1992

Auditing Symposium XI: Proceedings of the 1992 Deloitte & Touche/University of Kansas Symposium on Auditing Problems

University of Kansas, School of Business

Rajendra P. Srivastava

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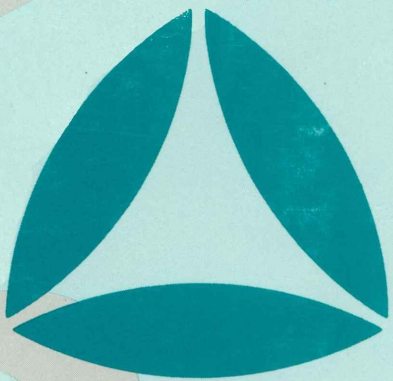

The University of Kansas, School of Business

Auditing Symposium XI

Proceedings of the 1992
Deloitte & Touche/University of Kansas Symposium on
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This issue of the Proceedings
is dedicated to the memory of

JOHN O. TOLLEFSON
(1937-1991),

former dean of the KU School of Business,
in appreciation for his strong support of
the auditing symposium and the accounting program
at the University of Kansas.

1992 Deloitte & Touche/University of Kansas Symposium on Auditing Problems Roster of Participants

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John J. Willingham, KPMG Peat Marwick
Alan J. Winters, AICPA
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Awni M. Zebda, Louisiana Tech University

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Preface

I would like to dedicate this issue of the proceedings to the memory of John O. Tollefson, dean of the Kansas University School of Business from 1981-90. During his tenure as dean, John was an enthusiastic supporter of the auditing symposium. He returned to teaching a year before his untimely death in a logging accident in 1991. He is greatly missed by his colleagues and students at KU.

The 1992 symposium was the 11th 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, Managing Partner of Deloitte & Touche, David Hunerberg, Managing Partner of the Kansas City Office, and Howard Cohen, Partner in the Kansas City Office, for their enthusiasm, commitment and dedication to the symposium.

Topics relevant to both academics and practitioners and the individuals who served as presenters and discussants were selected after extensive consultations with faculty members at the University of Kansas and professionals in auditing at other universities and in practice. In particular, I am indebted to my colleagues in the accounting and information systems area, Bruce Bublitz, Allen Ford, Betsy Goss, Bill Salatka, Tom Sarowsky, Tim Shaftel, Beverley Wilson, and Jim Waegelein. Special thanks are due to Val Renault for her editorial assistance, and to the graduate students in accounting and information systems for their general support.

The symposium started with a paper reviewing the philosophy and psychology of independence and objectivity of the auditor, and concluded with the paper "Internal Control: Progress and Perils." Each paper was critiqued by a discussant. Maintaining with the symposium tradition, we selected a practitioner to be the discussant for a paper by an academician and vice versa. All papers, except for the keynote speech by Bill Kanaga, were distributed in advance. 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.

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. For those who might like an opportunity to participate in the discussions at a future symposium, we would be pleased to receive an indication of your interest.

The proceedings of each of the symposia except the first are still in print and may be purchased from:

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Proceedings are shipped only on a prepaid basis. The 1992 symposium proceedings are priced at $15.00 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. The papers included in each of the available proceedings, the authors of those papers, and the prepaid price of each volume from the Kansas Union Bookstore are listed below for the benefit of those who may wish to refer to a paper in one of the previous volumes.

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Contemporary Auditing Problems Symposium II (1974) $5.00

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   Lee J. Seidler
4. Risk and Uncertainty in Financial Reporting and the Auditor's Role
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5. Status Report on Auditing in the European Economic Community
   Richard L. Kramer
6. An Examination of the Status of Probability Sampling in the Courts
   Boyd Randall and *Paul Frishkoff*
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Ethics and Morality*

William Kanaga
Retired Chairman, Arthur Young & Co.

Thank you, Jerry, and thank you all for having me. I am going to depart really from what I had intended to speak to, Raj (Rajendra P. Srivastava), when I agreed to come. I hope it won't cause heartburn for you and for the others in the crowd. Before I left for eastern Europe in early April, I had prepared some draft remarks on the question of ethics in the community and the impact on the auditing profession. Jerry Sullivan and I can remember a few days discussing the aims and objectives of the Treadway Commission and how that might impact the profession. When I came back to the United States I decided to scrap the draft that I had and to deal with a more fundamental issue, which is the ethics and morality of society in general. I have a captive audience here to share some of the impressions that I gained in eastern Europe and those countries that have emerged from communism, as well as what those observations might mean to us.

For the past month-and-a-half I have had the experience—I probably should say privilege, because it is a privilege—to spend time in and get some insight into an area of the world that is going through a major transition. I spent time in Albania and then in Siberia, plus two extended stopovers in Moscow. In talking with many of the citizens of those countries, both in the public sphere, government, cultural and private positions, a common theme emerges. During the communist dictatorships, some 75 years in Russia and almost 50 years in Albania, the leadership in both of those countries attempted to eliminate any kind of moral code and substitute for any moral decision making the absolute power of dictatorship. In both, the church came under direct attack.

In Albania, the dictator Hoxha, went further than those in the other countries of eastern Europe. I have spent a great deal of time in Poland, Rumania, Hungry, Czechoslovakia, and Bulgaria, and in my opinion, Albania was the worst of the group . The dictator Hoxha imprisoned or killed all the clergy in this country, both Christian and Moslem, and destroyed the churches and mosques throughout the country. He left a few standing and they have been returned to the church authorities, but those few that were left standing were converted either into movie houses or into indoctrination centers. When I first went to Albania early last year when the doors opened, all evidence that there had been churches had been removed.

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* This paper is an audio transcript of the keynote speech delivered by Bill Kanaga at the symposium.

[1] Jerry Golden of Ernst & Young introduced Mr. Kanaga, who served as chairman of Arthur Young from 1977 until his retirement in 1985.

That destruction was in the 1960s. In 1976 he declared that Albania would be henceforth the world's first atheistic state. His internal secret police reported on each and every family. They had the equivalent tactics of the Gang of Four from China, they went in every home and searched the home and removed anything that would indicate any tie to the church. They smashed all the icons, they destroyed churches that were over a 1,000 years old. And anybody that criticized or in any way indicated that they were unhappy with the regime went to prison.

There was an alternative, which was prison work camps. Anybody that didn't agree was in danger, not only his own immediate family, his wife and children, but also his parents and his brothers and sisters and their spouses and families. So it was a pretty horrible but effective deterrent.

The story was repeated over and over again, in eastern Europe and in the Soviet Union, although I believe that Albania was unique in its ferocity. Based on my experiences over the last four years in these countries, I have been appalled at the lingering impact today on the moral values in these societies. I'm chairman of the Center for International Private Enterprise operating out of Washington, which supports the indigenous institutions that are helping to return those countries to private enterprise, the market system, entrepreneurial activities, management training, etc. As a consequence, I have spent a good bit of time with individuals in those institutions in various countries. I have gotten a chance to talk to them about how they deal with the vacuum that was left.

What happened in each and every country was that there were really no moral principles, no debate, just dictatorship fiat. When the lifting of those despotic regimes occurred, we have seen what I would call an unlovely picture: a moral vacuum. We see people who have great trouble in distinguishing right from wrong. They are angry, even bitter, but without a way to deal with all of that bitterness. One of the ministers in the Albanian government said to me—and I would say that he himself is a man of compassion, a poet and an author—"We obviously have great physical needs here in my country— food, medicine, clothes, housing, but paradoxically our greatest need is to restore the spirit of my people, the spirit inside each and every person. And when I say spirit I mean spiritual needs. Food and medicine and the rest will be spent and gone tomorrow, but what we need and my people have to have is something permanent within them for this country to change. Unless they have something permanent inside, they have nothing to go on for tomorrow."

We had time and again debates on how to get these moral values back and how to instruct the people in right and wrong. These concerned simple things, mundane situations. One of the Albanians told me that when he flew to Rome he got on the plane and the first two fellows who got on sat down in First Class. The stewardess said, "Your tickets are not first class, you have to go to the back of the plane," and they said, "We were here first." So possession is all—it's the right of the jungle in effect.

There is a great shortage of food, so one question is, if your family is starving is it right to steal food for them? We have a free market system and unfortunately they have had much publicity in years past about our capitalistic system—all of it bad. Everything that went on the front page in the communist world concerned some deficiency in our system, so people in these countries believe when you talk free market that it means cheating one another. It is

exemplified by greed.

Trying to correct that perception is one of our major tasks at the center. We are working with education of the media, attempting to instruct the journalists in what a free market system really means, what our kind of system really means. And if we are disappointed on occasion with our own journalists, let me tell you that there are problems magnified in the communist world. The leader of one of the major autonomous regions in Siberia said, "You know we have a real problem here. We have all been motivated over our entire life time by fear. We have lifted the fear from our life and we haven't replaced it with anything. So we are floundering." He went on to say that it certainly hadn't been replaced by money.

I didn't see "60 Minutes" the other night, but for those of you who did, you know that the doctors are being paid the equivalent of about $7 a month, that is in rubles, compared to $15 for the bus drivers. I'm not begrudging the bus drivers their $15, but the doctors are deserting Albania in droves. I helped support a group of doctors that went to Albania in March. They spent three weeks, took $10 million worth of equipment and supplies into the medical profession, the principal objective being to retain the doctors that were there, to encourage them, because many of them have become baggage handlers in New York City.

The minister of economics in the last communist regime in Hungary, not himself a supporter of the system, in fact quite a critic, said to me (before the fall of the communist government, about three years ago) that it was his belief, that the system could not work, would not work. He said—and I think that you would be interested here at the University to know—"I don't think that there are any confirmed communists any where in the world except on the campuses of your universities." He said that the problem was to get people back to feeling a sense of responsibility, not only for the country but for themselves personally.

They are now telling these people that there is not going to be cradle to grave support by the government. All of a sudden they are going to have to fund their childrens' college education and they are appalled at this new economic system because they don't see any way under their current incomes to fund the things that are coming up. Now they are going to switch over to having to fund the health system and the health system is bad.

What we have been looking at in this communist world is what happens in a society devoid of moral structure, devoid of religious belief, devoid of individual liberty. And I can tell you it is a scary picture. The people themselves individually are warm and hospitable but they are scared. Why am I spending so much time on such an obvious failure, the failure of a system that we never embraced here in this country? The reason is that I believe there are some lessons in that situation for us. In this country we have a constant reminder in the headlines of our daily papers of the failures of businessmen. We have failures of a lot of others, but I'm referring in this group to businessmen, men in leadership roles without the desire or the will to make the right or moral decision when looking at a number of alternatives. In some cases it is individual failure, in some cases it is quite clearly institutional failure as in some of the insider trading cases — or the case of the bank scam that E. F. Hutton operated, or in the earnings fraud that I'm sure your business schools all look at involving a number of divisions of H. J. Heinz. In some whole plants or divisions of defense contractors there were a tremendous number of people involved in scams and no one, or at least no one apparently, with the instinctive reaction to blow the whistle or stop the practice.

We are in a society, in my opinion, in open warfare against values and moral standards. Battles are going on against prayer in public forum while lawlessness reaches a new high. We have battles being fought for moral standards of our youth to emphasize the individual importance of each, while at the same passing out condoms in our schools. We are the world's center of pornography, whose sole aim is to degrade women, and at the same time we are making a national issue of questionable remarks that men might make to women. There is a dichotomy that we are faced with and I believe, thank God, that in the people there is a great revulsion against the waning of moral principle.

We had a serious problem while I was without newspapers in Siberia, with riots coming out of the trials of the policemen in the Rodney King case. I arrived home this past weekend from Russia to see on the front page the pictures of a number of mayors in Washington denouncing not the action of the lawless rioters, but denouncing the federal government. Not a statesman among them took responsibility for leadership in the riot torn communities. As De Tocqueville [1900] said, and we have had quoted so many times, "America will be great as long as it's good. When America ceases to be good it will cease to be great." Business and our profession, our universities, have a great stake in the battle. We cannot sit idly by hoping that the moral climate will change. We have to be out in our communities, in our schools, in our newspapers, on TV, telling the story of the importance of moral standards, confronting the cynics and the demagogues and, for example, speaking truth to the voters, not pandering for their votes.

In our Treadway Commission deliberations several years ago, there was one clear truth on which all of us agreed, and there weren't all that many things that we all agreed on, as Jack Krogstad knows—Jack and I both worked on it in Washington. That was that the key to all of the problems we have had in the business world was **leadership**. Ethical behavior in any organization will exist if the leadership is there to lead. And the organization, I can tell you, will follow. If that leadership takes a strong stand on honesty and integrity, so will the organization. We just have to mobilize leadership in this country. Each and every one of us has to take a leadership role in our own community, in our own business, in the educational systems and institutions where we live and in our churches. The price I have seen in an amoral society is more, I can assure you, than we can bear.

You have the misfortune this lunch time in Lawrence of an individual who is on his high horse. But [this reflects my experience], having just gotten off the plane from the misery and misfortune of a huge area of the world dragged down by as much as 75 years of unbelievable hardship and returning to our country so complacent, self assured and seemingly invulnerable. I read recently a quote from Alexander Solzhenitsyn, who experienced at close hand the awful cost through the loss of moral value in his native Russia and for the last ten years or so in this country. He says [Solzhenitsyn, 1991]:

> The strength or weakness of a society depends more on the level of spiritual life than on its level of industrialization. Neither a market economy nor even general abundance constitutes the crowning achievement of human life. If a nation's spiritual energies have been exhausted it will not be saved from collapse by the most perfect government structure or an industrial development. A tree with a rotten core cannot stand. This is so

because of all the possible freedoms, the one that will inevitably come to the fore will be the freedom to be unscrupulous. That is the freedom that can be neither prevented nor anticipated by any law. It's an unfortunate fact that a pure social atmosphere cannot be legislated into being.

In my opinion this all does bear directly on our profession. A country whose moral values have decayed will be a country whose businesses are a danger to the auditor. Where the management operates without principle, the risks for us are enormous. We have much to be grateful for in this country and much battling to preserve it. You and I have an obligation to each other, our families, our communities and our profession.

Take the stand that will make the difference.

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2

The Auditor's Role: The Philosophy and Psychology of Independence and Objectivity

James C. Gaa*
McMaster University

> The auditor, like any professional man, has a responsibility to the society that recognizes and encourages his professional status as well as to the clients he serves directly. It behooves us, therefore, to give some attention to this responsibility. What is the social function of the auditor? What responsibilities flow from it?
>
> Mautz and Sharaf, 1961, p. 50

> The independent auditor's role in society is described by both his function—what he does—and his relationships to parties interested in that function.
>
> Cohen Commission, 1978, p.1

> The essence of all professions—including public accounting—lies in the expertise of its members. ... A characteristic of the auditing profession is then a unique knowledge-set or expertise.
>
> Bedard, 1989, p. 113

Introduction

The role of the "independent" auditor has been controversial off and on for many years. For over 100 years, auditors have been defendants in civil lawsuits, charged with failing to perform their job in accordance with their obligations to others. Over roughly the last sixty years (i.e., since the debates giving rise to the Securities and Exchange Commission in the U.S.), there have also been periodic political controversies regarding the public's expectations about what auditors are supposed to be doing, and whether they are delivering the goods.

Since Mautz and Sharaf wrote their words, the formerly all-male world of auditing has changed significantly. However, their observations on the social role of auditors are still as current—and as little resolved—as they were thirty years ago. Indeed, the issues they raise are just as important as they were then, if not more so.

Mautz and Sharaf pointed out that the overall problem of the auditor's role breaks down into two parts: what service auditors are supposed to perform, and for whom they are supposed to be doing it. Controversies seem to focus more on the former (e.g., concerning the scope of public accountants' services to

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clients, and whether auditors should examine and report on the client's internal control system) than on the latter. With respect to the auditor's relationship to other parties, while it is generally recognized that objectivity and independence are the heart of the role of the external auditor, we have no theory developing the foundations of that role. Even with the decreasing importance of auditing as a source of profits for public accounting firms, it is not hard to argue that the external audit function is the heart of public accounting. So, it is unfortunate that these concepts have defied the efforts of a number of writers to define it and place it into a conceptual structure.

Virtually no research has been done on the ethics of the auditing profession. This is evidenced by the recent publication *Research Opportunities in Auditing* [Abdel-khalik and Solomon,1988]. This careful and comprehensive survey of the field does not appear to mention ethics at all. Likewise, Gibbins's [1984] long and thoughtful examination of the problems of judgment in accounting explicitly excludes moral issues. Closer to the subject of this paper, recent reviews of research on the expertise of auditors in making professional judgments (e.g., Davis and Solomon [1989], and Bonner and Pennington [1991]) do not mention moral judgment. There is a good reason for this lack of attention. At this point, academic research in the ethics of the public accounting profession hardly exists. Hence, it would be difficult for either researchers or practitioners to see how it might proceed at all, and be a fruitful line of research.

The purpose of this paper is two-fold. The first is to present the outlines of a normative theory of the auditor's role, based on philosophical literature dealing with moral judgment and action. According to this analysis, a social contract between the auditing profession and the rest of society establishes the reasons why it is important for auditors to act in accordance with a set of ethical standards. Essentially, in accepting the role of auditor, auditors have agreed to the terms of a contract, and are therefore morally obligated to honor these terms. Among other things, they are expected to act in accordance with "the moral point of view." Auditor independence and objectivity are explained as interpretations of this more general principle.

This provides a partial characterization of the auditor's role and attendant responsibilities, and leads to the second question of how auditors might act ethically, i.e., how they are to make the moral judgments required by their role. Building on the philosophical foundation, the second objective is to propose a psychological theory of moral judgment and expertise as the foundations of moral judgment by auditors. It is hoped that such a theory and empirical research leading from it may yield a better understanding of the ways in which moral judgments are made by auditors, and may even lead to changes in the education and training of auditors, and thus to changes in the practice of auditing.

The next section of this paper presents the ethical foundations underlying the ethics of auditing. As mentioned above, the basic idea is that auditors have a social contract, i.e., an agreement with the rest of society, that obliges them to act from "the moral point of view." The "terms" of this contract are analyzed, via the pronouncements made by the public accounting profession. Definitions of auditor objectivity and independence are presented. This analysis leads to the conclusion that, even with a multitude of rules and principles governing the behavior of auditors, they still must make professional judgments which meet the requirements of the moral point of view. So, the psychological question of

how auditors are supposed to make ethical judgments arises, which is the subject of the next section. The concept of moral expertise is advanced, and analyzed and compared to the more technical (and traditionally recognized) forms of auditor expertise. Measures of moral expertise are proposed. The penultimate section presents some of the possible implications of moral expertise, for both research and practice. This is followed by a short conclusion.

This paper is exploratory in nature, bringing together several diverse literatures in both philosophy and psychology. Because of limited space, the paper presents the outlines of a theory, rather than a finished theory, and is meant to stimulate further discussion, with the hope that a more rigorous and complete theory of moral expertise, and empirical research leading from it, will emerge.

Contractual Foundations of the Auditor's Role

Recently, the attention of both researchers and practitioners has focused on the economic-contractual aspects of the auditor's relationships with other parties such as clients, investors and creditors, and regulators. (Recent examples include the papers and critiques in a forum in the January 1992 issue of *The Accounting Review*.) Such investigations are important, since the institution of external auditing does exist in an economic setting in which auditors provide their services for a fee, and the service consists primarily of informing others about the reliability of information about the economic activities of the client firm.[1] However, the concepts of objectivity and independence are not themselves economic concepts (although they do have implications of an economic nature). Rather, they are ethical, or normative, since they concern the issue of how an auditor ought to act in the course of performing an audit, and in ultimately deciding on the content of the auditor's report to third parties.

Both ethics and economics concern rational choice. The differences and similarities between them may be characterized in a variety of ways.[2] One way is that economics focuses on choice when each individual is regarded as an atomistic, self-interested, utility maximizer, who makes rational decisions without regard to the impact of her actions on the welfare of others. Ethics, on the other hand, focuses on the problems of choice when it is explicitly recognized that one's actions do have effects on others, and that those effects should be taken into account in deciding how to act. *Ipso facto*, taking the ethical point of view denies the validity of "ethical egoism" as a normative theory of rational choice.[3]

Roles and Norms

Strictly economic analyses of behavior have difficulty dealing with the fact

[1] Internal auditors have enormous problems defining their role as independent employees of the entity which they are auditing. Despite apparent similarities in the work performed by external and internal auditors, I believe that the theoretical foundation of the internal auditor's role will turn out to be different from that of the external auditor. For this reason, this paper concerns only the independence of the latter.

[2] The relationship between ethics and economics is complex. So, any simple characterization of it is automatically an over-simplification. In particular, the statements made in the text of this paper should not be interpreted to mean that they are separate disciplines, with totally different goals and methods. Rather, they are (or should be) intertwined. Insofar as they are concerned with the rationality of human choice and behavior, it would be a mistake to think that either one can proceed satisfactorily in isolation from the other. For a detailed examination of this, see Sen [1987].

that people choose and perform their actions within the context of a role. The concept of a role is a legal/moral concept[4] and is defined here as a cluster of rights and duties with some sort of social function [Downie, 1971, p. 128. See also, e.g., Williams, 1985, p. 7]. Everybody occupies a number of roles simultaneously, such as parent, child, spouse, citizen, and so on. Some of the roles people occupy are not voluntarily chosen (such as that of child), while others are assumed as a matter of voluntary choice. Specific occupational roles, such as that of auditor, are typically chosen. This means that the rights and duties which define these latter roles are agreed to by persons adopting them, and that they have the rights that accompany it and agree to abide by the obligations as well. Thus, voluntary acceptance of a role is a matter with ethical import. This has an important consequence for a theory of the role of the auditor, and for auditor objectivity and independence in particular. The consequence is that, contrary to the positive, principal-agent, conception of auditor decision making, an auditor is not free simply to decide (as a matter of maximizing self-interest) whether to report a breach of generally accepted accounting principles [DeAngelo, 1981]. Instead, she has an obligation to make such a report, and, by implication, this is the case even if such a report is not in her self-interest.

Rights and duties are generally recognized as fundamental to the ethics of the accounting profession, in view of the fact that virtually every professional organization of accountants has a code of professional conduct, specifying (primarily) the duties of members of the organization to other interested parties, including the general public, their colleagues, and to the organization itself. Furthermore, the relationships of the auditor to other interested parties may be analyzed in terms of the rights and responsibilities which define the role of the auditor.

People in general, and auditors in particular, often find themselves in situations where their actions have an impact on themselves and others, and where there is no feasible course of action which will be in the interest of all of them. In such cases, a principle or criterion is needed for deciding which of the competing or conflicting interests is to be given priority over the others.[5] In these situations, norms provide guidance (and possibly, incentives provided through their enforceability), by indicating actions which are required, allowable, or forbidden in a given situation.

Norms are standards of behaviour. They have the following logical structure:

Person P in situation S may (or should or should not) do A in manner M.[6]

For role-related norms, this definition encompasses both aspects of the auditor's role distinguished by Mautz and Sharaf [1961]. First, it states that a norm speci-

[3] Ethical egoism is the theory that all rational individuals ought to act exclusively in their own self-interest and without regard to the impact of their actions on others (except to the extent that such effects "rebound" on the individual). Ethical egoism is theoretically untenable. For one thing, it is not universalizable, since it is self-defeating when advocated as a general statement about how people ought to act). See Bowie [1991]; Sen [1987]; Etzioni [1988]; Frank [1988].

[4] This definition is a normative one. Roles are also understood in a positive, sociological sense, as a set of empirically determined behavior patterns, which have empirically determined outcomes for society. Thus, the auditor's role would be defined positively as consisting of those actions which are done by people who have been labelled as auditors, and which have a pattern of outcomes. (The purpose of the second clause is to omit "accidental" characteristics which have no pattern of effect from being included in the role). Roles in this positive sense are not the concern of this paper.

[5] It is also possible that one interest might be traded off against another, in the sense that it is given a heavier weight rather than absolute priority.

fies which actions person P is supposed to perform (or not perform). The relationships which an auditor is supposed to have concern the other part of the definition. First, the situations which P is allowed to be (or supposed to be) in, may preclude certain relationships. For example, it is a universally accepted norm that an auditor may not perform an audit if she is actively involved in the operation of the client's business. Second, the manner in which P performs action A relates to the way in which the auditor takes into account the contending interests of various parties.

Norms have two main functions. First, they provide criteria to evaluate situations and actions. Second, they provide guides for action, helping people to decide which action is appropriate or correct to perform. Following from both of these functions, norms may also provide standards for the enforcement of certain types of behaviour.[7] When this is the case, ethical norms may become formalized as statutes or government regulations, or as precedents in the common law. Thus, norms have normative content. Rules, principles, regulations, customs, and mores are additional types of norms which guide us in choosing our courses of action. The role of norms in influencing people's moral behavior is described by Baier [1965, p. v-vi.]:

> ...Moralities are best understood as special forms of social control and as special forms of practical reasoning. Any form of social direction and control must attempt to accomplish two major tasks: to provide for the members of the group an easy way of answering the question of what is required of them by this particular form of direction and control, and to ensure compliance with these requirements. The first task is accomplished by the formulation of appropriate principles, precepts, rules, and regulations in a way which makes them easy to remember, to pass on to others, and to apply in a variety of different circumstances, and by the instruction of the members in these principles, etc. The second task is accomplished by group practices designed to exert pressure on individuals to satisfy these requirements, such as the practice of 'investigating' individuals to see whether they have adhered to the appropriate principles, precepts, rules, and regulations, and of 'meting out' to them whatever is thought appropriate in the light of these investigations.

One of the pervasive facts about public accounting is the multitude of rules which its practitioners are supposed to follow. Rules governing their behavior are contained in generally accepted accounting principles, generally accepted auditing standards, codes of professional conduct, as well as statutes and regulations of government regulatory bodies. It may be that accounting has more rules than other professions. But the existence of rules is no accident, for rules are a primary means of defining the nature of a profession. That is, they codify a set of expectations about what members of a profession will do, and how they will do it, and in this way define (as well as guide) the practice of public accounting.

There are two types of norms [Bayles, 1989]. One consists of universal norms, that is, norms which apply to people in a society merely by virtue of

[6] This definition is based on Bayles [1989, p. 20].

[7] In order to have value in this regard, they must be explicitly formulated, and sufficiently precise to allow people to determine readily whether their actions are or would be in accordance with the norm.

their membership in that society. Examples might include norms against lying and deception, and inflicting harm gratuitously. Such norms are universal because they are regarded as applying to everybody, not that they hold without exception. For example, it is generally agreed that the norm against lying may be violated in a variety of circumstances, but only if there is sufficiently good reason. (For an application to auditing, see Gaa and Smith [1985].)

Even though universal norms as such enjoy no special status over role-related norms in the practice of auditing and accounting, some of them are apparently so central to the practice of accounting and auditing that they are explicitly included in codes of professional conduct. For example, the Code of Professional Conduct of the American Institute of Certified Public Accountants [AICPA, 1988] states that members of the Institute:

- should perform with the highest sense of integrity [Article III],
- should strive continually to improve competence [Article V],
- should be honest [Sec. 54.01] and not knowingly misrepresent facts [Rule 102],
- are obligated to comply with a validly issued and enforceable subpoena or summons [Rule 301], and
- shall not solicit clients in a false, misleading, or deceptive manner [Rule 502].

Although these norms (consisting of both principles and rules) are contained in the Code and specifically apply only to accountants who are members of the AICPA, they are really universal norms, because they merely formalize (in the Code) standards of behaviour which are expected of all people.[8] That is, these universal norms do not, or at least need not, specifically refer to people acting in their role of accountants or auditors.

Auditors are also subject to a second type of norm, i.e., role-related norms. [Bayles, 1989, pp. 22-25] These norms apply to auditors solely in virtue of their occupying a particular role in society. Other than those mentioned above, most of the norms in codes of professional conduct are role-related norms.[9] Held [1984, p.30] makes the connection between roles and norms clear:

> A role is also a set of norms or rules concerning behavior. In accepting a role, we accept these norms. In being a lawyer, we put ourselves in a condition of 'being a lawyer,' but this should not be understood merely in terms of making the empirical description 'that person is a lawyer' true.... we are accepting the norms constituting the role of the lawyer in that society as valid norms.

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[8] Some would argue that universal norms apply to all members of the human race, no matter which culture they are part of. For a brief discussion of ethical relativism [Bowie and Duska, 1990, pp. 21-22].

[9] Not all norms are ethical. For example, auditors are subject to a variety of role-related norms, including a number of sources of generally accepted accounting principles (GAAP) and generally accepted auditing standards (GAAS). Many of these are not directly ethical; rather, they simply specify efficient ways of performing one's duties (GAAS, for the most part) or specify standard methods of accounting and reporting (GAAP, for the most part). Parts of the Conceptual Frameworks of financial accounting and reporting do have ethical content, in that they specify the priority of interests among those parties who have a stake in the content of financial reports. See Gaa [1986].

For the reasons presented at the beginning of this paper, auditor objectivity and independence are the most important role-related norms of the public accounting profession. Indeed, since independence is the only norm which refers specifically to the role of auditor, it defines and distinguishes the role of auditor within the more general role of public accountant. Although the norm of auditor independence is formulated in a variety of ways in the various codes of professional conduct, they are all basically similar. For example, the AICPA Code [1988, Article IV] states as a general principle that:

> A member in public practice should be independent in fact and appearance when providing auditing and other attestation services.

That is, the public accountant *qua* auditor, i.e., a public accountant acting in the role of auditor, should be independent. The Code also contains a more specific rule [Rule 101]:

> A member in public practice shall be independent in the performance of professional services as required by standards promulgated by bodies designated by Council.

Social Contracts

There are two ways to look at high-sounding statements such as these. One is the "positive" way, based on an economic model of contracts between principals and agents, according to which economic agents will act "rationally," with the implication that they will act in accordance with the terms of a contract only when it is in their own perceived self-interest to do so.[10] This approach to the behavior of auditors may be able to explain some (or even much) of what is observed in the practice of public accounting. While it may thus have much to recommend it, this approach cannot address, much less solve, important problems in the professional ethics of the auditing (i.e., public accounting) profession. The problems which it cannot handle (at least not without great difficulty) are fundamental issues involving the role of the auditing profession in society, and the ethical obligations which attend that role. These include the often-expressed view that auditors occupy a fiduciary role, and the existence of conflicts of interest in performing the auditor's role.

Another literature which has a surface resemblance to the principal-agent framework addresses these foundational issues directly, in contractual terms. This contractarian approach assumes that people are rational decision makers.[11] However, instead of attempting to reach an agreement about the terms of a specific contract, such as an employment or profit- or risk-sharing contract, they are attempting to achieve a collective agreement, i.e., a social contract, about the structure of basic social institutions. Within this structure, specific principal-agent contracts are agreed upon and performed.

The idea that there is an "arrangement" of some sort between the auditing profession and society has been recognized for many years. For example, Mautz and Sharaf [1961, p. 50] state as one of eight tentative postulates of auditing

[10] In addition to having a number of problems when applied to ethical issues. Even with respect to economic relationships and transactions, it is increasingly controversial. For a critique, see e.g., Sen [1987]; Etzioni [1988]; Frank [1988].

[11] Though not necessarily expected utility maximizers [Gaa, 1988].

that "professional status imposes commensurate obligations." In conjunction with a postulate stating that an auditor should work exclusively as an auditor, this postulate is said to provide "the basis on which we determine the auditor's responsibility to society, to his client, and to fellow auditors" [Mautz and Sharaf,1961, p. 50]. They stated the principle as a postulate, because they lacked a theoretical foundation for it. This section provides a brief account of such a foundation, from which additional implications are also derived.

The contractual approach to institutional issues has been used as an analytic foundation in business ethics [e.g., Donaldson, 1982; Keeley, 1988; Dunfee, 1991] and in financial accounting standard setting [Gaa, 1988; Noreen, 1988]. The subject of the social contract in this case is the structure of the relationship between auditors and various interested parties, i.e., their constituents. Specifically, the terms of the "contract" characterizes the role of auditors, by specifying the rights and duties of auditors vis à vis third parties.

As such, the analysis is clearly normative in its focus on the actions which auditors must perform, may perform or may not perform, and the relationships which they must, may or may not have with others. Within the bounds of this social contract, auditors and their clients may make principal-agent contracts which are in their mutual self-interest. But contracts which violate the conditions of the social contract are not allowed, since they violate the norms defining the auditor's role. An analysis of this social contract is briefly sketched out here [for more details, see Gaa 1990].[12] The relationship of auditors with other members of society is governed by general principles and rules. As indicated above, this means that an agreement on the role of auditors is a general societal agreement.

The structure within which this contract is constructed is analyzed as a game with two players, each of whom is trying to obtain the "best deal" possible. One player in the game is the auditing profession as a collective whole, represented either by prominent individuals or by an organization of public accountants. The other party is society, taken as a whole. The purpose of the game is to settle on the role of auditors in society, which consists in an equilibrium agreement specifying both the rights of auditors to practice their occupation, and the social responsibilities which they agree to honor in exchange for these rights. Thus, there is a quid pro quo: public accountants collectively gain the benefits of organizing as a profession, such as the right to regulate their admission to the profession and to impose standards. In exchange for this autonomy, it agrees to act in a socially responsible manner. This is accomplished in part by establishing norms of competence [Moore, 1970], specifying, e.g., the training required to become an auditor, and principles and rules defining the standard of behavior expected of practicing auditors. Included among these norms are standards of ethical conduct, such as are contained codes of professional conduct. Because the profession will need to provide continuing assurance to the rest of society that it is holding up its end of the bargain, these rules and principles must specify clear and enforceable standards of behavior, and will require an effective

[12] The analysis presented here is about the overall structure of the relationship between the auditing profession and the rest of society. The recent "expectations gap" controversy in the U.S. was a disagreement between the public accounting profession and "the public" (in the person of members of the U.S. Congress and the Securities and Exchange Commission), within the overall social structure, about the role of auditors. For an analysis of this particular controversy, see Gaa [1991].

enforcement mechanism.

Contractarian analyses of ethical theories and principles are sometimes criticized on the grounds that they concern only hypothetical agreements between hypothetical people, and as such have no normative force on actual people in actual situations. This is a controversial matter [Davis, 1992] Whatever the force of these criticisms in general, they do not apply in this instance. The reason for this is that there is in fact an agreement between auditors and society, as evidenced for example by legislation recognizing the special status of professional organizations of public accountants, "local" licensing laws, and recognition in corporation and securities laws. For example, the Securities Acts in the U.S. require that the financial statements of publicly held corporations be examined by independent auditors. In exchange for this benefit, it is agreed that there will be public oversight of the auditing profession. In short, auditors have agreed to act in a socially responsible way in exchange for certain benefits granted to them by society.

The contractarian approach shows that auditors are rational to make an agreement with society, which specifies their role. By accepting the benefits bestowed by the social contract, auditors voluntarily accept a set of rights and responsibilities governing their behavior. That is, contract theory provides a theory about the ethical foundations of the profession (implicit in the specification and acceptance of their social role). This has major implications. For example, unlike the economic view mentioned above (according to which an auditor is rational to renege on a contract whenever it is in her self-interest to do so), the social contract approach says that auditors are obligated to act in accordance with the dictates of that role.

The Moral Point of View

The moral point of view has several important components. First, moral agents are supposed to act in the interest of all members of society, and not just in their self-interest. In addition, the interests of every member is to count equally. Second, on the plausible assumption that a person's actions cannot be expected always to maximize the interest of every member of the community, a further implication is that moral agents should expect that at least sometimes they ought to perform an action which is against their own self-interest. In addition, the moral point of view requires that the rules and principles governing people's behavior must be generalizable. This means that no individuals have special status exempting them from the principles; rather, they apply to all people who fit within their scope.

This may be applied to the institution of auditing. First, the obligations constituting the role of the auditor apply to all auditors alike.[13] So, the moral point of view is satisfied by auditors if they act in accordance with their role, i.e., in accordance with the obligations specified in the social contract, and with the rules which interpret the general terms of that agreement. By agreeing to this arrangement, auditors essentially promise (in exchange for a fee) to act for the benefit of others, in accordance with principles and rules governing their

[13] It is a little more complicated. For example, the specific rules and principles which constitute the auditor's role may have exceptions, which are either explicitly stated or implicitly understood. In addition, duties (and rules) may conflict, forcing the individual to decide which one has priority. These observations do not reduce the force of the universalibility criterion itself.

actions. In order to satisfy the requirements of the role, auditors are no longer free to act exclusively in their own self-interest in the performance of audit engagements. That is, having voluntarily agreed to act in accordance with the role of auditor, they should expect that sometimes they will be morally obligated to perform an action which is not in their own interest.[14]

In conclusion, auditors are obligated to act in accordance with a set of moral obligations (which specify their social role) because they have agreed to them. They are not free to violate the role of the auditor, even if it is in their self-interest (and thus economically rational, according to the conventional economic point of view) to do so. Rather, it is rational for auditors to make a social contract specifying their role and, in making that agreement, to agree to act in accordance with its terms. Making a contract implies an expectation that the other party will abide by it.[15]

Objectivity, Independence and Conflict of Interest

As noted above, a contract between the organized auditing profession and society is in fact readily identifiable (even if its exact terms are both vague and variable over time [Gaa, 1991]). Statements of the moral point of view may be found in the profession's own pronouncements. For example, the preamble to the Principles section of the AICPA Code of Professional Conduct [AICPA, 1988] states the following:

> "The Principles call for an unswerving commitment to honorable behavior, even at the sacrifice of personal advantage."

This code also proclaims that [AICPA, 1988, Sec. 54.01]:

> "Service and the public trust should not be subordinated to personal gain and advantage."

The normative approach takes such statements of the professional organizations literally and seriously, i.e., as statements of norms which partially characterize the role of the public accountant. Statements of principles and rules are important from the moral point of view, precisely because they obligate members of the profession to adopt the moral point of view. In essence, they are promises to the rest of society, and are morally binding on auditors in the same way any promise is.

An alternative interpretation of such statements is that they are intended as political gimmicks, i.e. ritual statements empty of content, intended to fool outsiders into believing that auditors are actually concerned with "the public interest." Thus, the ethical analysis of the role of auditors might strike some as naive or far-fetched. For example, some might claim that auditors will act in accordance with their own perceived self-interest, no matter what a code of conduct might say. Whether auditors really do act as claimed, and whether a belief to the

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[14] At the same time, if acting as an auditor required auditors regularly to act against their self-interest, either they would seek to re-negotiate the social contract or (since they are not obligated to continue to act as auditors) they would cease to act in that role [Gaa, 1990] However, as long as they act in that role, they are obligated to act in accordance with its requirements.

[15] It would be inconsistent for a person to have such an expectation, and also to hold that she is free to violate it at will. Giving oneself a privileged position, such that one is free to violate contracts while others are obligated to carry them out, cannot be consistently generalized as a universal rule [Bowie and Duska 1990, Ch. 3].

contrary is naive, are empirical questions, about which systematic evidence is sketchy at best.[16]

In spite of the fact that we don't know much about how auditors act, two conclusions seem safe. One is that it surely is naive to believe that all auditors always act in accordance with the obligations of their role. Second, regardless of that, it is not naive for society to attempt to determine whether auditors are in fact acting in accordance with their contractual obligations, and to hold them accountable whenever their actions are judged to violate the norms of the auditor's role.

