electronic testing, raising the level of sophistication of tasks now done by people at the lowest level of the audit team.

How could we strengthen the batting average of an audit team when it comes to fraud detection? Let me offer two suggestions Yogi might give: (1) more coaching, and (2) more farm team experience before moving to the major leagues.

More coaching could be provided by increased formal education, as the proponents of expanding entry-level education to 150-hours or graduate degrees in accounting advocate. More coaching could also be provided within the firms by having the experienced "pros"–the managers and partners–mentor the inexperienced rookies on the audit staff. Traditionally, manager/partner contact with junior staff members has been limited, with several layers of the management hierarchy filtering communication between the top and bottom levels. Again, this made sense in the days when public accounting firms were structured as pyramids with very wide bases and narrow peaks, and with a great deal of turnover (both voluntary and involuntary) in between. Yet, in the current environment, the traditional pyramid structure is being replaced by something that is beginning to look more like a cylinder. With this structure, direct mentoring by partners and managers may be feasible and cost effective. It should at least be explored as a possible way to leverage the batting power of the rookies on the team.

More farm team experience might also be in order. Traditionally, the best and brightest graduates of our accounting programs have often begun their careers in

public accounting. Then, after two to four years experience, many of these graduates have left public accounting for careers in industry or government. Public accounting, in effect, served as a training ground for auditors in other sectors of the profession. This made sense to public accounting firms because the nature of their industry required those armies of bodies at the entry level and high turnover. It made sense to young accountants because they got broad-based audit experience and great on-the job and continuing education training, which added up to a *de facto* graduate school. It made sense to industry and government, because they got experienced hires who were ready to hit the fast track when they came on board, particularly because experience transferred easily in an age of manual information systems.

But again, changing technology and other changes in the environment—including the greater sophistication needed to audit a broad range of computerized global clients and increased competitiveness in public accounting—make the old system questionable. Is it still economically efficient to use public accounting as the farm team for other sectors of the profession? Or, has the situation now reversed so that it may make more sense to have young accountants begin their careers in industry or government and then, after two to four years of experience, enter a public accounting firm if they wish to be financial auditors?

How Much Assurance Is Reasonable Assurance?

I take issue with Alan and John's paper (which I often agree with) most severely when it comes to the topic of reasonable assurance. None of us in practice, education or research like the question: How much assurance is reasonable assurance? As Yogi Berra once said when asked for the umpteenth time about the dismal record of his 1984 Yankees: "I wish I had an answer to that question because I'm getting tired of answering that question."

In their paper, Alan and John argue that auditors believe a reasonable level of assurance is *lower* for fraud than error, but users believe a reasonable level of assurance is the *same* for both error and fraud:

> We think that report readers believe that the auditor is responsible for and can detect all misstatements, irrespective of whether they are errors, management fraud, or defalcations, with the same level of assurance, while auditors do not. In other words, auditors believe what is a "reasonable" level of assurance for detecting a misstatement varies with the nature of the misstatement while report readers believe that this "reasonable" level of assurance is the same for all misstatements.

I think this argument seriously understates the true magnitude of the expectation gap. There is ample evidence in the research literature to tell us that investors want *more* (not the same) assurance against fraud than error. For example, the January 1994 *Journal of Accountancy* included an article on audit assurance by Epstein and Geiger reporting the results of a national survey of shareholders, one of the primary user groups for audit reports. Consider the following table which reveals the results of one of the survey's key questions:

Investor perceptions of audit assurance

The auditor should do whatever investigation is necessary so he or she can provide assurance the audited financial statements are free from material misstatements. This assurance should be described as follows:

	Error	Fraud
No assurance necessary	1.67%	2.51%
Reasonable assurance	51.05%	26.36%
Absolute assurance	47.28%	71.13%

From: Marc J. Epstein and Marshall A. Geiger, "Investor Views of Audit Assurance: Recent Evidence of The Expectation Gap," *Journal of Accountancy,* January 1994, p. 60.

The expectation gap is not less assurance for fraud versus error on the auditor side versus the *same* assurance on the user side; it's less assurance on the auditor side versus *more* assurance on the user side. I think it's very important that practitioners, and especially standard-setters, acknowledge the true magnitude of the expectation gap. Acknowledging the true size of the expectation gap is important because the gap is not likely to be closed by one side or the other moving completely to the opposite side's position, but by both sides compromising. From the viewpoint of Alan and John's paper, reducing the expectation gap by moving to the same level of assurance for fraud and error would be regarded as a capitulation where auditors give in entirely to users. But, if the real magnitude of the expectation gap is acknowledged, it becomes clear that moving to the same level of assurance for fraud and error would be a compromise for *both* sides, not merely a one-sided capitulation. Until auditors recognize the true magnitude of the expectation gap, it is unlikely that a mutually acceptable resolution of the gap can be achieved.

Alan and John's paper contains another argument which shows, in my view, further evidence that auditors in practice often understate the reality of the expectation gap. In their call for an "unambiguous statement of responsibility to detect fraud," Alan and John make the dual points that auditors must detach from their old, entrenched belief that they can disavow responsibility for fraud detection and that the public must also detach from their old, entrenched belief that auditors can detect all frauds. So far, so good. But then, Alan and John go on to explain how the public should come to view missed cases of fraud by drawing an analogy to the responsibility of police officers to find criminals:

> We believe the responsibility to detect fraud is analogous to the responsibility of police officers to find criminals. It would be absurd for police officers to deny such a responsibility, but it would be unreasonable to expect them to always find criminals. We believe that the public understands and accepts this for police officers, but not for auditors. Restating the auditor's responsibility for fraud more precisely and coherently in professional standards could help achieve this understanding and acceptance.

This is an interesting analogy, but it hasn't been thought through. Let's take a closer look for a moment at the notion that the public understands and accepts the failure of police officers to find criminals. Make the analogy a bit more specific by thinking about a particular crime analogous in severity to financial fraud. Since most companies don't die from fraud, we'll reject murder as the crime; but since they suffer greatly from the violation, rape would seem to be an appropriate analogy.

Now, ask yourself the question: Does the public understand and accept that some rapes go unsolved? At best, I think you could argue that the public at large accepts the

abstract notion that some rapists are undiscovered, but it would be unreasonable to argue that the victims of rape, or their families and close friends, feel the same way. Those affected by the crime do not accept or understand the failure to catch the rapist in the same way those unaffected by the crime might. And those who are affected by crime can include a pretty broad circle beyond the victim and the victim's family and close friends. While you may, in general, be tolerant that some rapes go unsolved, you will less likely be tolerant if the unsolved rape occurred in the parking garage of your building on the floor above where you park.

Here's where Alan and John's police officers analogy leads us: the public in general may be tolerant, but victims, both direct and indirect, care. The problem for auditors is immediately apparent. Financial frauds, particularly in public companies, have huge numbers of victims–and victims care. The analogy of "suite crime" (management fraud) to street crime, is a good one; but, when the analogy is carried through, it leads not to the logical conclusion that the public should be more forgiving of undetected crime, but to the conclusion that the pressure to keep the streets safe will continue.

Does Audit Education Begin Too Late?

Since I have been somewhat critical of practice so far, in the interest of fair play, let me also take a swing at academia. As academics, one Yogi-ism we should think about is Berra's explanation of why he missed a ball when playing left field in an afternoon game of the 1961 World Series: "It gets late early out there."

As educators, we need to recognize that time is not on our side when it comes to audit education: it gets late early out there. Consequently, in my view, audit education should begin earlier than it does in the traditional undergraduate curriculum. In the traditional curriculum, audit education occurs at the end of an accounting majors' coursework. Presumably, this placement of audit education within the curriculum arose from the notion that you can't learn how to audit until you've already learned about the financial accounting, managerial accounting, systems and tax aspects of organizations. While there's definitely merit in this notion, it applies more to audit procedures than to basic audit concepts. Basic audit concepts–including basic coverage of fraudulent financial reporting–should be taught earlier in the curriculum, and they should be taught to non-majors as well as majors.

By confining audit education to upper division auditing courses, we are missing our best opportunity to educate USERS of audit reports. The introductory accounting sequence is the only exposure most non-accounting business students and non-business majors ever have to accounting. It is ludicrous to constantly talk about the need to reduce the expectation gap, yet to ignore our only opportunity to talk to future users of audit reports about the role of auditing in society. Instead of talking about auditing only in a course for majors, we need to begin audit education at the introductory level. At the introductory level at the University of Southern California, for the past three years we have been introducing students to the meaning of the different types of audit reports, the nature of audits, the value of audits, and the types of testing and evidence auditors use. As a result, non-accounting students have a much clearer understanding of what an audit is about and they are more likely to correctly interpret the meaning of an audit opinion. In addition, we cover basic aspects of fraudulent financial reporting–including a discussion of the impact of fraudulent financial reporting, and a discussion of the roles of various parties (management, the board of directors, internal and external auditors, and regulators) in preventing, detecting and disciplining fraud. This type of early education raises awareness of the importance of maintaining the

quality and credibility of financial reports and places a strong emphasis on the ethical responsibilities of managers in setting an appropriate control environment to help reduce the incidence of fraudulent financial reporting.

Starting audit education early in the curriculum has added benefits for accounting majors. By confining audit education to a single course late in the traditional curriculum, we force some topics, including fraudulent financial reporting, to be treated too simplistically. We only have enough time in a traditional auditing course to cover the most basic aspects of fraudulent financial reporting. But, if these basic aspects were covered in the introductory course, the later courses could move to more complex aspects of the topic. For instance, if students come to their upper division auditing course already aware of the auditor's use of analytical procedures to assess risk, the auditing course can then focus on more complex aspects of risk assessment, such as the "too good to be true" problem mentioned earlier.

Do Auditor Characteristics Matter?

Finally, while I realize that Alan and John's focus is on fraud detection in practice, I can't resist making one observation about research. Those of us who spend part of our lives doing academic audit research might want to consider a comment Yogi Berra once made about the game of baseball: "Ninety percent of this game is half mental."

In pondering Yogi's unique phrasing, we might want to ask ourselves a question about research on auditors as fraud detectors: Do auditor characteristics matter? That is, if client characteristics help predict who is more likely to commit fraud, can auditor characteristics help predict who is more likely to detect it?

Earlier, I criticized practitioners for focusing only on large numerical deviations observed in doing analytical procedures. But, we researchers are guilty of a similar narrow focus when it comes to research on fraud detection. We tend to focus our efforts too much on empirical research on fraud risk factors (which red flags are the best fraud predictors?) and too little on the human judgment side of fraud detection. This occurs despite intriguing evidence building up in the auditing literature that such variables as sensitivity to integrity (e.g., the body of research on moral development using the work of Kohlberg as a model) and tolerance for ambiguity vary greatly among auditors. The role of auditor characteristics in audit judgment–particularly, fraud detection judgments–is an under-researched area that holds potential as a second line of attack directed toward potential improvement of fraud detection.

It's time to open the floor for discussion now, which reminds me of one last Yogi quote, Berra's description of his experience attending a 1985 White House dinner: "It was hard to have a conversation with anyone, there were so many people talking."

So, in closing, I would like to express my thanks to Deloitte & Touche and the University of Kansas for making it possible for so many people to come together to talk about such interesting topics as auditing for fraud.

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Client Acceptance and Continuation Decisions*

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Abstract

This paper presents the results of a study designed to understand how auditors make client acceptance and continuation decisions. Descriptive evidence was gleaned from the professional literature, audit firm materials, and interviews with seven audit partners. Based on the evidence we present a framework that delineates the key activities in this area. Avenues for additional research are presented.

Introduction

Why do auditors accept some companies as audit clients but not others? What types of information do auditors use when making client acceptance decisions? Once a professional relationship has been established, under what circumstances will an auditor terminate the relationship? These and related client acceptance and continuation issues have received limited attention in both the academic and professional literature. The decision to accept an audit client or continue a professional relationship with an existing client is important because an incorrect decision may directly affect the financial viability of an accounting practice.

We interviewed seven practicing audit partners who are responsible for making client acceptance and continuation decisions and reviewed audit firm manuals and professional standards. This paper presents preliminary findings on the task structure, the decision process and its participants, their incentives, and the types and sources of available information that shape such decisions. Our effort is exploratory—to sketch some of the more important issues that are of interest and concern to practitioners and academics alike. Sometimes it will appear that we have raised more questions than we have answered. This is deliberate and follows from our goal of identifying key issues and stimulating further research.