It is important to note that even though the general principles in a code of conduct are not intended to be enforceable, they still have normative force. This is because they state ethical obligations of professional accountants. In fact, enforceability has little to do with it. In order for a norm to be enforceable there must exist a) an explicit rule, b) an investigation system to discover and investigate alleged transgressions, and c) a judicial system to ascertain whether an action is a violation of the rules, and if so, what penalty ought to be inflicted. Many social norms are not enforceable, in this sense. They are no less important for that, because in general, and in the case of professional codes in particular, such norms are the foundations for the enforceable parts of the codes (i.e., the rules). In fact, the rules exist in order to implement the Principles (insofar as enforcement is both desirable and possible within the context of the member's basic legal rights). Basically, the statements from the AICPA code quoted above make the general point that auditors do recognize the existence and normative force of their social contract. It remains to consider the role of auditors, vis à vis other parties, in more detail.

Objectivity and Independence

Objectivity and independence are closely linked concepts which occupy center stage in the codes of professional conduct of the various professional organizations of public accountants. The reason for this is clear from the foregoing analysis. Since the role of the auditor is determined as the result of social contracts between society and the organizations representing members of the public accounting profession,[17] such codes are the "official text" of such agreements. So, what are the meanings of auditor objectivity and auditor independence? At least as a first approximation, they mean what the code says they mean. Unfortunately, they are not well-defined in any of them, because they are vague, ambiguous, and various interested parties may disagree about just what the

[16] As noted above, there are plenty of examples of situations in which people commonly act in ways which are not easily explainable on self-interest grounds. Nevertheless, the possibility exists that such behavior never occurs in auditing. Empirical studies which show that behavior is consistent with self-interest maximization are not enough to settle the issue. Such studies would also have to be strong enough to show that auditors never act against their self-interest even in situations in which (according to, say, the tenets of their code of conduct) they should. Notice that to perform such a test would require a criterion of what is in a person's self-interest independent of revealed preference.

[17] Each professional organization whose members conduct external audits may be interpreted as having a slightly different version of the basic social contract, in the sense that the precise wording differs slightly from code to code. (Detailed comparison of various codes is beyond the scope of this paper.) This is not so easily recognized in the U.S., since one organization represents virtually all auditors. However, other countries have their own organizations, whose codes of conduct and standards of professionalization (e.g., educational requirements) differ.

social contract calls for.[18]

Nevertheless, the statements in the codes of conduct of the professional organizations are the primary source, and in spite of their shortcomings, provide important information about the content of the social contract.

The analysis in this section examines the meaning of these concepts, using the *Guidelines on Ethics for Professional Accountants of the International Federation of Accountants* [IFAC, 1990].[19] The Guidelines has two sections, one concerning public accounting in general (Part A), and the other confined to the auditing (attest) function (Part B).

According to the IFAC Guidelines, the principle of objectivity is the following:

> A professional accountant should be fair and should not allow prejudice or bias or influence of others to override objectivity [Introduction, para. 15].

According to Part A:

> The principle of objectivity imposes the obligation on all professional accountants to be fair, intellectually honest and free of conflicts of interest [Para. 1.1].

Part B of the IFAC Guidelines, which concerns accountants in public practice, expands only slightly on the special obligations of auditors over and above their obligations as public accountants. It says only that:

> Professional accountants in public practice when undertaking a reporting assignment should be independent in fact and appearance [Para. 8.1].

As is normal with codes of the professional organizations, this statement is followed by a list of situations in which a public accountant's independence would be questioned [Paras. 8.3-8.11].[20]

The ethical content of these statements is clear and simple: They essentially say that public accountants should adopt the moral point of view in deciding on

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[18] For example, the Continental Vending case hinged on the meaning of "fairly presents" in the standard auditor's report. The profession claimed that it meant only that the financial statements were prepared in accordance with generally accepted accounting principles. The court disagreed, saying that it meant more than that. Thus, in this case, the parties to the social contract (i.e., auditors as represented by their firms and the AICPA, and the general public as represented by the judge and jury in this case) disagreed about the terms of the social contract. See AICPA [1970].

[19] IFAC is an international organization whose members are the professional organizations in the various countries. Professional accountants are members of the member bodies of the IFAC, and not members of IFAC directly. Based on the belief that the worldwide accounting profession has a number of important common objectives and principles, IFAC's purpose is to develop standards which will be used by its member bodies to harmonize practice around the world. It is useful to base the analysis in this section on the IFAC Guidelines, because it reinforces the view that codes of conduct are more than a codification of legalistic rules which pertain to a specific legal jurisdiction (and professional organization). In any case, the codes of professional conduct for North American organizations (i.e., the American Institute of Certified Public Accountants, the Canadian Institute of Chartered Accountants, and the Certified General Accountants Association of Canada, and their constituent organizations) are quite similar.

[20] These situations include the more-or-less standard categories of financial involvement with, or in the affairs of, clients; appointments in companies; provision of other services to audit clients; personal and family relationships; amount and nature of fees; acceptance of goods and services from client; and ownership of the public accounting practice.

their actions. Lack of prejudice and bias, and fairness and honesty suggest a sense of neutrality or equality, in serving the interests of the various parties who have a stake in the product of the auditor's work (i.e., the auditor's report). Freedom from conflict of interest recognizes that the interests of these parties (including the auditor's own interest) may conflict in some cases, and that a priority among these interests must be established. More detailed analysis of the concept of conflict of interest, via explicit pronouncements provides further insight.

Conflict of Interest

As Beauchamp and Bowie [1988, p. 472] point out, conflict of interest requires the existence of a role in which a person has a conflict either between a role obligation and her self-interest, or between two different role obligations. Furthermore, the agent must exercise judgment in the performance of that role. The conflict lies in the fact that influences on the agent, or the agent's loyalties or temptations might lead her to act in a way which is contrary to what the second person has a right to expect.

Based on an analysis of the *Code of Professional Responsibility* of the American Bar Association, Davis [1982, p. 24][21] formalizes these ideas in the following definition:

A person P_1 has a conflict of interest in role R if, and only if:

a. P_1 occupies R;
b. R requires exercise of (competent) judgment with regard to certain questions Q;
c. A person's occupying R justifies another person relying on the occupant's judgment being exercised in the other's service with regard to Q;
d. Person P_2 is justified in relying on P_1's judgment in R with regard to Q (in part at least) because P_1 occupies R; and
e. P_1 is ... subject to influences, loyalties, temptation, or other interests tending to make P_1's (competent) judgment in R with regard to Q less likely to benefit P_2 than P1's occupying R justifies P_2 in expecting.

Application of this definition to auditing is relatively straightforward. Auditors occupy a role which specifies the services which they are expected to perform, i.e., the performance of an audit (or other attestation services), including the publication of an auditor's report. Audits require significant amounts of professional judgment. The role of auditor also specifies who are the primary beneficiaries of the auditor's judgments: society at large, including especially potential and actual investors and creditors, financial analysts, and other constituents who are regularly listed as the users of audited financial reports. Furthermore, the social contract between the profession and society justifies the latter in expecting that the judgments required will be exercised in their interest. The last clause of the definition is critical: An auditor has a conflict of interest if there is any other interest (including obligations to other parties, such as clients) which would decrease the likelihood that the auditor's report is less reliable than one

[21] This definition is also used by Gunz and McCutcheon [1991].

has a right to expect.[22]

Whether an individual has a conflict of interest in a particular situation, depends on whether there is an influence, loyalty, temptation, or other interest which would tend to cause society (or its "designees," the users of the reports) to be less likely to benefit from the audit than it has a right to expect. Because of the auditor's central position in the situation, she would not be the best judge of the likelihood of influence. Instead, the beneficiaries themselves should be the judges.[23] Although the likelihood that an agent's judgments will be influenced to the detriment of the beneficiaries is a matter of degree, Davis finds it useful to distinguish three levels of conflict of interest. Actual conflicts of interest refer to situations in which it is certain that a beneficiary will be adversely affected by the auditor's actions. The second category consists of latent conflicts of interest, in which the individual is in a position where there is a "reasonable probability" that the beneficiary will be adversely affected. In cases of latent conflict, there is no actual conflict, but it is reasonable to foresee that a change of circumstances would yield an actual conflict. Third are potential conflicts of interest, in which it is foreseeable that the agent might be in a situation producing an actual conflict of interest.

An example of an actual conflict involving an auditor is the Fund of Funds case, in which the accounting firm owed a duty to two clients, and it was impossible to satisfy both [Gunz and McCutcheon, 1992]. Other examples include an auditor who has a material ownership interest in the client firm; an auditor who takes a bribe from a client in exchange for a clean opinion; and an auditor who accepts an engagement, the fee for which is contingent on the client obtaining financing. Examples of latent conflicts of interest include a public accounting firm which performs management advisory services for an audit, or forms joint ventures with an audit client. These situations do not imply that the interest of either the public or the client have been sacrificed, but there is a reasonable probability of that, at least in many people's eyes. Examples of potential conflicts of interest include the possibility that a personal relationship between individual auditors and clients may influence the auditor's judgment, and the fact that an auditor's fee is paid directly by the client (rather than through some other arrangement, such as from a pool of funds).

It is evident that under the present institutional arrangements, the auditor-client relationship has built-in conflicts of interest to some degree. The independence rules[24] address this problem by claiming to forbid any conflicts of interest. According to the definition presented above, however, such a restriction is infeasible, since auditors always have at least a latent conflict of interest, vis à vis their clients. However, the independence rules do have a function, which is

[22] Two important questions are the following: What does a reader of an auditor's report have a right to expect? What conditions would render the auditor's report less reliable? These questions are essentially the issues which arise whenever an "expectations gap" arises, and when the problem of the scope of services provided by public accounting firms arises. They will not be discussed here.

[23] This is analogous to the "perspective of the deceived" as the benchmark for evaluating the justifiability of deception. See Gaa and Smith [1985]. Presumably, the judge of the likelihood of adverse impact would be unbiased and reasonably well informed about financial accounting and reporting, the technical aspects of auditing, and the operation of financial markets.

[24] The Code of Professional Conduct of the Institute of Chartered Accountants of Ontario [ICAO, 1988] defines objectivity in essentially the same way that other codes define independence. The ICAO has no principle corresponding to the objectivity in the other codes. Hence, the discussion of independence in the text applies to the ICAO code provisions on objectivity.

to forbid auditors from performing audits when there is either an actual conflict of interest or a "high" degree of likelihood (rather than just a "reasonable" likelihood) that a potential conflict of interest would become actual. They boil down to saying that a range of auditor-client relationships must be avoided, because of the likelihood that the interest of the client will cause the auditor's report to be less reliable than the beneficiaries have a right to expect. The rules do allow potential and some latent conflicts of interest.

Although this terminology is unfamiliar in the context of auditing, these concepts are not entirely novel. First, it resembles fairly closely the statement of Mautz and Sharaf that there is no necessary conflict of interest between auditors and their clients [1961, p. 44-46]. Second, it is more useful than the rule-oriented distinction between independence in fact and independence in appearance[25], which draws a false dichotomy, masking the judgmental nature of the concept of conflict of interest. In this way, it also conflicts with characterizations of independence as an all-or-nothing matter [Lavin, 1976]. On the other hand, it resembles the definition of Simunic [1984, p. 679]:

> ...any situation which alters incentives such that a self-interested auditor is more likely to ignore, conceal, or misrepresent his findings is described as decreasing the auditor's independence. A setting where an auditor must evaluate (trade off) the benefits and costs of truthful reporting can also be described as a conflict of interest situation.

Third, according to this definition, auditors are never free of conflict of interest, although they may be free of actual conflicts. As long as an auditor's relationship with her client is not forbidden by an explicit rule as either an actual conflict of interest or an expressly forbidden potential conflict, she is free to perform an audit. This means that she must exercise professional judgment in a situation where she might be acting in her own self-interest or in the interest of another party, at the expense of those who have a right to expect that their interests will be served. However, the principle (and rules) of independence provide no guidance to auditors on how they ought to proceed in the face of latent (or potential) conflict of interest. The principle of objectivity, i.e., act according to the moral point of view, provides general guidelines, but does not provide any specific decision rule, procedure, or algorithm. No set of rules will be a complete guide to behavior, for a number of reasons. First, rules are incomplete, in that they do not specify actions for every situation. Second, they are vague, meaning that in many cases they require judgment in deciding whether a given situation falls within the scope of the rule or not. Sets of rules may also conflict, in the sense that one valid rule may specify one action, while a second valid rule may specify another action or forbid the action called for by the first rule.[26]

Since conflicts of interest are a regular feature of the performance of the auditor's role, it is important that the auditor understand whose interests are to be given priority. It is not necessary for the auditor to actually attempt to assess all of the possible consequences of all of her possible courses of action for all members of society, when making a decision. Instead, the rules and principles in auditors' codes of professional conduct function as guides to the auditor in

[25] The ICAO Code [ICAO 1988] does not use the terminology of independence in fact and appearance, focusing more explicitly on conflict of interest.

[26] For example, the rule requiring disclosure of material information about a client may conflict with the rule requiring confidentiality of client information [Beach, 1985; Gunz and McCutcheon, 1992].

attempting to carry out the demands of her role. As such, they should provide a relatively clear and simple way for her to act in accordance with the moral point of view: The interests of members of society, including both actual and potential creditors and investors, but not including the client's management or the auditor herself, are paramount. Among other things, this means that the possibility of actual conflicts of interest are so great in some situations that the rules of the codes of conduct forbid auditors from performing audits at all.

Acting in the interest of other parties, in the face of uncertainty and possible conflict of interest is a daunting task, requires careful and sophisticated judgment. How well equipped is an auditor to perform the tasks to which she has agreed?

Moral Expertise

The job of the auditor requires technical expertise. The previous section presented an analysis of the concepts of objectivity and independence, according to which the auditor is supposed to make moral judgments (from the moral point of view), and in the case of independence not to put oneself in a position where there is a significant chance of benefitting personally at the expense of other (external) interested parties. Thus, auditors are expected by the social contract to exhibit socially responsible behavior.

Nevertheless, they might fail to do this by acting in their own self-interest (so to speak, in willful violation of their obligations) at the expense of others. This has already been dealt with. But they may also fail to act in the interest of those to whom they owe a duty for "innocent" reasons. Suppose that an auditor is ethical, in the sense that she has committed herself to act in accordance with her obligations to others, because she has voluntarily agreed to do so via her acceptance of the role of auditor. There is still a difficulty, for there is no way of guaranteeing that an auditor will successfully satisfy the ethical requirements of her role, even with the best of motives. Instead, she might fail to act in accordance with her obligations due to a lack of ability to judge appropriately what action accords with the moral point of view. Auditors have a multitude of rules governing their behavior, and it is important that they follow them. Nevertheless, no set of rules is a complete guide to ethical behavior: for example, the rules themselves may be incomplete, and sometimes they ought to be broken.

This section advances some tentative ideas about how progress might be made in understanding how auditors make ethical judgments within the context of their ethical obligations. The idea is that both technical expertise and moral expertise are necessary in order to fulfil the technical and moral aspects of the auditor's role. Thus, the ability to make ethical judgments in accordance with the moral point of view may be regarded as a form of expertise in auditing.[27]

[27] Distinguishing between technical and moral expertise might suggest to some that they are two radically different kinds of expertise. For example, if one believed in a radical distinction between normative and descriptive theories or issues, or between empirical and normative domains, or believed that science is value-free or value-neutral, one might be tempted to come to make this distinction between types of expertise. This is not implied by the distinction in the text. For an analysis of the underlying problem, see Gaa [1977]. The distinction between technical and moral expertise should be interpreted as focusing on the issues being addressed by an auditor in a particular situation. So, for example, an auditor who is planning an audit engagement has a number of technical judgments to make, requiring technical expertise. As part of the overall planning process, there may be some ethical judgments required, calling for ethical expertise. Or, an auditor may be trying to

The purpose of the rest of this section is to make an argument for the plausibility of this view, and to suggest ways in which the process of making ethical judgments may be studied through the lens of expert moral judgment.

Philosophical Aspects of Moral Expertise

The first issue to address is whether the concept of a moral expert makes sense at all. A common view about ethics holds that ethical judgment is "subjective," i.e., that it is not subject to standards of rationality or that it is not objective in some other sense. For example, it might be claimed that ethical judgment is merely intuitive or based on emotion.[28] Alternatively, ethical judgment might simply be the product of learned patterns of behavior. If either of these positions were correct, the concept of a moral expert would be highly suspect. For, if it is impossible to say that one moral agent is better at making moral judgments, then the concept of moral expertise in particular is open to question. This issue is extremely important, since it relates directly to the foundations of auditors' obligations to society: if the concept cannot be adequately defined, then it is not clear how to determine whether an auditor is honoring the social contract in a given situation.

The concept of a moral expert has received some attention from philosophers [e.g., Singer, 1972; Szabados, 1978; Nielsen, 1978] As Szabados [1978, p. 123] points out, expertise is usually thought of as involving the efficient achievement of an agreed-upon objective or value, whereas ethical issues arise where values conflict. Perhaps not surprisingly, these discussions concern whether moral philosophers are moral experts, in view of their analytic skills and understanding of moral concepts and principles. A common conclusion is that these skills and understanding are helpful, but that additional factors (which moral philosophers have no special access to) are required in order for one to be a moral expert.[29] For example, one must be able to gather, select, and combine information about the specific issues or situations calling for judgment [Singer, 1972, p. 116]. Szabados's [1978, p. 122] conclusion is that with a number of provisos, the concept of moral expertise does make sense:

> Clearly there are skills, tasks and abilities involved in being moral at which some people are better than others. It is also plain that these skills can be taught and the relevant abilities can be more or less developed. It is these features that lend credibility to the idea of moral expertise.

This general statement raises immediately the question of whether auditors in particular can be moral experts, and (if so) to what degree. This is crucially important, since there is no mechanical or rule-bound method to guarantee that auditors (or anybody else) will make the "right decision" in an ethical situation.

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decide what form of audit report to issue, in a situation where there are a number of ambiguous and vague points regarding the audit evidence collected, or the extent of disclosure of major items. Such a judgment may be primarily ethical, in the sense that the impact of her decision on the various interested parties may be the primary focus. In such a situation, moral expertise would be critical.

[28] This sort of opinion might in fact account for the fact that ethical judgment has not been a subject of research in auditing until recently, and is still minor in comparison with the number of studies done on other aspects of auditing expertise.

[29] Singer [1972] concludes that moral philosophers may be superior moral judges, a view rejected by Szabados and Nielsen.

Indeed, without some concept of expertise, the whole question of auditors' obligations to act from the moral point of view would be suspect.

Psychological Aspects of Moral Expertise

The cognitive approach to expertise emphasizes the knowledge of the expert and the cognitive process through which judgments are made. Accordingly, whether a "correct" decision has been made is less important than to understand how experts make their decisions. The cognitive approach to expertise is appropriate for the purposes of this paper, for two reasons. First, it has been frequently pointed out that auditing is filled with situations in which there is no external criterion for determining the correctness of an expert judgment. According to Gibbins [1984, p. 116; see also, e.g., Bedard and Chi, 1992, p. 15; and Davis and Solomon, 1989],

> As problems such as lawsuits have increased and accounting firms (and the profession) have grown large, pressure has increased to ensure that quality [of professional judgment in public accounting] is sufficient. Measurement of quality according to outcomes is difficult because many important outcomes ... can follow actions by a long period of time and responsibility for particular outcomes can be diffused among a number of actions. In such circumstances, procedures to maintain quality turn on the apparent wisdom or consistency of the action at the time it is implemented, without reference to any specific outcome.

Thus, expert auditors typically act in situations in which there is no useful externally given criterion to be used either to guide the judgment or as feedback to help an auditor learn over time how to make professional judgments "better."

This observation is reinforced by the second reason for adopting the cognitive approach to expertise. By their nature, ethical issues are not subject to any type of independent criterion of correctness, or algorithm which will guarantee that the "right" action is taken. Rather, as indicated above, they involve conflicts among the interests of individuals, in which the interests of some will be given priority over the interests of others. Ethical principles may play a role in the process of deciding on a course of action, but there is no guarantee of "success." This observation is closely analogous to the philosophical concepts of procedural justice, in their focus on process versus outcome. Perfect procedural justice requires that there exist both a criterion of what counts as a just outcome, and a procedure guaranteed to reach that outcome. Imperfect procedural justice requires a criterion of a just outcome, but lacks a procedure which guarantees success in applying it. The ethical situation of auditors is analogous. There are external criteria in the required sense. One approach, based on the expected consequences of one's actions, holds that the auditor's actions are supposed to maximize the welfare of members of society.[30] Another approach is based directly on the existence of fundamental duties of accountants [Ruland 1984, 1989; Ruland and Lindblom, 1992] But there is no decision procedure for guaranteeing that the criterion is satisfied. We are left with the legitimacy of the process itself as a criterion of appropriate behavior.[31]

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[30] The various ethical theories differ among themselves in their interpretations of what the welfare of society means, and some would deny that welfare in any sense is the appropriate criterion for determining what counts as "ethical" behavior.

[31] This is the general approach adopted by Gaa [1988; see esp. pp. 136-7] for the development of a

Expertise has been defined in a number of ways [see, e.g., Bedard, 1989; Davis and Solomon, 1989] Following Bedard and Chi [1992], the definition used in the remainder of this paper is that of Frensch and Sternberg [1989, p. 158]: "the ability, acquired by practice, to perform qualitatively well in a particular task domain." According to them, expertise has three main components. First, it is acquired by practice, which means that performance of the skill is a matter of degree, and that people thus exhibit degrees of the skills that make up a particular form of expertise. Second, the quality of performance is the criterion of expertise, rather than, e.g., speed of execution of a task or years of experience at performing it. Third, according to Frensch and Sternberg, the performance of experts is superior in quality to that of non-experts. In short, experts are those people who perform well at something important.

While all three of these aspects of expertise are important to the development of a concept of moral expertise, the third deserves additional mention at this point. For, the notion that people with greater expertise do a task better than those with less expertise is an inescapably normative idea. Making qualitative superiority a criterion of expertise presupposes some value judgments about what kinds of skills are important, and what kinds of performance should be rated as superior to others. It is thus clear that the concept of expertise is itself value-laden: an expert is someone who is *good* at doing something *important.* Thus, speed of performing a task is an important and valuable feature of expertise *(ceteris paribus)*, since it reduces the cost of performing an audit, but it is not part of the definition of auditor expertise, nor is it a primary component of the social contract.[32] In the case of the auditor, the auditor is supposed to be good at something society regards as important, as contained in its social contract with the profession. Furthermore, expertise in one task or in one domain does not imply the possession of expertise in some other domain.

Expertise involves the use of judgment in the performance of a task, where judgment is defined [Gibbins and Mason, 1988, p. 4] as "the process of making a choice, a decision, leading to action." The possibility that auditors may exhibit moral expertise (or the lack thereof) does not seem to have been recognized explicitly in the literature. At the same time, the possibility has not been excluded. For example, Gibbins and Mason [1988, p. 5] define professional judgment as:

> [J]udgment exercised with due care, objectivity and integrity within the framework provided by applicable professional standards, by experienced and knowledgeable people.

An expert professional, then, combining the above definition with Frensch and Sternberg's definition, is one who makes professional judgments in a manner which is qualitatively superior. Two points should be noted about this definition. The first is that the definition of professional judgment contained in it imports ethical concepts directly into the definition of an expert professional. Thus, no professional auditor can make professional judgments independently of ethical norms or standards. Second, this definition is sufficiently general to encompass moral expertise, which may be defined as the ability to make ethical

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theory of standard setting for corporate financial accounting and reporting.

[32] Frensch and Sternberg point out, for example, that speed tends to decline with age, but there is no particular reason to believe that the quality of performance declines with age.

judgments in a qualitatively superior way. In the case of auditing, the ethical judgments in question are those implied by the obligations imposed on auditors by the universal norms and the role-related norms specified by their social contract to perform qualitatively well in a particular task domain.

Moral Judgment and Moral Expertise

The abstract concept of moral expertise requires a more concrete interpretation. A promising candidate is the theory of moral development. According to Rest [1986, p. 7f], moral behavior has four components. One is that a person must be able to recognize a situation as having an ethical component, and therefore requiring an ethical judgment. This involves recognizing that an ethical conflict exists, determining what courses of action are feasible, who is affected by these actions, and how they would be affected. Second, the individual must make a judgment about which course of action is morally right[33], and *ipso facto* ought to be performed. Third, an individual must be committed to morally appropriate action, in the sense that she gives priority to ethical values and principles over personal values. Fourth, the individual must have enough perseverance, ego strength, implementation skills, and perhaps courage, to actually carry out her intentions to act according to her ethical judgment of what action ought to be performed.

It appears that three of these components of moral development (i.e., the first, second, and fourth) may involve some form of skill or expertise. For example, personal experience shows clearly that the ability to recognize the ethical dimensions of situations is a skill that individuals possess in varying degrees, and that it can be developed. This component of the moral development of auditors is examined by Shaub, Finn, and Munter [1992]. Both in general, and in the case of accounting in particular, the second component has received most of the attention of researchers. If this is a promising line of research, this component probably would be its focus. For this reason, it will be helpful to provide a brief review of the Kohlberg-Rest theory of moral development.

According to the psychological theory of moral judgment, as developed by Kohlberg [1984], Rest [1986], and others, people's moral reasoning progresses through a hierarchy of developmental stages, in which they learn how to deal with ethical issues in increasingly sophisticated ways. According to the theory, there are three levels of moral development, termed pre-conventional, conventional, and post-conventional. Each level is in turn divided into two stages. Beginning in early childhood and extending into adulthood, people move through these levels and stages, from lower to higher. At some point, depending on such things as their cognitive abilities, level of education, and the nature of their experiences, development ceases.

At the pre-conventional level, people make judgments about how they

[33] The concept of rightness is used here, following Rest [1986]. He also uses the terms just and fair. Other concepts such as honesty, or the maximization of social welfare could be added as ethical criteria. These are all different ethical concepts and principles which would serve to justify one's actions as being morally appropriate, i.e., as best or acceptable or not forbidden (and therefore allowable). No particular importance should be placed on any one of these concepts within the context of this paper, although the merits of competing ethical theories are obviously critically important in the larger scheme of a general theory of ethics for the public accounting profession.

should act purely in terms of their impact on their own self-interest. The impact of one's actions on others is relevant, if at all, only to the extent that such consequences have an impact on the individual. In the case of contracts, stage 1 moral reasoning implies that an agent would act in accordance with a contract only if violating it would cause her to be punished. A stage 2 agent would violate or abide with the terms depending on which course of action were in her self-interest. The interests of the principal would be taken into account only to the extent that it has an impact on the agent's own self-interest.

At the conventional level (consisting of stages 3 and 4), the interests of others are relevant to making moral judgments in a less direct way. In addition, it is possible (especially with stage 4 reasoning) that an individual would decide to carry out an action which is not in her self-interest to perform. At stage 3, it is important to the individual to obtain the approval of other people (e.g., parents, friends, colleagues, superiors and other associates). Thus, a stage 3 agent would act in accordance with the contract if doing so would enhance the agent's image in the eyes of the principal or other party whose approval the agent seeks.

The fourth stage is more "institutional." By this point in a person's moral development, an individual recognizes that her actions take place in the context of a fabric of social institutions, and that they may either violate or be in accordance with the norms of those institutions. Furthermore, these institutions have social value and need to be reinforced through one's actions. Thus, actions which violate the norms weaken an institution, while actions in accordance with them serve to strengthen them. So, according to stage 4 judgments, those actions should be taken which reinforce the institutions. Thus, a stage 4 individual might decide to act in accordance with a contract on the grounds that contracting is an important form of social arrangement, the success of which depends on people actually carrying out the terms of agreements which they have agreed to honor.

Stage 4 is sometimes called the "law-and-order" stage, because (according to stage 4 reasoning) one should obey the law whatever it is, and it is right to obey the law since laws help to establish, maintain, and preserve social order. For example, an agent might decide to make truthful reports of her efforts because doing so is consistent with the institutional practice of truth-telling, and truth-telling is an important practice to society.

Individuals at the post-conventional level have developed a set of basic principles which may sometimes override the dictates of the established social institutions. They recognize that social institutions are important, and that acting in accordance with them is important. Nevertheless, the post-conventional individual recognizes that there are occasions in which obeying the rules may not be the most appropriate thing to do. Two kinds of reasons for this are possible. The first is that obeying the rule or practice would conflict with more basic principles, such as a principle of justice or fairness. Second, it may be concluded in a particular situation that acting in accordance with the norms of the institution (as one normally would do) would have negative consequences which are sufficiently undesirable that the practice should be violated. For example, in an audit engagement, it would be expected that an auditor will become aware of confidential information about the client's activities. Conventional norms of practice imply that the agent should maintain their confidentiality. Stage 5 reasoning presents at least the possibility of violating the norm of confidentiality under sufficiently extreme circumstances.

In conclusion, moral judgment as characterized by the theory of moral development is a plausible interpretation of the concept of moral expertise. In terms of Frensch and Sternberg's definition, people have an ability (in varying degrees) to make moral judgments qualitatively well, i.e., in a sophisticated manner. Furthermore, according to the theory, this ability is learned and varies in degree among individuals and develops within individuals over time. In order to treat the ability to make moral judgments as a form of expertise, a couple of qualifications must be made. As noted above, the concept of expertise involves a value judgment that certain forms of behavior are qualitatively superior to other forms of behavior. For this reason, consideration of the theory of moral development as a theory of moral expertise requires making the normative judgment that higher levels of moral development are qualitatively better ways of making moral judgments.

It should be pointed out that the Kohlberg theory of moral development is an "impartialist" theory of moral judgment, which focuses on the resolution of ethical issues via such ethical considerations as principles of justice, fairness, or aggregate social welfare. As such, it has been criticized on the grounds that it does not place sufficient importance to alternative systems of thought [Gilligan, 1982; Blum, 1988; Adler, 1989; White, 1992]. Such critics would presumably deny that the stage theory of moral development has much to do with the ability to make moral judgments in a qualitatively superior manner, i.e., that it adequately captures the concept of moral expertise.[34] Nevertheless, the theory is consistent with a number of ethical theories, and has a good deal of empirical support [Rest, 1986; see also Derry, 1989; Weber, 1991].[35] Gilligan's theory presents some very fundamental questions regarding the structure of professional ethics, which are beyond the scope of this paper.

Second, it is essential to note that possession of a higher level of moral development is not the same as being a more "ethical" person. Since the theory of moral development focuses on the cognitive processes involved in moral behavior, it is not concerned primarily with either the specific actions performed, specific judgments made, or in ascribing the character of individuals. Rather, it is concerned with the cognitive process of making moral judgments. So, being a more expert (i.e., qualitatively superior) moral judge does not make one a morally superior person.

The Measurement of Moral Expertise

Moral expertise has escaped the attention of empirical researchers in audit-

[34] They might also reject the idea of moral expertise in the first place. For example, some might claim that it separates out a favored class of moral judges. It doesn't do that, except to the extent that individuals who are at higher stages (according to the theory) are classified as making them in an ethically more sophisticated way. The Kohlberg-Rest theory does not exclude the possibility that there may be other legitimate forms of ethical reasoning, and thus other forms of moral expertise.

[35] This topic requires more attention than can be given to it in this paper. For present purposes, it will have to suffice to say that the Kohlberg theory has received a great deal of empirical support. At the same time, it is not being claimed that it is a complete theory of moral judgment, and that other approaches may be "equally" valid. With particular regard to Gilligan's [1982] claims that the ethical reasoning of women is significantly different from the justice orientation of Kohlberg, studies in accounting have found that female accountants have higher scores than comparable males on the MJI [Ponemon, 1990] and on the DIT (both described below) than males [Shaub, 1992]. In a corporate setting, Derry [1982] found no difference between males and females; virtually all subjects who reported encountering ethical conflicts at work used "justice language" to describe them.

ing. As has been frequently observed [Bonner and Pennington, 1991; Davis and Solomon, 1989], a major obstacle in any study of expertise is a valid measure of expertise for the task in question. It might appear that the difficulties would be even greater in a "subjective" area such as moral judgment. In fact, however, two different measures of moral development are available. One is the Moral Judgment Interview (MJI) [Colby and Kohlberg, 1987] The MJI is a structured interview in which subjects are presented with an ethical dilemma, and asked a series of questions, the answers to which are intended to reveal the nature of the subject's ethical reasoning. The scoring system for the MJI is a form of protocol analysis, the result of which is a stage-score. The other measure is the Defining Issues Test (DIT) [Rest, 1979, 1986]. The DIT is a paper-and-pencil questionnaire, which presents subjects with a set of moral dilemmas and asks them to rank the four most important reasons influencing their choice of the most appropriate action in the circumstance. These responses are used to construct a number of scores, the most familiar of which is the P-score. The P-score expresses the importance (i.e., frequency) of principled (i.e., post-conventional) reasoning in her evaluation of the dilemmas.[36] None of the scores obtained from the test, including the P-score are intended to place subjects at a particular stage of moral reasoning. Instead, higher P-scores are indicative of more sophistication with which the subject deals with ethical dilemmas. Thus, a higher P-score may be associated with a higher level of moral expertise.

Both the MJI and the DIT have been used recently in accounting research. Examples for the MJI include Ponemon [1990], and for the DIT, Armstrong [1987], Lampe and Finn [1993], Ponemon [1991, 1992a, 1992b], Ponemon and Gabhart [1990], Ponemon and Glazer [1990], and Shaub [1992] The existence of the MJI and DIT, and the baseline measures and exploratory worked contained in the studies just mentioned, may lead to interesting research on moral expertise. This is discussed further in the next section.

Implications

Technical expertise in auditing has been the subject of much research in the last few years. In addition to its interest at an intellectual level, it has major ramifications for the profession. For, if expertise can be better understood—e.g., what skills auditors are good at, what distinguishes an expert from a non-expert, how do they become experts—then the practice of auditing ought to be capable of improvement. Progress is always important, but never more so than in the current situation of increasing competition and increasing societal expectations about the nature and quality of auditors' performance. The concept of moral expertise in auditing may be a nice idea, but it is sterile unless it has implications for research and practice. This section suggests some possible implications for academic research and for the practice of public accounting.

Before turning to some of the specific issues, it is helpful to summarize very briefly the small amount that is known about the moral expertise of accountants. All of the results reported should be considered preliminary, in view of the relatively early stage of this area of research. Only one study on the first component, i.e. the ability to recognize, analyze, and evaluate ethical situations has

[36] The DIT has been extensively validated in a number of ways in a large number (over 500 as of 1986) of studies. The DIT has been described in a review as a paradigm of measurement instruments [McCrae, 1985].

been done [Shaub, Finn, and Munter, 1992]. Their study examined the effects of personal ethical orientations, organizational commitment, and professional commitment on their ethical sensitivity, i.e., their ability to recognize an ethical issue in a professional situation. If it is assumed that an auditor with a higher ethical sensitivity is more expert (i.e., more skilled at recognizing and evaluating ethical issues), then the results are relative to moral expertise of auditors. They found that ethical sensitivity was not influenced by either the professional commitment or organizational commitment of the subject. However, an audi-

Figure 1

DIT P-Scores of Selected Groups

65.2	Moral Philosophy and Political Science Doctoral Students	Rest, 1986
59.8	Liberal Protestant Seminarians	Rest, 1986
52.2	Advanced Law Students	Rest, 1986
50.2	Medical Students	Rest, 1986
49.6	Accountants (Female, Senior)	Shaub, 1992
49.5	Practicing Physicians	Rest, 1986
48.1	Accountants (Liberal Arts)	Ponemon & Glazer, 1990
47.7	Accountants (Supervisors)	Ponemon, 1992a
46.8	Staff Nurses	Rest, 1986
46.7	Accountants (Female, Management)	Shaub, 1992
45.1	Accountants (Female)	Shaub, 1992
44.9	College Graduates	Rest, 1986
44.7	Accountants (Staff)	Ponemon, 1992a
43.6	Accountants (Third-Year Staff)	Shaub, 1992
43.5	Accountants (Female, Staff)	Shaub, 1992
43.0	Accountants (Second-Year Staff)	Shaub, 1992
42.4	Accountants (Senior)	Ponemon, 1992a
41.9	Accountants (Managers)	Lampe & Finn, 1993
41.6	Navy Enlisted Men	Rest, 1986
41.4	Accountants (Senior)	Shaub, 1992
41.4	Accountants (Male, Staff)	Shaub, 1992
41.0	Accountants (First-Year Staff)	Shaub, 1992
40.0	Adults (General Population)	Rest, 1982
39.8	Accountants (Staff)	Lampe & Finn, 1993
39.8	Accountants (Manager)	Shaub, 1992
38.6	Accountants (Male)	Shaub, 1992
38.5	Accountants	Armstrong, 1987
38.1	Accountants (Public)	Ponemon & Glazer, 1990
38.1	Accountants (Senior Manager)	Shaub, 1992
37.5	Accountants (Partner)	Shaub, 1992
37.1	Accountants	Armstrong, 1987
36.8	Accountants (Male, Management)	Shaub, 1992
35.7	Accountants (Managers)	Ponemon, 1992a
35.6	Accountants (Male, Senior)	Shaub, 1992
32.2	Accountants (Partners)	Ponemon, 1992a

Figure 2

DIT P-Scores of Student Groups

47.4	Accounting, Seniors, Liberal Arts	Ponemon & Glazer, 1990
45.9	College, Female	Rest, 1986
45.8	Accounting, Female	Shaub, 1992
44.1	College, Male	Rest, 1986
43.2	College	Rest, 1979
42.8	Business, Graduate	Rest, 1982
38.6	Accounting, Masters	Ponemon, 1992b
38.4	Accounting, Undergraduate	Ponemon, 1992b
37.4	Accounting, Senior, Public	Ponemon & Glazer, 1990
36.3	Accounting, Male	Shaub, 1992
34.5	Accounting, Undergraduate	Lampe & Finn, 1993
31.8	High School Seniors	Rest, 1982
26.7	Accounting, Freshman, Liberal Arts	Ponemon & Glazer, 1990
25.3	Accounting, Freshman, Public	Ponemon & Glazer, 1990
20.0	High School Juniors	Rest, 1979

tor's ethical orientation (i.e., idealism vs. pragmatism, and absolutism vs. relativism) were correlated with the ability to recognize ethical situations.

Most of the research to date has concerned the second component of Rest's model of moral development, i.e., the level of moral development as measured by the Moral Judgment Interview and the Defining Issues Test. The main results of the studies of moral judgment (i.e., the second component of Rest's model) studies are shown in Figures 1 and 2.[37] Figure 1 includes mean scores for a number of occupational groups, including professionals and professional students. It reveals a distinctive pattern of scores in which the P-scores of public accountants are about the same as university students (Figure 2), but lower than university graduates—and much lower than a number of other professional groups. Figure 1 also reveals a large amount of unexplained dispersion in P-scores among the study samples and sub-samples, centering roughly around the mean for the overall adult population. In addition, they show that the scores of female accountants are higher than those of males, controlled for rank in firm. The fourth interesting finding is that three cross-sectional studies have revealed a link between moral expertise (as measured by DIT P-scores in Ponemon [1992] and Shaub [1992], and by MJI scores in Ponemon [1990]) and rank in public accounting firms. Specifically, the relationship appears to be an inverted U, i.e., P-scores increase from staff to senior and supervisor, and then decline from there to manager and partner. This raises the interesting possibility that partners may not be the most expert members of the firm (with regard to moral expertise). It also raises the issue of whether (at least in the case of moral expertise) experience in a task is a good surrogate for degree of expertise [see, e.g., Davis and Solomon, 1989; Bedard, 1991; Bonner and Pennington, 1991].