The next section delineates the motivation and presents background information. It is followed by a section that describes the interview method. Then the descriptive information on how auditors make client acceptance and continuation decisions is presented in a framework that emerged as we analyzed the interview results. The final section enumerates some research opportunities.

Motivation and Background Information

Our primary motivation is to understand the client acceptance decision process—in its naturalistic setting—from the perspective of practitioners. The paucity of research

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and the importance of the client acceptance decision, suggested an exploration of that decision environment. The crucial role of such exploration in theory building is aptly demonstrated by work on accountability (Emby and Gibbins 1988; Gibbins and Newton 1993). In this regard, this exploratory study responds to calls to give adequate consideration to the nature of audit tasks, as a prerequisite to evaluating auditors' judgments or formulating theories of audit judgment (Felix and Kinney 1982; Wright 1987; Burgstahler and Sundem 1989; Trotman 1992). Second, we elaborate on the guidance included in the professional standards and academic literature (e.g., Huss and Jacobs 1991; Stice 1991) pertaining to information sources, reliability of evidence, relative importance of different types of evidence, and the extent of information search. We explain why auditors evaluate evidence from various sources differently, and why under certain circumstances (e.g., lapse of time) a discovery of lack of integrity on the part of management will be discounted by an auditor.

Professional guidance on client associations is provided in the Statements on Quality Control Standards (QC) section QC 10 and paragraphs QC 90.23-.24. These standards require that an audit practice establish procedures for evaluating prospective clients and for reviewing the continuation of ongoing relationships. For prospective clients, suggested procedures include (1) obtaining financial statements, (2) performing third-party inquiries, (3) communicating with predecessor auditors, (4) evaluating independence issues, and (5) reviewing pertinent regulatory rules. For existing clients, the emphasis should be on identifying and evaluating significant changes in client circumstances. Examples of significant changes include changes in management, ownership, legal counsel, financial status, litigation status, type of business, and scope of engagement. Whether dealing with prospective or existing clients, the standards require that firms designate a person to be responsible for each decision, inform all personnel of firm policies, and emplace a system for monitoring compliance. Finally, these standards indicate that "the auditor would not necessarily include all the examples or be limited to those illustrated." In effect, the auditor's judgment determines the nature and extent of client acceptance procedures.

Audit firm policies and procedures reviewed tended to restate the professional standards but with emphasis on administration and provision of a paper trail of compliance. At some firms, a lengthy form must be completed, typically consisting of numerous yes/no questions and requiring additional explanation for the no answers. Other firms utilize open-ended questionnaires that allow the auditors to summarize their efforts and findings. Firms differ in the level of approval (e.g., office managing partner or regional partner) that is required for obtaining or continuing any given client relationship. While our initial review of firm manuals indicated firm differences, our interviews suggested that the apparent differences were matters of form rather than substance. Further, procedures that were not explicitly discussed in the manuals were routinely undertaken in the actual decision process depending on the circumstances of the prospective client being evaluated. Therefore, our first proposition is that research on inter-firm differences in client acceptance decisions is not a viable opportunity. As a corollary, we propose that inter-engagement differences are more worthwhile to study.

Interview Method

Seven partners representing four international accounting firms were interviewed in their respective offices located in the same major metropolitan area. Each interview lasted one to two hours. Two of the researchers were present for each interview. The interviews followed a semi-structured format that allowed the interviewee the latitude

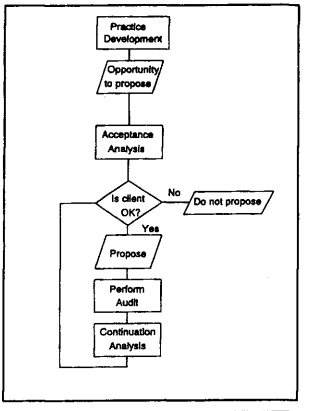
to convey anecdotal evidence. Prior to the interview, each participant was provided an interview fact sheet that illustrated some of the issues to discuss (see exhibit 1). They were told, however, to add or to delete from the list at their discretion—in effect they described the decision process in whatever way they desired. None of the participants referred to this sheet during the interview. All interviews were taped and transcribed.[1] Partners were chosen because they are responsible for the client acceptance decisions.

Interview Results

Overview

A content analysis of the interview transcripts suggests that there are four distinct phases—practice development, acceptance analysis, acceptance decision, continuation analysis—of the client acceptance and continuation decision process. Figure 1 is a framework based on this finding. It takes the form of a flow chart.[2] The process starts with *practice development.* The purpose of practice development is to disseminate information about the services provided by the firm and thereby cultivate potential clients. Practice development is usually continuous and low-profile, although it may be aggressive at times when specific target companies are identified and actively cultivated.[3] Typical avenues for practice development include involvement in civic, business, charitable, and social organizations; advertising; high-profile engagements and personal contacts. Size of company, audit fee, prestige, exposure, opportunity for consulting, and timing of the work are among the engagement attributes that accounting firms consider when targeting prospective clients. Successful practice development provides opportunities for auditors to offer their services to prospective clients, often in the form of a proposal.[4]

Figure 1
Flowchart Of The Client Acceptance And Continuation Decision Process



[1] Transcripts of the interviews are available upon request.

[2] The relationship between practice development, acceptance analysis, and acceptance decisions may not be strictly temporal as implied by Figure 1.

[3] Cultivation of prospective clients must be done within the limitations imposed by the Code of Professional Conduct and the applicable state laws.

[4] A proposal is not an engagement letter. We use the term "proposal" to indicate the process by which auditors inform a potential client that they would like to make their services available. An engagement letter is a contract between the parties listing the duties and responsibilities of each. It is completed during the planning phase of an audit.

Exhibit 1

Interview Fact Sheet

The AICPA Quality Control Standards Committee is responsible for developing the profession's quality control standards. It has identified nine elements of quality control for a professional practice. One of these standards pertains to the acceptance and continuance of clients. The purpose of this interview is to gather general information on (1) the guidance the AICPA provides CPA firms on the client acceptance decision, (2) your firm's client acceptance policies and procedures, and (3) the application of these policies and procedures to individual engagements.

For the purpose of this interview, the term business risk refers to the probability that your firm will suffer loss or injury to its practice as a result of providing professional audit services to a particular company. Examples of loss or injury include litigation, tarnished reputation, sanctions imposed by regulatory bodies, lack of profit, etc.

1. We would like to begin the interview by having you describe the process that led to you, as the partner-of-record (partner-in-charge), to accept your newest audit client. It may help to review the client acceptance documents in that company's permanent file as you reflect on the process. This walk-though should include a rather specific description of how the firm's formal (as documented in the audit manual) and informal policies and procedures were applied.
   a. What types of information and evidence did you gather in order to make the decision?
   b. How did you document your reasoning?
   c. Who participated in the process besides yourself? What role did each play?
2. Assume for the moment that a prospective client had approached you about providing audit services.
   a. In general, what characteristics of a prospective client would indicate that it should be accepted?
   b. What characteristics would make you hesitate or think twice about accepting it?
   c. What types of audit engagements would your firm not accept or would be accepted only under special circumstances? What are those special circumstances?
   d. What would be the most likely reasons that you would ultimately decide not to accept a prospective client?
   e. If during an engagement you become aware of facts or circumstances that would have caused you not to accept the prospective client, what would you do?
3. One of the procedures suggested by the Special Committee on Proposed Standards for Quality Control Policies and Procedures was to consider the "riskiness" of the engagement in *accepting* and *planning* an audit engagement (guidelines attached). Is the Committee referring to business risk as defined earlier in the interview? (use revised definition of business risk through the rest of the interview)
   a. How does your firm assess business risk?
   b. What types of evidence is used to assess the riskiness of a prospective client?
   c. How reliable is each type of evidence?
4. Describe an engagement you would consider to have a "high" business risk.
5. Describe an engagement you would consider to have a "low" business risk.
6. In what ways is audit planning affected by these initial assessments of business risk? Is the planning or conduct of the audit any different for those engagements that are judged to have a "high" business risk as opposed to those that are judged to have a "low" business risk?
7. To this point in the interview, we have discussed only client acceptance decisions. The quality control standards also apply to client continuation decisions. How does the client continuation decision differ from the client acceptance decision?
8. In your opinion, does the "Statement on Quality Control Standards No. 1 — System of Quality Control for a CPA Firm" and the "Quality Control Policies and Procedures for CPA Firms" (both are attached) provide sufficient guidance in the area of client acceptance? Explain.
9. Are your firm policies more strict, equally as strict, or less strict than those embodied in "Statement on Quality Control Standards No. 1 — System of Quality Control for a CPA Firm" and the "Quality Control Policies and Procedures for CPA Firms"?
10. Are there any other issues related to the client acceptance decision that we have failed to address or that you would like to clarify or discuss further?

When presented with an opportunity to propose, the auditor performs a series of procedures that we refer to as acceptance analysis. The acceptance analysis may lead to a decision not to propose, and the process would then stop. Alternatively, if the analysis does not reveal any significant *negative* information about the prospect, the auditor will submit a proposal. Therefore, we propose that a noncompensatory decision is used, and rejection decisions are influenced solely by negative evidence (Beach and Frederickson, 1989; Asare and Knechel, 1992). The proposal is a verbal or written offer to provide services; if accepted by the prospective client, it signifies the "go ahead" to perform the audit.[5]

The final activity incorporated in the framework is the continuation analysis. Once the auditor has completed the audit engagement, a decision must be made whether to continue the relationship with the client. There are a number of reasons why an auditor might choose to discontinue an existing client relationship.[6] Participants indicated that, the decision to disassociate from a client involves consideration of information that becomes available during the course of the audit that would have caused the auditor not to propose in the first place if available at the time of the acceptance analysis.[7] If the auditor (and the client) decide to continue their professional relationship, they will enter into an indefinite cycle of auditing the company and reviewing the relationship. The rest of this section is a detailed discussion of the activities in the four phases: (1) practice development and identification of potential clients, (2) acceptance analysis, (3) acceptance decisions, and (4) continuation analysis.

Practice Development and Identifying Potential Clients

This phase is probably the least discussed in either the professional or academic literature. Nonetheless, all the participants highlighted it as a crucial component of their client acceptance decision process. The main role of practice development is to identify the set of prospective clients available to the firm now and in the future. Participants suggested that not all potential clients are a target of the firms' practice development. Specifically, they identified three constraints that defined which clients to cultivate. The first constraint is imposed by the environment. Firms consider only those engagements that they can service in accordance with professional standards (e.g., independence issues) and regulatory and governmental restrictions (e.g., mandatory auditor switch). The second constraint is firm imposed. Clients must meet certain minimum firm standards before they will be considered worthwhile candidates for acceptance. Some companies may be omitted from consideration because they are in a high risk industry (e.g., casinos, savings and loans), are potentially unlawful (e.g., an importer of cut flowers from Colombia), or of questionable repute (e.g., a 900 telephone service or

[5] A proposal may be either formal or informal. For example, a governmental organization may have a legal obligation to follow a very formal process whereas an owner-managed business may have an informal process.

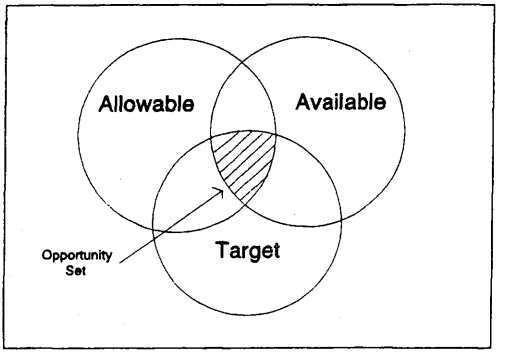
[6] Clients may also choose to discontinue the professional relationship with a firm on the basis of the *ex post* information that they possess after an engagement is complete. The client may consider the fees unreasonable, may dislike the personnel assigned to the engagement, or feel that quality service was not forthcoming from the auditing firm. Whatever the reason for such a client-firm split, we have omitted this case from our analysis because we are primarily concerned with the factors that affect the *auditor's* decision process.