[37] There is some repetition in the scores reported in both figures. For example, the scores for female senior accountants, female staff accountants, and female accountants as a group are all reported.

Since 20-25% of the population is estimated to be post-conventional moral reasoners, the data from a number of DIT studies suggest that accountants are predominantly conventional moral reasoners. Whether they are stage 3 (seekers of approval) or 4 ("law-and-order" types) is unclear at this point. On the one hand, the nearly ubiquitous presence of rules in public accounting suggest that it might be "natural" for public accountants to stabilize at stage 4. On the other hand, to the extent that public accounting firms are highly organized entities with clear procedures and goals, and with a large amount of interpersonal contact, it might be suggested that they would stabilize at stage 3. The little evidence which exists is equivocal. Ponemon [1992] found a high frequency of stage 3 responses, leading him to suggest that partners and managers (who, as noted, had lower P-scores than their subordinates) are predominantly stage 3 (conventional) moral reasoners. Lampe and Finn [1991] found a relatively high proportion of stage 4 responses on the DIT. The scores for students (Figure 2) show a similar pattern, i.e., that females may score higher than males, and that accounting students have lower P-scores than other groups of university students (with the exception of females [Shaub, 1992] and seniors at a liberal arts college [Ponemon and Glazer, 1990]).

Implications for Research

The account of moral expertise in auditing presented above is really more a proposal for a theory, requiring further development. In spite of its sketchiness, a number of empirical research questions readily arise, a few of which are outlined below. They are grouped into three categories: those concerning the concept of moral expertise per se, those concerning the realization of moral expertise in actual behavior, and those concerning its relationships to other forms of expertise.

Studies of Moral Expertise

First, the level of moral expertise of auditors deserves closer attention. With respect to moral judgment, the spread of P-scores of the various samples of both students and practicing auditors shows clearly that the factors influencing the stage of moral development need to be clarified. Second, expertise in the other components of moral development, i.e., the recognition and evaluation of ethical issues, and the factors leading from moral judgment to action, has received very little attention. Third, the existence of an independent measure of moral expertise may provide a way of investigating some of the basic relationships which underlie other expertise studies. For example, the relationship between consensus judgments and the level of moral expertise (moral judgment) could be investigated directly, rather than via the surrogate variable, experience. This would be all the more interesting since (as discussed above) the relationship between moral expertise and experience appears to be more complicated than might have been thought.

Another reason for interest in the basic relationships is based on the observations of Frensch and Sternberg [1989] and Bonner and Pennington [1991, pp. 16-17] that experts tend to be very good at making decisions in common situations because they have been able to "routinize" the decision process, whereas they are less able to handle rarely found situations. It may turn out on investigation that conventional (i.e., stage 3 and 4) moral judges exhibit a higher degree of consensus, because they are more rule-oriented than post-conventional moral

judges. Thus, it is possible that some measures of decision quality, such as consensus and consistency with professional and firm standards [Ashton, 1983; Bedard, 1991] are an artifact of auditors' predilection for following rules, rather than being indicative of a higher level of expertise per se.

Determinants of Moral Expertise

We do not know much about the factors which affect the moral judgment and moral behavior of people (such as accountants) who make moral judgments and act within the context of a) special occupational roles (such as that of professional accountant) and b) rule-governed institutional structures (such as a professional association, and employment in a public accounting firm). To the extent that it is a "pure" cognitive developmental theory, the Kohlberg-Rest theory does not help much in addressing these issues. The reason for this is that it focuses on developmental dynamics and its correlates, without a focus on the organizational forces and constraints faced by people working in organizations or professions.[38] That is, the complications which people find in their own lives, especially when they occupy roles which produce conflicts, were given less attention at first. For this reason, a broader theory, i.e., a theory of moral judgment in the context of institutional (i.e., professional and employment) settings, is needed.

Three recent attempts to provide a richer theory of moral judgment and behavior in an organizational setting show some of the possibilities [Trevino, 1986; Trevino and Youngblood, 1990; and Jones, 1991]. They build on the Kohlberg-Rest theory, which they regard as a basic theory of moral judgment and behavior, by introducing additional factors which might affect individuals' moral judgments and actions. According to Trevino, moral behavior is the result of moral judgments, but the effect of moral judgment is moderated by two sets of factors. One set consists of situational moderators. Within this group there are three types of moderators: the immediate job context, organizational culture, and characteristics of the work. According to the theory, situational moderators affect behavior both directly and indirectly by affecting moral judgment.[39] Jones [1991] identifies a number of factors which he claims influence all of the components leading up to moral behavior by affecting the intensity with which the situation is perceived. These factors of moral intensity are: magnitude of consequences, social consensus, probability of effect, temporal immediacy, proximity, and concentration of effect.[40]

Although their theories are not exactly unprecedented,[41] these theories appear

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[38] This is a simplified view, since the theory has been tested in, e.g., school settings and prisons; and the effectiveness of educational interventions has been an important stream of the total research program. Furthermore, Rest has stated [1986] that the study of moral judgment in professionals is likely to be a fruitful avenue, because professionals have explicit standards of behavior to attain, and they often are expected to explicitly justify the moral judgments and actions they take. In this sense, the proposals presented here work out some of the possibilities.

[39] The other set, called individual moderators, act directly to influence action. Individual moderators consist of: ego strength, field dependence, and locus of control. Because they do not affect the moral judgment itself, they are irrelevant to the issue at hand.

[40] In addition, Jones identifies factors which affect only the third and fourth components of the Rest model.

[41] For example, without developing a more general theory, Rest [1986] describes studies relating to ego strength (pp. 15f) and obedience to authority (pp. 12f), and other personal and situational factors (chs. 4 and 5).

to have potential for explaining moral judgment and behavior of professionals, and could be given an interpretation specifically focused on public accounting.[42] For example, Lampe and Finn [1992] and Ponemon [1992] both suggest that one of the factors influencing DIT P-scores is socialization. If so, one would also expect a high degree of consensus of decisions among subjects. The existence of some form of socialization and selection of employees is quite plausible, especially in light of the structure of public accounting firms, and of the situational moderators identified by Trevino [1986]. If this is the case, then one might find a firm effect in a sample of subjects drawn from multiple accounting firms.

One of the striking results of DIT studies of accountants is the significantly higher P-scores of female auditors and students described above. This is interesting in light of Gilligan's [1982] claim that females will score lower (even though Kohlberg's theory that does not predict any difference between males and females.) This result, which may be explained by the types of variables discussed above, clearly deserves more attention. This empirical finding raises the possibility that females might exhibit different characteristics (e.g., degree of consensus) on tasks involving technical expertise.

The Relation of Moral to Other Forms of Expertise

The definition of expertise implies that expertise is domain-specific. Indeed, Frensch and Sternberg [1989] reject the notion that there might be a unitary characteristic which underlies the various manifestations of expertise.[43] This means that there is no *a priori* reason to believe that expertise in one domain would be highly correlated with expertise in another, except insofar as the skills or domains "resemble" each other. Since technical expertise might be thought of as very different from moral expertise, one could speculate that technical expertise and moral expertise might even be negatively correlated.

On the other hand, since there appears to be a connection between expertise, consensus, and the existence of explicit standards, there may be a connection between technical expertise and moral expertise. For moral expertise, the general theory predicts no connection between level of expertise and consensus. However, one might expect that a group of subjects (i.e., auditors) who are strongly attuned to the idea of following rules would exhibit high consensus—since one might expect them to be "better" at following rules. Since the existence of a multitude of rules governing auditors indicates that they are extremely important, an ability to follow them "well" should be regarded itself as a form of expertise. Presumably, a low level of expertise in "following the rules well" involves being able to determine when a "black-and-white" situation clearly falls within the range of a rule, and then acting in accordance with it. Higher levels of expertise, then, would involve such things as an ability to balance the requirements of conflicting rules, interpreting vague rules, or interpret-

[42] For example, the Lampe-Finn study could be interpreted as a test of a hypothesis related to one proposed by Trevino [1986] Trevino's hypothesis is that people will make moral judgments at a lower level in their real work situations than for the hypothetical dilemmas. If the response items specified for the vignettes were coded according to levels of moral judgment (thereby making the vignette questionnaire into something analogous to a DIT, only more realistic for accountants), then one could compare the two scores. Likewise, Jones's theory that moral intensity could be tested by administering the vignette questionnaire to non-accountants.

[43] They make a comparison with the g construct in the psychology of intelligence.

ing the rules in novel situations. Finally, one might expect that experts at following rules (whether "ethical" or "technical") would exhibit a fair degree of consensus, as noted above. Although the theory of moral development does not presume that subjects at a given stage will make the same choices, auditors (whether expert or novice) are a relatively homogeneous group in terms of training and occupation, and are all trained in a single set of rules. So, it would not be surprising to find that they would in fact exhibit consensus.

This line of argument could even be extended to suggest that expertise (at least moral expertise) might be two-dimensional, in the following sense: Auditors have both a level of moral expertise as measured by the DIT or MJI, and also a level of expertise in terms of their possession of a knowledge structure which allows them to make moral judgments "efficiently", by helping to search for, organize, and use information efficiently in a routine fashion. The result of this efficiency or routinization may be high consensus and high consistency with external standards of behavior [Bedard, 1991]. Thus, moral expertise may be two-dimensional, in the sense that it is possible both for conventional moral judges to have high consensus and high consistency with both technical and ethical standards, and for post-conventional moral judges to have lower consensus and lower consistency with standards. Since the empirical data strongly suggest that most auditors are conventional moral judges, it might turn out on examination that auditors who are more expert than their (less experienced) subordinates at technical tasks are less expert in the moral domain—because they are "efficiency experts."

Post-conventional moral reasoning, on the other hand, implies the ability to move beyond the rules to decide when rules ought to be broken, e.g., for the welfare of society or because justice or duty demands it. Inflexibility is a price of expertise in the sense of efficiency [Frensch and Sternberg, 1989; Bonner and Pennington, 1991], and sometimes situations arise where one must recognize that the normal everyday habits and rules will not do the job, with respect to satisfying the demands of the auditor's obligations to society. It may be the rare situations which the conventional auditor is less able to handle appropriately — and which land them in court on the wrong end of a lawsuit, because "efficiency experts" would be less able to respond appropriately to such situations. From the moral development point of view, their conventional approach to moral judgments traps them—even if conventional reasoning works well most of the time.

Implications for Practice

The evidence from studies on DIT P-scores reviewed above and summarized in Figure 1 indicate that the general level of moral expertise of auditors is not high, when compared to other groups. This might signal to some people that something is radically wrong somewhere in the institution of auditing, including perhaps both the education system and the structure of public accounting firms. For, if auditors are members of a socially important profession, with explicitly agreed-upon obligations to act in the "public interest" (and *ipso facto* to make professional judgments from the moral point of view), then it might be disconcerting that a number of studies show that auditors are not particularly sophisticated moral reasoners—and that partners have the lowest scores within their firms. The low scores of accounting students serve to show that the problem—if there is one—does not originate within accounting firms. So, it is worthwhile to

examine briefly some of the issues that arise for the profession, once it is recognized that moral judgment and behavior are subject to serious study and examination as a form of expertise.

How Expert Must Auditors Be?

If further studies of the moral judgment and behavior of auditors support the studies conducted so far, some of the assumptions about the role of the auditor might merit re-examination. The social contract between auditors and society requires auditors to act from the moral point of view, which involves taking the interests of all members of society into account when making ethical judgments. One might conclude that the moral point of view requires post-conventional moral judgment. But this is not the case. "Low" DIT P-scores do not necessarily indicate the existence of a social problem, with respect to the social contract. For one thing, a post-conventional stage of moral development means that an individual recognizes the importance of rules and social institutions, and the importance of acting in accordance with them. At the same time, situations arise in which "higher" principles indicate that the conventional behavior, i.e., actions in accordance with the rules, is not appropriate. Thus, a post-conventional moral judge is capable of "post-conventional" moral reasoning, but will reason in accordance with convention much, if not most, of the time.[44] So, it appears that conventional moral judgment is compatible with the moral point of view, particularly insofar as auditors do not face "post-conventional problems," i.e., problems for which conventional reasoning is inadequate.

Rather, the question is this: What degree of moral expertise is required by auditors, in order to carry out their professional obligations? The answer is complex, but it starts with the social contract. That is, the appropriate degree of moral expertise depends on the amount of sophistication required in order to resolve the ethical issues actually confronted by auditors, in a way that satisfies the interests of all those interested parties to whom they owe a duty. One reason why most people do not reach post-conventional stages of moral reasoning is that they do not (often enough) face situations in which conventional reasoning is insufficient.[45] So, it is (in a broad sense) an empirical question as to what level of moral development is required of auditors.

The degree of moral expertise required of auditors is also a function of the set of rules which they have to follow. Acting in accordance with the moral point of view can be accomplished (at least in many cases) if one is acting in accordance with a set of rules which satisfy the moral point of view [Ruland and Lindblom, 1992]. This is an essential feature of any rule-based theory of morality. Such theories hold that there are two tiers of rational, or ethical, choice. One level concerns the choice of rules, while the second concerns the choice of actions within the constraint of the previously specified rules. Thus, the rules promulgated must satisfy the requirements of the moral point of view. Individual actions, then, should be chosen which are in accordance with the rules. Indeed, if the rules are ethically appropriate (e.g., they satisfy the moral

[44] At least this is true for Rest's version of Kohlbergian theory, in which higher stages incorporate the lower stages. [Rest, 1986] Even if one believed that the stages are discrete, then an individual's judgments (and actions) will usually be the same as the actions performed by a person at a lower stage of development.

[45] In addition, the correlation between stage of moral development (or DIT P-score) and intelligence and education suggest an intellectual component in addition to relevant experiences and challenges.

point of view), then the judgments and actions of individuals are morally justified by appeal to those rules.[46] Thus, stage 4 moral judges rely implicitly on the assumption that the rules and policies which already exist are a reliable guide to determining which actions benefit the community as a whole, and its members.

This suggests that as long as an auditor is an "expert" at following the rules (i.e., is an expert in the "efficiency" sense discussed above), she satisfies the social contract.[47] That is, perhaps society expects auditors to be good at following the rules, but does not require them to be extremely sophisticated (i.e., post-conventional) in moral reasoning skills. It should be noted that this argument presumes that conventional auditors are in fact stage 4 moral reasoners, rather than stage 3. Moral expertise, i.e., skill at making ethical judgments, is still important, since no set of rules can be expected to eliminate the necessity of judgment in applying it to real ethical problems, and the ability to follow rules may itself be a form of expertise. As long as the rules governing auditors (including generally accepted accounting principles, generally accepted auditing standards, and especially the principles, rules and interpretations in the codes of professional conduct) are ethically "appropriate"[48], then the auditor's ethical obligations are honored by acting in accordance with them.

This may explain the otherwise puzzling observation of Lampe and Finn [1993] that auditors have low P-scores, and yet auditors enjoy highly favorable public perceptions of their moral standards. Low P-scores are not an indication that public accountants are unethical, nor that public trust in the behavior of public accountants is misplaced. Consistent with this, it may be that favorable public attitudes are not based on perceptions of the sophistication with which public accountants address moral issues. Rather, it is quite possible that they are a function of perceptions of the personal characteristics of public accountants. For example, they may be held in high regard because of perceptions that accountants have integrity, are honest, act in accordance with their public duties, recognize their fiduciary responsibilities to other parties rather than act in their own self-interest, and so on. In short, demonstrated commitment to their professional duties, as contained in their codes of conduct, may be the crucial variable [Frank, 1988]. Indeed, it is not entirely obvious that society wants or needs hordes of post-conventional auditors—although there are surely ethical situations (presumably rarely occurring) where the ability and flexibility to respond in a more sophisticated manner would be highly valued by both auditors and society.

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[46] Rule utilitarianism is an example of such a theory. The various versions of utilitarianism all share the principle that those actions should be chosen which are expected to maximize the amount of social welfare. According to act utilitarianism, moral agents are supposed to choose each of their actions by this criterion. According to rule utilitarianism, the rules are supposed to satisfy the utilitarian criterion, while individual actions should be chosen which are in accordance with the rules. See, e.g., Harsanyi [1977] for an argument in favor of rule utilitarianism. See also Gaa [1988]. Note that rule utilitarianism is only one form of "indirect" consequentialism; in addition, there are many rule-based ethical theories which are not based on the consequences of actions [Sen and Williams, 1982, Introduction].

[47] The point here is analogous to the suggestion of Ashton [1983], and adopted by Bedard and Chi [1992], that complying with professional and firm standards be used as a criterion of expertise.

[48] How one would distinguish the "good" rules from the "bad" rules, and how firms and professional organizations should proceed in order to promulgate "good" rules is an enormous topic which can only be mentioned here. This problem is addressed with regard to standard setting for corporate financial reporting in Gaa [1988, Chs. 8 and 10].

Figure 3

Framework For Ethical Decision (Adapted from AAA, 1990)

A Decision Model For Resolving Ethical Issues

I. Determine The Facts
(What, Who, Where, When, How)
Including Legal, Professional, Organization Rules And Regulations

II. Define The Ethical Issues
- A. Specify The Problem (e.g., Conflicting Rights, Rights vs. Welfare, Safety vs. Rights)
- B. Whose Problem Is It?
- C. Identify Stakeholders
- D. Identify Major Principles, Rules, Values (e.g., Quality of Life, Self-Determination, Self-Respect, Financial Responsibility, Fiduciary Duties, Honesty, Integrity)

III. Specify The Alternative Actions (This May Require Some Creativity)

IV. Examine And Compare Alternatives With Respect To Ethical Considerations
- A. *Vis á vis* Principles, Rules, Values
  Rights And Duties
  Fairness And Justice
  Virtues
- B. *Vis á vis* The Consequences
  Positive vs. Negative
  Short Run vs. Long Run
- C. *Vis á vis* Laws, Rules, Regulations

V. Make Your Decision

Can Moral Judgment be Learned?

If moral judgment is indeed a form of expertise, then the question arises as to whether it can be taught, either to students or to practicing auditors (as part of their training programs). If the answer is "yes," and if one were to conclude that auditors are not sufficiently skilled at it, then it would be very important to implement ethics education into both university curricula and firm training programs. According to Bonner and Pennington [1991, p.27], there is "a strong relation between the learning environment and performance, which suggests that performance is probably poor in some tasks because auditors have not had good opportunities to acquire knowledge." They conclude that such learning would involve both formal instruction and practice. Presumably, education and training would be aimed at all relevant components of Rest's four-component model of moral behavior, including both the stage of moral development, and the skills of judgment in applying ethical principles and rules to specific situations. It is also possible that the development of suitable decision aids would increase the ability of auditors to make judgments, and to act, in accordance with

their obligations. The decision model in Figure 3 is a crude example, that may nevertheless be helpful.[49]

Empirical evidence does not exist for the first and fourth components of Rest's model of moral behavior. With respect to the second component, i.e., moral judgment, the evidence is somewhat mixed. In general, a large number of studies show that educational interventions do have an effect on moral judgment. Similar to Bonner and Pennington's [1991] conclusions regarding expertise, Rest makes the following conclusions regarding ethics education: Programs which involve either the discussions of ethical dilemmas or involving personality development produce "modest but definite" gains. Discussions of dilemmas do slightly better than personality development, while "academic" courses do not appear to have an effect. Furthermore, there is weak evidence that programs involving adults have a greater effect than programs for younger subjects. In addition, programs lasting between 3 and 12 weeks seem to work best. In sum, these general results suggest that properly designed education and training programs of relatively short duration may have a significant positive impact on the ability of auditors to make moral judgments [Rest, 1986, pp. 85f].

Conclusion

The purpose of this paper is to present the outlines of an ethical theory for auditing, based on the fundamental notion of a social contract between auditors (and their professional organizations) and the rest of society. That contract enforces on auditors certain obligations, which taken together constitute their role. Both technical and moral expertise are required. Auditors agree as part of their contract with society to be objective and independent. Definitions of objectivity and independence recognize that, when providing professional services, more than one party has an interest in the way those services are performed. These parties include employees, clients, such third parties as investors and creditors, as well as accountants themselves. The interests of these parties conflict in a way such that the public accountant is unable to maximize the welfare of all of them simultaneously. That is, there will be at least sometimes "winners" and "losers" resulting from the accountant's actions. An especially important aspect of this situation is that the accountant may find herself in a conflict of interest, such that it is possible to act in her own self-interest at the expense of the interest of others.

In view of this fact, the principle of objectivity says that the public accountant ought to act in a way that is fair to all parties. By implication, fairness does not imply that everyone will benefit to the maximum by the accountant's actions. Since this is especially important and sensitive when a public accountant is performing an attest engagement, special rules are necessary in order to assure that the existence of a conflict of interest does not actually harm others. These principles reduce essentially to the following: auditors are expected to

[49] This decision model is similar to the model in the materials developed by the American Accounting Association's Committee on Professionalism and Ethics [1990], and in Arthur Andersen's materials for teaching business ethics. The premise behind it is that such a model helps people to organize their analysis and decision making. Any decision aids developed for practicing auditors would have to recognize that there is by definition no mechanical way of making ethical decisions, as there might be for some technical issues, e.g., statistical sampling. Rather, they would probably resemble the more open-ended checklists used in other areas.

make ethical judgments in accordance with the moral point of view, and in particular to avoid certain conflicts of interest. This means that an essential part of the auditor's role is to possess a "sufficiently high" degree of moral expertise. The concept of moral expertise is presented and defined. Its relationship to technical expertise is explored, and the problem of measuring it is addressed.

A number of implications of this analysis, for both research and professional practice, are presented. Among other things, it is suggested that there may be a socially desirable degree of moral reasoning which auditors are expected to have. This expertise presumably would involve both a desirable level of moral reasoning ability, and sufficient skill in following professional and firm standards of behavior. The analysis raises important questions about the education of accounting students, firm selection and retention policies, staff training programs, and so on. How is a firm to organize itself in order to gain the efficiencies of expertise (including possibly the efficiency of conventional, i.e., stage 4, moral reasoning) and still be able to respond adequately to the relatively rare ethical challenges that "don't fit the rule book?" The importance of this issue is obvious. On the one hand, there are tremendous economic forces working on public accounting firms to maximize efficiency, and pressuring them to perform audits at "full speed ahead." At the same time, there are ethical icebergs out there in the fog waiting to sink the firm if the crew does not recognize and deal with them.

The final conclusion is an ethical dilemma, for society: In many cases, no harm is done to society by auditors acting in a conventional manner, i.e., by following the rules. In fact, society is presumably better off to the extent that auditors who follow standards very well are more efficient. Indeed, if there were a correlation between high technical expertise and conventional (i.e., stage 4) moral development, society might (to this extent) want auditors who are also conventional moral judges. The problem is that sometimes situations arise where conventional reasoning is less likely to yield the decision that society would have wanted. The losses in the savings and loan industry are spectacular examples of this, to the degree that auditors are part of the "causal chain" [Gaa and Smith, 1985]. This indicates that the social contract between society and the profession requires further clarification. If it is too much to ask that auditors will be highly expert in both technical and moral matters (since, perhaps, such people do not in fact exist in "sufficient" numbers), which type of expertise is more important? If technical expertise is more important, then society should expect what might be regarded in hindsight as moral lapses, and re-consider the penalties (e.g., through negligence suits) it places on them. On the other hand, if moral expertise is more important, then it should expect, *ceteris paribus,* that the audit industry will be less competitive, or at least less efficient and therefore more costly. In short, the expectations gap looks a little different, from the moral point of view.

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Discussant's Response to "The Auditor's Role: The Philosophy and Psychology of Independence and Objectivity"

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After reading Professor Gaa's paper for the third time, I continued to struggle with the notions presented:

- The role of the auditor in society and his or her social contract to society.
- The necessity for the auditor to have an independent state of mind in fulfilling his or her responsibility to society.
- The relationship of moral "expertise" to the auditor's social contract with society.
- The auditor's education and training and their impact on the interpretation of ethical dilemmas.
- The multiplicity of rules imposed upon the auditor and the resulting barriers in assisting an auditor in arriving at "subjective" judgments in ethical situations.

The conclusions reached in Professor Gaa's paper lend themselves—as recognized by the professor—to additional research on "moral expertise", which may result in a change in the accounting curricula. One observation in the paper that "academic research in the ethics of the public accounting profession hardly exists" certainly verbalizes the obvious. The public accounting profession has dealt with the subject of ethics as it has other issues facing the profession: when faced with an issue in an area, the accounting profession has a history of being reactive. In other words, the profession reacts by issuing detailed rules, particularly in the ethics area.

An Accountant as a Technician

In addressing Professor Gaa's paper, I believe it would be beneficial to establish a framework of one possible view of an "accountant". I will use the term "accountant" to represent a member in public accounting and frequently referred to as an "auditor." The view presented is not intended to be all-inclusive, but only to provide some perspective of an accountant's background which may lend itself to some of the observations made by Professor Gaa, particularly in the "Moral Expertise" section of the paper.

The accountant by nature is a technician and deals with a level of preciseness not generally found in other professions—the double entry system for bookkeeping and financial statements that balance and articulate. The accountant's

education consists of many courses in accounting which are technical in nature and have a level of precision again not found in liberal arts curricula. The accountant's training is based upon detailed rules from recording entries in the books of original entry to the application of generally accepted accounting principles.

The public's perception of the "accuracy" of financial statements likewise stereotypes the accountant as possessing a level of precision which may be unwarranted. While the books of original entry do balance and the resulting financial statements may articulate, there are many management estimates and judgments which the accountant must consider in his or her examination of the books and records of a company. Because there are estimates and judgments, the level of precision of the resulting financial statements lies in the "eye of the beholder." For example, the opinion as to what is an adequate estimate for an allowance for doubtful accounts may differ between management and the accountant. Depending upon the materiality, there may or may not be an adjustment to the allowance which would, in turn, be reflected in the financial statements. Moreover, the interpretation of generally accepted accounting principles is subject to the judgment of an accountant. In some situations, two accountants will arrive at a different application of generally accepted accounting principles based upon the same facts and circumstances. In other words, the age old argument as to whether accounting is a *science* or an *art* continues to haunt the accountant.

The accounting profession, as recognized by Professor Gaa, may be unique in that it consists of a multiplicity of rules with which the accountant must be in compliance to be considered an "independent" accountant. Generally accepted accounting principles are not established within a framework which lends itself to consistent results during their deliberative process by an authoritative body. This is evidenced by the number of times that an accounting issue such as business combinations or leases has been addressed by the authoritative bodies. The accounting profession has various layers recognized as "GAAP" in the United States. The Auditing Standards change over time as a result of events impacting the profession. Ethics are consistently refined based upon various facts and circumstances (both internal and external) and the dynamics of our profession. For example, a recent change by the American Institute of Certified Public Accountants (AICPA) in the independence rules concerning loans from clients has narrowed the loans that are permissible. This change was initiated due to media and regulatory reactions to a situation involving a financial institution and partners of its accountant.

In summary, the accountant through his or her education, training and on-job experience deals with a set of rules which have been characterized as "cookbook"; however, the "so-called cookbook rules" are reflective of the accountant's ever-changing environment. This background may contribute to why an accountant may not score well on the P-score as discussed in Professor Gaa's paper, because ethics are not subject to detailed rules and require subjective judgment.

Integrity And Objectivity

The notion of the social contract between the accountant and public is pervasive in Professor Gaa's paper. This contract places the accountant in a fiduciary role with the public. In other words, the accountant should act in the best

interest of society, irrespective of his or her self-interest.

The public looks to the accountant to provide an "independent" examination of a company's financial statements and to express an opinion as to whether such financial statements fairly present the financial condition of the company. The public relies on the accountant's technical expertise in accounting and auditing and likewise relies on the "moral" expertise of the accountant as well, i.e., the accountant is expected to execute his or her social contract in an impartial, objective, honest and knowledgeable way. In essence, what the accountant is selling is his or her objectivity and integrity, i.e., independence.

Objectivity and independence are addressed in the Code of Professional Conduct of the AICPA. They are discussed under Article IV—Objectivity and Independence as follows:

> A member should maintain objectivity and be free of conflicts of interest in discharging professional responsibilities...[and] should be independent in fact and appearance when providing auditing and other attestation services.

When one reviews the AICPA's ethics interpretations, such interpretations have evolved over time to focus on the notion of *independence in appearance*, a subjective concept. This notion is also prevalent in the Securities and Exchange Commission (SEC) independence requirements and the related SEC staff independence correspondence. In other words, the interpretations of independence attempt to place the interpreter in the position of an unbiased person who, when presented with the facts, would arrive at the conclusion that the accountant would *appear* to be independent. While independence in fact is considered, independence in appearance has clearly dominated the interpretations of independence since the early 1970's.

AICPA Special Independence Committee

The AICPA established a Special Committee on Independence in 1990. This Committee has focused on the preponderance of detailed rules dealing with independence and the past practice of interpreting the AICPA and SEC independence rules based upon appearance. The Committee has suggested that independence be viewed from the perspective of a *prudent person* given the facts of the situation. It recognizes that independence is both a state of mind and a matter of character. These conditions can be interpreted as "moral" as contemplated by Professor Gaa's paper.

In a draft of the independence concepts, the Committee noted that detailed rules do not have a significant influence on an individual's state of mind or character and are not effective in motivating individuals to strive to meet the highest standards in their personal or professional behavior. The Committee notes that detailed rules convey a negative message because their focus is on proscribing specific behavior.

The Committee has recommended that the present independence rules and interpretations be replaced with three broad principles:

- The audit firm and the auditor should be financially independent of the client.
- An auditor should not audit the results of decisions that are those of the auditor or the audit firm and that were not reviewed, understood and

accepted by management.
- The audit firm and the audit client should not be adversaries in litigation that is significant to the audit firm.

The Committee envisions that some type of broad statements would supplement the three broad principles and that the focus of such statements would be on independence *in fact.*

Conclusion

In my prior comments, I have attempted to set forth reasoning as to how the accountant's background (education, training and on-job experience) may result in the accountant attempting to apply in a particular situation detailed rules which he or she has applied over his or her professional career. With the interpretation of each situation, an accountant will develop a database over time which will impact subsequent decisions on ethical matters such as independence.

I have also attempted to place the notion of independence in some perspective, namely that the notion of independence has evolved from one that was based on fact to one based on appearance. Appearance is much more subjective and does not lend itself to detailed rules. It is based upon a person's life experiences. The education and training of an accountant is not based upon subjective studies, but on procedures which do not generally lend themselves to subjective judgments. For example, the accountant is trained in the double entry system of accounting.

Professor Gaa's paper raises some interesting questions for future research and education and training in the area of accountant's ethics. One might envision the accounting curricula including a course based upon case studies in ethics to broaden the accountant's perspective. These case studies may provide the accountant with a broader base to evaluate whether a situation is "morally" ethical and whether he or she is fulfilling the social contract to the public.

Before pursuing the above course, it would be well to perform research in the area of "moral expertise" to determine its applicability to the accounting profession. Questions which might be addressed in research are:

- How should "moral expertise" be defined?
- How is "moral expertise" recognized in actual behavior?
- How should concepts of "moral expertise" for accountants be related to concepts of "moral expertise" of others?
- How expert must accountants be in the "moral point of view"?
- What are the implications for education of accounting students, firm selection and retention policies, and staff training programs?

In conclusion, addressing ethics, particularly objectivity and independence, is not an easy task. These are concepts which have been with the accounting profession since its inception. Until parameters are established under which independence and ethics can be addressed, the multiplicity of rules will continue to expand because each is written to address specific facts and circumstances. The AICPA Special Independence Committee's three broad principles are an effort in the right direction. These principles would provide a basis for "moral expertise" because they are not envisioned to be embedded in detailed rules.

3

Litigation Risk Broadly Considered

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There is little doubt that litigation risk associated with the audit of financial statements, as well as other attestation assurances, is presently at a level that threatens the viability of the public accounting profession and is contrary to the public interest. A decade ago, it was infrequent to encounter a report of auditor litigation in the financial press. Today, it is virtually a daily occurrence.

A decade ago, when the Auditing Standards Board was debating and finalizing Statement on Auditing Standards No. 47, *Audit Risk and Materiality in Conducting an Audit,* an appropriate distinction was made between audit risk and audit exposure which is essentially litigation risk. The auditor was cautioned that when litigation risk was assessed as low, less extensive procedures should not be performed than would be otherwise required under generally accepted auditing standards (GAAS). Today, litigation risk is never assessed as low and the aforementioned cautionary note might be better restated to suggest that the auditor would be well advised to consider performing more extensive procedures than might otherwise be required by GAAS when auditing public companies.

The Current Environment

Small firms are divesting themselves of attest engagements, large firms are performing risk assessments of their clientele and resigning from "risk engagements" and curtailing many attest services, such as assurances on prospective financial information. Senior executives of the Big Six firms lament the fact that divesting themselves of smaller, lesser developed and more risky small public companies is contrary to the public interest as these entities are often in need of the most sophisticated assistance in producing reliable financial information.

The actual cost of litigation involving the accounting profession has not been calculated, but it has reached proportions that threaten the solvency of even the largest firms. Spokesmen for the Big Six firms (those firms are involved in most of the litigation involving public companies) claim its aggregate cost is second only to human resources. Costs of defense on some cases have exceeded $15,000,000. Document reproduction alone is often in excess of $2,000,000 a case. The projected costs of defense for many cases have reached a level that indicate settlement is economically prudent even when the firm believes it has adequate defenses.

Two recent highly publicized cases, the MiniScribe Corp. litigation involving Coopers & Lybrand and the Lincoln Savings and Loan Association litigation involving Ernst & Young, illustrate the level of stakes involved and the incentive for firms to settle.

A recent editorial in the *Wall Street Journal* reported:

> The Texas King of Torts did it again, just as the Vice President was renewing his campaign to reform the lawyers.
>
> Mr. Jamail's latest spin at the lottery wheel of American justice is a good example of the excesses. He won a $550 million judgment against MiniScribe Corp., $530 million of it in punitive damages, from a Galveston jury last week. This 25-to-1 ratio of punitive to actual damages is typical of a legal system out of control, which is why Mr. Quayle wants states to limit punitives to an amount equal to the actual harm.
>
> MiniScribe is in bankruptcy, so much of the ruinous judgment would be paid by its former accountants at Coopers & Lybrand and former investment bankers at Hambrecht & Quist—who point out they were also defrauded, for much more than Mr. Jamail's bondholder clients. It's also an irony that it was an internal investigation by MiniScribe that uncovered the falsifying of records by some of its employees. So whom is the legal system punishing for what by assessing punitive damages? The jury, by the way, decided Mr. Jamail should get some $8 million for his labors.

The MiniScribe verdict was later overturned by the state judge presiding over the case to facilitate a settlement among Coopers & Lybrand, Hambrecht & Quest and the plaintiffs for an undisclosed amount, thus avoiding a costly appeals process.

In another recent *Wall Street Journal* article[2] the following was reported:

> The nation's second largest law and accounting firms agreed to pay a total of $87 million to settle investors' fraud claims arising from the collapse of Lincoln Savings & Loan Association....
>
> The investors' lawyers said in opening statements to a jury that they would claim $350 million in losses. Under Arizona's racketeering statutes and California's punitive damages laws, both of which could be applied in the case, potential liability could be tripled.
>
> That prospect led in part to the settlements, lawyers for the two firms said. "The taint that affects anyone who had any dealings with Charles Keating is so black that it is asking a great deal for a jury to understand that auditors, too, can be victim," said Laurence Popofsky, a San Francisco lawyer for Ernst & Young.

A coalition of securities firms, insurance companies, accounting firms, law firms, corporate directors, and other business organizations is working to seek litigation reform, involving such matters as proportionate liability, fee shifting, and discovery procedural reforms. Tort reform efforts, even if ultimately successful, are likely to move slowly.

The large accounting firms are presently accumulating aggregated cost data relating to litigation costs to support their efforts for reforms. However, much more may be needed. For example, firms are reporting that the existing litigation environment is having an adverse impact on entry level recruiting and their ability to retain competent partner level personnel. However, no empirical evi-

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[1] Amy Williams, "Ernst & Young and Jones Day Law Firm to Pay $87 Million in Lincoln Savings & Loan Case," *The Wall Street Journal*, March 31, 1992, p. A3.

[2] AICPA Professional Standards, AU Section 561, "Subsequent Discovery of Facts Existing of Date of Report."

dence has been gathered to substantiate or refute their claims.

There are other areas where it may be possible to develop empirical evidence to augment the proposition that the current level of litigation risk the accounting profession faces is not in the public interest. I would like to suggest one area. My hypothesis is that the accounting profession's litigation risk does not correlate to substandard performance (audit risk). The data and arguments I present in support of my hypothesis suffer from the same shortcomings academic research on auditor litigation has encountered—incomplete data for analysis because of the high incidence of settlement before adjudication. Nevertheless, I hope that this paper will suggest the need for further research and identify areas that might be further explored by those of you who are more expert in research methodology than I.

Both the peer review process and the investigation of allegations of audit failure involving public registrants by the Quality Control Inquiry Committee (QCIC) provide an opportunity to identify some data relevant to the quality of audits performed by member firms of the SEC Practice Section (SECPS) of the American Institute of Certified Public Accountants (AICPA).

Peer Review Results

As part of the peer review of member firms of the SECPS, engagements are selected and reviewed to determine whether they comply with professional standards and the firm's quality control system. The engagement selection involves a consideration of risk factors related to the firm, such as industry concentration of clients, new engagements, partner workload and experience, and other control risk and inherent risk factors related to the firm's practice. The engagement reviews are in sufficient depth, and the Public Oversight Board's oversight process is sufficiently vigorous, to provide reasonable assurance that they lead to a consistent and objective identification of audit failures when they exist among the engagements reviewed.

During the peer review of engagements, an audit is determined to be substandard if the peer reviewer concludes (1) that one or more auditing procedures considered necessary at the time of the audit in the circumstances then existing were omitted[3] or (2) that the audited financial statements are materially misleading, or the auditor's report inappropriate, thus requiring recall and revision.[4]

This forensic dissection of engagements as part of the peer review process provides an indication of the incidence of audit failure among firms that are members of the SECPS. Table 1 summarizes the results of engagements reviewed during the most recent three peer review years (1989-91). While the data relating to 1991 peer reviews is incomplete, that year completes the current cycle for the peer review of large firms and the partial data summarized to date about substandard engagements is somewhat enlightening.

When analyzing substandard performance in the context of litigation risk, it is necessary to distinguish between AU Section 390 failures and AU Section 561 failures. Substandard engagements summarized as AU Section 390 failures are only those engagements in which, after performance of the omitted proce-

[3] AICPA Professional Standards, AU Section 325, "Communication of Internal Control Structure Related Matters Noted in an Audit."

[4] AICPA Professional Standards, AU Section 390, "Consideration of Omitted Procedures After the Report Date."