[7] The decision to resign from an engagement can be made at almost any time, even during the course of an unfinished audit. However, withdrawing before completing an audit is obviously an extreme response to extreme conditions, such as discovery of major financial fraud. For the purposes of this paper, we do not exclude those types of events, but we will emphasize the less extreme conditions that would allow the auditor to complete the engagement but then choose to discontinue the relationship.

adult bookstores). The third constraint is auditee imposed. Not only do some clients not solicit bids, but also they are not amenable to the possibility of hiring the firm.

Practice development entails the management and coordination of these constraints. Based on our findings, Figure 2 presents a useful framework for considering firms' practice development efforts. Each point in the Venn diagram is an individual audit engagement. Within the rectangle is every audit engagement to be completed by all audit firms within a specified time period. The area labelled "allowable" represents all audit engagements a particular firm is permitted to serve in the next period. That is the area defined by the environmental constraints. The area labelled "target" represents all engagements that have no obvious disqualifying characteristics. That area is fixed by firm imposed constraints. Finally, the area labelled "available" represents all clients that consider the audit firm a suitable candidate to provide services during the next period—the auditee imposed constraint. This set includes current clients, first-time audit engagements, and companies open to an auditor switch.

Figure 2
Determination Of The Opportunity Set



The intersection created by the three constraints is the set of engagements the firm will include in its current acceptance or continuation analysis. We call this the *opportunity set.* Our findings and the framework suggest several interesting propositions. First, both nonclients and current clients are members of the opportunity set. Second, the size and content of the opportunity set changes over time because the number of possible engagements satisfying each of the three constraints changes each period. Third, the firm can influence many of the factors that alter the composition of the opportunity set. For example, it can broaden its allowable set by acquiring the necessary expertise to service specialized industries, firm philosophies and goals can change in such a way as to broaden or narrow the target market, and successful practice development may increase the number of available companies. Finally, based on practice development efforts, potential clients are classified as desirable, undesirable or unknown. Desirable companies are those that the firm is aware of and, unless evidence to the contrary surfaces, would like to serve. These potential clients are cultivated. Undesirable companies are those that the firm is aware of (either individually or as a class) but, for any number of reasons, prefers to avoid (that is, they are not in the target set in Figure 1). Unknown companies are those that the firm is unaware of but that approach the audit firm for possible services. This latter group includes most start-up enterprises and presents the biggest challenge in terms of acceptance deci-

sions. As described in the next section the extent of acceptance analysis is closely linked to this classification.

Acceptance Analysis

This phase is probably the most discussed in the professional literature. Nonetheless, we unearthed several subtle issues. Acceptance analysis includes the activities undertaken by an audit firm to determine whether to submit a proposal. Seven key issues identified are:

1. firm expertise and staffing,
2. firm independence,
3. client effect on firm reputation and image,
4. client integrity,
5. anticipated profitability of engagement,
6. client financial status, and
7. client accounting practices and control structure.

The importance of each issue depends on whether the client is initially classified as, desirable, undesirable, or unknown. Table 1 summarizes some of the differences.

Firm Expertise and Staffing: Professional standards highlight the importance of having the requisite expertise to handle a specific engagement. Presumably, if the expertise is not present, a firm must turn down the prospective client. Many of the interviewees indicated that turning down work because of lack of expertise or adequate staff is rare since most staffing problems can be overcome by transferring personnel from other offices (in the short run) and by expanding recruiting efforts (in the long run). In some cases, the excuse that the accounting firm lacks expertise is offered as an explanation when the firm wants to refuse work for other, more derogatory reasons (e.g., the suspicion that the management lacks integrity).

Firm Independence: GAAS requires that auditors maintain an independent attitude in both fact and appearance. All interviewees indicated that their firms had procedures for identifying potential independence problems. In some firms, independence is verified with a "negative confirmation." With this procedure, a list of clients is periodically distributed to all audit staff, but only those who have a conflict of interest with a client need respond. Other firms use a "positive confirmation;" the client list is made available to appropriate staff, who sign a form indicating that they are independent.[8] Regardless of the system used, the interviewees felt independence problems caused by direct or indirect ownership interests can almost always be resolved.

Client Effect on Firm Reputation and Image: A client can affect a firm's reputation. As one auditor stated, "We wouldn't want to be known as Al Capone's auditor." The issue of reputation goes beyond the possibility of adverse publicity from litigation.[9] In assessing a potential client's effect on firm reputation, participants emphasized the need to evaluate the nature of the client's business or operations as

[8] One firm used a positive confirmation in the local office and a negative confirmation on a national basis.

[9] Wilson and Grimlund (1990), using SEC disciplinary actions as a surrogate for reputation effects, found that firms with bad reputations had their market share erode relative to other firms. Second tier firms (i.e., non-Big Eight) also had difficulty retaining clients when faced with SEC disciplinary action. Surprisingly, the same second-tier firms did not have a significant fall-off in their ability to attract new clients.

well as the reputation of the client's principal owners. For instance, a client may be turned down because the principal owners or managers have a negative reputation in the business community, and the firm may not want to be associated with that reputation. Auditors may also want to avoid companies in certain types of business because the overall reputation of the business is poor, e.g., adult book stores or penny stock schemes.

Table 1
Aspects of Acceptance Analysis

	Type of Potential Client		
	Known, Desirable	**Known, Undesirable**	**Unknown**
Expertise/ Staffing	Exists or easily obtained via transfers or recruiting.	Lack of expertise may be used as excuse to avoid undesirable clients.	Will try to obtain if client turns out to be desirable.
Independence	Rarely a problem.	Not pertinent.	Family relationships are more likely to be a problem.
Reputation/ Image	Predetermination usually made that this will be a positive effect which must be rebutted by contrary information.	Predetermination usually made that this will be a negative effect that is difficult to rebut.	Will try to evaluate this with extensive research and investigation. Interpersonal references, media research, review of legal documents and client discussions may all be performed. Key concerns center on nature of business operations and reputation of management.
Integrity	Predetermination usually made that this is unlikely to be a problem. Opinion may be changed by further information received during review but extent of review will be limited.	Typically a major reason why the client is not desirable. Requires extensive rebuttal to overcome preconceptions.	Will try to evaluate with extensive research and investigation. (See "Reputation.") Also concerned with competence of management.
Profitability	Often pro forma consideration, as prospective client is assumed to be willing to pay reasonable fees and business risk is not a major concern. Ex post evaluation is more important.	Not pertinent. No fee is high enough.	Fees may be very important consideration. Can the client afford the work that is necessary to issue an opinion, given their records and control structure? Will the client grow and expand its demands for services? Is engagement timing beneficial to firm? Should fees be paid in advance?
Financial Status	Often pro forma consideration since companies having financial difficulties are easily identified.	May be a major reason why the client is not desirable.	Important consideration since one-year clients are not desirable. Firm often concerned with competence of management, under-capitalization, nature of product and service, and existence of sound business plan.
Accounting Practices	May be a problem in certain industries. Firms may need to discuss their strong opinions with the prospective client. Control structure is rarely a problem.	Not pertinent.	May be a problem in certain industries. Firms may need to discuss their strong opinions with the prospective client. Control structure may be a problem.