Table 1

SECPS Peer Review Engagement Review Results (1989 - 1991)

		Total	Big Six Firms	Other Firms
1989	Engagements Reviewed	1497	340	1157
	Engagements Determined to be Substandard:			
	AU 390	12	2	10
	AU 561	8	-	8
1990	Engagements Reviewed	1909	298	1611
	Engagements Determined to be Substandard:			
	AU 390	10	-	10
	AU 561	11	1	10
1991	Engagements Reviewed	-*	114	-*
	Engagements Determined to be Substandard:			
	AU 390	30	-	30
	AU 561	18	-	18

* The Peer Review Committee has not yet processed all 1991 peer reviews and the data relating to other than Big Six firms is incomplete.

dure(s) by the practitioner, it was determined that neither the financial statements were materially misleading nor was the auditor's report inappropriate. Therefore, those relying on the auditor's report were not misled and damaged. Thus, only substandard performance summarized as an AU Section 561 failure should, in an ideal world, correlate with litigation risk, since only in those instances could a financial statement user be misled and damaged.

Over the three year period (1989-91) involving 742 engagement reviews of Big Six firms, only one engagement was identified as an AU Section 561 failure (.13% of the engagements reviewed). During 1989 and 1990, a total of 2,768 engagement reviews of non-Big Six firms were conducted and twenty such engagements were identified as AU 561 failures (.7% of the engagements reviewed). Many of the substandard engagements involving audits conducted by non-Big Six firms during 1990 and 1991 were by firms having their initial peer review as a result of the AICPA bylaw change mandating SECPS membership for all firms that audit SEC registrant companies (sixteen of twenty-one substandard engagements identified in 1990 and forty-five of the forty-eight substandard engagements identified to date in 1991).

The conclusion that can be drawn from an analysis of the incidence of audit failure identified in the peer review program is that litigation risk should be much lower than the profession presently experiences. It is estimated that the Big Six firms report on approximately 12,000 public companies annually. The sole substandard engagement identified in the 942 engagement reviews of Big Six firms was a small eleemosynary institution audit that was not subjected to the same quality control procedures applied to public company audits (for

example, concurring partner review). Therefore, a "worst case" projection of audit failure involving public companies would be sixteen (.13% of 12,000 audits), whereas the actual number of complaints filed against Big Six firms involving their audits of public companies annually is approximately three times that number. The only reasonable conclusion to be reached is that litigation risk does not correlate to substandard performance by the profession.

QCIC Investigations

When a lawsuit involves the audit of a public company (or an entity where there may be a public interest, such as a savings and loan institution), it is the QCIC's responsibility to determine if the allegations suggest an aberrational error, a shortcoming in the firm's quality control or its compliance with them, or a shortcoming in professional standards. Member firms must report to the QCIC all litigation or regulatory proceedings involving audits of public companies or regulated financial institutions within thirty days of receiving a complaint.

The QCIC's proceedings, conducted in strict confidence, do not determine the merits of a case or the culpability of any party. Rather, their purpose is a review of the firm's policies and procedures to assure that, when appropriate, the firm takes measures to upgrade its controls and compliance with them. In conducting its proceedings, the QCIC may interview firm personnel, inspect firm policy and guidance material, and examine selected workpapers to determine the need for corrective action by the firm or by standard-setters.

QCIC cases are not closed until the committee is satisfied that a firm has properly addressed any weaknesses discovered in its quality control system and that matters that require consideration by the accounting and auditing standard-setting bodies have been reported for their consideration. The Public Oversight Board oversees all QCIC inquiries into alleged audit failures. Its staff reviews both the plaintiff's allegations and the QCIC staff's analysis of them. Board members and/or its staff attend meetings between firms reporting litigation and QCIC task force members, and participate in discussions about committee recommendations.

Table 2

QCIC Cases Reported

	Cumulative Cases Reported	Annual Average
1980	10	10.0
1981	12	11.0
1982	29	19.0
1983	31	23.0
1984	36	25.6
1985	42	28.3
1986	44	30.5
1987	44	31.7
1988	42	32.9
1989	53	34.9
1990	56	36.9
1991	44	37.4
1992 (8 Months)	40	39.2

Table 2 presents a tabulation of the number of cases reported to the QCIC since its inception. Because of the sensitivity of QCIC proceedings and concerns about their threat to "live" litigation, most documentation is destroyed shortly after a case is closed. The only documentation retained is a copy of the complaint and the staff's analysis of the allegations. Since most cases are not adjudicated, it is impossible to accumulate data relating to the outcome of reported cases, particularly data relevant to a determination of audit failure. However, an analysis of the complaints provides some data relevant to the environment in which litigation occurs and an understanding of what areas of financial reporting plaintiff's counsel believes to be deficient. Ninety cases reported to the QCIC during the period 1989 through 1991 were selected for analysis. Forty of the cases selected for analysis involve the audits of financial institutions. Table 3 summarizes data found from a review of the complaints about the parties involved in the litigation and actions taken by the auditor. Table 4 summarizes data about the allegations in those cases.

Table 3

Analysis of Ninety Cases Reported to QCIC
Information About Parties and Auditor Action

	Financial Institution Cases	Other
Total Cases	40	50
Auditor:		
Big Six Firm	35	42
Second Tier	4	3
Other	1	5
Financial statements restated or auditor withdrew opinion	5	7
Auditor resigned or was terminated	11	8
Auditor reported modified opinion on financial statements:		
Ability to continue as going concern	11	5
Other	9	9
Company condition when complaint was filed or end of class period:		
Bankruptcy	23	15
Severe decline in earnings and security value	13	35
Plaintiff:		
Security holder	27	38
Company management	4	4
New management	3	4
Creditor	3	1
Government agency	4	1
Insurer	1	2

Table 4

Analysis of Ninety Cases Reported to QCIC
Information About Allegations

	Financial Institution Cases	Other
Total Cases	40	50
Existence of Management Fraud	11	14
Internal Controls:		
Material weakness not identified by auditor	1	18
Weaknesses not adequately considered when performing the audit	16	8
Weaknesses not communicated by auditor	6	2
Principal Financial Statement or Auditor Report Defect:		
Revenue recognition	3	13
Valuation of assets	12	26
Adequacy of loan loss reserve	26	-
Disclosure	3	3
Fraudulent transaction	2	6
Report not modified for continued existence	2	1
Not obvious	6	6

Litigation Risk Does Not Correlate to Audit Risk

In the QCIC cases analyzed, all of the non-financial institution cases and ninety-six percent of the financial institution cases involved bankrupt entities or entities experiencing severe declines in their security values. The implication is that auditors' substandard performance correlates to financial difficulty of the entity being audited, i.e., the profession can perform well in profitable and financially successful environments, but not so in financially troubled environments. This is of course a ludicrous proposition, but is easily explained. The objective of plaintiff's lawyers litigation directed at auditors is settlement, not adjudication of the allegations.

Most cases are resolved through settlement. Cases are settled at a "going rate" of approximately one quarter of the potential damages claimed.[5] Plaintiffs' lawyers are sophisticated in identifying potential class actions. Armed with computers they identify potential class actions where a decrease in security price produces a market loss sufficient to support an adequate level of fees. In discussing this phenomenon Alexander explains:

> Twenty million dollars is about the lowest potential recovery (damage claim) that could be expected to generate an attorney's fee sufficient to justify maintaining a complex securities class action on a contingent fee

[5] Janet Cooper Alexander, "Do the Merits Matter? A Study of Settlements in Security Class Actions," *Stamford Law Review*, Volume 43:497, February 1991, pp. 513-14.

basis. Assuming that settlements can be expected to be approximately 25% of the claimed loss...attorneys fees can be expected to be about 20-30% of the recovery. (Page 513)

Alexander's research shows that most suits are filed when a fee in the range of $1.25 million or more could be expected. Critics can find degrees of imperfection in virtually every audit. The sufficiency and competence of evidential matter influencing the auditor's judgment about the reporting entity's financial statements is not only a matter of professional judgment but it is also fact-dependent and will vary from audit to audit. These judgments about the sufficiency and competence of evidence, particularly relating to the valuation assertion, are focused on by plaintiff's counsel and most often underlie allegations charging auditors with substandard performance, when in fact, the litigation is motivated by the "plaintiff's bar settlement model."

Among the financially troubled and bankrupt population of companies, there are no doubt occasional instances of substandard performance by the auditor. There are other situations involving highly sophisticated management fraud where both the auditor and third parties have been deceived where the auditor's responsibility for material irregularities in financial statements is less obvious. Damaged parties will always contend that the auditor should have detected fraud and this expectation gap is fueled by occasional highly publicized cases where, based on the reported facts, it appears that an alert, experienced audit team should have identified related "red flags." When conducting QCIC investigations directed at evaluating the adequacy of and compliance with firms' quality control systems, we occasionally suspect a "busted audit." However, far more often the investigations lead us to the conclusion that the litigation is "frivolous."

Other Observations About QCIC Cases

Continued Existence

Among the fifty non-financial institution QCIC cases examined, sixteen entered into a form of bankruptcy proceedings. The auditors for five of the sixteen bankrupt entities modified their opinion for concerns about the ability to continue as a going concern during the financial reporting year preceding bankruptcy. The auditors for seven of the thirty-four non-bankrupt entities modified their opinions on the financial statements for concerns about the ability to continue as a going concern.

The above suggests that the auditor's "red flag" identifying going concern problems in the audit report may have little utility because of the inherent inability to identify entities that will become insolvent in the volatile marketplace and economy in which business operates. Further, it is interesting to note that the plaintiff's attorney alleged failure by the auditors to provide a "red flag" in only one of the eleven bankruptcies that was not accompanied by an auditor's opinion modified for substantial doubt about the entity's ability to continue as a going concern.

Audit Evidence

None of the ninety QCIC cases examined suggest that the auditor did not

identify evidence relating to the allegations, with the exception of the identification of "side agreements" related to a number of financial institution audits. This suggests the sufficiency of audit procedures applied by the profession for identifying evidential matter about which an audit judgment must be made. The allegations, for the most part, call into question the auditor's judgment about the evidence identified in the audit, particularly valuation judgments and income recognition matters. Table 4 summarizes the allegations.

As firms in recent years have revised their audit approaches to be consistent with the SAS No. 47 risk model, similarities in audit methodology are more apparent than differences. An example of this is that all of the large firms now use non-statistical sampling plans to the virtual exclusion of statistical sampling plans. During the most recent cycle of Big 6 firm peer reviews that have included 742 engagement reviews, we do not recall seeing one statistical sampling application. The most plausible reason for this is that non-statistical sampling plans are less expensive and experience has demonstrated the sufficiency of audit evidence identified by them.

Statistical sampling plans are still used for a limited number of special purpose applications, usually involving the requirements of governmental agencies. These applications are usually planned and assisted by specialists in the firms. Academics, when planning their research projects and class syllabi, should consider the limited use of statistical sampling, and quantitative techniques generally, in the audit of financial statements.

Management Integrity and Internal Control

In fourteen of the fifty non-financial QCIC cases examined, there was an allegation of management fraud. Among the fourteen cases involving an allegation of management fraud, eleven allegations related to entities with revenues of less than $100 million (six of which had revenues of less than ten million dollars). Most of the smaller entities involved owner-manager dominance.

The *Internal Control—Integrated Framework, Revised Draft* (February 1992), of the Committee on Sponsoring Organizations of the Treadway Commission (COSO), indicates that management integrity and ethical values are an integral component of internal control. Unfortunately, these attributes cannot be evaluated based on any known objective criteria. They are personal qualities, not processes like risk assessment, and reasonable men can differ greatly about their acceptability. Public reporting on the adequacy of internal controls, including attributes of management integrity and ethical values in the control structure, is both questionable and dangerous. It is not reasonable to expect that management will ever evaluate its members as lacking in these personal attributes, nor will it be possible for others to do so, except in the most egregious situations-and well after the fact.

In discussing its application to small entities, the draft COSO report states, for example:

> Although small and even mid-size companies may find it difficult to bring outside directors on to the board, absence of such directors (or an audit committee) does not necessarily create a weak control environment. A board that consists solely of an entity's officers and employees who report to the owner-manager can adequately perform necessary governance, guidance, and oversight responsibilities....

Thus, the draft COSO report suggests that not only can management of small companies evaluate objectively their own integrity and ethical values, as well as the adequacy of other components of the entity's control system, they can do so and report to the public without the oversight of an independent audit committee. Owners of smaller companies, once choosing to raise capital in the public markets, should be required to have audit committees with independent members to assist in safeguarding the interests of absentee equity and debt stakeholders. A failure of a public company to do so should be regarded as a serious deficiency in its internal control structure.

COSO recommends that the threshold for modifying the report should be an uncorrected material weakness. Many of the components of internal control identified by COSO, such as integrity, ethical values and an absence of audit committees, do not easily lend themselves to the concept of a material weakness. The likely result of management reporting following the COSO guidance is that reporting entities will routinely provide "clean reports," and auditors will be called upon to provide assurance on these reports, even when there are numerous significant deficiencies in the control structure identified as "reportable conditions."[6] This suggests that the plaintiff's bar in future litigation will more routinely allege that the management of various companies and their auditors have misled and damaged third parties because of assertions about the adequacy of internal controls where significant deficiencies have been identified. To minimize this danger, there should be an acknowledgment in public reports that weaknesses in internal control have been identified and are being addressed by management.

The Auditor's Opinion

After years of controversy, criticism and deliberation, the Auditing Standards Board revised the auditor's standard report in 1988, the first revision in thirty-eight years. The revision was directed primarily at more clearly explaining the elements of an audit and the degree of assurance being provided by the auditor. The nature of allegations in auditor litigation suggests another revision may be in order.

The sufficiency and competence of evidential matter available to assess management's assertions about sensitive valuation judgments often do not reduce audit risk sufficiently to justify the degree of assurance being provided in the auditor's report on historical financial statements. The following is an example.

The evidential matter available to the auditor to support a judgment about the carrying value of a financial institution's loan or equity participation in a real estate project under development is limited primarily to an evaluation of: (a) the developer's reputation and financial stability, the latter usually being highly dependent on the success of the project being considered; (b) assumptions relating to market feasibility; and (c) costs incurred to date related to percentage of completion estimates and additional development funds available.

If the auditor was requested to provide assurance to a third party in a separate financial presentation related to the real estate project, the presentation would be cast as a financial forecast and the auditor's report would include a caveat

[6] AICPA Professional Standards, AU Section 325, "Communication of Internal Control Structure Related Matters Noted in an Audit."

that the prospective results are dependent on assumptions that may not be achieved. Yet, the same assets included in a historical financial statement would result in the auditor expressing a clean opinion on the valuation assertion related to the project.

This dichotomy in auditor assurance cannot be theoretically justified nor rationally supported. It should be no surprise that the auditing profession is being held culpable for the savings and loan debacle by the financial press, Congress, investors and government agencies, and more recently for the failure of many banks. The financial collapse of many of these entities resulted directly from their equity participation in and loans to real estate projects. The auditor's assurances about the valuation assertions related to these projects was at the same level as assurance provided on the carrying value of the cash account.

Conclusion

The accounting profession has a unique role in society as a provider of third party assurances on the reliability of client-prepared financial information. In meeting this responsibility, the profession has found itself beset with increasing litigation risk that more directly correlates to the financial difficulties of some clients than to its own substandard performance. Unlike the statistical dispersion of malpractice actions against other professionals, the accounting profession's litigation risk is concentrated among a limited number of firms that audit most public companies. While the litigation risk of these firms is increasing, audit risk appears to be managed in a way that limits substandard performance to a reasonably low level, particularly in firms that have mature quality control systems meeting the membership requirements of the SEC Practice Section.

The accounting profession must continue to strive to even further lower the incidence of substandard performance. However, it is unreasonable and, in the long run, contrary to the public interest in reliable financial reporting for the legal system to operate in a way that encourages plaintiffs' attorneys to bring actions against accountants on the basis of a calculation of loss in client security values necessary to support a profitable settlement. This results in accounting firms being penalized for the financial troubles of their clients rather than substandard performance and leads to an unwarranted erosion of confidence in the profession as well as its financial viability.

This paper identifies a few facets of the accounting profession's litigation risk relating to attest performance and reporting that may warrant research by the academic community; there are undoubtedly others. Research and other scholarly inquiries may assist in bringing about reforms to our legal system or minimizing the profession's exposure to it.

Discussant's Response to "Litigation Risk Broadly Considered"

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The paper presented by Jerry Sullivan [1992] provides a thought-provoking essay dealing with the ever-increasing occurrence of litigation risk in the auditing profession in the United States. The author provides some preliminary evidence on the nature and extent of alleged audit failures gathered from peer reviews of SEC Practice Section (SECPS) member firms over a three year period and 90 QCIC cases reviewed by the Public Oversight Board (POB). His findings imply that the recent wave of alleged audit malpractice, especially lawsuits against Big Six firms, may not be caused by substandard audit work. Rather, Sullivan intimates that much of the present-day litigation alleging audit failure may be baseless and without merit. Despite judicial reality, innocent firms may choose to make out-of-court settlements to avoid the high cost of a proper litigation defense and the peril of punitive damages as, for example, experienced by Coopers and Lybrand in the MiniScribe case [see *The Wall Street Journal*, February 18, 1992, p. C-11].

As posited by the author, a direct consequence of increasing litigation cost is a commensurate reduction in the profession's reputation and ability to provide quality independent audits of client companies. Given recent negative economic events in the United States caused, in part, by recessions in global financial markets and the crisis in the national Savings and Loan industry, the public's positive perception of the independent auditing profession may be dwindling. This, in turn, could lead to clients and financial statement users alike placing less faith in audit opinions and placing greater reliance on legal or contractual arrangements. As the demand for public accounting services declines, government authorities may become more actively involved in the regulation of the profession. Loss of the public trust and resulting governmental interventions can cause the demise of the public accounting profession.

Admittedly, it is difficult to engage in an intellectual debate when you agree with the fundamental arguments raised by your opponent. My discussion, however, will attempt to provide a critical analysis of Sullivan's contentions as well as a reinterpretation of his results. The remainder of my paper is organized into two parts. First I will comment on what I believe are the most salient aspects of the several excellent points raised by the author. In particular, I will touch upon

* At Babson College at the time of this presentation. The author acknowledges the many helpful comments provided by Abraham Akresh, Richard Mandel and Zoe-Vonna Palmrose, and appreciates the editorial assistance provided by Joan Grossman.

the possibility of abuses in the legal system, the importance of self-regulatory controls in mitigating substandard audit work, and the significance of the findings on peer review and QCIC investigations presented. Then I will provide a critique of four general claims made by the author, which are:

- that the recent wave of litigations against auditing firms does not serve the public interest;
- that auditors are generally victims of a litigious society;
- that the stringent process of self-regulation imposed on SEC Practice Section firms of the AICPA should reveal and ultimately weed out substandard work in the extant auditing domain; and
- that SAS 59 going concern disclosures and the new COSO report requirements will exacerbate litigation risk for auditors.

An Emphasis of Major Points

Abuse in the Legal System

As noted by Lawrence A. Weinbach, managing partner of Arthur Andersen & Co., in a recent interview by *The Wall Street Journal* [September 1, 1992, p. B-8], "Out-of-court settlements over malpractice litigation are costing the six biggest accounting firms nine percent of their audit fees." Based on an estimate for U.S. audit fees of the Big Six accounting firms, the article further suggests that annual litigation costs average about $56,000 per partner. To corroborate this point, consider the reluctance of most major insurance companies to provide malpractice coverage to various professional and occupational groups such as physicians, engineers, lawyers and accountants. While there may be instances of egregious behavior in the auditing community, it would be absurd to believe that the present-day level of contributory negligence or fraud in the accounting profession approached $56,000 per partner each year. What are the consequences of litigation assuming that this figure is correct? Apropos the point raised by Sullivan, I too believe that the considerable sums paid by audit firms to defend or settle malpractice lawsuits may provide evidence of an abuse of legal process that, if allowed to continue, could severely cripple the accounting profession as we know it today.

Has society become too litigious? Some legal scholars and political experts believe it has, arguing that the significant rise in practicing attorneys within the United States over the past two decades has resulted in a commensurate increase in the number of lawsuits filed against individuals and business firms. Walter Olson [1991], in his recent book entitled *The Litigation Explosion*, notes that malpractice lawsuits have risen as much as 300-fold in some sectors of the economy in about twenty years. Quoting the results of a Harvard Law School study, he further suggests that only about one in five malpractice claims have something to do with genuine negligence. This exponential increase in courtroom docket activity has severely limited the court's ability to deal effectively with and respond to a plethora of civil malpractice cases. Legal experts now believe that chaos in the American courtroom is causing the legal system to become increasingly bureaucratic and grossly inefficient. This fact, coupled with the general difficulty in defending any malpractice action, may explain why it is becoming increasingly difficult to dispose quickly of lawsuits against public accounting firms that are known to be frivolous or without legal merit.

Importance of Self-Regulatory Controls

In response to increasing litigation risk and the threat of governmental intervention, the public accounting profession as well as individual firms have instituted formal control mechanisms to ensure audit quality. For example, audit firms belonging to the AICPA undergo a peer review if they provide attestation services to client organizations. A peer review is a detailed, independent investigation of a public accounting firm, including certain selected client engagements, by an independent body of accounting practitioners from another qualified firm or by a team of experts assembled by a professional body such as the AICPA. The purpose of the review is to ensure that member firms comply with the standards, rules and regulations required by the profession.

The peer review is remedial rather than punitive. Very rarely does a peer review seek to uncover the unprofessional or unethical actions of an individual practitioner or an entire firm. If, however, in the course of their investigation, a breach of the ethics code is revealed to members of the review team, such a finding could possibly result in a referral to the ethics division of the Institute. In certain cases, very negative findings could lead to civil or criminal liability on the part of the firm under investigation. In actuality, this occurs only rarely and in most cases the firm judged to be in noncompliance will receive a private reprimand by the review team and the AICPA. It is still asserted that the consternation and embarrassment caused by a potentially negative peer review, in some situations, will motivate a firm and its employees to comply with various professional and technical standards.

Comprehensive peer reviews are also performed by a special investigation unit of the AICPA when audit firms are implicated in alleged audit failure. As explained in a recently published monograph entitled Evolution of the Quality Control Inquiry Committee by Mautz and Evers [1991], QCIC reviews are conducted on SECPS member firms to determine the nature and probable causes of the allegations contained in pending litigation. If instances of substandard audit work are discovered, the committee makes recommendations to the audit firm so that it can take the necessary steps to avoid similar problems on future engagements.

The profession also employs a detailed set of work guidelines known as Generally Accepted Auditing Standards (GAAS) to ensure a consistent and reasonable application of professional judgment. Although the exact nature of audit judgment varies according to a multitude of factors including the auditor's competence, integrity and ethical values, these standards serve as examples of how one should behave in a wide variety of situations and circumstances in the course of professional practice.

In recognizing the possibility for substandard work despite a detailed set of professional standards, public accounting firms have established an internal system for reviewing the quality of all audit work completed by the firm (e.g., in accordance with the AICPAs' Statement on Quality Control Standard No. 1 entitled *System on Quality Control for a CPA firm*). Such control systems attempt to validate the reliability of active attestation engagements within the firm on an ongoing basis. These often include a quality control review of selected workpapers to ensure the consistency and completeness of all auditing work performed and an internal examination of post-audit adjusting entries recommended by the audit team. In addition, when difficult or ambiguous technical is-

sues are encountered, firm specialists are often brought in to participate on an ex-post basis.

Working in concert, peer reviews, detailed audit standards and internal controls within the audit firm tend to mitigate the possibility of litigation risk caused by an auditor's erroneous judgment or unethical acts in practice. Some argue that the nature of self-regulation is corrective and, therefore, it cannot prevent egregious judgmental errors or audit failure from happening in the first place. Even with the best system of total quality management, it may be difficult, if not impossible, to identify audit failure soon after it happens. As will be mentioned later, the chances for detection are especially problematic when the unscrupulous auditor knows the detailed workings of the quality control system used to prevent such action. Others, however, argue that the mere existence of quality controls discourages potential unethical behavior. While such controls are far from perfect, I believe that they do act, to some extent, as a deterrent to audit failure as well as unethical behavior in the accounting profession.

Sullivan's Presented Findings

As Executive Director of the Public Oversight Board, Jerry Sullivan has access to internal statistics for SEC Practice Section member firms gathered from peer reviews and QCIC investigations. These data clearly support the claim that the extent of substandard audit work is a minuscule proportion of the total activity evaluated by the Institute. In particular, peer reviews of thousands of audit engagements over a three year period (as reported in Table 1 of Sullivan's paper) revealed only thirty-seven instances of substandard audit work that, according to AU section 561, could have resulted in material error to a client's financial statements and a change to the auditor's opinion. Only one such incident pertained to the work of a Big Six accounting firm.

Sullivan provides additional data pertaining to ninety selected cases of alleged audit failure reported to the QCIC during the period 1989 to 1991. Substantially all lawsuits dealt with client organizations that had experienced financial distress or bankruptcy during or after the class action period. The author uses this fact to support his claim that litigation does not necessarily mean a "busted audit". Rather, by virtue of a so-called "deep pocket" for settling alleged malpractice, he intimates that blame is often cast onto the largest accounting firms. Along these lines, Sullivan writes [1992, p. 55],

> The implication is that auditors' substandard performance correlates to financial difficulty of the entity being audited, i.e., the profession can perform well in profitable and financially successful environments, but not so in financially troubled environments. This is of course a ludicrous proposition, but is easily explained. The objective of plaintiff's lawyers litigation directed at auditors is settlement, *not adjudication of the allegations* [emphasis added].

Sullivan [1992, p. 56] also points out the inconsistent application of SAS 59 audit report modifications in the sample of selected companies investigated by the QCIC, suggesting that going concern disclosures may be of little benefit to security holders for forecasting financial distress or bankruptcy (e.g., poor hit

rates)[1]. Sullivan also found that none of the ninety cases of alleged audit failure examined by the QCIC showed that the auditor failed to identify evidence relating to the allegation in the lawsuit—indicating that audit procedures for the discovery of evidential matter must have been sufficiently applied. In summary, the findings presented by Sullivan provide some indication of a potentially serious problem facing the public accounting profession in the United States, where allegations of audit failure and actual incidents of poor quality audits may not be highly correlated. Although litigation reform is probably warranted, my critique, as provided in the next section, is based on the premise that litigation can serve a useful purpose in society.

A Critique to Four General Claims

Does Litigation Serve the Public Interest?

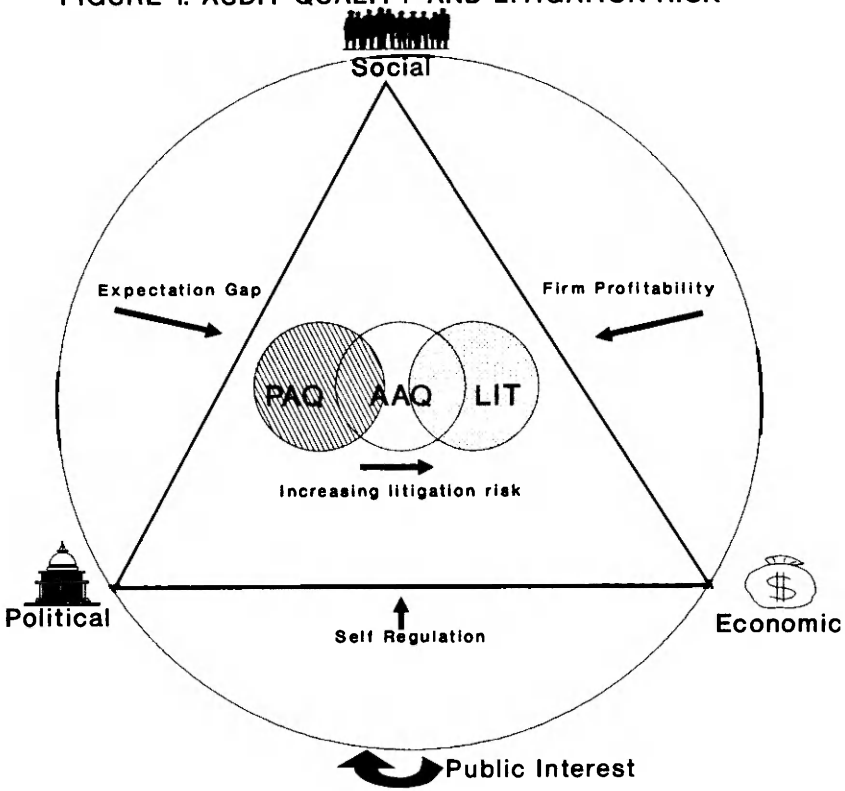
To address this question, consider the framework depicted in Figure 1, illustrating a relationship between actual audit quality (AAQ), perceived audit quality (PAQ) and litigation (LIT).[2] As can be seen, using a Venn diagram, perceived audit quality and litigation are two mutually exclusive (disjoint) domains. Litigation risk, defined as the intersection of actual audit quality and litigation, is very small when perceived audit quality and actual audit quality nearly overlap. This is because, in an economic sense, the client and the auditing firm enter into and realize an audit contract specifying a given level at a given price. The domain of litigation risk increases substantially when perceived audit quality does not equal actual audit quality because the client may believe that the audit firm has shirked on its contractual obligation to the organization and its key stakeholders. Clearly, litigation risk becomes more salient as the gap between actual and perceived audit quality widens.

Irrespective of audit quality problems, however, litigation risk can be influenced by a multitude of other factors defined within a triad of social, political and economic forces that are determined by public demand. Factors that may be important include the nature of self-regulation, the level of firm profitability and the proverbial expectations gap between users of financial statements and independent auditors. The social-political-economic triad serves as a unique mechanism for ensuring audit quality and for containing litigation problems within the boundary of the public interest. In this regard, litigation has a dual role. First, it serves as a change agent through which the opinions of the general public are communicated to the auditing profession. Second, and perhaps most importantly, it acts as a deterrent to substandard auditing. Here, audit quality is defined by the public's eye in the context of what auditing *ought to be.*

[1] Prior research on the information content of audit opinions corroborate Sullivan's [1992] findings. Accordingly, studies show that less than 49 percent of bankrupt companies received a going concern opinion one year prior to bankruptcy [Hopwood, McKeown and Mutchler, 1989, p.32] In addition, Altman [1982] found, for an eight year period, that 25 percent of companies receiving a going concern opinion ultimately went bankrupt. It is important to note, however, that at the time of these studies, auditors were not required to predict clients' ability to stay in business.

[2] Palmrose [1988] also proposes a causal relationship between a firm's litigation activities and the audit quality perceived by the stakeholders of a client organization.

FIGURE 1: AUDIT QUALITY AND LITIGATION RISK



The apparently spurious association presented by Sullivan between substandard audits and allegations of audit failure for QCIC cases may have been brought about by a growing rift between the public's belief as to what auditing *ought to be* versus the reality of what auditing is. Despite the severity of economic damages in recent years and the possible lack of causality between audit and litigation risks, I hold the very unpopular view that malpractice litigation in auditing can and often does serve a useful role in society.

To illustrate my point, consider the following scenario. Suppose audit firms could predict with perfect certainty the financial condition of a client company. Further, imagine that the firm made all audit findings publicly available to all interested parties. Would perfect prediction and full disclosure eliminate malpractice litigation in the profession? I believe that the answer is *yes.* That is, aside from the occasional harassment lawsuit, cases alleging audit failure would invariably be avoided by plaintiff's attorneys for lack of fee potential or would be dismissed prior to trial. In this hypothetical situation, the value of settlement and the cost of defense would be nominal.

Assuming that the root cause of litigation in any profession is at least one dissatisfied plaintiff, perhaps the significant rise in audit malpractice claims is due to the profession's inability to understand and respond to the needs of its constituency. For example, we may believe that by simply issuing the so-called

expectation gap auditing standards (e.g., SAS 52 to SAS 61) we could virtually eliminate substantive performance problems in auditing. In reality, however, these standards may have done little to change the perceptions of financial statement users and other key exchange partners about the audit opinion or the client organization. Perhaps the only viable solution to reducing litigation risk is to substantially increase the scope of audit services in ways that will provide greater comfort to end-users of financial statement information. This solution, however, has been ruled out by many on the basis that it would be too costly to provide higher levels of assurance on auditing engagements. Taking this one step further, perhaps the reduction in statistical sampling applications among Big Six firms, as indicated by Sullivan, reflects the belief that cost is more important than quality.

Are Auditors Culpable?

Because public accounting is a legitimate profession, to address the issue of culpability one needs to understand first the role of the legal system in professional self-regulation. As a starting point, consider the early sociological literature, where theorists have attempted to categorize occupations as either professional or non-professional based upon the presence of several social or political attributes [Greenwood 1957; Montagna 1974; Wilensky 1964]. Sociologists generally agree that autonomy is perhaps the most significant attribute that distinguishes professions from other occupations. Greenwood [1957], for example, asserts that the only truly important distinction between professions and other occupational groups is that the professional possesses legitimate control over his or her work environment. The state grants autonomy, including the exclusive right to determine who can legitimately do the work and how the work should be done. Professional autonomy is not absolute, however, since the state has ultimate sovereignty. As Freidson [1971, p. 44] suggests, a profession has within the state-protected environment sufficient power to control virtually all facets of its work without serious interference from any lay group. Through a process of political negotiation and persuasion, society is convinced that it is desirable to grant an occupation professional stature. To be given autonomy, a profession must demonstrate a high level of specialized knowledge and skill, and, perhaps most importantly, trustworthiness.

While professional rules, standards and codes of conduct may be important devices for persuading the general public to believe that members of a profession possess good qualities (e.g., competence and integrity), it does not guarantee public support. As noted by Friedson [1971], standards of conduct may be also viewed as manipulative because they attempt to influence public opinion without directly affecting behavior in the extant professional domain. Although a profession has the power of self-determination, it should recognize that autonomy is conditional, rather than absolute, since the public has ultimate sovereignty. Consequently, if a profession's service, work product or behavior is not consistent with societal expectations, the public can reclaim its power in two ways: first, by exercising political control and second, by seeking legal action. Society's mistrust of political (governmental) forces in the United States may explain, at least in part, the lawsuit craze over the past decade against various professional groups, including accountants.

Does the rash of malpractice litigation mean that the auditing profession has fallen victim to the unreasonable demands of society or does it mean that mem-

bers of the profession have breached the public trust by engaging in nefarious business practices? Strong arguments can be made either way. As a starting point, consider the many egregious cases of audit failure arising from the auditors' participation in, or failure to report incidents of fraud or fraudulent financial reporting. On the other hand, there are many less publicized cases where auditors seemingly sacrificed income potential and reputation by voluntarily disclosing incidents of wrongdoing or fraud within the client organization to the general public.

There is another class of malpractice stemming from a shift in standards of responsibility concerning due professional care. For example, should the auditors who failed to acknowledge the possibility of an understated loan loss reserve for the first financially distressed Savings and Loan (S&L) be held to the same legal standard of gross negligence as those who failed to consider similar audit evidence for the 900th bankrupt S&L? All in all, I believe that the auditing profession has experienced a soiled reputation caused, in part, by a relatively small number of egregious cases of audit failure that have been the basis for many feature stories in the press [Palmrose, 1991].

Does this mean that a few bad apples are spoiling the barrel? Not according to four studies on CPA audit quality conducted by the United States General Accounting Office (GAO). Consider, for example, a 1985 study in which the GAO reported that the federal inspector general's office found one out of four audit reports for governmental units needing corrective action. To paraphrase the GAO (p. 2), in about one in five audits ". . . the required audit work was not performed, or the audit documentation was inadequate or unclear, after reviewing the auditors' working papers supporting the audit." In a 1986 study involving the audits of governmental units requiring federal assistance, the GAO found that CPAs did not comply with governmental auditing standards in about thirty-four percent of the audits performed by them. Over half of these audits involved a severe violation of professional standards. In 1988, the GAO studied the quality of external audits completed for participants in federal guaranteed and insured loan programs. According to the GAO in their report (p. 3) ". . . seven of twenty-eight loan program audits did not satisfactorily comply with auditing standards. The problems included working papers that did not adequately show the CPA appropriately tested financial transactions, evaluated internal controls, or tested compliance with laws and regulations." More recently, the GAO conducted an investigation of eleven out of twenty-nine failed savings and loan associations in the Dallas Federal Loan Bank District. In this 1989 report, the GAO concluded that (p. 1)

> For six of the eleven S&Ls, CPAs did not adequately audit and/or report the S&Ls' financial or internal control problems in accordance with professional standards. The CPAs' problems involved (1) inadequate audit work in evaluating loan collectibility and (2) inadequate reporting on S&Ls' accounting practices, regulatory compliance, and internal controls. The nature of the audit reporting problems was significant enough to warrant referring the CPA firms performing the audits to regulatory and professional bodies for their review.

In summary, drawing from the findings of all four GAO reports, I believe it is fair to conclude that audit quality is far from perfect — at least with respect to the audits of governmental units, participants in federal loan programs and sav-

ings and loan associations. Taking these findings one step further, perhaps the low error rates found by Sullivan in his review of peer review and QCIC cases may not be representative of the true state of audit quality that exists in the accounting profession today.

Does Self-Regulation work?

According to Sullivan, the low occurrence of substandard audit work found in his peer review data suggests that self-regulation is working well. These same data, however, can be used to support an alternative claim; that is, the process of self-regulation may be ineffective at detecting audit failure. This claim may be valid for a variety of reasons. First, poor audit quality is typically framed as consensus to an existing body of auditing standards rather than the auditor's ability to render the highest possible caliber of auditing services. To clarify this distinction, consider the now famous opinion by U.S. Appellate Court Judge L. Hand in the *T.J. Hooper* (1932) decision in tort law.

> Indeed in most cases reasonable prudence is in fact common prudence; but strictly it is never its measure; a whole calling may have unduly lagged in the adoption of new and available devices. It never may set its own tests, however, persuasive be its usages. *Courts must in the end say what is required; there are precautions so imperative that even their universal disregard will not excuse their omission* (emphasis added).

Applying Judge Hand's reasoning to the arena of auditors' legal liability, when assessing the quality of audit work the peer review team should attempt to determine whether or not the audit firm exercised a *reasonable standard of care*, which may or may not be defined by existing auditing standards or accepted auditing practices.

A second related problem concerns the reliability of the peer review process itself. For instance, firm-on-firm reviews are commonly performed among the largest public accounting firms on a three year cycle. Given the small number of large firms that could be chosen at any point in time to perform a comprehensive review of another large firm, it is not beyond the realm of possibility that negative review findings can be suppressed by members of the review team for fear of retribution by the firm under review since it too will someday serve in the capacity of reviewer. Beyond self-interest issues, peer review teams may be motivated to stifle findings of egregious audit error to maintain the illusion that everything is "ok" in the auditing profession today, thus ensuring the continuation of a system of self-governance.

Because client engagements are never selected randomly by the peer review team, their findings may not be representative of the entire population of audits completed by the firm under review. In addition, the review is often limited to workpaper evidence, thus making it virtually impossible to gauge source credibility or to detect people-related problems that may have caused audit quality reduction on the job, such as premature sign-off or shirking on audit tasks. In essence, given these problems, and because the purpose of a peer review is remedial rather than punitive, this form of self-regulation may do very little to mitigate substandard audit work. For similar reasons, QCIC investigations may not lessen audit failure because the QCIC operates under a veil of total secrecy and does not have the authority to apply disciplinary measures, even to audit firms or individuals who knowingly engaged in deceptive or fraudulent activities [Mautz and Evers 1991, pp. 48-49].

Will the Going Concern Audit Opinion and Management Reports on Internal Control Expose Auditors to Increased Litigation Risk?

Sullivan's analysis of QCIC cases involving fifty non-financial business firms revealed that for sixteen companies going bankrupt, only five firms received SAS 59 [AICPA, 1988] audit report modifications. In addition, seven of the remaining thirty-four non-bankrupt companies also received a going concern audit report modification. Perhaps one reason for auditors' difficulty in issuing a modified audit report, as noted by Elliott and Jacobson [1987], is that the issuance of a going concern opinion itself may serve as a self-fulfilling prophecy for failure. A second reason may be that the notion of substantial doubt about the client organization's ability to continue operations as required by SAS 59 is not well defined in the accounting or auditing literatures [Ellingsen, Pany and Fagan, 1989], thus causing ambiguity and possible error in auditors' going concern judgments [Solomon and Krogstad 1988] Although auditors are not and have never been responsible for forecasting future events, many believe that audit report modifications for going concern may be a prime source of present and future litigation for public accounting firms. On the other hand, Sullivan found only three legal actions in his QCIC sample of ninety firms pertaining to an alleged failure to provide a "red flag" for a company's insolvency.

The relatively low bankruptcy prediction rate suggested by Sullivan's analysis may indicate that the requirements brought about by SAS 59 are nearly impossible to attain. These same findings, however, may have resulted from the auditor's inability to accurately frame predictions of the client's financial distress caused, in part, by ineffective auditing procedures that do not consider important factors within and outside the client organization. For example, based on the theory of organizational decline, Ponemon and Schick [1991] found that six qualitative factors explain actual going concern problems in client organizations. In short, using these factors in concert with financial indicators, Ponemon and Schick [1991] suggest that auditors may be better able to frame reliable predictive judgments of client organizations and their managements.[3]

The low incidence of legal action caused by failure to modify an audit report for continued existence may indicate that the additional paragraph required by SAS 59 may be of little consequence to security holders and their attorneys when filing suit against a firm. Drawing from Sullivan's reported findings, however, I believe that a very different story can be presented. As illustrated by the author's Table four, eighty-six of ninety QCIC cases of alleged audit failure examined by Sullivan related to organizations that were either bankrupt or had experienced severe decline in earnings. One could reasonably conclude that allegations of audit failure and resulting litigations were greatly influenced by the auditor's inability to predict the client's impending bankruptcy or financial distress. The complaint, as drafted by lawyers, however, may be grounded on

[3] In a recent study by Schick and Ponemon [1993], auditor's assessments of audit risk were related to their perceptions of a client's rate of growth or decline. Here auditors perceived the most risky clients as those that were experiencing very rapid growth or very rapid decline. These findings may suggest that auditors are tacitly incorporating their perceptions of organizational decline in their assessment of the client organization's financial well-being.

other related facts that the plaintiff's attorney believes will stand a greater chance of being proven in court or that will generate a larger settlement sum. In other words, given Sullivan's data, it may be nearly impossible to assess the extent to which proper assessment of going concern problems by the auditor would have mitigated a wide array of litigation claims against audit firms. Furthermore, Palmrose [1991] found that the auditor's inability to predict a client's impending financial distress may have a profoundly negative impact on the reputation of an audit firm because such allegations of audit failure are more likely than other incidents to be reported by the financial press.

According to Sullivan, a second area of potential future litigation risk concerns the draft report entitled *Internal Report— Integrated Framework* published in 1992 by the Committee on Sponsoring Organizations of the Treadway Commission (COSO). The COSO report deals with management's role in evaluating and reporting on the adequacy of internal controls within the organizational setting. The report states (p. 8) that ethical values, integrity and competence of management are essential components to a well-functioning system of internal control. While these qualities are impossible to assess, and because a company's management would rarely disclose ethical problems to the public, it is possible that uncorroborated assertions about internal controls will be reported by management. If, however, internal control problems related to incompetent or low integrity management are revealed to the public after the fact, auditors may find themselves victims of lawsuits alleging that they failed to properly consider management assertions about internal controls.

While the report does not expressly require independent verification of management's reports on internal control, Sullivan intimates that a potential by-product of COSO recommendations when implemented may be increased litigation for auditing firms. Again I disagree with Sullivan's prediction because, if implemented properly, the COSO recommendations are intended to reduce incidents of undetected material weaknesses in an organization's internal control system. These improvements, in turn, should result in a commensurate reduction in lawsuits based on the auditor's failure to detect or report on internal control problems. To corroborate my point, consider Sullivan's analysis of QCIC cases in which fifty-one of ninety allegations of audit failure involved internal control related problems in client organizations.

Increasing malpractice litigation against audit firms may be a sign that the public is demanding more from the profession. It appears that the so-called "expectations gap" between financial statement users and auditors may be widening. Many auditing practitioners and researchers alike argue that the complexity of client organizations and the extent of competition in the auditing services market make it increasingly difficult to render quality audit services at a reasonable price. Perhaps user demands for attestation services beyond a level of reasonable assurance make it imperative that independent audits be treated as public goods. While litigation is a form of social control over the profession, if it has become needlessly excessive or abusive, efforts to minimize legal exposure are most definitely warranted.[4] On the other hand, however, increasing liti-

[4] Robert Mednick [1987], partner of Arthur Andersen & Co., makes a cogent argument for tort reform. He claims that limiting joint and several liability and restoring the privity standard should be the two top priorities of the auditor litigation reform efforts.

gation may well be indicative of a reduction in the public trust, in which case other forms of social control may be necessary.

At the risk of opening a Pandora's box, in conclusion allow me to suggest that some sort of external regulation may be the only solution acceptable to an increasingly mistrustful public. In this respect, accountants are likely to be joined shortly by their counterparts in the legal and medical professions. If this is not acceptable, then attention must be paid to the real-world needs and concerns of the general public instead of investing time and effort in the protection of "turf." Self-regulation can only work if everyone affected, rather than merely those being regulated, agrees that it is working and is satisfied with the outcome of the process.

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4

Auditors' Judgments and Decisions Under Time Pressure: An Illustration and Agenda For Research[1]

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Time limitation when acquiring and processing information (i.e., time pressure) is a structural feature of many judgments and decision contexts. In emergency situations, for example, physicians must process a variety of information within critically small time spans to make diagnoses and identify appropriate courses of treatment. Similarly, after leaving a huddle, a football quarterback must appraise the formation of the defensive team within no more than thirty seconds to determine if a change in the planned offensive play is warranted. Likewise, traders working within investment banking houses often must decide within a highly constrained period of time whether to buy, sell or hold specific securities based on a variety of data about economic and political events.

Various types of time constraints are present in auditing contexts [AICPA, 1978]. For example, auditors are required to perform audit procedures within prescribed time limits (e.g., vouch a specified number of transactions to supporting documents within a given period of time). Consistently, auditors must meet various client-imposed (e.g., allow earnings to be released within six weeks of the client's year end) and non-client-imposed deadlines (e.g., file a 10-K with the SEC by a specified date). Although such time constraints have always been present within the audit context, it has been argued that recently they have increased as competition in the market for audit services has increased [National Commission on Fraudulent Financial Reporting, 1987].

While often identified as deleterious [AICPA, 1978; Alderman and Deitrick, 1982; Kelly and Margheim, 1990], very little actually is known about the judgment and decision effects of time pressure in audit and other applied contexts. Interestingly, in non-audit contexts, time constraints in the form of time budgets sometimes have been found to enhance efficiency [Pachella, 1974] Although it has been argued that some time pressure may stimulate auditors to work harder and otherwise strive for efficiencies [Kelly and Seiler, 1982; Kermis and Mahapatra, 1985], no systematic evidence exists on functional consequences of time pressure in auditing. Rather extant audit studies almost exclusively have

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addressed "audit quality" reductions as a consequence of time pressure using one of two research methods.

In particular, surveys have been used by various researchers [Alderman and Deitrick, 1982; Kelly and Margheim, 1990] who primarily have focussed on *extreme* time pressure and attendant auditor responses. Laboratory experimentation has been used by other researchers [McDaniel, 1990; 1992; Choo and Firth, 1992] and, because auditor-subjects and audit tasks were employed, the experimental studies have greater potential to elucidate audit time pressure effects than psychology studies which primarily have employed student subjects performing "generic" tasks. Experimental studies also have the usual advantage (*vis-à-vis* audit time pressure survey studies) of greater control and the concomitant advantage of enhanced power. Unfortunately, as is argued below, common features of the experimental studies limit what actually can be discerned about time pressure effects in natural audit settings. As discussed later, the primary feature of concern is the restrictive way in which the experimental tasks have been defined which, in turn, has restricted opportunities for experimental subjects to *adapt* strategically to time pressures. In our view, this characteristic of prior research has constrained the experienced auditor from demonstrating an ability to cope with time pressure and, in turn, may have resulted in an overstatement of the deleterious effects of audit time pressure.

The purpose of the present paper is to describe how research efforts devoted to elucidating the effects of time pressure can be more profitably spent. This objective is accomplished by describing the results of an illustrative time pressure experiment designed to mimic the features of the aforementioned experimental studies, developing a taxonomy for analyzing audit time pressure effects, and based on that taxonomy, describing an embryonic agenda for future research on time pressure in audit contexts. We begin by describing the results of the illustrative experiment which is focused on the effects of time pressure on auditors' judgment policies. This experimental study is described first so that it can serve as a vehicle for highlighting the shortcomings of extant audit time pressure research. In the subsequent section, using psychology research on adaptive judgment formulation and decision making [Payne, Bettman and Johnson, 1988; 1990], we present and discuss a rudimentary taxonomy of time pressure effects in audit contexts. This taxonomy then is used to characterize extant research and, in the next section, to suggest how future audit time pressure research efforts profitably could be redirected. Following presentation of the resultant research agenda, concluding remarks complete the paper.

An Experimental Illustration

To illustrate how time pressure has been investigated in prior audit studies, we introduced time pressure into the experimental setting of a recently published paper [Brown and Solomon, 1990]. The focus of Brown and Solomon was auditor patterned (configural) information processing while assessing internal control risk. Introducing time pressure into such a study might be motivated by the simple recognition that time pressure is present in auditing and has been shown in psychology studies to cause judges and decision makers to: 1) be more erratic in usage of their judgment policies [Rothstein, 1986], 2) restrict their focus to a subset of available information cues [Wallsten and Barton, 1982; Wright, 1974; and Christensen-Szalanski, 1980], 3) alter global judgment and decision policies [Billings and Scherer, 1988], 4) access less relevant informa-

tion [Bowden, 1985] and 5) make less risky choices [Ben Zur and Brenitz, 1981]. To facilitate comparison with non-time pressured results, the same mode of analysis, analysis of variance (ANOVA), is used to represent each auditor-subject's information-processing strategy. The specific research question to be investigated is:

> Time pressure will have an inverse impact on the extent of auditors' configural information processing. That is, the proportion of judgment variance attributable by an ANOVA judgment model to expected interactions will decrease (increase) as time pressure increases (decreases).

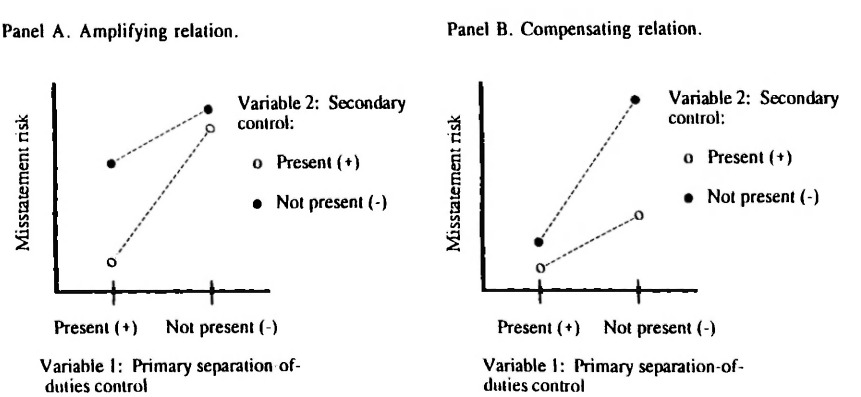
The Audit Judgment Task

The experimental task, more fully described in Brown and Solomon [1990], is assessment of interrelated internal controls in clients' information and business control systems. The specific control system component is cash disbursements and, in particular, assessment of the risk that cash disbursements are materially misstated as a result of checks being written and/or disbursed for improper (unauthorized/invalid) purposes. Within control systems, a weakness (i.e, increased risk of misstated financial statements) caused by the absence of a control (e.g., separation of duties such as check signing and cash disbursement processing/recording) may be at least partially offset by the presence of another control (e.g., an independent, second check signer). Further, strengths due to the presence of a control (e.g., the separation of cash disbursements duties) may be amplified by the addition of another control (e.g., internal audit of payments).

The information-processing strategies appropriate for evaluating such an internal control system component is configural in nature (also see Hitt and Barr, [1989]). In particular, this strategy involves the fully conditional question, "Is the primary separation-of-cash-disbursements-duties control present?" When the auditor's answer to this question is "yes," another question must be

Figure 1

Information Processing Strategies: Expected Interactions.



asked: "Are other controls present that amplify the primary control's effectiveness?" When the auditor's answer to this other question is "yes," the risk of improper cash disbursements is lower than when the answer is "no." However, when the auditor's answer to the first question is "no," a different question must be asked: "Are other controls present that compensate for the weakness caused by the primary control's absence?" When the auditor's answer to this question is "no," the risk of improper cash disbursements should be judged to be higher than when the answer is "yes" (when the answer is "yes," the risk could be as low as when the separation-of-cash-disbursements-duties control is present).

When this judgment strategy is modeled using ANOVA, a significant portion of improper-cash-disbursement-risk judgment variance will be accounted for by ordinal interactions between the primary and secondary internal controls (see Panels A and B in Figure 1 for graphic representations), as well as by the main effects for the controls that are involved in those interactions. Further, these interactions, because of their ordinal forms, will account for less judgment variation within the described judgment strategies than the main effects for the interactions' component controls.

Subjects

The initial subject pool consisted of seventy-four CPAs with three to four years of experience in financial-statement auditing (in addition to having college degrees with majors in accounting), and were employed by the same large, international CPA firm. Auditors with three-four years of experience have performed as part of actual audits the task employed in this study. Further, drawing the subjects from those with similar extent of experience should, at least in part, control for differences in task knowledge between subjects.

The subjects participated either in one of the firm's offices (twelve subjects) or while attending a technical training school run by the firm (sixty-two subjects). Based upon a pre-test (described below), twenty-three of these subjects participated in the current study.

Variables

The research design was a completely randomized one-factor design involving a pre- and a post-test. The single factor was time pressure which was manipulated at two levels: self-regulated (i.e., no time pressure) and a per-judgment time limit (i.e., time pressure). Because other constructs can differ between subjects that could affect information processing abilities (e.g., reading comprehension of task materials and task familiarity), time pressure was defined relative to each individual. Under time pressure, therefore, a subject's per-judgment time limit was defined to be one-half of the average per-judgment time taken for his (her) last eight pre-test judgments (see below).[2]

Nested within both the pre- and post-test is a within-subjects one-half fractional replication of a 2^5 factorial manipulation of task information cues. This factorial manipulation involved five information cues specific to the internal control assessment task, each cue at two levels. An example of the task stimuli is presented in Exhibit 1. One control question (D) contains three related sepa-

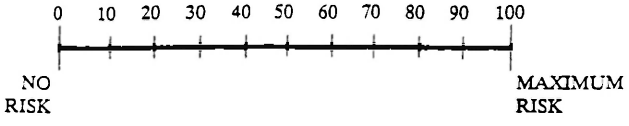
[2] A number of time-pressure "fractions were examined in a pilot test using CPAs. The fraction "one-half" was selected based on a desire to induce an effect but to not overwhelm the subject's ability to perform meaningfully the task.

Exhibit 1

An Example of a Cash Disbursement Internal Controls Questionnaire

	Control Question	Yes	No
A.	Are protective writing devices used to inscribe amounts on checks?		X
B.	Are properly approved vouchers required for check preparation?	X	
C.	Are all check signers designated by the Board of Directors?	X	
D.	Are the primary check signers independent of:		
	1. Purchasing and those requesting expenditures?	X	
	2. Persons approving vouchers?	X	
	3. Persons processing and recording cash disbursements?	X	
E.	Is an independent second check signer required who carefully scrutinizes the supporting documentation?	X	
F.	Does internal audit investigate payments made to payees not on an independently approved payee listing?		X

Given the controls as represented above, assess the RISK that cash disbursements could be materially misstated AS A RESULT OF checks being written and/or disbursed for improper (unauthorized and/or invalid) purposes.



ration-of-cash-disbursements-duties controls. Another control question (E) is a preventive cash disbursements control, and still another control question (F) is a detective cash disbursements control. The remainder of the control questions (A through C) were intended to be cash disbursements controls not highly related to the stated cash disbursements control objective. Five of the six control questions (A, C, D2 and D3 jointly, E and F) were factorially manipulated at two levels each (Yes or No), and two questions (B and D1) were held constant (Yes). Subjects were asked to assess the risk of a material misstatement in cash disbursement accounts. The risk assessments were elicited on a 100-point scale, where zero was no risk and 100 was maximum risk. Consistent with Brown and Solomon [1990], the predicted effects are interactions involving two pairs of control questions (D2/D3 and E; and D2/D3 and F).

An ANOVA judgment-model was computed for each auditor's risk assessments. Although each auditor judgment-model estimated all main effects (5) and two-way interactions (10), the higher-order (three, four and five-way) interactions were aliases of the estimated effects and thus, were assumed to be negligible. In addition, because each auditor-model has only one observation per cell, such models are determined fully and no error estimate exists. The judgment variance attributed to each term within an auditor-model, therefore, was computed by dividing the sum of squares for the term by the total sum of

squares for the model. Further, an arbitrary criterion of greater than or equal to four percent of total judgement variance was used to determine significance (i.e., terms with less than four percent of total judgment variance are assumed to have been caused by random variation rather than systematic effects).[3]

The following dependent measures were determined for each individual:

$$M_{ij1} = V_{ij2} - V_{ij1},$$

where V_{ijn} is the proportion of judgment variance that the ith individual's model attributed to the jth dependent variable of interest determined both from the pre-test (n=1) and the experiment (n=2). The dependent variable (M_{ij1}) is further categorized into each individual's random assignment to the time pressure (l=1,2) variable. The dependent variables of interest were expected interactions, main effects of expected interaction component controls, all above-criterion main effects, all above-criterion interactions, and below-criterion judgment variance.

Procedures

The laboratory session consisted of three sections: training, pre-testing and testing. All sections were presented on personal computers, and subjects completed the sections at their own pace (other than the time-pressured condition in the testing section). The training section began with brief instructions on the personal computer, and was followed by a practice case involving the general task but set in a context different from the pre-testing/testing case. The practice case was intended to allow subjects to gain familiarity with the response scale and the decisions aids available in the subsequent sections. The decision aids were intended to reduce subject memory load and to control extraneous variance.[4] The training section continued with presentation of the internal control case, and was followed by a blank copy of the task stimuli and additional instructions (see Appendix A).[5] The subjects then responded to a series of questions designed to stimulate prior thought about each item listed in their stimuli and its relation to the specific audit objective for which they were being asked to make risk assessments.

In the pre-testing section, the subjects were presented sequentially with the sixteen judgment trials (internal control questionnaires) from one of the half-replications (randomized over subjects). The order of the judgment trials (i.e., information combinations) within each half-replication was randomized for each subject. In addition, the order of the stimuli items in the judgment trials was counter-balanced; one-half of the subjects received one order and the other one-half received a second order. Upon completion of the pre-test half-replica-

[3] Results of a pilot study (n=12) employing a full twenty-five factorial design and earlier versions of the cases, indicated that effects > 2 percent of total risk assessment variation were significant when using the higher-order (three-, four-, and five-way) interactions as error estimates.

[4] The two decision aids were an electronic file and a logical consistency checker. When assessing risk, the subject had access to an electronic file of judgement trials that he or she had already evaluated (previous evaluations could not be changed). As the subject worked through the judgment trials, the computer reviewed their assessments for logical consistency (i.e., dominance conditions). If the computer detected an apparent logical inconsistency, that fact was displayed, and the subject had the option of either changing or maintaining his or her assessment of the current judgement trial.

[5] The subjects were instructed 1) to ignore the temporal sequence of the judgement trials and 2) that the trials would represent a mixture of possible situations. Further, the subjects were told that, although some situations may occur less frequently than others in practice, they should not allow such frequency to affect their risk assessments.

Table 1

Mean Risk Assessments Over Levels o Expected Interaction Terms Wi hin Judgment Models

Interaction Form	Time Pressure	n	Pre-Test Expected Interaction Levels* (+,+)	(+,-)	(-,+)	(-,-)	Post-Test Expected Interaction Levels* (+,+)	(+,-)	(-,+)	(-,-)
Amplifying	Yes	7	32.20	52.00	54.30	60.70	30.40	42.10	49.80	58.20
Amplifying	No	5	13.50	49.80	64.00	70.50	15.00	48.50	62.00	73.50
Compensating	Yes	8	20.10	27.10	38.10	68.70	20.40	28.00	49.90	63.30
Compensating	No	6	16.40	26.70	31.20	62.30	15.70	28.50	32.90	60.20

*The expected interaction levels are labeled as follows variable 1 (variable 2) is the first (second) element in a label, and "+" and "-" is he variable level. Both the variable and variable levels are the same as iden i ed in Figure 1.

tion, the percent of judgment variance attributable to the appropriate interaction was calculated for each subject.[6] When this percent was less than the four percent of total judgment variance criterion, the subject's participation in the experiment was ended. Alternatively, when this percent was greater than the criterion, the subject continued to the testing section of the experiment. Using this pre-test to filter those subjects who had not yet learned the appropriate judgment strategy should at least partially control for task knowledge differences between subjects.

Continuing subjects next were randomly assigned to one of the two levels of the time pressure variable (i.e., either no time pressure or time pressure). Subjects assigned to the time pressure condition were informed of their per-judgment time limit (as well as the basis for determining such limit). Following this, subjects were presented sequentially with the sixteen judgment trials from the other half-replication. Procedures for these trials were the same as for the pre-test, except for those subjects with judgment time limits. After completing these judgment trials, the subjects responded to a post-experimental questionnaire.

Results

As a validity check, each subject's expected pre-test interaction was inspected. Table 1 presents the mean risk assessments across the levels of the expected interactions for each level of time pressure. Since two possible ordinal interaction forms (compensating and amplifying) were expected for the internal control evaluation task, the means for both forms are presented. The inspections disclose that each subject's pre-test interaction was in a form consistent with the expectation (see Figure 1 for the expected forms).

Time pressure had a significant effect on changes in proportion of judgment variance attributed to the expected interactions. The proportions of judgment variance attributed to the expected interactions exhibited greater changes from a non-time pressured pre-test to a post-test when subjects' post-tests were time pressured. When the post-test was not time pressured, the mean change (from pre-test to post-test) in the proportion of judgment variance attributed to the expected interactions was -1.56 (from 8.68 to 7.12 percent of judgment variance, see Table 2). When the post-test was time pressured, however, the mean change was -5.76 (from 8.13 to 2.46 percent of judgment variance, see Table 2). The decline in judgment variance attributed to the expected interactions was

[6] This procedure was performed automatically by the computer.

Table 2

Effects of Time Pressure on Changes in Proportions of Judgment Variance Attributed to Various Judgment Model Terms: Descriptive Statistics

	Time Pressure						No Time Pressure					
	Unpressured Pre-Test		Pressured Post-Test		Difference		Unpressured Pre-Test		Unpressured Post-Test		Difference	
	Mean	S.d. Dev.	Mean	S.d. Dev.	Mean	S.d. Dev.	Mean	S.d. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Above-criterion:												
Main effects	82.31	5.23	86.57	5.51	4.25*	6.06	81.26	5.05	84.36	5.12	3.10	5.93
Interactions	11.19	6.80	2.50	3.47	-8.70	4.38	9.47	5.30	7.07	3.96	-2.40*	3.75
Below criterion	6.49	2.71	10.94	4.79	4.44	3.32	9.28	4.90	8.57	2.70	-0.71	5.51
Expected:												
Interactions	8.13	3.40	2.46	2.11	-5.67*	3.55	8.68	4.01	7.12	4.42	-1.56*	2.45
Main effects**	63.86	16.93	63.25	20.61	-0.61	8.34	70.86	9.99	75.18	7.82	4.53	8.83
N	13		13		13		10		10		10	

*p < 0.05

**0 controls involved in the expected interactions.

significantly greater when the post-test was time pressured than when it was not time pressured ($t(21) = 2.85$; $p<0.002$).

Time pressure also had significant effects on changes in the amount of below-criterion judgment variance (i.e., judgment error). The proportions of below-criterion judgment variance exhibited greater changes from a non-time pressured pre-test to a post-test when subjects' post-tests were time pressured. When the post-test was not time pressured, the mean change (from pre-test to post-test) was -0.71 decreasing from 9.28 to 8.57 percent of judgment variance. When the post-test was time pressured, however, the mean change was 4.44 increasing from 6.49 to 10.94 percent of judgment variance.

In sum, auditor-subjects' information processing strategies as captured by ANOVA judgment models were affected significantly by the imposition of time pressure. Generally, time pressure resulted in a decrease in configural information processing (as captured by the sum of all above-criterion interaction terms as well as the expected interaction terms). Furthermore, this decrease in configural information processing was accompanied by an increase in both non-configural processing (as captured by the sum of all above-criterion main effects) and in judgment instability (as captured by the sum of below-criterion terms).

Discussion

To the extent that configural information processing is believed to be appropriate in connection with the experimental task, time pressure would be viewed as having had a deleterious effect on the auditor-subjects' performance. Such a conclusion would be consistent with expectations based on: 1) audit studies reporting survey data concerned with pathological time-pressure responses such as premature sign-off [Kelly and Margheim, 1990; Alderman and Deitrick, 1982], 2) psychology studies using student subjects who generally would be expected to have little knowledge of, or experience in, managing the time pressures created in their experimental tasks [e.g., Rothstein, 1986; Wright, 1974], and 3) the few extant experimental studies using auditor subjects.

Elaborating on the experimental auditing studies, Choo and Firth [1992] described a study in which auditor-subjects assessed the risk that recorded accounts receivable did not exist under one of three levels of time pressure. The auditor subjects were given evidence from specified audit procedures (e.g., con-

firmation, inspection of subsequent collections, etc.) as the basis for their risk assessments.[7] This task is the same as that of experiment one in Brown and Solomon [1991], and although both studies were focussed on configural processing, Choo and Firth introduced time pressure in an effort to increase external validity. The results of Choo and Firth were consistent with those of the experimental illustration—configural processing was reduced by time pressure.

Other recent experimental studies of time pressure effects in audit settings include the two related studies by McDaniel [1990; 1992] In these studies, auditor-subjects performed an experimental task related to the year-end inventory audit procedures for a hypothetical auditee. Her subjects, assigned to one of two levels of time pressure in McDaniel [1990] and one of four levels of time pressure in McDaniel [1992], were required to identify and document seeded pricing and omission errors relevant to finished goods inventory and the related reserve account. For each of four objectives (completeness and valuation for the inventory asset and reserve accounts), the auditor-subjects determined which audit procedure to apply, the sample selection method and sample size to employ, and the conclusions to be reached based on the resultant evidence. McDaniel's [1990] results were that time pressure decreased audit effectiveness, enhanced audit efficiency only when the time pressure manipulation was extreme, and had enhanced auditor consistency by eliminating overly large sample sizes. Although McDaniel [1992] used the same task as McDaniel [1990], the focus of the later study was different. For present purposes, the most germane of her results was that when faced with time pressure, auditors may change the decision-making strategy they employ.

The results of these studies generally are consistent–time pressure had a largely deleterious effect on auditor judgment and decision making. Before etching this general proposition in stone, however, it is instructive to consider some of the features of the experimental illustration and the other experimental studies of auditor judgments and decisions under time pressure. In particular, notice that in both the illustrative experiment and Choo and Firth [1992], time pressure was unknown to the auditor until he/she was to perform a specific task. Further, these tasks were rather rigidly defined such that the auditor could only adopt limited tactical measures (e.g., work faster). Specifically precluded, therefore, were strategic measures to negate the effects of time pressure, such as bringing more resources to bear on the task, altering the audit strategy, and redefining the scope of the task.[8]

While some additional tactical measures could be adopted, constraints on strategic responses also were effectively imposed on the auditor-subjects in the

[7] Choo and Eggleton [1982] also investigated time-pressure effects using auditor-subjects. The results of that study are similar to that of the present illustrative study with the exception that configural processing seemed to be greater under time pressure than under no time pressure. This result should be interpreted with caution, however, because configural processing was measured on an ex post basis as the sum of all two- and three-way interactions rather than on an ex ante basis for predicted interactions. In addition, the time pressure manipulation in Choo and Eggleton was between-subjects and there only were five subjects in each condition.

[8] In this paper strategic responses are considered to be the establishment of audit goals and objectives as well as management control required to implement such goals and policies (e.g., audit program planning, audit work assignments, and review of audit work). Tactical responses, on the other hand, are considered to be the methods and procedures employed to effectively and efficiently perform the planned audit tasks. These definitions are similar to those employed by the management control literature [Anthony, Dearden and Govidarajan, 1992].

McDaniel [1990; 1992] studies. Nevertheless, McDaniel [1992], did report some evidence that auditors' behavior may be contingent upon task and context features such as time pressure. Consistently, a study by Kermis and Mahapatra [1985] also reported evidence suggesting that auditors take various tactical steps to cope with time pressure depending upon its severity. For example, it was reported by Kermis and Mahapatra that the amount of time devoted to some audit procedures may be reduced while the time allocated to other procedures may be increased.[9] Although some audit time pressure studies have permitted limited tactical responses to audit time pressure, no study has investigated strategic responses. Because various strategic options are available to auditors in the field, this is a serious limitation of audit time pressure research which may have caused both an overstatement of the deleterious effects of time pressure on auditor judgments and decisions and constrained the experienced auditor from demonstrating a superior ability (e.g., relative to students) to cope with such pressure.

The Adaptive Audit Decision Maker: A Time-Pressure Taxonomy

For many years, psychology researchers have argued that judgment and decision processes as well as the judgments and decisions themselves are influenced by a variety of considerations. More recently, psychology researchers began to recognize that judgment formulation and decision making may be characterized by a two-stage process in which the goal of the first stage is "deciding how to decide" while the second stage goal is to execute the chosen judgment and decision process [Payne, Bettman, and Johnson, 1988; 1990]. The conventional wisdom has become that during the first stage of this process (deciding how to decide), the judge/decision maker selects an approach which he or she perceives to be most appropriate for the task at hand [Beach and Mitchell, 1978; Payne, 1982] Perceptions of the appropriateness of judgment and decision strategies have been shown to be influenced by a variety of factors including justifiability [Tversky, 1972] and cognitive effort considerations [Simon, 1955] Since time pressure can be directly related to cognitive effort (i.e., constrained time generally requires increased cognitive effort), the perspective of people as strategic and adaptive decision makers has important, but heretofore largely unrecognized, implications for investigating time pressure effects in audit settings.

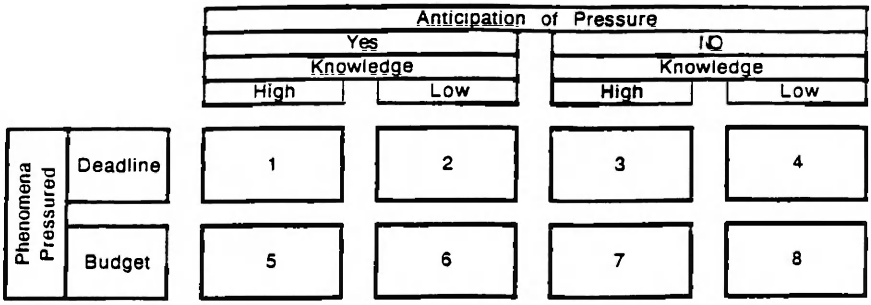
In considering potential time pressure effects within the auditing environment it is useful to employ the taxonomy shown in Figure 2. This taxonomy is structured around three variables: whether time pressure was anticipated by the decision maker (operationalized as either "yes" or "no"); the extent of the decision maker's knowledge about the potential time- pressure effects within the specific tasks being performed (operationalized as either "high" or "low"); and the nature of the time-pressure phenomena (either deadline or budget).

A structural feature of audit-engagement time pressure is the nature of the phenomena. That is, time pressure can be manifest either as "deadline" or as

[9] Kermis and Mahapatra [1985] was an experimental investigation in which time pressure was manipulated bewteen-subjects at four levels (ranging from no pressure to a 30% reduction from prior year's actual hours). The experimental materials, however, were mailed to the subjects. This procedural dimension differentiates the Kermis and Mahapatra study from the laboratory experiments mentioned earlier.

Figure 2

Time Pressures in Auditing: A Taxonomy



"budgetary" pressure. The increasing levels of competition within public auditing has resulted in substantial pressure to perform within increasingly stricter limits on audit resources allocated to an engagement. The most significant (costly) audit resource is auditor labor. Auditors, therefore, are not only given constrained amounts of time to perform tasks but are required to account on a task-by-task basis for the amount of time they actually take to complete each major portion of a task. Thus, budgetary pressure may arise because of constraints on the resources to be allocated in accomplishing particular tasks. For example, a requirement that a client's annual audit engagement be completed using no more than 200 staff hours would represent a budgetary pressure. On the other hand, deadline pressure may arise when there is a particular point in time by which specific tasks must be complete. For example, a requirement by the client that the annual audit opinion be delivered within six weeks of the fiscal year-end may create deadline pressure. These two time-pressure manifestations, however, may not be entirely independent. For example, one strategy for dealing with an unanticipated deadline would be to bring additional audit resources to bear in completing the required tasks which, in turn, may create a budgetary pressure.

Within the auditing environment, the extent to which time pressure can be anticipated is a critical feature that separates coping mechanisms into strategic and tactical responses. That is, when they are able to anticipate time pressure, auditors can strategically modify the planned audit program to cope with such pressure. For example, an expected budgetary pressure could be met with a reduction of substantive tests-of-details in favor of analytical procedures within certain areas (e.g., a retailer's fixed assets) such that sufficient resources are maintained for other areas (e.g., the retailer's cash receipts and inventories). On the other hand, when the time pressure has not been anticipated, many strategic responses are precluded and coping may be restricted to tactical responses of a more immediate nature. In the previous illustration, for example, having performed planned substantive procedures in a given area precludes reduction of such procedures to cope with an unanticipated pressure that arises during the execution of the audit program. When such pressure is an unanticipated deadline (e.g., the underwriter of an IPO wanting the stock issue to be effective a

month earlier than planned) the only effective response may be to bring additional audit resources to bear (again, potentially inducing unanticipated budgetary pressure).

Another feature critical in determining the extent and nature of time-pressure effects is the auditor's knowledge concerning the dysfunctional effects that can be caused by the pressure and his or her knowledge of effective strategies and tactical responses that can be employed to mitigate such effects. Such knowledge may be more affective in nature, learned through abstraction and generalization of audit experiences, than learned as a set of principles within a structured educational environment. If so, practicing auditors who have more experience with audit engagement time pressures should have greater knowledge of both time-pressure effects and coping strategies and tactics. Audit situations in which auditors' time pressure-related knowledge was low, therefore, would not be expected to occur frequently. It is true that junior-level auditors may not have acquired sufficient knowledge with which to understand fully potential time-pressure dysfunctionalities and to know appropriate responses for coping with such problems. However, viewing audit planning and performance as a team-based technology, senior-level members of the audit team should have sufficient knowledge (although some audit failures may have been due, in part, to a lack of such knowledge within the team-as-a-whole). Thus, adequate supervision should facilitate appropriate responses to all but the most rapidly occurring time pressures. The inclusion of "low" knowledge cells in the taxonomy is to facilitate discussion of extant academic research involving time pressure. Such research largely has employed subjects who, arguably, had low knowledge concerning time pressure effects and appropriate coping mechanisms within the experimental tasks in which they were required to perform.

Analyzing the earlier experiment and Choo and Firth [1992] in terms of the taxonomy presented above, the nature of the time pressure was budgetary. In particular, the amount of time that could be allocated to making the judgments required by the experimental task was limited physically. Since the possibility of time pressure was not known by the subjects until it was imposed, these experiments involved unanticipated time-pressure. Additionally, the subjects were audit seniors with significant auditing experience. Given the pre-test in which such subjects were filtered based on their ability to configurally process the information, all subjects in the illustrative experiment could be assumed to have high knowledge of the underlying phenomena (i.e., controls effective in ensuring that the objectives of cash disbursements authorization and validity are being met). In Choo and Firth, no such pre-test was employed. With respect to the subjects' knowledge about appropriate mechanisms for coping with the specific form of budgetary pressure employed in the experiment, neither study provided any evidence. Consequently, we consider the illustrative experiment and Choo and Firth to fall in cell No.7 of Figure 2, although we acknowledge that a case could be made for cell No. 8.

In the McDaniel [1990; 1991] studies, the time pressure was budgetary and the subjects were audit seniors who should be experienced at performing the experimental tasks. While not specifically tested in the studies, it is reasonable to assume that subjects had sufficient knowledge of the underlying phenomenon (i.e., substantive testing in connection with the inventory asset and reserve accounts) as well as limited experience in coping with the budgetary pressure introduced into the experiment. In these respects the McDaniel studies were

similar to the illustrative study and to a somewhat lesser extent, Choo and Firth [1992]. Also similar, time pressure was not known by the subjects until it was imposed. In one important respect, however, the McDaniel studies were different from the other studies. That is, the auditor-subjects were given a little more opportunity to use tactical measures to cope with time pressure than in the other studies. For example, in the McDaniel studies, the auditors could elect to perform procedures in a specified order or adjust the order in which they were performed so that those procedures thought to be more important could be accomplished within the allotted time. Nevertheless, the best placement of the McDaniel studies would seem to be cell No. 7 of Figure 2.

Audit Time Pressure: An Agenda For Research

In the preceding section, because the auditor-subjects in each of the experimental studies reviewed were unaware of the time pressure until it was imposed, it was argued that they were able to adopt some tactical measures (e.g., accelerate decision-making, filter information, reduce or eliminate more complex, and thus more time consuming, configural cue processing), but were effectively precluded from employing virtually all strategic mechanisms for coping with the pressure. It is our contention that while such situations may be of interest (especially to those interested in applying theories of harassed decision making in the audit setting; see Wright, [1974]), to the extent that the goal is to paint an objective picture of the affect of time pressure on audit judgments and decisions, audit researchers would seem to have over-invested in these types of studies. Further, we contend that one potential consequence of such over-investment is that little presently is known about *how and how well auditors use strategic measures in situations for which time pressures are anticipated.* A second-order consequence, therefore, as noted earlier, is that audit research may have overstated the negative consequences of time pressure.

Our agenda for audit time pressure research has both descriptive and evaluative foci and thus, will address the following general questions:

1. What strategies are adopted by knowledgeable auditors to cope with anticipated budgetary time pressures?
2. In what situations do knowledgeable auditors consider these potential strategies to be more or less appropriate?
   a. How are such strategies related, if at all, to the nature and timing of the tasks being performed (e.g., planning audit procedures versus executing planned procedures)?
   b. How effective and efficient are these strategies (i.e., what are their relative costs and benefits)?
3. To what extent do knowledgeable auditors, when they anticipate budgetary time pressure, select the most appropriate strategies?