To assess possible reputation effects, auditors often search media sources, e.g., LEXIS, for news about the company, its owners, and its managers. Additionally, firms often contact existing clients as a matter of courtesy. This is particularly important if the prospective and existing clients are direct competitors, e.g., Coke and Pepsi. The existing client may object to the prospective client, and most firms are not willing to upset long-standing professional relationships for the sake of obtaining a new client. However, this is not always a problem because companies want to hire the "best" firm for their type of business. This often means that the "best" accounting firm is also auditing one or more of their competitors. The trade-off of confidentiality against industry expertise depends on the number of competitors in an industry or geographic region. Therefore, we propose that, the less concentrated an industry, i.e., the greater the number of direct competitors, the greater the willingness of companies to hire an accounting firm that does work for a competitor.

Management Integrity: Without question, assessing management integrity was the biggest specific concern of the interviewees. In fact, the majority of procedures identified and discussed by the interviewees directly related to assessing management integrity. The focus of most client investigations is to try to determine if the client's management is trustworthy. Assessing management integrity involves communicating with management as well as with those familiar with management. If the auditor feels that the management is less than completely candid, uncomfortable feelings may exist about the accounting practices and procedures of the company. A "hard-nosed but honest businessman" or an "individual with the habit of suing for every imagined slight" would also be difficult to deal with; in these situations, taking on the client may not be worth the trouble.

The interviewees identified many routine sources of references for prospective clients. For example, attorneys are routinely contacted. Information received from the current counsel of the client "must be carefully interpreted, however, since attorneys are hesitant to say anything negative about their clients." Other sources of reference are bankers, stockbrokers, ex-employees of the company, alumni of the accounting firm, business acquaintances of the company's management, other clients, colleagues in the firm (especially tax and consulting personnel), and mutual friends. Bankers are regarded as having a high reputation relative to attorneys. This finding, suggests that holding constant the information content of evidence, information obtained from bankers will be considered more reliable that those from attorneys. Availability of reliable references depend on the business environment. For instance, reliable references are difficult to obtain in a business environment where there are many transient entrepreneurs or much foreign investment.

Where such routine sources are lacking, participants stressed the use of more rigorous and formal investigations. They may review recent financial statements for obvious incongruities,[10] obtain a Dun & Bradstreet report on the company, check with the SEC for complaints, review arrest records, or hire an investigation service. If these investigations reveal anything of importance, management is usually given the opportunity to respond or explain. One participant, recalled an investigation which revealed that a member of top management was a subject of criminal investigations several years ago. As explained by that participant, "transgressions that are ancient history do not help, but they sure are not fatal flaws." One partner indicated that he does not use

[10] One interviewee related a story of a retailer who had an inventory turnover ratio of one. The client was turned away because the auditor felt that there was probably something questionable going on in the business.

investigation services because, if he feels that uncomfortable about the potential client, he would simply choose not to propose. Attitude toward using investigation services, did not seem to be influenced by firm affiliation.

The final source of information that was frequently mentioned was the predecessor auditor (when one existed). Communication between predecessor and successor auditors is required by SAS 7. Auditors are usually fairly forthcoming, even when being replaced by another firm, because they realize that they may someday be on the other side. Contrary to SAS No. 7, however, formal communications may not always occur or may occur after the client has been accepted. SEC Form 8K filings, which detail the circumstances of an auditor change, are not always informative either.

Anticipated Profitability of Engagement: The interviewees suggested that virtually all engagements result in little or no profit in the first year (i.e., lowballing). In submitting a proposal, firms focus not on first-year profits but rather on the prospect for future profits from repeat engagements and on opportunities for spin-off work, such as tax or consulting. Alternatively, if most of the work can be performed at a time when staff are unassigned, the fees from the engagement may help cover some of the firm's fixed costs.

Client Financial Status: The participants indicated that they are not interested in accepting a client who is on the verge of bankruptcy since such cases tend to end up in costly litigation and high up-front costs cannot be recouped. Accordingly, the client's financial status is thoroughly assessed prior to proposing. This does not mean that companies in financial difficulty are totally avoided. Auditors also evaluate management plans for dealing with the identified difficulties. In such situations, the key questions become: Is the business legitimate and does the product or service make sense? Is management competent and honest? Does the company have a reasonable business plan? Is undercapitalization the main cause of the company's difficulties? Although not interested in short-term clients, accounting firms stand to gain much from start-up companies with a reasonable plan because these may eventually require more accounting services.

Client Accounting Practices and Control Structure: A key concern that auditors often address early in the decision process is whether the prospective client is auditable. As used here, auditability refers to whether the client's accounting practices and control structure are conducive to accurate and complete record-keeping. The interviewees indicated that they would be wary about submitting a proposal to management that had disagreed with its previous auditors on questions of accounting principles. This is especially true if the previous auditor was a "Big 6".

Acceptance Decisions

"Most of the (acceptance) decisions are fairly easy" and "95 percent (of the time we) are going to accept the client—it's a matter of documenting what we are doing" were comments made by audit partners interviewed. Auditors want to "get to yes." Turning away a client is a difficult choice for many to make since successful recruiting of clients is one criterion often used to judge the promotability of a manager to partner or to determine a partner's share of profits. But even the most aggressive auditor realizes that there are significant risks associated with accepting some companies as clients. Consequently, little negative evidence is needed to reject the client. This suggests that auditors can be characterized as "hungry" yet cautious. Being

hungry, the auditor adopts the operating hypothesis that all prospective clients are acceptable. However, because the auditor is cautious, very little negative evidence is required for this hypothesis to be abandoned. Asare and Knechel (1992) have tested and found support for this proposition.