To illustrate how these general questions might be operationalized within specific audit contexts, in the remainder of this section, we identify select examples from the perspective of cell No. 5 of Figure 2. Importantly, we also will argue that different research methods (e.g., laboratory experiments, field experiments, fields studies) should be employed depending upon the question to be addressed and the current state of knowledge with respect to that question. We have selected cell No. 5 because it provides a striking contrast with the cell (No. 7) in which the extant research would appear and because it represents

frequently occurring circumstances. Cell No. 5 would arise, for example, if an audit firm were to secure a new or continuing engagement through a competitive bidding process which resulted in a relatively low audit fee. In turn, this low audit fee, is assumed to create budgetary time pressure which is known at the onset. Additionally, the auditors are assumed to have the requisite minimum task knowledge and are assumed to be experienced in such task performance under time pressure.

An interesting starting point is to consider that if time pressure were anticipated early in the audit, it may be possible for the auditor to deal with it during audit planning by making *strategic administrative assignments.* That is, in assigning auditors to the engagement, it may be possible to substitute more experienced and knowledgeable auditors for less experience/knowledgeable auditors in various facets of the engagement. Such substitution would seem to have at least two potential benefits. First, to the extent that more experienced/knowledgeable auditors take less time to perform audit procedures, a direct time savings may result. Second, to the extent that more experienced/knowledgeable auditors perform more effectively, it may be possible to subject their work to a somewhat less exhaustive review process. Consistently, even if the review process itself were not modified, it would seem reasonable to expect that more experienced/knowledgeable auditors would spend less time clearing review notes etc. Although strategic administrative choices would seem to be an obvious mechanism for coping with audit time pressure, little presently is known about the staff assignment process within audit organizations either in the absence or presence of time pressure. Both descriptive and evaluative research of this type, therefore, would seem to be of value.

Another strategic aspect of audit planning and administration concerns the extent to which audit technology is to be used on an engagement. For example, it may be possible to cope, at least partially, with anticipated budgetary time pressure by using sophisticated technology such as expert systems. It also may be possible to use technology to perform more extensive and powerful analytical procedures [Bailey, Graham and Hansen, 1988]. Closely related to such technological options is the choice among the various approaches to producing sufficient, competent audit evidence. That is, as is well known, audit evidence may be produced using various mixes of audit procedures. For example, under anticipated budgetary time pressure, auditors may be less likely to plan to perform extensive tests-of-details or more or less likely to attempt to rely on the client's control structure. Auditors also may be more or less likely to use statistical approaches to planning audit sampling. While descriptive research on these potential time pressure coping mechanisms would be of considerable value, it also should be obvious that there are attendant audit effectiveness implications.

We next shift our focus from strategic planning and administration to *strategic execution* of audit activities. For reasons of expositional parsimony, we restrict our focus to one class of audit procedures— analytical procedures. This class was chosen because performing analytical procedures requires the auditor to perform the various component judgment and decision activities (i.e., problem representation, hypothesis formulation, information search, information processing and hypothesis testing, action choice) found elsewhere in the audit. Consequently, much of what is presented may be readily generalized to other procedure classes.

The shift from planning to an execution perspective, makes salient a variety

of fundamental questions. In particular, descriptive research on the impact of time pressure on each of the component judgment and decision activities would seem to be of value. For example, how does anticipated budgetary time pressure impact auditors' information search activities and hypothesis-testing strategies? At a more basic level, questions like the following might be posed about auditor behavior when faced with anticipated budgetary time pressure relative to non-pressured situations: (1) Are auditors more or less pre-disposed to employ statistical approaches to analytical review? (2) Are auditors more or less pre-disposed to employ decision aids to facilitate hypothesis formulation? (3) Do auditors plan to test hypothesis sets which are truncated to a greater or lesser extent? (4) Do auditors plan to sequentially test hypotheses and are they predisposed to focus first on those hypotheses which are more favorable to the client (e.g., non-error explanations for analytical review fluctuations)? (5) Do auditors make greater use of positive-test strategies? and (6) To what extent are the answers to questions like those just posed dependent upon client-specific factors (e.g., industry, risk level etc.)? Again, these are but a few of the questions which might be addressed to shed light on strategic audit execution under time pressure.

Shifting from execution to the perspective of a *strategic audit review process*, illustrative research questions would seem to be manyfold, but two are most salient. First, how and to what extent do auditors vary the nature and extent of their review activities as a consequence of time-pressured audit planning and execution? To elaborate, as previously noted, if especially experienced/knowledgeable auditors were assigned to the engagement because of the anticipation of budgetary time pressure, a strategic reviewer might perform a less exhaustive analysis of portions of the working papers. In such situations, descriptive research documenting the nature of the strategic review process modifications would seem to be of value. Second, to what extent does the audit review process result in the addition of audit procedures etc., which may have been trimmed during initial execution due to time pressure?

Before concluding this section, a few comments are in order about research methods for investigating questions like those just described and motivations for incorporating time pressure into research contexts. With respect to the former issue, because different research methods have different comparative advantages, it would seem to be a mistake to rely to the same extent as prior audit time-pressure research on surveys and laboratory experiments. Rather, we believe that field surveys and experiments are appropriate methods to use during theory building to investigate many of the descriptive questions just specified. As is the case for research focussed on other issues, such methods would seem to have the comparative advantage of facilitating identification of relevant variables. In addition, when investigating the audit effectiveness implications of identified time-pressure coping mechanisms, field studies would seem to be invaluable. For example, field studies could be conducted to determine the frequency with which audit failures arise from time-pressured audit engagements as well as the strategic actions taken, if any, which failed to effectively overcome the time pressure. Only after the resultant theory has been sufficiently developed would laboratory experimentation be efficient.

Lastly, it recently has been argued that greater representation within research contexts of important audit contextual features will be critical to the next generation of audit judgment and decision research studies [Solomon and Shields, 1993]. Because time pressure is an ubiquitous feature of audit contexts which

can have a pervasive impact on auditor judgment and decision making, researchers may want to incorporate time pressure into studies designed to investigate other audit-judgment and decision-making issues. To illustrate, considerable research has been reported in which the focus was auditor expertise and/or experience effects [e.g., Davis and Solomon, 1989]. With a few exceptions, those studies have been unable to identify systematic experience or expertise effects. But the contexts of these studies have been rather undeveloped, generally not incorporating features like multi-person interaction, review process feedback, accountability, and time pressure which, in concert, distinguish auditing from other judgment and decision making contexts. One possibility is that contextual features like time pressure interact with other aspects of judgment and decision making such that the presence of time pressure is a necessary (or sufficient) condition for such aspects to be revealed. Thus, it may be that in the presence of time pressure experienced auditors' judgment and decision making will exhibit some characteristics often associated with expertise but not (or less so) when time pressure is absent. For example, auditors under time pressure may exhibit some parallel information search and processing strategies whereas only serial strategies may be evident when time pressure is absent.

Concluding Remarks

In this paper, we have reviewed extant judgment and decision research on the effects of time pressure in auditing, described a representative time-pressure experimental study, critically analyzed the extant research (including our illustrative study), provided a taxonomy for investigating audit time-pressure effects and, based on the taxonomy, described an embryonic agenda for redirecting audit research efforts. While this agenda was fleshed out on an illustrative, but not exhaustive, basis only for one of the cells in the taxonomy, generalization to other issues and other cells should be facilitated. Critical themes in our discussion have been that extant research has not done a good job of depicting how and how well auditors cope with time-pressure effects in natural settings. This critical conclusion rests on the argument that most extant research has precluded the auditor from taking any strategic actions in the presence of time pressure and many tactical actions also have been precluded. Often, the only available options have been to work faster and when extreme time pressure has been introduced, the predictable deleterious effects were discerned.

Our approach has been to assume that although in concept extreme time pressure may be present, it may be precluded by the various audit organization controls. In addition, we have noted that extant research has already documented the obvious—when given no other options except to work harder and when this is not enough, work less is what auditors do. However, we also have argued that such research can tell us very little about the more common and interesting situation in which time pressure is present but less extreme and such time pressure has been anticipated by a knowledgeable and experienced auditor (or audit team). Focussing on such situations amounts to a re-direction of audit time-pressure research to how and the extent *to which the auditor works smarter in the presence of time pressure?*

Appendix A

Cash Disbursements Internal Control Case

Assume you are a senior-level auditor and that one of your clients is Nortack, Inc. Nortack, a large processor and merchandiser of agricultural commodities, is a privately-held company that has debt covenants requiring audited financial statements prepared in accordance with GAAP. The company has not presented significant auditing problems during your firm's five-year tenure as its public auditor. Nortack's management is actively involved both in designing the company's internal controls, as well as reviewing existing internal controls. The employees who administer Nortack's internal controls are well trained and supervised, with clearly defined responsibilities. Nortack has relatively autonomous internal audit department that is adequately staffed and supervised; the department head was a manager for a Big Eight CPA firm, and most of the internal auditors have CPA certificates. During the past five years, Nortack has been computerizing its accounting and information systems.

Currently, you are planning Nortack's 1988 audit engagement and are evaluating its internal controls to determine the extent to which you will rely on them in planning the year-end audit work. For sixteen randomly ordered cases, you will be presented with a portion of a cash disbursement internal control questionnaire completed by an auditor on your staff. For each case, you will be asked to assess the risk that the specified controls could give rise to a material misstatement of cash disbursements as a result of checks being written and/or disbursed for improper (unauthorized and/or invalid) purposes. Additional cash disbursement controls information:

A. The authorization for approving expenditure requests has been designated by the Board of Directors at various management levels, depending upon the nature and amount of the request. Expenditure authorization is indicated on purchase orders.

B. The cash disbursement department has the responsibility for verifying the propriety of expenditures and for recording them in the voucher register. The original copy of the voucher has a copy of the vendor's invoice, receiving report and purchase order attached.

C. Primary check signers carefully scrutinize vouchers and supporting documentation at the time checks are signed.

D. When they exist, second check signers are independent of all other expenditure and cash disbursement functions.

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Discussant's Response to "Auditors' Judgments/ Decisions Under Time Pressure: An Illustration and Agenda for Research"

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Arthur Andersen & Co.

This is an excellent paper, and I completely support the efforts by these authors to expand the research agenda regarding time pressure in auditing. My comments will offer insights from auditing practice on the nature of time pressures and auditors' responses to these pressures as well as how these matters might be addressed in a broader research agenda.

Time Constraints in Auditing

One of the critical issues that should be covered by a broader research agenda is the nature of time pressure in auditing. Much of the prior research and many comments in this paper treat time pressure in auditing as an "on-off switch." Time pressure is present in some situations and not present in others. This premise is not consistent with actual practice. In my experience, time pressure is present in virtually all audits. The real issue is the intensity of the pressure, and particularly changes in the intensity. In practice, the degree of time pressure that is present in a particular audit differs according to factors such as client size, industry, and other client-specific factors. Some of this pressure may be self-imposed by the audit team itself and some is imposed by the client. In any event, some degree of time pressure is an ever-present factor in auditing.

The prior research on time pressure dealt with the differences in auditor responses when time pressure was present versus not present. A more realistic approach would be to analyze auditor responses when the degree of time pressure changes. Over time, auditors adapt to a certain amount of time pressure. A critical question is how they revise their approach when the degree of this pressure changes. With a more "field based" approach, researchers should be able to study the degree of pressure that is present in various situations, factors which change the degree of time pressure, and how auditors respond to these changes.

Time Pressures Are Increasing

The authors indicate that time pressures are increasing due to competition within the profession. I agree with this comment. However, there are other forces at work that are also serving to increase time pressure. For instance, virtually all companies today are under increasing pressure to reduce costs in all parts of their operation. In turn, they are placing pressures on various vendors to reduce their costs through efficiencies or other measures. Auditors are being asked to do their part in helping reduce costs.

The authors discuss two types of time pressure in the article. The first is pressure to reduce the absolute amount of time incurred (budget pressure). The second is to complete the work at an earlier time (deadline pressure). The above-noted examples are of the first type. No examples are provided of the second type, although this type of pressure is probably also increasing. A contributing factor is that improvements in information systems are enabling companies to close their books faster. In turn, they are looking for quicker sign-offs by their auditors.

Time Pressure May Reduce Audit Quality

In various parts of this paper, the authors comment (and refer to prior research) that a major concern with time pressure in auditing is that it may lead to reductions in audit quality. This is a valid issue and an appropriate topic for further audit research. The question is whether time pressures on auditors cause non-compliance with auditing standards, either intentionally or unintentionally. Research that would shed some light on these issues would be welcome.

Prior Research

A basic premise of this paper is that prior research has not been a good reflection of the real world. I completely agree with this premise. Prior research essentially used a laboratory approach where auditors were required to simply work faster. In most instances, there was no change in the basic nature of the work. The authors indicate that often auditors have "strategic choices" that are available to them. I agree with this. Choices such as arbitrarily reducing the amount of time by one-half, as in one of the research experiments, would almost never be suggested as a realistic alternative in a real situation. On the contrary, when auditors are faced with significant increases in the degree of time pressure, they would consider revisions in the nature, extent, or timing of the work. Essentially, these are "strategic choices."

Another Option: Not Adhering to the Pressures

In much of the laboratory-style research conducted to date, the auditors did not have a choice in adhering to the time pressures. They were required to complete their tasks within a constrained amount of time. However, in real situations, auditors have choices about whether they will adhere to the limits imposed by the situation. In many situations, it is simply not possible to adhere to the time constraints or deadline constraints. In these situations, the auditor needs a certain amount of time to complete the audit work that is necessary under the auditing standards. It is simply not possible to adhere to the limits imposed by the client, and additional time must be incurred.

In these instances, the key question becomes: Who pays for this additional time? In my experience, there are three possible answers. The first is where the client pays for the additional time. If the additional work is legitimately required by the circumstances, this is a logical result. Another possibility is where the audit firm pays for the additional time. This may be the case where the audit firm has a fixed fee arrangement for the audit, or where the firm chooses to make an investment in the client relationship. A third and more subtle alternative is where the individual auditor, or staff member, pays for the additional time. Staff members are under increasingly intense time pressure, often without significant opportunities to modify the scope of work to be performed. These

pressures are generated by the client, other members of the audit team, or by the staff member's own high standards. A phenomenon that seems to have increased in recent years is where the staff member incurs the additional time to do the work, often on an overtime basis, but does not report the additional time incurred. In these instances, the staff member pays in the form of lost compensation, although the audit firm also pays through lost opportunity for billings.

The expanded research agenda should deal with issues where the auditor does not adhere to the limits.

Strategic Choices

The authors make the comment that little is known about the strategic choices available to auditors, such as staffing decisions. This seems like a strange comment in that the audit firms themselves know a tremendous amount about the strategic choices. Perhaps the comment is intended to mean that little has been provided in the auditing research on strategic choices. This is probably the case. It also indicates the appropriateness of expanding the research agenda to deal with 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.

An Alternative Agenda

Figure 1 outlines the nature of issues that have been considered in the previous research on time pressures in auditing.

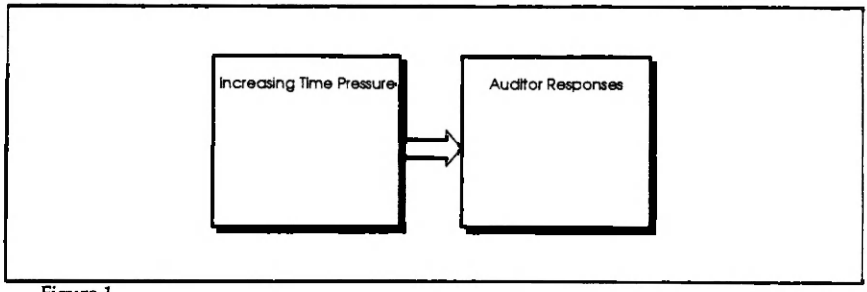

Figure 1

This research imposes time pressures of various types and studies auditor responses to these pressures. Figure 2 is a wider agenda for research on time pressure. This research would also begin with time pressure, but deal in particular with changes in this pressure. It would also be important to study the causes of these increases. In turn, the broader research would deal with auditor responses, but would expand beyond the existing research to deal with strategic responses. An important aspect here is to consider the conditions that exist in the different areas being audited to determine how these conditions will influence the responses that auditors have available to them and in fact exercise. An

important added dimension of the research is to deal with the audit quality implications of various types of auditor responses to these pressures. The underlying implication of much of the research is that audit quality is being impacted. An expanded research agenda should study actual impacts on audit quality. Further, this research should deal with impacts on the various stakeholders to the audit, such as management, stockholders, regulators, etc.

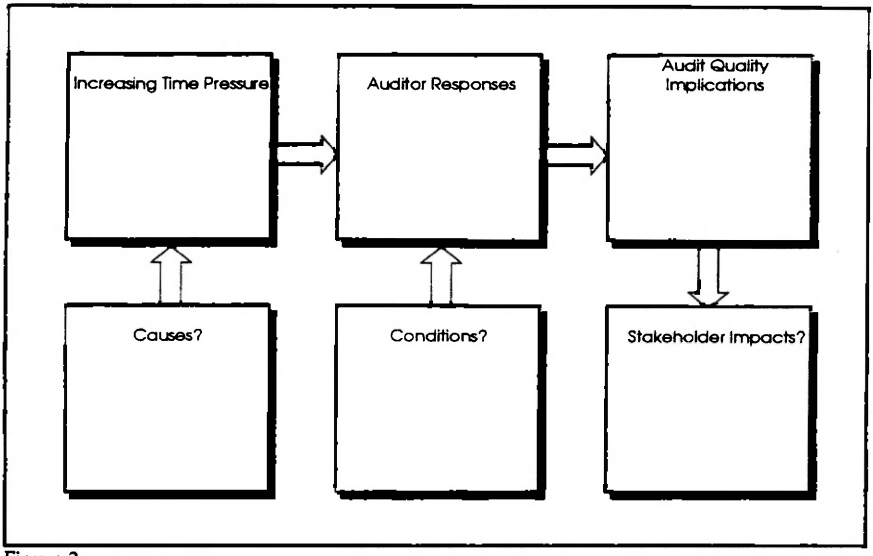

Figure 2

Proposed Taxonomy

The authors propose a taxonomy of time pressure issues including several key variables. I believe this is an excellent means to frame the issues for future research. However, the comments above indicate these issues should be framed in the context of changes in the intensity of time pressure, rather than time pressure as an "on-off switch."

Whether Time Pressure Was Anticipated

One of the key variables in the taxonomy is whether time pressure was anticipated. I believe the real issue is whether the change in pressure is known at the beginning of the engagement or arises during the engagement. The authors actually cover this in the paper. They comment that the inability to anticipate pressure at the beginning of the engagement may preclude certain actions by the auditor. In other words, certain audit procedures may have already been completed, and thus the auditor simply may have fewer options and less reaction time when the change in pressure occurs during the course of the audit.

Extent of Knowledge

One of the variables included in the taxonomy is whether the auditor has knowledge for establishing strategic responses to the time pressure situation. In my experience, there is always some knowledge present on the audit team on how to react to changes in circumstances. Thus, I do not believe including this item in the taxonomy will produce much insight about auditor decision-making,

as all the instances will likely be in one category. While I would suggest deleting it from the taxonomy, this is really a matter of preference.

Deadline or Budget

A key item in the taxonomy is whether the time pressure is due to a change in the deadline or an increase in budgetary pressure. I agree that these are two key elements, but another variable should be added consisting of a combination of both deadline and budget pressure.

Proposed Research Agenda

The authors propose a research agenda that focuses on understanding strategies adopted by knowledgeable auditors to deal with anticipated budget pressure. I was surprised to see this rather narrow research agenda. It covers only one branch of the authors' proposed taxonomy. It appears that the authors are only choosing this as an example. However, there are rich issues to be covered in other parts of the taxonomy as well, and this research should be encouraged. Issues about unanticipated pressures (i.e., not known at the beginning of the engagement) will be equally as interesting as anticipated pressures (i.e., known at the beginning of the engagement). Issues involving deadline pressure will be equally as interesting as issues involving budget pressures. Research should be strongly encouraged on all of these factors. It is important to study the causes of these pressures, the other conditions that exist in these situations, the types of responses that auditors make to these pressures, etc. In each of these parts of the taxonomy, these issues will be considerably different.

Possible Response to Time Pressure

The authors outline several possible responses that auditors can make to time pressure. These items represent a good discussion of possible responses. However, as a guide to future research, what will be needed is a structure for thinking about these possible responses. The following are some questions that could be used to guide some thinking about possible responses:

- What is done? (i.e., alternative audit procedures)
- How is it done? (e.g., use of technology or other tools)
- How much is done? (i.e., variations in extent)
- Who does it? (i.e., degree of experience and expertise)
- When is it done? (i.e., preliminary or final)
- Where is it done? (e.g., client office, remote locations, etc.)

Each of these questions would yield multiple options to be considered by auditors. The examples provided by the authors would fit within these questions.

Assigning More Experienced Personnel

One of the possible responses to time pressure that is laid out by the authors is to assign more experienced personnel to the engagement. This suggestion ignores certain realities of audit engagements. It seems to assume that time is the most important issue. In reality, the important issue is cost. It has both a short-term aspect (i.e., cost on the engagement) and a long- term (i.e., failure to

develop people is a cost). There is a long running debate about whether partners could do the job faster and cheaper than less experienced people. Regardless of the outcome of this debate, this is not the way to run a professional practice. It is essential that investments be made to develop people, both through formal training as well as on-the-job experience. Thus, a suggestion of assigning experienced personnel to an engagement in order to meet time pressures is not a realistic solution.

The other issue not considered by this suggestion is the difference in rates between experienced and inexperienced personnel. In fact, it would often be more expensive to have experienced personnel perform certain tasks. The key on any engagement is to assign the right level of person to each task. In auditing firms today, there is increasing sophistication of personnel structures, with several levels of personnel as well as specialists of various types. All of this is intended to get the right level of experience and skill assigned to each task. Thus, as a near-term solution, simply assigning more experienced personnel may not in fact reduce costs.

Use of Advanced Technology

The authors also suggest that auditors could use advanced technology such as expert systems as a way to reduce time when time pressures arise. In my experience, technology is already deployed to an optimum level on any given engagement. Because of the time pressure that is ever-present in auditing, auditors are constantly seeking means to be more efficient. One of these means is the use of technology. Technology is increasingly used in audits of all types. Any innovation in the use of technology is quickly deployed on virtually all audits. Thus, as a short-term method to reduce time, the additional use of technology would seldom be an option.

However, technology might be a technique that could be deployed in order to meet a quicker deadline established by the client. Certain tools might be deployed that would enable the auditor to sign off faster at year-end, although the total cost of the audit would probably be somewhat higher.

Experience to date with expert systems is somewhat mixed. Expert systems are in their early stage of development and deployment in auditing contexts. Many of the useful systems are in the audit planning stage rather than in the execution of audit procedures. For these reasons, expert systems would seldom be an option for reducing time on any given engagement.

Use of Different Approaches to Produce Audit Evidence

The authors also suggest another means of dealing with increased time pressures is to use different approaches to produce audit evidence. Again, because of the ever-present time pressures on audits, the auditor would probably already have selected the least costly approach. Thus, use of a different approach would seldom be available as a short-term solution to dealing with time pressures.

The use of a different audit approach would, however, be a viable technique to use when there is a change in the deadline. In this case, the auditor may select an approach that would enable him to complete the work at an earlier stage, although the total cost would probably be somewhat higher. An example would be to move certain work to a preliminary date with an update at year-end versus having the work performed entirely at year-end.

An Alternative Taxonomy

In light of the above comments, Figure 3 includes an alternative taxonomy for considering auditor responses to time pressure in auditing. It considers factors raised by the authors in their taxonomy as well as matters noted in my comments. In this model, it is important to identify the cause of the increase in time pressure. If it is subsequently determined that the auditor will not adhere to the limit, the cause of the increase in pressure will be important in determining who pays. For example, if the client is the cause for the pressure (i.e., changes in circumstances require additional effort), then it is logical that the client could be asked to pay for the increase. It is also important to understand the conditions of the account being audited. This will affect the types of responses that will be available. It is also likely that there would be some interplay between the choices of adhering to the limit and not adhering to the limit. In other words, the auditors may partially adhere to a limit that is being imposed and would then need to consider who pays for the remainder.

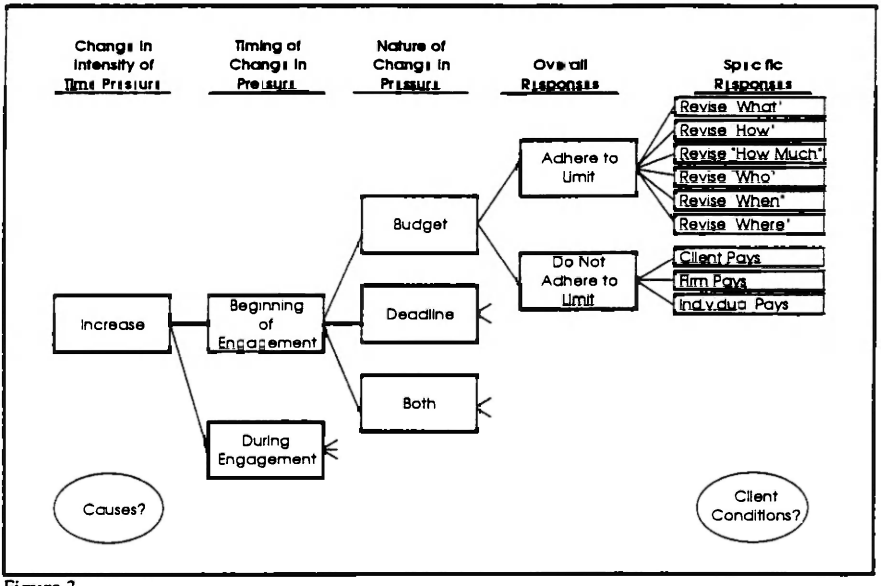

Figure 3

Future Research Approaches

In closing, the authors suggest that future research needs to involve more field surveys and experiments. I strongly agree with this comment. This will dramatically expand the scope and value of this type of research.

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Self-Evaluative Privilege

Thomas E. Powell
Institute of Internal Auditors, Inc.

As the Director of Professional Practices with the Institute of Internal Auditors (IIA), I respond to many, and duck some, questions from practitioners and others regarding all manner of issues with which practitioners are confronted daily. In recent years one question seems to be asked more frequently. The question is:

> How can we protect our workpapers and reports from access by parties other than those for whom they were prepared?

External auditors are familiar with both protecting their workpapers from access and having their reports used by third parties. Auditing students learn early that *Ultramares v. Touche & Co.* [1931] means third parties need to be carefully considered in the audit process. Internal auditors usually aren't concerned about that sort of thing. After all, their work is only for the use of their organization and they are a part of that organization. Or are they?

How Internal Auditors See Themselves

Internal auditing is defined in the *Statement of Responsibilities* of Internal Auditing [IIA, 1990] as follows:

> Internal Auditing is an independent appraisal function established within an organization to examine and evaluate its activities as a service to the organization. The objective is to assist members of the organization in the effective discharge of their responsibilities. To this end, internal auditing furnishes them with analyses, appraisals, recommendations, counsel, and information concerning the activities reviewed.[1]

It is this position that allows an internal auditor to use his or her detailed knowledge of the entity's policies, procedures, and environment to appraise the function and apprise management of existing or potential problem areas.

In earlier versions of the *Statement of Responsibilities of Internal Auditing* [1947, 1957, 1971, 1976] the wording was more narrow and implied a stronger allegiance to management: "Internal Auditing is an independent appraisal activity within an organization for the review of operations as a service to management."

In 1981 and subsequent versions "service to management" was changed to "service to the organization." This new broad allegiance provides a professional basis for departing from the interest of management. It also provides a basis for

[1] The Institute of Internal Auditors, Inc., Statement of Responsibilities of Internal Auditing (Altamonte Springs, Florida: The Institute of Internal Auditors, Inc., 1990).

others to view the internal auditor's work product as fertile ground for homing in on the organization's problem areas as identified by an objective professional.

How External Auditors See Internal Auditors

Last year the Auditing Standards Board of the AICPA wrapped up a two-year project to update Statement on Auditing Standards (SAS) Number 9: *The Effect of an Internal Audit Function on the Scope of the Independent Audit.* SAS Number 65: *The Auditor's Consideration of the Internal Audit Function in an Audit of Financial Statements* superseded SAS 9.

One of the most hotly debated topics was the concept of internal auditor independence. It was finally decided to point out in SAS 65 that the two professions define independence differently.[2] Rather than concentrate on independence, external auditors are directed in SAS 65 to look at the internal auditor's objectivity and competence, among other things. Based on their assessment they can then determine the degree to which the work of internal auditors might be used to supplement or reduce some of their own work.

Although this professional recognition was more subtle than some internal auditors would have desired, it was viewed very positively by others. However, the point was made once again that internal audit workpapers have a broader audience than the entity's management. This recognition is a continuation of the changes that have occurred primarily in the last twenty years.

Recent Changes

The stature of internal auditors has changed dramatically in the last two decades. One milestone was the establishment of the CIA Program.[3] Although not a license, the CIA credential has afforded a means of recognizing those internal auditors who have attained professional status through education, experience and examination. As internal auditors were working on improving their own abilities to provide professional service, legislation was being forged to increase the demand for such service. The passage of the Foreign Corrupt Practices Act in 1977 was another visible milestone in the profession. Since that time the increased expectations of the profession are obvious.

Internally, the work product of internal auditors has always been viewed by management as one of the best sources of independent appraisal within an organization. In 1987, the Treadway Commission *[Report of the National Commission on Fraudulent Financial Reporting,* 1987] underscored that view and encouraged an internal audit function as a means of strengthening corporate integrity.

In the United States the issue of corporate integrity obviously has many sides. Recently we have had some spectacular examples of fraud and mismanagement which undermined the public's confidence in everyone and everything from ministers to gambling casinos. Individuals have been damaged and litigation has inevitably followed. In this climate people do search for someone to blame when things go wrong. Sometimes the search is eleemosynary and some-

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[2] SAS 65 defined independence for external auditors and indicated in a footnote that IIA Standards use the term differently.

[3] The Certified Internal Auditor Program requires completion of: a two-day, four-part written examination; two years of qualifying experience; and, a degree which equates to the U.S. baccalaureate degree. The exam is offered in French, English and Spanish at sites around the world.

times it's for profit. One of the places that people found to search was internal auditors' workpapers. Being popular is not something internal auditors are used to, so it is understandable that they are uncomfortable when unforeseen third-party clients suddenly appear.

A Call For Help

The call I receive is frequently from a director of internal auditing or a member of an organization's legal staff, either anticipating or responding to work-product access by third parties. Unfortunately the question usually doesn't come up until the circumstances have progressed too far for the organization to deal effectively with the situation. I usually ask a few questions to see if the situation is similar to any of the ones I have heard before. But it seems that there are enough differences to make a general answer difficult.

Sometimes the access is sought by a local, state, or federal regulatory authority. Typically the caller says: "We are not concerned about the issues they are raising but our workpapers contain a lot of other unrelated subjective data that we don't want them to see." The caller sometimes asks: "How will I avoid scope restrictions when word gets out that my workpapers are an open book? I am trying to help my company correct and avoid problems, not punish them."

I usually share some basic information and references starting with the *Codification Of Standards for the Professional Practice of Internal Auditing.* The *Standards* state that "Audit working papers are the property of the organization." Furthermore they warn that "there are circumstances where requests for access to audit working papers and reports are made by parties outside the organization other than the external auditor. Prior to releasing such documentation, the director of internal auditing should obtain the approval of senior management and/or legal counsel."[4]

Based on my own experience it appears that most organizations have not anticipated these outside requests. They do not document internal memos and reports anticipating external publication. Since the main purpose of these reports is to get action, the wording is usually devoid of all of the caveats designed to avoid liability or shift blame. My caller is usually playing catch up and needs help immediately. So I, at this point, am forced to suggest that they balance their check book, unless they have privileges similar to U.S. congressmen, and call an attorney.

These calls started coming so regularly that I called our own attorney and asked for some sort of informational memo that I could share with our members. I also suggested to our Professional Issues Committee that they draft a position paper that would give further guidance to all internal auditors who were faced with access issues.

The question is a difficult one because there are good arguments on every side except the one I usually happen to be defending. The Professional Issues Committee did prepare an advisory report[5] in an attempt to be responsive to the

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[4] The Institute of Internal Auditors, Inc., Codification of Standards For The Professional Practice of Internal Auditing: No. 420 (Altamonte Springs, Florida: The Institute of Internal Auditors, Inc., 1989).

[5] The Professional Issues Committee of the IIA, just released a subcommittee report which provides guidance including a sample access policy statement for use by organizations in preparing for access requests.

problem. In the report they identified the basic concerns. The issues they defined go to the heart of our profession:

- Independence.
- Objectivity.
- The right of the public to know versus the right of an individual or an organization to privacy.
- The constitutional protection from self-incrimination.
- Whether the public interests are best served by openness or by confidentiality.
- The role of the internal auditor serving management as well as the board of directors in the private sector, and the role of the internal auditor as a public servant in the governmental sector.

The committee's report points out that in order to be effective as an independent appraisal function, internal auditing must be able to objectively evaluate high-risk activities and frankly communicate the results to management and the board. Unlimited access to internal auditing work-products by outside parties would have a chilling effect both on the scope of activities reviewed and the frankness with which results were communicated.

If this sounds like a plea for privileged communication or protection from self-incrimination, many would argue that it should be that way. But others might say that most organizations being called to report are simply too big and too public to demand privacy.

The Internal Auditor's Code

The *Code of Ethics* of the Institute of Internal Auditors, Inc., states in Article VIII [IIA, 1988]:

> Members and CIAs shall be prudent in the use of information acquired in the course of their duties. They shall not use confidential information for any personal gain nor in any manner which would be contrary to law or detrimental to the welfare of their organization.

Article II states [IIA, 1988]:

> Members and CIAs shall exhibit loyalty in all matters pertaining to the affairs of their organization or to whomever they may be rendering a service. However, Members and CIAs shall not knowingly be a party to any illegal or improper activity.

Now when the interests of owners, managers, regulators, and other interested parties are the same there is no problem. When those interests diverge, whose interests come first? The Board of Directors? Owners (members)? The public? Regulators? The auditor?

Self-Evaluative Privilege

I mentioned earlier that I asked our attorneys to outline this concept of the "self-evaluative privilege." Our attorney provided me with the following memorandum dated March 1990:

> The self-evaluative privilege is a judicially recognized doctrine which provides that, under certain circumstances, documents created pursuant to

> a critical self-analysis by a company should not be subject to compelled disclosure in private litigation. The rationale for the privilege is relatively simple: Company self-evaluations are beneficial, most immediately to the company and ultimately to society, and the fear of public disclosure of the results of self-evaluations would discourage such efforts. Unlike some privileges recognized by the law (e.g., the attorney-client privilege) the self-evaluative privilege is not well-defined, nor has it achieved broad acceptance. This situation is exacerbated by the fact that the privilege is currently being formulated almost exclusively by trial court judges, not appellate courts, and this leads to inconsistent application of the privilege.[6]

A few courts have subscribed to the self-evaluative privilege, including *Bredice v. Doctors Hospital Inc.,* 50 F.R.D. 249 [D.D.C., 1970], affirmed 479 F. 2d 920 [D.C.Cir., 1973], *The Washington Post Co. v. U.S. Department of Justice*, No. 84-3581 [D.D.C., Sept 25, 1987], and *Federal Trade Commission v. TRW, Inc.,* 628 F. 2d 207 [D.D.C., 1980]. However as pointed out in the above memo, this is not uniformly recognized.

Internal auditors have battled the reputation of being an adversary rather than an ally of management. If the internal auditors' workpapers become regularly accessed by true adversaries, the auditors may have more difficulty locating problem areas for early detection and correction.

In an unofficial IIA informational publication, the legal issues faced by internal auditors were explored and auditors were warned that [Fargason, 1992, p. 27]:

> Workpapers can be exposed during any legal proceeding, including interrogatories, motions/request for documents, depositions, subpoenas, etc. Internal auditors should be aware of the fact that their reports and workpapers may be the foundation for a lawsuit.

Unless internal workpapers can be protected by either the attorney-client privilege or the work-product privilege, they are likely to be discoverable [Fargason, 1992, p. 28].

This is not always the case. In *United States v. Newport News Shipbuilding and Dry Dock Company*, CA 4 No. 87-3832 (Newport News I) the Fourth Circuit Court of Appeals affirmed the district court's order denying the enforcement of a DCAA subpoena for internal auditing work-products. In this case, the workpapers contained data that was not "closely connected."

Some of the calls I receive suggest that they are being placed under the direction of the legal department for certain investigations in order to come under the umbrella of "attorney-client" privilege. Is this in the best interest of the profession?

An example of this type of posture is described in a forthcoming book from the IIA written by James Fargason. "In *Pritchard-Keang Nam Corporation v. Jaworski,* 751 F. 2d 277 (8th Cir. 1984) the issue before the court was whether the attorney-client privilege should be applied to documentation prepared by an attorney for the audit committee of the corporation. International Systems and

[6] Internal memorandum to The Institute of Internal Auditors from the law firm of Webster, Chamberlain & Bean, (Washington, D.C., March 1990).

Controls Corporation (ISC) directed its audit committee to investigate allegations that individuals within the corporation were paying bribes to government officials of foreign countries. In order to facilitate the investigation, the audit committee hired an outside accounting firm and an outside law firm. The law firm completed its assigned investigation and issued a report to the audit committee for review." Fargason [1992, p. 30] points out that the court upheld the attorney-client privilege. The court pointed out that not privileging this information would have a chilling effect on individuals who seek legal advice. Clients would be less likely to be completely candid and honest with their attorneys.

Recent U. S. legislation seems to be increasingly directed toward compelling internal and external auditors to report problem areas directly to regulators. For internal auditors this further exacerbates an already tenuous hold on their desired recognition as "team players" who want to correct existing problems as they are found. But now, internal auditors, having fought long and hard for recognition as objective professionals, are finding that "objective" means different things to different people. Internal auditors are supposed to be objective advisors, not managers. They cannot usurp management's decision-making responsibility. At the point they cross the line and begin to make the decisions and direct activity (manage) they are no longer independent of the activity. However, there are others who see that quite differently and suggest that the auditor should be a "whistle-blower." Where the lines between legal and illegal are distinct, the answers are clear. But in many complex issues the lines are less distinct.

At the AICPA's Annual Conference on SEC Developments held January 8, 1992, attendees were warned to anticipate enforcement action against internal auditors and other in-house officials. SEC Associate Enforcement Director Bruce Hiler and former SEC Enforcement Director Gary Lynch suggested that the 1990 Securities Enforcement Remedies and Penny Stock Act gave the Commission broader authority to go after mid-level executives who "cause" violations of the securities laws either by negligence or by failure to perform an act. Hiler discussed a 1985 enforcement action against the controller and treasurer of a company for aiding the chief executive officer's alleged financial fraud. The case is known as the "good soldier" case (*SEC v. Oak Industries Inc., DC SCalif*, 6/25/85; 17 SRLR 1199).

According to Lynch this new legislation allows cease-and-desist orders to be used in a way that will make it easier for the SEC to win its cases. Previously in order to get a permanent injunction, the SEC had the burden of proving in court that the defendant had the propensity to commit the violation again. Lynch pointed out that cease-and-desist orders can be handled administratively and do not require proof that violations could recur.

Another promulgation that professionals are trying to understand is the new Organizational Sentencing Guidelines[7] which became effective on November 1, 1991. These guidelines provide for restitution, probation, and fines; with the fines appearing to be the primary instrument of punishment. Base fines range from $5,000 for the lowest offense to $72,500,000 for the highest. The base fine is then adjusted by minimum and maximum multipliers based on culpability

[7] In May of 1991 the U.S. Sentencing Commission sent to Congress proposed sentencing guidelines for companies convicted of federal crimes. These guidelines became law on November 1, 1991.

scores. A company with a $72,500,000 fine could have its fine reduced to $3,600,000 or increased to $290,000,000 based on its culpability score.

Organizations are encouraged through enormous guideline incentives to investigate and report employee misconduct. However, this "voluntary" disclosure may waive any attorney-client privilege or work-product doctrine protection. This in turn opens the organization up to the potential for civil and administrative action which may result from shareholder, competitor, and/or employee lawsuits. The documentation for all of this may be the internal auditors' workpapers.

Conclusion

In conclusion, I don't have solutions to offer but rather challenges to researchers, educators, and practitioners alike. Recently I have had the opportunity to work directly with a number of groups seeking to address reporting issues. My observation has been that most of the time we are in a reactive rather than proactive mode. As accounting and auditing professionals we should be in a position to foresee more of these problems instead of dealing with the solutions handed to us by legislators and courts. One of the basic tenets of true professions is self-subordination and a devotion to the welfare of those served.

The legislative efforts that are increasing our professional liability have been annealed in a crucible of distrust. We all find ourselves living in glass houses and will have to be ready for inspection at all times. For auditors that means documenting circumspectly. For educators that means teaching critical thinking and instilling ethical pride. For researchers that means finding new solutions to keep the professions in a proactive rather than reactive mode.

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Discussant's Response To "Self-Evaluative Privilege"

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Introduction and Significance of Issue

As a somewhat frequent participant in the Kansas Symposium on Audit Problems, I today find myself in somewhat of an unusual situation—that of discussant rather than presenter or observer. But in any role, I always welcome the opportunity to participate in the grandfather symposium of systematic, academic-based audit research. I congratulate Raj Srivastava, his colleagues, and Deloitte & Touche for once again organizing an interesting set of research and position papers.

As a discussant for an issues paper based in practice, I feel obligated to give a qualification similar to what one often hears from practitioners as they discuss academic papers. Before I began to prepare my comments, I really knew very little about *self-evaluative privilege* or the other issues raised in Tom Powell's paper.

However, the fact that I was generally unfamiliar with the issues raised, at least from a research perspective, implies that we may have a research area which is academically novel. In addition, the fact that a prominent practitioner is raising the issue implies that the issues are practically relevant. What else could a researcher ask for? Perhaps, not much more. However, an academic discussant is bound to feel a bit uncomfortable reacting to a paper that includes little literature, theory, methodology or statistical analysis!

So, what to do? Tom Powell's paper is a lucid statement of a set of issues dealing with access to audit work-products which he develops from an internal auditor's perspective. This is clearly an issue to both internal and external auditors and Tom is to be commended for bringing it to the attention of the academic community.

In my comments, I attempt to achieve two primary objectives. First, I attempt to react positively to Tom's challenge in his closing paragraph of identifying some promising research opportunities in the arena. Second, I provide some guidance as to what kinds of additions to practitioner's papers (e.g. integration of academic literature and development of more detailed models or theories) would help promote audit research. Such additions to papers of this nature would help to bridge the *Practitioner-Academic Research Gap.*

Specifically, the following three topics are discussed. First, is the topic of what aspects of auditor workpaper access are *researchable* from a scientific

* Helpful suggestions from Ganesh Krishnamoorthy are gratefully acknowledged.

standpoint. In other words, what types of knowledge can academia contribute to these problems? Second, is an overview of some of the existing literature, both academic and practitioner based, which may be relevant. Lastly, based on this review, I then identify some research opportunities and two specific research ideas, one experimental and one analytical, which may be pursued. Hopefully some of these ideas will ring a bell with both academics and Tom Powell and will lead to some research funds and studies in this area.

Nature of the Issues: Problem Solving, Engineering, Research or Politics?

When reading a position paper of this nature, one is first struck by the sheer complexity of the issues related to access to audit workpapers. Tom does an excellent job of identifying some of these complexities, although not in a formal or rigorous manner which would assist one interested in research. What would be helpful is a more systematic identification of the variables, relationships and agents or players which Tom sees as being relevant. The researcher is forced to do this for him or herself and is subject to serious risks of *omission of relevant variables or relations.*[1]

The second thing that struck me in the paper was Tom's call for academic research and the question of the scientific nature of the issues he was raising. A distinction which is often made in science, for example by Kerlinger [1979], is that many issues which are raised by practitioners are not researchable issues. Kerlinger identifies three types of issues and problems that practitioners face: engineering, value and research problems. "We consider problems that are really not problems in the scientific sense. They can be called value or engineering problems."[2]

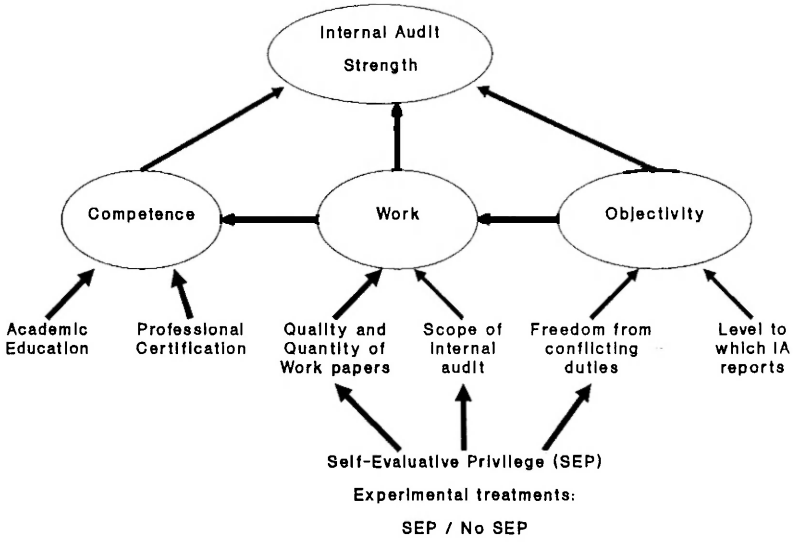
Engineering problems deal with "how to" issues and value issues concern "what is best or what is preferred" types of problems. In contrast, Kerlinger views scientific research problems as questions that ask about *relations among variables or phenomenon.* Whereas some of the issues Tom raises are research questions, many are not. An example of an engineering type problem is presented on the first page where he asks: "How can we protect our workpapers and reports from access by parties other than those for whom they were prepared?" It doesn't take scientific (i.e. academic) research to "engineer" feasible solutions to this problem—one solution is simply to shred any potentially relevant evidence.

An example of a value question is presented later in the paper where Tom notes that some internal audit activities are being placed under legal department direction to come under the umbrella of "attorney-client" privilege. "Is this in the best interest of the profession?" Such questions do not fall within the direct purview of science although research can provide some knowledge which might be helpful such as attitudinal surveys of the tradeoffs which might be involved.

In all deference to Tom, it should be noted that many of the questions, issues, problems, and assertions raised could be scientifically addressed. For instance, on page 102 he asserts that "Unlimited access to internal auditing work-products by outside parties would have a chilling effect both on the scope of activi-

[1] Figure 1 is a sketch of such a model for one aspect of these issues.
[2] Kerlinger [1979, p. 29].

Figure 1: A Multistage Structure for the Evaluation of Internal Audit Function



ties reviewed and the frankness with which results could be communicated". A testable cause-effect relation between access to work-product and chilling effects is explicit in such an assertion. On page 100 he raises another research issue concerning "the degree to which the work of internal auditors might be used to supplement or reduce some of their [external auditors] work." In fact, this second question is one that already has some research results to consider.[3]

This leads to the third aspect of Tom's paper that is readily apparent to any academic. The paper is devoid of any explicit reference to the academic literature and little reference to the professional literature. From an academic/audit standpoint, one could say that the paper lacks appropriate research documentation. What part of the literature was systematically considered? What ideas, problems and assertions have support or explicit research results in the extant literature? These are questions whose answers would help academics interested in doing research of this nature.

Related Research and Literature

Although I did not do a comprehensive review of the research literature, I did consult a number of sources to obtain a judgment sample of what is available. My search looked at academic and professional literature and also survey documents, such as the "Research Opportunities in Auditing" monographs (see foonote 3) and a review of research presented at the USC Audit Judgment Symposium.[4] Although I found little research which directly addresses issues related to access to internal audit work-products, there is a substantial body of

[3] Peat, Marwick, Mitchell & Co.[1976]; and Abdel-kahlik and Solomon [1988].
[4] Mock, Watkins, Pincus and Caster [1992].

research, some of which is listed in my references, which may provide some useful information and guidance.

For example, several studies have explicitly investigated aspects of the external auditor's assessment of and reliance on internal audit work. Figure 1 summarizes the main variables and their relations as they are discussed in the literature. The main variable in the figure is the quality or strength of the internal audit function within an organization. This variable is affected by or related to in Kerlinger's terms three primary variables: competence, work quality and objectivity. These three variables are in turn affected by a number of factors such as work paper quality. Such models or theories are imperative in academic work as they summarize the knowledge that is thought to exist on a subject and are open to critique and challenge.

The existing literature has focused on the external auditor's assessment of the relative importance of the internal audit qualities of competence, work performance and objectivity in their reliance decision.[5] Such qualities may effect external audit efficiency and may, in turn, be affected by increasing access by outsiders to internal audit work. One possibility for such an effect would be that the access constrains or has a "chilling effect" on audit work performance.

An Experiment to Assess the Chilling Effect of Increased Access

At the bottom of Figure 1, an experimental treatment is shown which indicates the kind of experiment that could be conducted in this area. Such an experiment would develop a task where auditors were asked to make judgments concerning the internal audit strength in a case where the internal auditors were working with or without the "self-evaluative privilege" discussed in Tom's paper. The "theory" suggested in Tom's paper is that for the treatment where access to internal audit workpapers is a threat and where there is no self-evaluative privilege, there would be a chilling effect on the workpapers. Other similar treatments, such as varying the likelihood of increased access to workpapers, come to mind when reviewing these issues. Whether such an experimental study would be valuable from a practicing or academic standpoint is an issue which symposia such as this one help address.

In looking at Figure 1, which represents only a small part of the issues raised in Tom's paper, one readily sees the complexity of the problems being addressed. For example, published research shows that the external auditor's rankings and weightings of these factors vary over studies and probably over audit situations. Second, there are many other variables and players that probably should be considered if one attempted to expand a model like Figure 1 into a comprehensive model or theory.

Other Researchable Questions and Research Opportunities

In my review of Tom's paper and of the published literature, I did attempt to respond to his challenge to act in a proactive manner to these issues. This involved the compilation of a list of research questions that could benefit from additional academic research:

[5] See, for example, Brown [1983]; Margheim [1986]; Messier and Schneider [1988]; and Harrell, Taylor and Chewning [1989].

If the internal auditors' workpapers become regularly accessed by true adversaries the auditors may have more difficulty locating problem areas for early detection and correction. [Powell, 1992, p. 103].

How do the auditor's need to document and take responsibility for judgments and actions affect his/her evaluation of conflicting evidence? [Abdel-kahlik and Solomon, 1988, p. 130].

When interests of owners, managers, regulators and other interested parties diverge, what effects will occur on internal auditor priorities and decisions? [Powell, 1992, p. 102].

What is the effect of aggressive enforcement of compliance with laws and regulations on security and privacy of client (firm) information? [PMM, 1976, p. 137, (paraphrased)].

What mechanisms should be considered to serve the demand for dissemination of attest reports related to social utilities? [Abdel-kahlik and Solomon, 1988, p. 151].

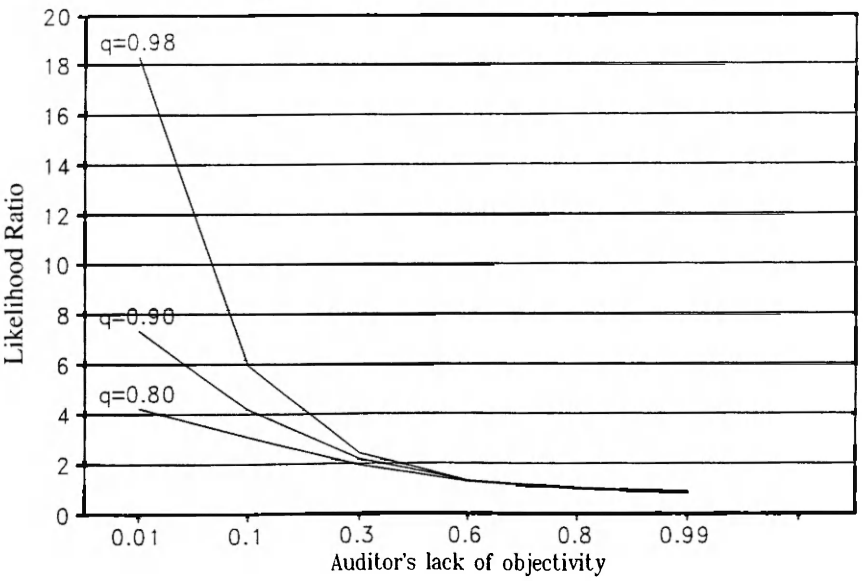
Does litigation influence audit effectiveness? If so, how and to what extent? [Abdel-kahlik and Solomon, 1988, p. 180].

What are the effects of litigation on the nature and pricing of audit services? [Abdel-kahlik and Solomon, 1988, p. 180].

Research Methods

The above research questions and others that are evident in the literature imply the possible use of a variety of empirical research approaches and methods including controlled experiments, experimental markets studies, field stud-

Figure 2: Informational Impact of Internal Audit Workpapers



ies and attitudinal surveys. It also might be fruitful to utilize some of the more formal, hierarchical models of auditor judgment to analytically assess the possible impacts of increased access to auditor work-products on the discovery of material errors or significant control weaknesses.

An example of the analytical approach is suggested by Krishnamoorthy's work [1992] In this approach, cascaded inference theory is used to derive analytically the effect of changes in the quality of audit workpapers on the likelihood of error detection, the primary issue identified in Tom's paper. Figure 2 depicts the sensitivity of the underlying likelihood ratios to differences in auditor objectivity which influences the "source reliability" of the evidence. These differences then change the informational impact (likelihood ratios) of the audit evidence. These differences are particularly large on the left side of Figure 2, i.e., where the auditor lacks objectivity, for example, when the internal auditor is "less than frank" in communicating the results of audit tests (Powell, 1992, p. 102).

Concluding Comments

In my remarks I have attempted to focus on two general issues. First is the issue as to what scientific research may be able to contribute to practical problems such as increasing access to internal audit work-products. Tom's paper raises a number of important problems which need to be addressed and academic research can be helpful for some of these problems. Examples of research questions were identified from both Tom's paper and from the literature in general. In addition, illustrations were developed of both an experimental and an analytical methodology which could be used to address two of these research questions.

Second, I have suggested that practitioners could facilitate this process in a number of ways. For example, explicit incorporation of extant research in their position papers would provide information as to what previous results were useful and to what extent models, theories and methods were found to be incomplete or inaccurate. If extant research is found to be lacking in some respect, the next step would be to identify variables, relations and complexities that need to be considered in formal research. Both of these activities would help bridge the academic-practitioner research gap which exists.

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6

Using Regression Analysis to Assist Audit Judgments in Substantive Testing

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Introduction

Over the years there has been some debate over the use of analytical procedures in auditing, particularly non-statistical procedures to derive substantive assurance. SAS 56 [AICPA, 1989] clarified the process involved in substantive procedures, but did not solve such audit questions as "How much work is enough?" There has been less debate over statistical analytical procedures, which usually incorporate regression analysis, perhaps because the level of use by auditors is not as widespread. The very term "regression analysis" is forbidding, and auditors, who are finally becoming more comfortable with sampling (as long as you don't mention the term statistics!), do not tend to show enthusiasm for statistical tools unless they are packaged in a very friendly fashion.

Our firm is fortunate to have a regression tool that our auditors feel comfortable using. STAR (Statistical Techniques for Analytical Review) is a software tool that assists the performance of substantive analytical procedures by using regression analysis to model the relationship between an amount being tested and data expected to be predictive of the amount. It is designed to help auditors perform substantive analytical procedures in the context of an audit framework, and it builds upon the basic concepts involved in any substantive analytical procedure.

STAR was developed by our firm and has been used in the audit practice since 1971. We have recently updated the software, giving it a more modern user interface and making minor enhancements to the reports and messages provided by the software to improve the information available to the auditor. The enhancements were based on prior experiences with STAR and a fresh challenge of the tool against the requirements of SAS 56. However, the key features and the calculations remain unchanged.

One such key feature of STAR is the inclusion of an "audit interface" that melds professional judgments about materiality and assurance with the application of regression analysis. This feature computes thresholds based on auditor judgments and thereby identifies differences between the recorded amounts and the expectations that are sufficiently unusual to warrant further investigation.

We do not propose to discuss the calculations and statistics included in STAR in detail. Rather, we want to focus on the use of STAR for substantive testing, and how STAR assists auditors in making the judgments required in any substantive analytical procedure.

For a more detailed explanation of STAR and its statistical concepts, refer to *Statistical Techniques for Analytical Review in Auditing* [Stringer and Stewart, 1986].

Substantive Analytical Procedures

To provide a context for our discussion of STAR, we should first consider the components of a substantive analytical procedure. As indicated in SAS 56, substantive analytical procedures involve comparing recorded amounts with an expectation thereof developed from relevant financial or non-financial data for the purpose of concluding whether the recorded amounts are free of material misstatement.

In general, an auditor performs the following steps when using substantive analytical procedures:

1. Develop expectation(s) of the amount to be tested at an appropriate level of disaggregation based on relevant financial or non-financial data. This includes selecting reliable data expected to be predictive of the amount to be tested and determining an expected relationship between such data and the amount.
2. Determine a threshold amount (i.e., the maximum difference between the expectation of an amount and its recorded value that is acceptable without explanation). It should be sufficiently small to enable misstatements to be identified that could be material, either individually, or when aggregated with misstatements in other disaggregated portions or in other accounts.
3. Compare the expectation(s) with the recorded amount and identify differences requiring further investigation (i.e., those differences exceeding the threshold amount).
4. Identify and corroborate explanations for differences exceeding the threshold amount by performing further analysis or inquiry and examining supporting documentation.
5. Evaluate the findings and determine the level of assurance, if any, to be drawn from the analytical procedures.

Use of STAR

When an auditor uses STAR to perform a substantive analytical procedure, the steps that he or she[1] takes are similar to those for any other type of substantive analytical procedure, and exactly parallel those described above:

1. Develop an expectation. The auditor determines the type of analysis, an appropriate level of disaggregation, and appropriate base data. Then he uses STAR's regression analysis techniques to develop a plausible relationship from the base data (a regression model), between the amounts to be tested (the test variable) and one or more independent sets of data (predicting variables) that are expected to be related to the test variable. Based on this relationship, STAR is used to calculate the expectations (regression estimates) for the test variable based on the current-period values of the predicting variables.

[1] The use of the pronoun "he" in this paper is generic, denoting the "professional," whether male or female.

2. Determine threshold. STAR uses statistical techniques to determine thresholds, based on the regression model and the audit judgments as to materiality, required audit assurance, and the direction of test (i.e., whether the test is primarily to detect overstatements or understatements).
3. Identify differences for investigation (i.e., differences exceeding the thresholds determined for each disaggregated recorded amount). STAR compares the expectations with the recorded amounts of the test variable to determine the differences (residuals) exceeding the thresholds.
4. & 5. As above.

As indicated in these steps, STAR performs more than regression analysis. It assists the auditor in the first three steps of the analytical procedures process by performing four distinct activities:

1. Regression analysis to study data relationships and to develop a model that can be used to calculate an expectation for comparison with recorded results.
2. Mathematical tests to assess the plausibility and predictability of the relationship.
3. A proprietary statistical algorithm to compute threshold in light of the materiality and required assurance specified by the auditor, and the precision inherent in the particular regression model.
4. Identification of the differences between the expectations and the recorded amounts that exceed threshold.

How STAR Supports Audit Judgments

Two important criteria should be considered when designing a software tool to perform regression analysis for a substantive test. The regression analysis should be packaged so that auditors can use it as a substantive testing tool without having to become mathematical/statistical experts, and the tool should be designed to assist the auditor as much as possible without leading him to suspend audit judgment in favor of the automated answer.

In this discussion, we demonstrate how we dealt with these considerations in designing STAR, such that:

- The regression statistics are not totally hidden, but are presented in formats with which auditors feel comfortable.
- Additional mathematical and statistical checks are performed automatically without requiring auditor interaction, but when the results indicate unusual conditions, sufficient explanation and information are given to allow the auditor to determine what actions to take.
- The reports, text messages, and graphics, which explain the statistics and mathematical tests and illustrate the relationships, are specifically designed to assist auditor judgments.

In addition, we demonstrate that the limitations that arise in using STAR for a substantive analytical procedure are no different than the limitations faced when using other means (often nonstatistical) to perform a substantive analytical procedure.

We emphasize throughout our training that the effectiveness of STAR depends on the application of sound professional judgment at the design and

interpretation stages, and the responsible follow-up of any significant differences that it highlights. STAR does not replace audit judgment; it confirms it and focuses our attention on areas where further analysis is needed. Auditors using STAR must understand the basic concepts involved in developing an expectation and identifying differences for investigation. For example, our firm's training and manuals require an understanding of substantive analytical procedures as a pre-requisite to learning how to use STAR.

The auditor makes the basic decisions, such as what predicting data to use, the level of disaggregation, and the materiality and assurance required to meet the audit objectives. These decisions are no different than the decisions to be made if the auditor uses nonstatistical analytical procedures to perform the substantive test. However, STAR has a strength that most other techniques lack, in that it provides an objective determination of threshold. This is otherwise a complex problem for the auditor, because it requires combining materiality and audit assurance with the precision inherent in the expectation (STAR combines these factors statistically, as described later).

If used effectively, STAR can provide valuable objective assistance to the auditor making the judgments required in a substantive test and, by determining and illustrating the relationships between the data entered, can increase the auditor's understanding of the client's business.

To illustrate how STAR supports the audit judgments required in a substantive analytical procedure, we will discuss the four activities STAR primarily assists:

1. Development of a relationship (i.e., a model), using regression analysis,
2. Plausibility and predictability checks of the relationship using mathematical tests,
3. Determination of threshold,
4. Identification of significant differences for investigation.

For each activity, we focus on how STAR assists the auditor without eliminating the need for audit judgment. The presentation of results, text messages, on-line help, and graphics provides the auditor with sufficient information so that, without being a statistical expert, he can develop and refine a statistical model, and use such a model to assess whether material misstatement is likely at a specified level of assurance.

Developing a Relationship

Whether using STAR or not, when developing an analytical procedures expectation, an auditor must determine the type of analysis, time-series (comparisons over time) or cross-sectional (comparisons over different units), the level of disaggregation, appropriate base data, and the model relating the predicting data to the data to be tested.

STAR facilitates these audit decisions with flexible options as to data and disaggregation and with a sophisticated approach to building a model. STAR offers both time-series and cross-sectional analysis. It effectively allows any level of disaggregation because it has no maximum limit on the number of observations and requires a minimum of three observations in the base period. Typically, the base profile in a time series application will contain 24 or 36

monthly observations. However, 52 weekly observations over one year could be used, or quarterly information for five years. A minimum of 20 observations is recommended for a cross-sectional application.

Determine Appropriate Base Data

Base data should include variables that are expected to be predictive of the test variable and that, therefore, are likely to be useful in determining expected values for the test variable. Sources of data can be broadly categorized as external, internal accounting, internal non-accounting, and dummy predicting variables.

STAR offers many options to allow the auditor the greatest flexibility in selecting base data. For example, it is possible to use up to 24 predicting variables in a STAR model, although normally only two or three are used to prevent the model from becoming too complex to be comprehensible. It is possible to have STAR skip or ignore portions of base data if, for example, observations for certain periods are known to be unusual.

If a mathematical expression (e.g., units shipped x price index) better characterizes the business relationship between a group of predicting variables and the test variable, STAR includes facilities to calculate such derived variables, provided that data for the component variables have been entered.

STAR also accommodates the entry of dummy variables, if these are required to account for the presence of unusual factors or events, which are difficult to quantify and represent with an ordinary variable (e.g., holidays, fires, or strikes); a trend variable if the relationship between variables is thought to change systematically and in one direction over time; and other special variables, such as:

- If seasonal factors are expected to affect the relationship among variables, STAR can be instructed to create predicting variables for seasonal adjustment. In a monthly model, for example, STAR will generate one predicting variable for each month of the year, each of which adjusts for seasonal effects in the month it represents. For seasonality to be used, there needs to be a base period with at least three "sets" of observations so that a seasonal pattern can be identified.
- Lagged variables can be specified to build expected time lags into relationships, such as those expected between cash collections and sales, or between sales and advertising expenditure. For example, if advertising expenditures in March are expected to affect June sales dollars, the auditor can specify that advertising expenditure be "lagged" by three months.

The most common STAR audit applications are to test sales, cost of sales, and other expenses. Typical predicting data used by auditors in STAR applications to develop expectations of sales include inflation indices and seasonality, and mathematical expressions combining factors such as:

- Store floor area and sales per square foot,
- Number of units produced, consumed or shipped, and unit values,
- Kilowatt hours sold and prices per kilowatt,
- Number of users and entry or usage fees,
- Hours worked and labor charges per hour.

Develop Regression Model

The auditor may identify some number of potential predicting variables. A decision has to be made about which particular subset results in the "best" model. The ideal is to use a small but powerful set of variables. STAR assists this process by using a procedure that includes a forward selection procedure for admitting new variables one at a time, as well as a backward elimination procedure for removing variables that become redundant as a result of subsequent admissions. Known as *stepwise regression,* the goal is to ensure that all the independent variables that are included in the final regression function (including special variables such as dummy, seasonal, or trend), contribute significantly to it in a statistical sense (i.e., contribute significantly to the explanatory power of the model).

We do not recommend entering variables without regard to whether they are predictive of the amount being tested, even though they are likely to be discarded by STAR. The auditor should only enter data expected to have a relationship with the test variable. On the other hand, if predicting variables expected to be related to the test variable are rejected by STAR, the auditor should investigate why the relationship is not acceptable to STAR.

If STAR finds no statistically significant variables, it reports this and stops processing:

> **NO SIGNIFICANT PREDICTING VARIABLE HAS BEEN FOUND. STAR will not process the data further. Review the base profile and study the relationships analytically to determine why the predicting variable(s) do not have the expected relationships to the test variable.**

Unless an account is very volatile or totally subject to management's discretion, it is unusual not to find a relationship with other financial or non-financial variables. In particular, the auditor should consider potentially related non-financial variables where STAR rejects financial predicting variables.

Presuming STAR finds one or more statistically significant variables, the resulting model is reported in the form of a regression equation. A listing of all base data entered by the auditor indicates which variables are used in the model and which are not.

Plausibility and Predictability Checks of the Relationship

Figure 1 shows the portion of the report that summarizes the regression function along with a variety of statistics for informational purposes. The effects of the statistics on the model are automatically monitored by STAR.

Regression Statistics

STAR presents the regression model developed in the form of an equation:

$$Y' = a + b_1X_1 + b_2X_2 + \ldots b_nX_n$$

where Y' is the regression estimate for the test variable, X_n is the nth predicting variable, b_n is the coefficient of the nth predicting variable, and a is a constant. For example, in Figure 1, the constant is 214.46 and the coefficient of the predicting variable is 1.1638:

Figure 1

Stepwise Multiple Regression Model

Description	Input Data: Mean	Input Data: Standard Error	Regression Function: Constant or Coefficient	Regression Function: Standard Error
Constant			214.46	
Predicting Variables				
X1 Cost of Sales	1,248.17	149.36	1.1638	0.0658
Test Variable				
Y Sales	1,667.11	183.02		
Y' Expectation			1,667.11	58.1081
Coefficient of Correlation (100% = Perfect)			95%	

Expectation [Y'(t)] for observation t :
Y'(t) = 214.46 + 1.1638*X1(t)

The auditor does not need a detailed understanding of the statistics, but is encouraged at a minimum to check that the model represented by the equation appears to make sense in the context of his knowledge of the business. The auditor should check that any special variables, such as seasonality, are as expected, both in terms of the periods affected and the magnitude of their coefficients. In a simple STAR application (e.g., sales versus cost of sales), the auditor may be able to predict the approximate value of the constant and of the coefficients from the expected business relationship.

The coefficient of correlation indicates how closely the regression line fits to the actual base data. Although it is not possible to provide specific guidelines for an acceptable coefficient, the more precise the auditor expects the relationship to be, the closer the coefficient should be to 100 percent. A coefficient of 100 percent, however, usually indicates that the analytical procedure is closer to a proof of total than a regression application. In particular, the auditor should track the coefficient from year to year; a significant decrease may indicate the presence of a new business factor that is not reflected in the model.

The STAR report for the example in Figure 1 continues in Figure 2. In this figure, the recorded amounts, the regression estimates (expectations), and the residuals (differences) are displayed for both the base period and the audit period, together with a graph of the residuals. This graph may highlight trends and other influences in the data that would not otherwise be apparent.

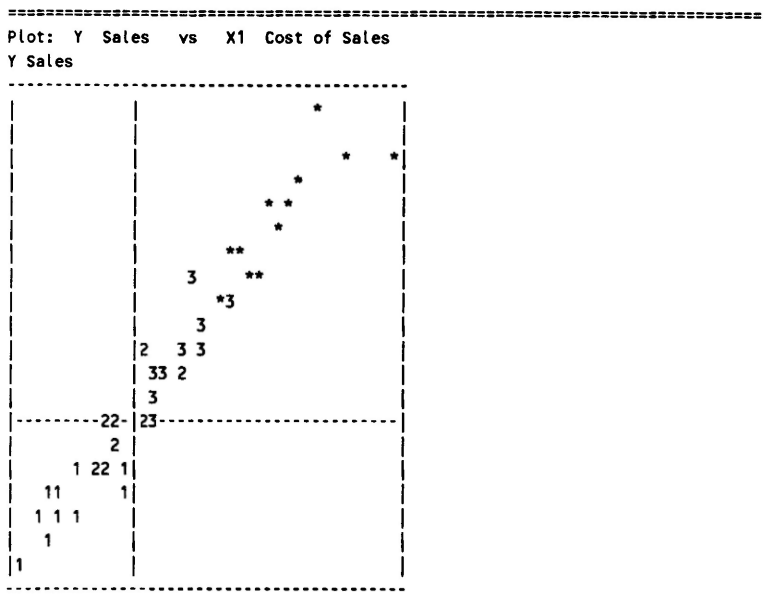
The statistical and graphical information reported by STAR can help to determine whether refinements to the model are desirable. For example, a low coefficient of correlation may suggest that a significant variable is missing from the model. If we examine the graph of the residuals and find a large positive residual followed by a negative residual of similar size, this may indicate a cut-off error. Optional scatter diagrams of the variables are available (see Figure 3)

Figure 2

Plot of Residuals

Obs No	Recorded Amount	Regression Estimate	Residual (Difference)	Residuals Graphed in Units of One Standard Error
				-4 -3 -2 -1 0 1 2 3 4
1	1,487	1,414	73	*
2	1,440	1,396	44	*
3	1,319	1,328	-9	*
4	1,518	1,642	-124	*
5	1,418	1,441	-23	*
6	1,377	1,420	-43	*
7	1,449	1,491	-42	*
8	1,521	1,585	-64	*
9	1,512	1,459	53	*
10	1,532	1,505	27	*
11	1,543	1,510	33	*
12	1,557	1,647	-90	*
13	1,653	1,701	-48	*
14	1,638	1,582	56	*
15	1,565	1,551	14	*
16	1,635	1,618	17	*
17	1,560	1,577	-17	*
18	1,608	1,637	-29	*
19	1,553	1,578	-25	*
20	1,815	1,725	90	*
21	1,767	1,765	2	*
22	1,847	1,815	32	*
23	1,792	1,839	-47	*
24	1,804	1,701	103	*
25	1,771	1,766	5	*
26	1,724	1,752	-28	*
27	1,653	1,754	-101	*
28	1,759	1,733	26	*
29	1,914	1,883	31	*
30	1,784	1,757	27	*
31	1,999	1,868	131	*
32	1,842	1,829	13	*
33	1,840	1,874	-34	*
34	1,931	1,972	-41	*
35	1,823	1,890	-67	*
36	2,066	2,010	56	*
37	1,930	1,950	-20	*
38	2,162	2,107	55	*
39	2,070	1,983	87	*
40	2,032	2,000	32	*
41	2,002	2,064	-62	*
42	2,124	2,118	6	*
43	2,251	2,187	64	*
44	2,280	2,321	-41	*
45	2,186	2,160	26	*
46	2,028	2,031	-3	*
47	2,400	2,237	163	*
48	2,305	2,476	-171	*

Figure 3



Base = Year Number; Projections = '*'

Correlation in Base Profile: 95%

Other Summary Statistics	Maximum-- All Values	Minimum-- All Values	Range	<1> Mean-- Base Profile
Y Sales	2,400	1,319	1,081	1,667.11
X1 Cost of Sales	1,943	957	986	1,248.17

<1> Base profile means indicated by crossbar

that may indicate a change in conditions from the base to the projection period. All this information is designed to increase the auditor's understanding of the relationships underlying the data entered, and may increase his understanding of the business.

Mathematical Tests Applied to the Model

As well as reporting the regression statistics, STAR performs a number of mathematical tests on the data, and if it identifies unusual patterns or abnormalities in the base profile, prints appropriate warning messages. These alert auditors to conditions that, if corrected, may improve the application. A few conditions cause STAR to terminate the application; most allow the application to proceed, but alert the auditor to consider whether refinement of the model is necessary or preferable. The messages and the supporting on-line help indicate why the condition reported might have occurred and what the auditor might do to correct the condition. The auditor is encouraged to refine the model because a good model may eventually become invalid if refinements are not made as

needed in successive applications.

Typically, messages indicate the presence or absence of some additional factor affecting the relationship between the predicting data and the test variable, either in isolated instances or systematically over time. Whenever practicable, the auditor should investigate such factors and determine how to refine the model to account for them. A review of the graph of the residuals, often in conjunction with a review of the scatter diagrams of the variables, is usually helpful in determining the business reason for the change in the model. Depending on the problem identified, suggested refinements to the model include:

- Correcting errors in the base profile
- Adding new variables to account for significant factors that have been omitted from the model
- Adjusting the observations to eliminate the actual or estimated effects of special one-of-a-kind events
- Using dummy variables when an exceptional circumstance exists, but it is not practicable to identify a specific real variable to compensate for it
- Introducing trend to account for systematic changes in one direction over time
- Removing the oldest observations from the base profile when a change has occurred in the underlying relationship
- Stratifying observations into more homogeneous units (i.e., disaggregation of data) when the regression base appears to consist of two or more separate models.

STAR tests for four major conditions: discontinuity, autocorrelation, heteroscedasticity, and abnormality. These tests are performed automatically after STAR has identified a model. They are logically structured and in designing them certain decisions were made as to significance levels and alternative regression models. Such decisions are beyond the statistical expertise of most auditors, but do not compromise the auditor's judgment. The results of the tests are clearly communicated to the auditor who decides what, if any, action to take.

These tests are described below in some detail to illustrate the set of procedures that STAR performs to identify problems and to produce a reliable model from the data provided, and how STAR provides the auditor with information to assist him in improving the model. STAR messages are included in the following discussion (in bold) to give an idea of the style and language of the text help provided. Each message is supported by additional on-line help that is in a similar style, but is more detailed.

Discontinuity

One assumption that is implied in the linear model is that of *continuity;* that is, that the same underlying linear relationship applies throughout the range of the observations. Its opposite, *discontinuity*, can occur within the base period or between the base period and the audit period. STAR applies tests for both types of discontinuity to time-series applications.

A model is derived from base period data, therefore, the consequences of discontinuity within the base period can be significant, and STAR will not proceed with a model in these circumstances. STAR prints a message.

THERE IS AN INDICATION OF DISCONTINUITY IN THE BASE PROFILE. STAR will not process the data further. Discontinuity is ordinarily caused by a change in conditions which affects the relationship between the variables. Examine the plot of residuals to identify the cause. Including an appropriate predicting variable in the model may eliminate the condition.

Unlike discontinuity in the base period, discontinuity between the base period and the audit period does not necessarily mean that the regression model is inappropriate. STAR prints a message to alert the auditor, but does not terminate processing.

THERE IS AN INDICATION OF DISCONTINUITY BETWEEN BASE AND PROJECTION PROFILES. This type of discontinuity does not invalidate the model but it may affect the differences to be audited. If it is not eliminated, it may result in invalid models in future years. Examine the plot of residuals to identify the cause.

In many cases, the reason for the apparent discontinuity between base and projection periods is the very effectiveness of the regression model in identifying errors or unusual transactions in the audit period. However, if the discontinuity remains after the current period data have been audited (and adjusted, if necessary), it should be investigated and corrected, otherwise it is likely to reappear in the next period's application as a discontinuity in the base period.

Discontinuity is often caused by a temporary business disruption, for example a fire or a strike. Either the data may be adjusted to eliminate the effects of the disruption, or a dummy variable may be used to compensate for them.

Discontinuity is sometimes caused by a change in the line or size of business. For example, a company may have acquired or disposed of a subsidiary, or may have increased or decreased product lines. The application must be redesigned. Analytical procedures, whether using STAR or not, can only be effective if the data used is comparable over time.

Autocorrelation

An assumption that is implicit in simple time-series regression is that the residuals are statistically independent of one another over time. In other words, that a regression estimate in period t could not be improved by knowledge of what the residual was in period t -1 or any other prior period. In the business world, events frequently move in a time-related pattern and a pattern in the residuals may result. For example, in an inflationary economy, where costs are rising continuously, but sales prices are only adjusted periodically, residuals in a model relating sales to cost of sales will tend to show increasing residuals until a price increase takes effect. In this case, the assumption of statistical independence is not valid, because regression estimates can be improved by factoring the pattern in the residuals.

A systematic pattern of interdependence over time is known as *autocorrelation* or *serial correlation* of the disturbances. It ordinarily results in a visible pattern in the residuals from the regression function, which may be observed in the graph of the residuals. If significant autocorrelation is ignored and the ordinary regression function is used, two events could occur. First, the regression projections might be less precise than expected because the pattern would be ignored rather than factored in. Second, the calculations of the standard error

might be distorted. It is desirable, therefore, to test for autocorrelation and, if possible, to circumvent the problem that autocorrelation can cause.

Because significant autocorrelation is a potentially serious problem, STAR automatically tests for it and then, if necessary, adjusts for it by calculating a so-called *generalized regression function.* The test and computation of the generalized regression function are performed automatically, but the outcome is clearly communicated to the auditor in a message.