Continuation Analysis

The decision to continue or terminate a professional relationship is similar to the decision to accept a client, but the sources of information for the decisions differ. After completing an engagement, the accounting firm has more information upon which to base its decision. This suggests that external sources of information, such as business or legal references, are less important when the firm has extensive first-hand information. The three key issues that auditors consider when deciding to continue a professional relationship are:

1. Changes in client circumstances that are related to issues considered during the acceptance analysis,
2. Audit results and status of client relations,
3. Actual profitability.

The interviewees indicated that a problem would need to be significant before most firms would resign.

Significant Changes in Client Characteristics: Auditors cannot accept a client and then close their eyes to circumstances that might have caused rejection if previously known. Many of the interviewees indicated that the criteria they use for deciding to continue a client are the same as for accepting a client. The instances of disassociating from a client for reasons of reputation, financial status, expertise, or lack of independence are fairly rare; firms do a good job with their acceptance analysis in these areas. Issues related to management integrity are more likely to pose a problem since the auditor now has inside information about key management. For example, one interviewee related a case where he resigned because the president had been convicted of tax fraud even though the case did not involve the company.

Audit Results and Client Relations: The performance of the audit will reveal information that is relevant to the continuation decision and may lead to conflict between the auditor and the firm personnel or management. Situations involving voluminous related-party transactions, client-imposed scope limitations, and accounting disagreements that cannot be satisfactorily or amicably resolved may lead auditors to conclude that they should withdraw from the client. Other situations may be more subtle, such as when management ignores management letter comments or when the control structure is deteriorating. The interviewees indicated that they would withdraw from an engagement if they are frequently at loggerheads with management, which may occur even if the engagement is an otherwise profitable endeavor.

Profitability: After an audit has been performed, the firm is able to analyze whether the engagement was profitable. Fees, costs, and expenses are all known with relative certainty at that point. The mechanism for determining profitability is the realization rate, computed by dividing the total fees collected for the job by the man-hours employed. This rate is then compared to the "official" billing rates of the audit team. A job that is operating at less than 80 percent realization is being billed at a substantial discount. Realization rates in the first, and even second, year of an

engagement may be relatively low. The consensus of the interviewees was that realization should be close to 100 percent by the fourth year. Otherwise, the relationship will be terminated unless there are extenuating circumstances for continuing to discount the job.[11]

Research Opportunities

Throughout the paper, we have identified testable propositions. In this section we will link some of our findings to the academic literature with a view to identifying more research issues. The unifying theme of this section is business risk. Business risk is the likelihood that an accounting firm will suffer a loss due to its association with an audit client in spite of complying with professional standards.[12] Such losses include lawsuits, inadequate profits, and damage to a firm's reputation. Business risk may be best controlled by careful selection of the firm's clients.[13] The interview results indicate that the purpose of the acceptance or continuation analysis is to assess the business risk associated with a current or prospective client. The purpose of this section is to illustrate how the client acceptance framework developed in this paper can be used to generate research questions. Table 2 presents a sample of specific questions.

Business Risk: How Is It Assessed?

The discussion of acceptance analysis indicates that auditors use many types and sources of information to assess business risk. No prescriptive or descriptive research has directly addressed the selection, weighing, or integration of the information available to assess business risk. However, several observations on how business risk is assessed and issues for further research are evident from the interview results. Table 2 enumerates six questions related to this topic.

First, the relative importance of cues and the information evaluation strategies of auditors when assessing business risk are areas amenable to research. Auditors weigh differently the relative importance of the seven types of information discussed in Section 4.2 when assessing business risk. For instance, the interview results suggest that auditor independence and firm expertise and staffing are directly controllable by the audit firm and should play only a limited role when auditors assess business risk. Of the factors that are not directly controllable by the auditor, management integrity and the client's financial status are the most important in the business risk decision. Further, these two factors may be evaluated configurally. If management integrity is low, the assessed level of business risk is likely to be high regardless of the client's financial status. But if management integrity is high, the assessed level of business risk is directly related to the client's financial status.

The information used to assess business risk comes from many sources, particularly in acceptance analysis situations. The interview results indicate that information from current counsel is scrutinized closely, while information from bankers is considered very reliable. The credence attached to the predecessor auditor's communication appears to be affected by the reasons for the auditor switch. Thus, issues related to the

[11] Simon and Francis (1988) reported evidence that indicated fee cutting amounted to 24% in a new engagement and 15% in years 2 and 3 of an engagement, with full fees being received by the fourth year of an engagement.

[12] Section AU 312.02, footnote 2, acknowledges the existence of this risk without giving it a specific name.

[13] Business risk is different from, and subsumes, the concept of audit risk (which represents the likelihood that the auditor will issue an incorrect audit report). Audit risk is controllable by the auditor via proper audit planning and compliance with professional standards.

effect of source reliability on business risk assessments is an area with research opportunities.

Information search strategy is an important facet of the client acceptance analysis. The process can be quite costly, and investigation costs cannot be passed on to the client if the latter is not accepted. Many factors can be expected to influence the information search process, e.g., the economic outlook or whether the client is planning an initial public offering. The interview results indicate that the amount of information gathered varies considerably across engagements. The acceptance/continuation decision process is a context in which research on information search strategies is needed.

Table 2
Research Opportunities

Business Risk: How is it Assessed?

1. To what extent does the relative importance of the seven acceptance analysis issues vary with the classification of the prospective client in the practice development phase?
2. Are business risk assessments influenced by auditor-specific factors such as a sense of professional responsibility and individual motivations?
3. Given the same facts and circumstances, will the business risk assessment differ depending upon whether the potential auditee is a prospective or continuing client?
4. What is the relationship between audit risk and business risk? How does information obtained during the screening of clients affect audit planning?
5. To what extent does a Firm's audit technology influence the assessment and minimization of business risk?
6. Are auditors well calibrated as to their ability to assess and control business risk?

Business Risk: Whose Preferences Prevail?

1. How effective are firm policies (or the partnership agreement) in providing efficient risk sharing among auditor partners?
2. Should firms allocate a greater portion of insurance liability premiums to higher risk clients? If so, how?
3. How is the business risk of a firm affected by clients inherited through firm merger activities?
4. Are auditors on repeat engagements willing to accept a higher (lower) level of business risk than would be accepted on a new engagement?
5. To what extent does the possibility of spin-off work (e.g., consulting and tax) affect an auditor's tolerance of business risk?

Business Risk: How is Audit Pricing Affected?

1. How do business risk assessments affect pricing decisions?
2. Does the classification of a prospective client during the practice development phase affect the extent of lowballing?
3. Does a firm's tolerances of business risk affect their market position?
4. Under what conditions should auditors use fixed fee versus cost plus contracts for pricing audit engagements?
5. What influence do restrictions on practice development (e.g., advertising and soliciting) have on the opportunity set of potential clients and, ultimately the pricing of audit services?

Finally, the relationship among business risk, audit risk and audit planning needs to be unravelled. Preliminary evidence suggests that evidence obtained during the client acceptance process is used to reduce audit testing (Huss and Jacobs 1991; Hackenbrack and Knechel 1994). The pervasiveness and the appropriateness of such a strategy remains unknown.

Business Risk: Whose Preferences Prevail?

Although a firm may have a particular risk tolerance at a conceptual level, the actual business risk assessments are made at the office level and, within an office, at the individual partner level. Partners have different risk tolerances. For instance, newly promoted partners may pursue risky engagements more aggressively than would established partners. Partners who have recently been involved in litigation may be more conservative than they otherwise would be, reducing their risk tolerance. The diversity of such tolerances means that client acceptance decisions made by individuals (or within local offices) may not coincide with the overall objectives of the firm. This observation has important implications for research that assumes a single set of risk preferences for decision making (e.g., Simunic and Stein 1990).

Firms adopt a number of policies and procedures that are intended to reduce such variations in individual risk tolerances and, ultimately, client acceptance decisions. Examples include senior partner reviews and the use of standardized client acceptance checklists. At this point further research is needed to ascertain how effective these techniques are.

Partially tempering these individual differences is the strong sense of partnership responsibility and duty to the accounting profession that was expressed by the partners interviewed for this paper. Personal integrity, professional ethics, and interactions with peers would all contribute to an increase in the effectiveness of firm policies and procedures. The role these intangibles play in the individual partner's risk/return trade-off decisions is an important area for future research. Five questions related to this topic are listed in table 2.

Business Risk: How Is Audit Pricing Affected?

Auditors cannot simply choose companies to add to their client base. They must bid against their competitors for the opportunity to serve a particular company. Consequently, auditors' acceptance/continuation decisions subsume an assessment of the minimum fee they are willing to accept.[14] The interview results indicate that these business risk and bidding decisions are not made in isolation. Rather, they involve comparing the net benefit that can be obtained by adding the company to its current client base. From this "portfolio" perspective, the decision to add a client to the firm's client base is based on the explicit consideration of its riskiness in relation to existing clients. Consequently, business risk plays an important role in an auditor's audit pricing strategy (see also, Simon 1985; Simon and Francis 1988; Simunic 1980).

Prior research indicates that auditors use either a fixed fee or a cost-plus contract to price their audit (Palmrose 1989) and a tendency toward lowballing exists on some initial engagements (DeAngelo 1981; Turpen 1990). The conditions under which

[14] Simunic and Stein (1990) argue that the minimum bid level will include a recovery of direct costs, a recovery of opportunity costs, and a premium based on the perceived risk of the engagement. Simunic and Stein also argue that commonalities such as "client industry, geographic location and types of accounting principles" (p. 332) cause returns across audit engagements to be correlated. We would add the firm's audit technology to this list also. As a result of these commonalities, the decision to add a client to the firm's client base should be based on the explicit consideration of the return, risk, and covariation with existing clients.

either type of contract is used is not well understood, nor is it clear why auditors lowball on some engagements but not others. The interview results indicate that one possible explanation is auditors are more willing to use a fixed fee arrangement or lowball in situations of low business risk. Additional research that examines the relationship between lowballing or bidding strategies and business risk is needed.[15]

Accounting firms will also assess business risk differently in similar situations because they have different cost and revenue functions. The cost of performing an audit can be expected to vary across firms with different audit technologies (Cushing and Loebbecke 1986), industry specialization (Eichenser and Danos 1981) or perceptions of the audit risks of the client at the global, account, or assertion levels. These variations directly affect the extent of audit effort necessary to obtain reasonable assurance that financial statements are free of material misstatements.

The revenue a firm can expect to collect on an engagement will also vary across firms and will depend on such factors as the firm's attitude toward lowballing (DeAngelo 1981; Schatzberg 1990), fee cutting (Simon and Francis 1988; Ettredge and Greenberg 1990; Turpen 1990), and their ability to generate spin-off work in consulting or tax (Simunic 1984; Palmrose 1986; Abdel-Khalik 1990). To the extent that these differences occur, firms will have different assessments of business risk and their bids will differ. The extent to which the cost and revenue functions of firms affect business risk assessments and audit pricing strategies is an important area for future research. We enumerate five research questions related to this topic.

Concluding Remarks

On the basis of a review of the professional literature, audit firm materials, and interviews with audit partners, we presented evidence on how auditors make client acceptance and continuation decisions. Our approach was driven by the lack of prior research, and has identified a number of research issues with practical significance. Auditors' assessments of management integrity is potentially the most rewarding area for further research. The dynamics of the client acceptance process and planning judgments as well as the relative importance of the various information sources identified in professional standards are fertile research avenues. Conversely, inter-firm differences in client acceptance decisions does not appear to be a viable opportunity (cf. Huss and Jacobs 1991).

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[15] Simunic and Stein (1990, 339) conclude that an auditor with a high-risk portfolio of clients will tend to bid low. An earlier attempt to model this decision process is reported in a paper by Scott (1975). His model was based on the assumption that the auditor's loss function (and thus his or her risk) is derived from the utility function (e.g., wealth) of the financial statement user. While interesting, this perspective omits the multi-investment decision problem of the auditor and limits the definition of risk to economic losses by investors that can then be passed on to the auditor (presumably via litigation).

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