THERE IS AN INDICATION OF AUTOCORRELATION IN THE BASE PROFILE. Generalized least squares regression will be used to correct for the condition. Autocorrelation can often be attributed to a missing major factor and is evidenced by a pronounced pattern in the residuals. Examine the plot of residuals to identify the missing factor. Including that factor as a predicting variable may eliminate the condition and reduce the differences to be audited.

The auditor is encouraged to correct the original regression model by adding a variable, rather than to use the generalized model. For example, if a periodic event, such as price increase, is identified as the contributing factor, either a variable representing price or a dummy variable representing the percentage increase may be added.

If the generalized function fails to eliminate the autocorrelation, the application is treated as fatally flawed and a message is printed indicating that the model is invalid:

FATAL AUTOCORRELATION. This model should not be used for audit purposes.

Heteroscedasticity

Another assumption made in ordinary regression analysis is that the standard error is constant from point to point. This condition is called *homoscedasticity.* In practice, residuals are not always homoscedastic. For example, in a cross-sectional analysis of sales across the branches of a retail company, the sales of large stores might fluctuate more in terms of absolute dollars than the sales of small stores. Residuals that do not have a constant standard error are said to be *heteroscedastic.* Heteroscedasticity can also be observed in a time-series analysis in which the size of the variables increases over time because of either growth or inflation.

Heteroscedasticity can take many different forms. In audit applications in which heteroscedasticity exists, the size of the residuals varies in proportion to the size of one of the predicting variables. STAR tests for heteroscedasticity and, where significant heteroscedasticity is detected, performs *weighted regression,* in which the observations are weighted to compensate for the effect of the predicting variable on the standard error.

The test and, if necessary, the weighted regression calculations, are performed automatically, but the results are clearly communicated to the auditor who is encouraged to review the application and to correct for the condition if possible.

THERE IS AN INDICATION OF HETEROSCEDASTICITY IN THE BASE PROFILE. Weighted least squares regression will be used to correct for the condition. Heteroscedasticity is evidenced by significant correlation between the size of the residuals and one of the

predicting variables, in this case *(variable is identified).* The model may be improved by identifying the cause of the heteroscedasticity and introducing appropriate predicting variables. This may also reduce the differences to be audited.

Heterosedasticity is often encountered in cross-sectional applications, where operating units (e.g., stores) vary considerably in size. The auditor should consider using separate STAR applications, one for large units and one for all other units.

Abnormality

There are strong theoretical grounds for believing that residuals will tend to be normally distributed. STAR performs a test for normality and alerts the auditor to the presence of apparent *abnormality* (also known in statistical literature as *non-normality*) in the base-period residuals.

ABNORMALITY IN THE BASE PERIOD IS INDICATED BY:
(STAR prints one or more of the following)

- **LEFT SKEWNESS - This may be caused by large negative residuals**
- **RIGHT SKEWNESS - This may be caused by large positive residuals**
- **KURTOSIS - This may be caused by both large positive and large negative residuals**

Abnormality does not invalidate the model but it may affect the differences to be audited. Examine the plot of the residuals to identify the outliers and, if possible, eliminate the abnormality by correcting any errors or unusual events in those observations.

Abnormality is usually apparent from a review of the graph of the residuals. The outlier residuals should be investigated to determine if there is a business reason that accounts for them. Sometimes an outlier is explained by an unusual non-recurring event (e.g., a factory shut-down), or a periodic event such as seasonal peaks. The first may be corrected by adjusting the data affected by the event; the second by adding seasonal variable(s).

Determination of Threshold

A major benefit to using STAR in a substantive analytical procedure is that it determines the thresholds for the disaggregated parts, based on the required audit parameters (i.e., materiality, audit assurance, and the primary direction of the audit test), and on the statistically achieved precision of the regression. These thresholds are used to identify any differences that must be investigated. Without STAR, the auditor usually has difficulty determining threshold, because of the number of different factors involved.

The factors STAR uses to determine threshold are:

- *Monetary Precision (MP)* - The monetary quantification of materiality for the substantive test, specified by the auditor. As MP becomes smaller, thresholds become smaller, and more residuals that exceed threshold points are likely to be identified. MP need not be reduced to allow for allocation over the disaggregated observations, because STAR handles this in the determination of threshold.
- *R Factor* - A factor specified by the auditor, representing the required level of assurance to be derived from the substantive test, presuming

positive results. As R becomes higher, thresholds become smaller and more residuals that exceed threshold points are likely to be identified.

- *Direction of Test* - The auditor specifies whether the test is primarily for overstatement or for understatement of the test variable.
- The statistical characteristics of the regression function determined by STAR, principally the standard error. The larger the standard error, the larger threshold becomes to compensate for the imprecision of the estimates.

If a material amount of misstatement exists cumulatively in the audit period, such misstatement could be spread throughout the observations in many ways. For example, it could all be in one month or it could be spread over twelve months. Threshold points that are set to detect misstatements spread in one way may not detect misstatement that is spread differently, even though the total amount of misstatement is the same in both situations. Fortunately, it can be shown that there is a *most adverse spread of error.* Threshold points that detect misstatement spread in the most adverse manner are tighter than those that would be needed to detect misstatement spread in any other way. STAR determines the most adverse spread of error and conservatively applies it in its determination of thresholds.

That a most adverse spread of error should exist may not be immediately obvious. The key to understanding why it does exist is to recognize that there are two opposing factors that determine the probability of detecting error:

- The size of the individual error taintings. The smaller the error tainting of a particular observation, the less probable it is that the observation will be identified.
- The number of error-tainted observations. The more error-tainted observations there are, the more likely it is that at least one will be identified.

It can be shown that the interaction of these two opposing factors ensures that a certain spread of error will result in the tightest threshold requirement. This spread is the most adverse spread of error because any other will allow a threshold that is less stringent. It is dependent on two main factors: the size of the MP relative to the standard error of the residual and the required R factor.

Initially, it might seem that the maximum number of observations over which a material error might be spread should be limited to the number of observations in the accounting period. For example, if the application uses monthly data, the need to consider the risk of spreading a material error over more than twelve observations might appear doubtful. STAR, nevertheless, does not place any upper limit on the most adverse spread of error, and the calculation is performed separately for each observation. This approach to calculating the most adverse distribution helps to ensure that the statistical assurance provided by STAR is not diluted over multiple STAR applications. For example, if the calculation did not consider the possibility that a material error could be spread over sixty observations, the risk that material error could be spread over five different STAR applications that use monthly data might be higher than the nominal level.

Identification of Significant Differences

The basic concept underlying STAR's audit interface is that the recorded amounts of the test variable in the projection period may have been materially affected by accounting errors, while the estimates projected from the regression model should not be so affected (because the model is based on observations that have been audited or obtained from sources considered reliable). Therefore, differences between the recorded amounts and the regression estimates in the audit period are expected to have been caused by:

- The random variation that is inherent in business operations and in estimates based on a regression model
- Errors or unusual events that affect the recorded amount of the test variable in the projection period.

Thresholds are used to identify which differences are sufficiently significant to warrant investigation. In the event that the difference between the recorded value of the test variable and the regression estimate for any disaggregate part (i.e., any observation) exceeds the threshold in the direction of the test, STAR identifies the difference as significant, warranting investigation. For each such identified significant difference, the auditor performs further analysis and inquiry to obtain, corroborate, and quantify an explanation or, if this is not possible, performs alternative procedures to investigate the difference. (Differences are always shown as positive if the recorded amount exceeds the regression estimate and negative if the reverse is true, regardless of the direction of the test specified.)

If the difference exceeds the threshold in the direction opposite to that of the test, STAR also identifies the difference as significant. The auditor should seek an explanation for such differences, even though they are not a primary focus of our test. If nothing else, the differences may indicate problems with the predicting variables in the audit period.

The STAR report of the projection profile in the Alpha Company application is shown in Figure 4. A difference to be investigated in the direction of the test occurs in period 48, in which the residual is -171 and the threshold is 79. Differences to be investigated in the opposite direction occur in periods 39 and 47, in which the residuals are 87 and 163.

The fact that STAR identifies a significant difference to be investigated does not mean that something is wrong. Instead, it indicates that the auditor does not have the desired assurance that something is not wrong. The difference could be caused by an unusual transaction or event, or by a number of ordinary occurrences that just happen to combine to cause a significant difference. Until the reason for the difference has been determined, corroborated, and quantified, however, the desired level of assurance from the analytical procedure has not been achieved.

Auditors are recommended to check whether differences between expectations and recorded amounts in the audit period, even if not individually significant, follow any pattern that might indicate potential material misstatement in the aggregate. For example, they might be concerned if most differences were in one direction and many were close to threshold. This type of recommendation is to avoid the "It's produced by a computer so it must be right"

mentality, and to encourage auditors to use their judgment throughout a STAR application.

Figure 4

AUDIT test for UNDERSTATEMENT using MP = 350, R = 3.0

Obs No	Recorded Amount	Regression Estimate	Residual (Difference)		Threshold	Excess <1>	Optional Test Select'n Interval	Optional Test Sample
37	1,930	1,950	-20					
38	2,162	2,107	55					
39	2,070	1,983	87	<2>				
40	2,032	2,000	32					
41	2,002	2,064	-62					
42	2,124	2,118	6					
43	2,251	2,187	64					
44	2,280	2,321	-41					
45	2,186	2,160	26					
46	2,028	2,031	-3					
47	2,400	2,237	163	<2>				
48	2,305	2,476	-171		79	92	137	18
	25,770	25,634	136					18

<1> Significant difference in direction of test. Perform further analysis and inquiry to obtain and corroborate explanation. Perform optional test of details only if difference cannot be explained.

<2> Significant difference in opposite direction to that of test. Seek an explanation.

Investigation of Significant Differences

STAR cannot directly help the auditor's investigation of significant differences, but, as illustrated throughout this discussion, reports information that may be useful in resolving issues related to the credibility of the model and/or its refinement. When our investigation of differences identifies a potential correction to base data used in the model, we should preferably refine the STAR application, even though the explanation may be sufficient for this year's audit purposes. If the model is not updated for discovered discrepancies, it is likely to be less precise in subsequent years and, therefore, may identify more and/or larger differences than necessary.

When STAR identifies a significant difference in the specified direction of test, it designs a Cumulative Monetary Amount sample (CMA - a form of dollar unit sampling) for a test of details of the test variable, to provide an alternative test if the significant difference cannot be resolved. This is a last resort option, used only if the auditor fails to identify an explanation for the difference or cannot corroborate or quantify an explanation. STAR prints the sample size and selection interval under the caption, *Optional Test.* This is shown in Figure 4. In period 48, the optional CMA sample size is 18 and the selection interval is 137.

Example of a STAR Application

To reinforce the concepts presented, we include an example of the use of STAR in Appendix A. In this example, the original model was not optimal and STAR reported a discontinuity between the base and the projection periods. The auditors reviewed the data and identified a missing variable. They corrected the model and reran the STAR application.

Conclusion

STAR does not perform audit procedures; it *assists* the auditor in performing substantive procedures. The fundamental decisions are made by the auditor, just as they would be if any other technique were used for the analysis. The objectives of the test are determined by the auditor; the model is based on data selected and deemed reliable by the auditor; thresholds are based on audit parameters; and the auditor must determine how to deal with differences identified for investigation.

However, STAR provides valuable assistance to the auditor in developing the model and determining thresholds. STAR translates expected relationships between data into mathematical forms that can be used to make projections. STAR reports to the auditor if a resulting relationship appears less than optimal, with suggestions as to possible causes and solutions, and graphical reports to help identify the problem. Finally, STAR determines thresholds for identification of significant differences by combining the auditor's materiality and audit assurance requirements with the statistical precision of the regression model.

The limitations encountered in using STAR for substantive testing are the same as the limitations inherent in any substantive analytical procedure. The auditor must make judgments whatever tool he uses, and is ultimately responsible for deciding whether a procedure indicates the absence of material error at the required level of assurance. While substantive analytical procedures may be performed without using STAR, the benefits of an objective challenge to the data relationships expected by the auditor and an objective threshold determination make STAR a preferred alternative in many circumstances.

Appendix A: Example of a STAR Application

This example is based on a STAR application for a client in the importing/wholesale trade. STAR had been used successfully for several years to project sales of imported products based on the cost of purchases from the British parent company. This year, STAR reported a discontinuity between base and projection profiles (see the message at the bottom of Figure A-1), and the results of the projection profile analysis (see Figure A-2) show that STAR identified significant differences to be investigated for every observation in the current period.

From a review of the plot of residuals (see Figure A-3), a distinctive change in the pattern is observed after observation 37 (i.e., all the residuals are on the same side of the line and many are -2 or more standard errors away). This suggests that a change in operating conditions occurred in January of the current year.

A discontinuity between the base profile and the current data does not prevent the model from being used. However, the number and size of the differences to be investigated (Figure A-2) would require a significant amount of audit effort, and if the discontinuity is not resolved and eliminated this year, discontinuity may appear in the base next year, resulting in an invalid model.

Discussions with the client revealed the following:

- The client purchased almost all of its imports from its parent company.
- The purchase cost to the Canadian operation was set in British pounds and recorded in the Canadian books at the spot rate of exchange existing on delivery.
- Foreign currency hedges were not used.
- Sales prices in Canada were set well in advance, and were not changed during the year.
- The exchange rate between the British and Canadian currencies had jumped from 1.85 to 2.05 in January of the current year and had remained relatively constant during the year.

The audit staff tested the theory that the exchange rate was affecting the cost side of the Sales/Cost of Sales relationship, and found that this more or less explained most of the differences reported by STAR.

Figure A-1

Stepwise Multiple Regression Model

	Input Data		Regression Function	
Description	Mean	Standard Error	Constant or Coefficient	Standard Error
Constant			74.90	
Predicting Variables				
X1 COST OF SALES	2,841.14	716.61	1.5545	0.0663
Test Variable				
Y SALES	4,491.44	1,147.89		
Y' Expectation			4,491.44	281.0349
Coefficient of Correlation (100% = Perfect)			97%	

Expectation [Y'(t)] for observation t :
Y'(t) = 74.90 + 1.5545*X1(t)

THERE IS AN INDICATION OF DISCONTINUITY BETWEEN BASE AND PROJECTION PROFILES.
This type of discontinuity does not invalidate the model but it may affect the differences to be audited. If it is not eliminated, it may result in invalid models in future years. Examine the plot of residuals to identify the cause.

Figure A-2

AUDIT test for UNDERSTATEMENT using MP = 500, R = 2.0

Obs No	Recorded Amount	Regression Estimate	Residual (Difference)	Threshold	Excess <1>	Optional Test Select'n Interval	Optional Test Sample
37	3,944	4,134	-190	153	37	826	5
38	6,103	6,765	-662	148	515	270	25
39	9,693	10,964	-1,271	56	1,215	254	43
40	6,142	7,061	-919	146	773	252	28
41	5,101	6,008	-907	151	757	250	24
42	4,338	4,763	-425	153	272	366	13
43	4,868	5,421	-553	152	401	301	18
44	4,260	4,737	-477	153	324	338	14
45	8,146	9,051	-905	114	791	266	34
46	6,758	7,712	-954	146	808	257	30
47	4,933	5,376	-443	152	290	358	15
48	4,831	5,786	-955	151	804	251	23
	69,117	77,778	-8,661				272

<1> Significant difference in direction of test. Perform further analysis and inquiry to obtain and corroborate explanation. Perform optional test of details only if difference cannot be explained.

A decision was made to revise and rerun the model because:

- Unless the exchange factors were built into the model, the STAR model would probably fail in the following year due to discontinuity in the base period.
- Including the exchange factors in the base would improve the model because the rate had fluctuated throughout the base period, although never as much as in January of the current year.
- Revising and rerunning the model would provide the most efficient and objective means for verifying the analytical explanation received.

To refine the model, the predicting variable, cost of sales, was adjusted for the exchange index and the model was re-run using the derived variable.

Figures A-4 through A-6 show the results of the STAR application after the effect of foreign exchange was added to the data profile.

STAR no longer reports discontinuity (see Figure A-4) and the revised projection profile analysis (Figure A-5) shows only two significant differences to be investigated. The plot of residuals (see Figure A-6) shows no dramatic change in the last twelve months.

By adjusting the base data, the auditors have only a few significant differences to investigate and have a more precise model to use in the future.

Figure A-3

Plot of Residuals

Obs No	Recorded Amount	Regression Estimate	Residual (Difference)	Residuals Graphed in Units of One Standard Error
				-4 -3 -2 -1 0 1 2 3 4
1	3,747	4,037	-290	*
2	4,785	4,650	135	*
3	4,853	4,769	84	*
4	4,439	4,258	181	*
5	4,146	4,720	-574	*
6	3,883	3,529	354	*
7	3,563	3,638	-75	*
8	3,298	3,300	-2	*
9	5,261	5,873	-612	*
10	5,097	5,149	-52	*
11	4,380	4,664	-284	*
12	3,280	3,893	-613	*
13	2,388	2,459	-71	*
14	4,029	3,935	94	*
15	5,127	5,020	107	*
16	4,346	4,400	-54	*
17	3,776	3,756	20	*
18	4,066	3,888	178	*
19	3,139	3,311	-172	*
20	3,369	3,330	39	*
21	6,123	6,442	-319	*
22	5,076	5,111	-35	*
23	6,494	6,081	413	*
24	3,756	3,938	-182	*
25	3,002	2,700	302	*
26	4,632	4,412	220	*
27	6,699	5,996	703	*
28	5,576	5,402	174	*
29	3,446	3,308	138	*
30	4,524	4,261	263	*
31	3,702	3,761	-59	*
32	3,220	3,260	-40	*
33	6,208	5,954	254	*
34	5,317	5,461	-144	*
35	7,034	7,129	-95	*
36	5,911	5,895	16	*
37	3,944	4,134	-190	*
38	6,103	6,765	-662	*
39	9,693	10,964	-1,271	*
40	6,142	7,061	-919	*
41	5,101	6,008	-907	*
42	4,338	4,763	-425	*
43	4,868	5,421	-553	*
44	4,260	4,737	-477	*
45	8,146	9,051	-905	*
46	6,758	7,712	-954	*
47	4,933	5,376	-443	*
48	4,831	5,786	-955	*

Figure A-4

Stepwise Multiple Regression Model

Description	Input Data: Mean	Input Data: Standard Error	Regression Function: Constant or Coefficient	Regression Function: Standard Error
Constant			232.78	
Predicting Variables				
X1 Cost of Sales	1,551.25	407.35	2.7453	0.1090
Test Variable				
Y SALES	4,491.44	1,147.89		
Y Expectation			4,491.44	262.7308

Coefficient of Correlation (100% = Perfect) 97%

Expectation [Y'(t)] for observation t :
Y'(t) = 232.78 + 2.7453*X1(t)

Figure A-5

AUDIT test for UNDERSTATEMENT using MP = 500, R = 2.0

Obs No	Recorded Amount	Regression Estimate	Residual (Difference)		Threshold	Excess <1>	Optional Test: Select'n Interval	Optional Test: Sample
37	3,944	3,730	214	<2>				
38	6,103	5,998	105					
39	9,693	9,614	79					
40	6,142	6,251	-109					
41	5,101	5,345	-244		159	85	890	6
42	4,338	4,271	67					
43	4,868	4,839	29					
44	4,260	4,249	11					
45	8,146	7,966	180	<2>				
46	6,758	6,813	-55					
47	4,933	4,798	135					
48	4,831	5,152	-321		159	162	515	10
	69,117	69,026	91					16

<1> Significant difference in direction of test. Perform further analysis and inquiry to obtain and corroborate explanation. Perform optional test of details only if difference cannot be explained.

<2> Significant difference in opposite direction to that of test. Seek an explanation.

Figure A-6

Plot of Residuals

Obs No	Recorded Amount	Regression Estimate	Residual (Difference)	Residuals Graphed in Units of One Standard Error
				-4 -3 -2 -1 0 1 2 3 4
1	3,747	3,645	102	*
2	4,785	4,175	610	*
3	4,853	4,485	368	*
4	4,439	4,249	190	*
5	4,146	4,691	-545	*
6	3,883	3,549	334	*
7	3,563	3,653	-90	*
8	3,298	3,329	-31	*
9	5,261	5,353	-92	*
10	5,097	4,713	384	*
11	4,380	4,285	95	*
12	3,280	3,604	-324	*
13	2,388	2,509	-121	*
14	4,029	3,917	112	*
15	5,127	4,952	175	*
16	4,346	4,362	-16	*
17	3,776	3,747	29	*
18	4,066	3,873	193	*
19	3,139	3,321	-182	*
20	3,369	3,340	29	*
21	6,123	6,481	-358	*
22	5,076	5,174	-98	*
23	6,494	6,127	367	*
24	3,756	4,024	-268	*
25	3,002	3,044	-42	*
26	4,632	4,875	-243	*
27	6,699	6,769	-70	*
28	5,576	6,113	-537	*
29	3,446	3,497	-51	*
30	4,524	4,458	66	*
31	3,702	3,953	-251	*
32	3,220	3,448	-228	*
33	6,208	5,844	364	*
34	5,317	5,375	-58	*
35	7,034	6,967	67	*
36	5,911	5,789	122	*
37	3,944	3,730	214	*
38	6,103	5,998	105	*
39	9,693	9,614	79	*
40	6,142	6,251	-109	*
41	5,101	5,345	-244	*
42	4,338	4,271	67	*
43	4,868	4,839	29	*
44	4,260	4,249	11	*
45	8,146	7,966	180	*
46	6,758	6,813	-55	*
47	4,933	4,798	135	*
48	4,831	5,152	-321	*

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Discussant's Response to "Using Regression Analysis to Assist Audit Judgments in Substantive Testing"

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I'm very pleased to have the opportunity to discuss the updated version of STAR. Many of my papers have addressed problems in analytical review in auditing and particularly regression analysis as a tool. Hearing about STAR's revision was like hearing that an old friend hadn't died after all. Thus, it was with some enthusiasm that I accepted Raj's invitation to discuss the updated, interactive version of STAR with its new bells and whistles.

My comments are divided into four basic areas and are generally favorable toward the software and the approach. Rather than being overly technical, I will try to stimulate your thinking about STAR, provide some perspective, and assess where we might go from here. First is a brief history of STAR and some STAR-related regression analysis research in auditing. Second is an analysis of what's good about STAR and what's new in the current version, and third will be some areas that need elaboration or additional thought. Finally, there is an overall evaluation of STAR and its impact.

History

As many of you know, STAR, dollar unit sampling, and the AICPA's audit risk model were developed by Ken Stringer of the former Deloitte Haskins & Sells. I began my research on regression in auditing after a 1977 conversation with Jim Loebbecke. We were discussing his research on "combined attributes and variables" sampling which was related to Stringer's "cumulative monetary amount" version of dollar unit sampling. Jim said that he had based his efforts on the presumption that Stringer was probably right, so Jim took what he knew about CMA and tried to derive what he didn't. I decided that I would try the same approach for STAR.

Using Stringer [1975], I set out to derive what must be in a regression package that could satisfy the requirements for a substantive test. My primary problem was determining what Stringer meant by the "most adverse distribution of error." Stringer [1975] gave no clues but said that STAR was designed to be effective even under that most feared of circumstances. I finally decided that that must mean that the procedure was based on the *sum* of estimated misstatements, and therefore it didn't matter how misstatements were distributed. My solution appeared in Kinney [1979]. At a conference sponsored by DHS, I found out that I had not guessed correctly about STAR but still had a useful result.

Both STAR and Kinney [1979] use an upper precision limit (UPL) on error

calculation that is then compared to a monetary precision measure (monetary precision is the magnitude of "intolerable" misstatement for the assertion or account under audit). The decision rule is:

"If UPL (Error) > MP measure, then don't rely."

There are two basic approaches to relating UPL to MP, as represented here today. They differ on how the UPL is calculated and how MP is measured. The Price Waterhouse approach is based on Kinney [1979] and calculates an UPL on total error for the year (in a time series model) using the standard error for the total. The resulting UPL for the year is then compared to a materiality or tolerable error measure for the year. Specifically, for Price Waterhouse the calculation is:

$$UPL_{AP}(E) = E + t(AP) \times SE(E) \geq MP$$

where AP denotes the analytical procedure risk level, E is sum of the estimated monthly misstatements for the year as a whole, and SE(E) denotes the standard error for total misstatement for the year.

The STAR approach of Deloitte and Touche calculates the UPL by month and compares with a monthly MP measure (see Kinney [1979] and Stringer and Stewart [1985]). STAR makes the following comparison for all values of $n > 0$:

$$UPL_{AF}(e) = e + t(\sqrt[n]{AP}) \times SE(e) > MF/n$$

where e is the estimated error for the month, and SE(e) is the standard error for the month. It can be shown that the STAR comparison has a unique minimum that occurs at generally small values of n. Thus, the calculation need not be made for all values of $n > 0$.

Research since 1975 has found the following. Regression analysis is *reliable* for the data tested (it has been tested using simulated data and actual data with simulated misstatements). That is, the actual rate of failure to indicate material misstatements does not exceed the nominal level [e.g., see Kinney and Salamon, 1982; Knechel, 1988]. Also, the procedure is "fail safe." If a precise model cannot be developed, then the SE is so large that the UPL will exceed the MP measure and the auditor is warned that there is insufficient evidence for reliance.

As to the success of field application, there is circumstantial evidence that STAR may be effective in locating potential material misstatements. Kinney and McDaniel [1989] show that the rate of correction of errors discovered in quarterly statements of Deloitte Haskins & Sells clients is about twice that for the population of Big Eight firms as a whole. While the result may be due to poor clients or to other factors, these alternative explanations do not seem likely.

In regard to auditing standards, STAR and other regression-based procedures are perhaps the only fully operational and practical means of complying with the provisions of SAS No. 56 [AICPA, 1988] for substantive evidence. Regression provides a basis for forming conditional expectations, and a means of quantifying precision and relating the result to materiality—-two difficult requirements of SAS No. 56. Ratio analysis and ARIMA models may partially satisfy these conditions, but generally they suffer from excessive standard errors and, thus, are not effective as audit evidence. Finally, STAR has an advantage under the SAS No. 31 [AICPA, 1980] approach of assessing risk at the assertions level. In contrast to tests of details which often test only a single assertion, STAR may be effective in detecting misstatements in more than one assertion and more than one account.

What's good about new STAR, and regression in auditing?

In addition to the desirable features discussed above, the new STAR approach is an improvement because of the new bells and whistles that guide the auditor in developing an acceptable model of an account. There is increased emphasis on understanding the client's business and many hints are provided to the auditors on how to better understand the business. First, the model-building exercise itself requires understanding of the basic covariation among and between financial and physical elements. Second, the new diagnostic testing can confirm or deny the auditor's preliminary understanding. For example, the auditor is directed to try to understand why an expected covariation is not observed.

Furthermore, the diagnostic approach is extended through consideration of omitted variables. Specifically, the program tests for discontinuity (or changed parameters since the base period), autocorrelation, heteroscedasticity, and abnormal residuals. In each case, the auditor is given hints as to what the pattern that violates regression assumptions might mean in terms of an improperly specified model. For example, the auditor is directed to consider whether there are patterns over time such as a positive residual followed by a negative residual. This pattern may indicate a cutoff problem. Also, it gives guidance about omitted causal or structural variables.

Beyond auditing applications, there are several additional uses of STAR and the auditor's skills in using STAR. A partial list includes: interim reviews of financial information, preparation and review of forward-looking information, and incorporation in a client's integrated internal control system [COSO 1991]. In fact, the latter two can be combined in developing client forecasting systems useful in formulating plans or budgets for the future and then providing early warning that things aren't working out as planned. The regression model could be used by the client to direct attention to implementation problems (including errors and fraud), to revise the planning model estimates, or to revise the model itself by including variables that had been omitted. Such a system should be helpful in business operation as well as in demonstrating to others that controls are good [Kinney, Maher and Wright, 1990].

Finally, I pose a question for professors and practitioners alike (I don't expect an answer now, but I am curious about your thoughts). Given all of the advantages of STAR, why hasn't this product and approach been advertised? Regression analysis seems to offer solutions to several problems of auditors and offers considerable benefits to clients. Why hasn't D & T advertised it? Why don't public accounting firms in general advertise their leading edge technologies? Why isn't it useful to advertise audit excellence to clients, financial statement users, audit committees, and prospective employees?

What needs elaboration?

As to limitations of STAR and the Stewart and Thornton [1992] paper, I have three general comments. The first relates to the paper and how it could be made more useful for professors who are interested in giving their students perspective on practical application of tools such as regression analysis (Scott and Wallace [1992] provide some insights in this regard). The second concerns the guidance in SAS No. 56 and its incorporation in STAR, and the third involves questions about STAR itself.

As a teacher, I would appreciate answers to three questions about the appli-

cation of STAR in practice. First, what is the distribution of the ratio of the standard error of the regression to monetary precision? This ratio relates the precision of the estimate measured in dollars (SE) to allowable imprecision also measured in dollars (MP). I believe that the distribution of SE/MP would be more useful than correlation coefficients since, in the former, both the numerator and denominator are measured in dollars instead of proportion of variation explained. It would be especially useful to see the distribution of SE/MP across accounts, clients, and industries. Second, what is the mix of internal, external, non-financial, and indicator variables across accounts, clients and industries? This knowledge would allow professors to assess the importance of internal variables in designing analytical procedure research projects and to see how sophisticated the practice models are. Realistic classroom examples could then be developed. Third, what have STAR's costs been— training costs, implementation costs, and the costs of making the transition for staff auditors from Deloitte & Touche?

As one interested in auditing standards, I am torn between the use of regression diagnostics to better understand the client's business vs. signalling possible misstatements. This same concern was expressed in the recent Expectations Gap Roundtable [Blocher and Loebbecke, 1992], and in a presentation at this conference two years ago [Kinney and Haynes, 1991]. The approach taken in STAR is consistent with SAS No. 56, para. 21, which focuses the auditor on explaining unexpected results in terms of non-error causes. Basically, para. 21 says that if UPL exceeds MP, then the auditor should first consider whether the model is wrong (auditor mistake), then ask management for an explanation. If both of these fail, then the auditor is directed to consider accounting misstatement as the possible cause. Since behavioral research has shown that auditors may focus unduly on nonerror causes identified by either of the first two foils, they may underweight the probability of error or fraud. This problem is not unique to STAR, but STAR's focus on understanding the client's business may increase the tendency.

Turning now to STAR itself, I note two issues that provide food for thought. First, stepwise regression includes the variable(s) that best fit the data during the base period. Each period, by chance, certain variables will exhibit particularly good fits in explaining the dependent variable even when there is a truly causal variable available. The best fitting variables in the base period may not exhibit much explanatory power in the prediction (audit) period. Thus, STAR may to some degree select randomly irrelevant variables. An alternative is a theoretical basis for the model in each application. The model (or perhaps an industry model) might be developed once and updated through appropriate consideration of omitted variables. A theoretically-based model would require more skill in model building, but may be more precise in the long run.

Second, a reading of SAS No. 31 in conjunction with SAS No. 56 raises an evidence integration issue that has not been adequately addressed. The issue is how to combine evidence across assertions and across accounts. There are at least two levels of analysis for integrating results using regression as an analytical procedure. Within an application, care must be taken to account for the lack of independence due to use of the same regression equation to estimate multiple components of an account balance [see Kinney, 1979] Across applications, there is the problem of how to combine results. Since STAR uses an investigation rule that considers the "most adverse distribution of error," it may provide

protection in signalling possible misstatement when a material amount of misstatements is spread over several accounts that are audited using STAR.

Overall

STAR was a very useful tool in 1975. It has led to considerable research and to SAS No. 56. It holds much promise in the 1990s as a tool for substantive testing in auditing as well as many other areas of client services and direct use by the clients themselves.

The new "bells and whistles" should add value through better understanding of clients' businesses, and increased value as a substantive audit tool. Furthermore, its potential as an analytical tool seems even greater now than it did in 1975.

I'm delighted that the technique has survived the merger, and competitive and cost pressures. I hope that other firms will consider its use as an audit and business tool.

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7

Practical Experiences with Regression Analysis

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Abstract

Price Waterhouse has conducted a field experiment on the application of regression analysis, involving the launching of new software, micro-based training, and initial modeling for audit use. While the phases of the experiment included alpha and beta testing of the software as described herein, the core of the experiment involved field applications of regression analysis by engagement teams. Their experiences and reactions are described, as are the future plans of the firm. Experiences in prior field applications are likewise shared, to illustrate both the context in which regression analysis has been used and the nature of inferences drawn, as well as the statistical profile achieved in modeling. Insights are gained as to the tool's feasibility, time demands in its application, and perceptions of users.

Introduction

Over the years, a number of papers have appeared suggesting the benefits of using regression analysis as an analytical audit tool for risk identification and error detection. In some cases the authors have described individual applications of the technique. For example, Campbell and Rankin [1986] described the use of regression analysis to develop expectations of sales in a manufacturing company, Kask [1979] covered an application to identify out-of-line energy costs for a group of hospitals, and Akresh and Wallace [1981] discussed a public utility application. Others [Knechel, 1986 and Wilson and Colbert, 1989] have reported that regression analysis, compared with alternate analytical procedures, is a more accurate tool for identifying errors of varying sizes and patterns seeded into simulated data.

Despite these purported conceptual advantages from using regression analysis, Deloitte & Touche is the only major accounting firm that seems to have used it regularly, in sampling applications [Stringer, 1975 and Stringer and Stewart, 1986—referred to as STAR]. While Price Waterhouse has had field applications using regression analysis since 1979, the scope of application has not been pervasive throughout the World Firm, for a number of reasons detailed later in this paper. Overall, as has been reported by Daroca and Holder [1985] and Spires and Yardley [1989], the use of regression analysis and other advanced quantitative procedures by audit teams, across firms, has been rela-

tively rare. As usual, the marketplace is the ultimate proof of the pudding. Among the barriers have been the need for relatively powerful computing capability, the perceived complexity of the technique for non-statisticians, and uncertainty as to how to relate the results of a regression analysis application to an audit risk/satisfaction framework.

We have been involved in studying how and if these barriers could be overcome at Price Waterhouse. In this paper we report on our experiences to date.

The Interest

For a number of years the Price Waterhouse audit methodology has included an audit satisfaction hierarchy wherein alternate audit procedures are ranked based on their presumed efficiency [Walker and Pierce, 1988]. The actual procedures selected for the audit plan will depend on inherent risk assessments by assertion, assessed control risk, materiality, client expectations, and other factors. However, all things being equal (which is rarely the case), audit planners are encouraged to think first about relying on analytical procedures, then on internal controls, and to do detailed testing only when particular audit assertions cannot be satisfied in any more cost-effective way. This approach is consistent with evidence regarding the value of analytical procedures in risk assessment. Empirical studies in an external audit context, such as those by Kreutzfeldt and Wallace [1986] and Wright and Ashton [1988], have consistently shown that forty to fifty percent of errors detected were disclosed by analytical procedures. Coglitore and Berryman [1988] have shown how better use of analytical procedures might have prevented several well-publicized audit failures [also see Wallace, 1991]. Analytical procedures are clearly an important risk assessment tool.

Price Waterhouse believes that many advantages accrue from using analytical procedures in the audit. For example:

- Analytical procedures enhance the auditor's understanding of the dynamics of the client's business, which not only improves the quality of the audit but also makes the auditor better able to offer sound business advice to the client.
- Research confirms our own experience that analytical procedures can be very effective at finding errors. For example, Wallace and Kreutzfeldt [1986], Wright and Ashton [1988], and Knechel [1988a, 1988b] all present evidence along this line. However, Loebbecke and Steinbart [1987], Kinney [1987], and Blocher and Cooper [1988] show that trends and ratios are relatively ineffective, at least at the aggregate level at which they are conventionally used. Research suggests somewhat of a gulf between the effectiveness of trend and ratio procedures on the one hand and modeling procedures on the other.
- Analytical procedures are efficient because they usually provide evidence for several audit assertions simultaneously (in contrast to a detailed test which may address only one or two assertions).

At the same time as analytical procedures were receiving increased emphasis in the Price Waterhouse auditing methodology, professional pronouncements such as *Statement on Auditing Standards No. 56: Analytical Procedures* [AICPA, 1988] and *International Auditing Guideline 12* [IFAC, 1990] introduced new requirements for the use of analytical procedures in the planning and

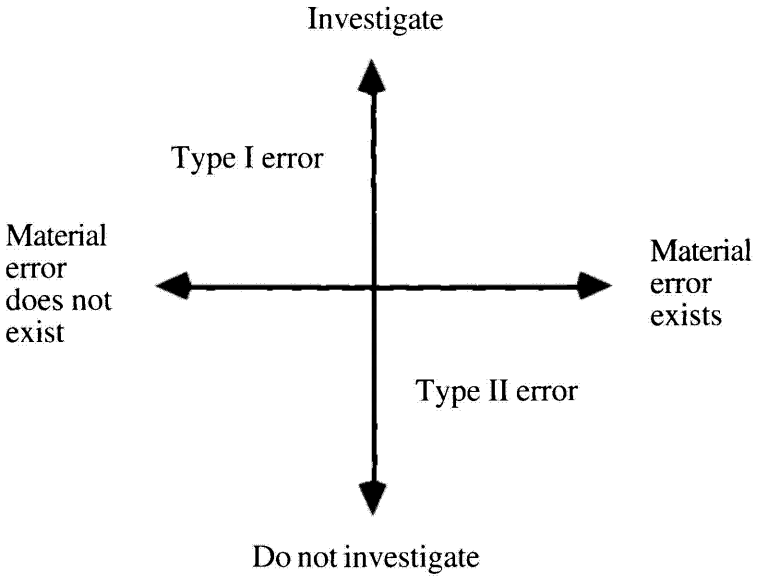
final review stages of audit examinations. In fact, the auditing standard setters were mandating what made common sense, and what, by and large, was already being done in practice.

The strategic emphasis by Price Waterhouse on analytical procedures stimulated an interest in regression analysis as a tool for the auditor. The potential advantages we saw from regression analysis were the following:

- In contrast to the judgmental predictive models embodied in the simpler analytical procedures such as ratio and trend analysis, regression analysis, through measures of precision and goodness of fit, would give a more objective assessment of the reliability of predictive audit models.
- Auditors generally have little difficulty assessing whether the direction of change in an accounting variable makes sense, but regression analysis could be a more effective tool for assessing the reasonableness of the *amount* of change.
- With regression analysis, auditors would be able to define unusual observations using objective mathematical probabilities rather than the subjective rules of thumb often associated with simpler analytical procedures. This should mean improved efficiency in detecting errors, a supposition borne out by empirical research. For example, Knechel [1986] concluded that "based on the analysis of Type I and Type II errors presented in this paper, the regression models were superior to the nonstatistical approaches in most cases." This finding ties to the idea that the best analytical procedure is the one which alerts us when errors exist in the data, while minimizing the number of false alarms when the data is error-free. This concept is illustrated in Figure 1. The two alternate decisions are investigate or do not investigate. The two possible conditions of the accounting variable are that it is or is not materially in error. In the bottom left and top right quadrants, the risk assessor makes the correct decision. In the top left quadrant, the evaluator does an unnecessary investigation, referred to as a Type I error, in line with AICPA literature (note difficulties with this use of terms explored by Beck and Solomon [1985]). In the bottom right quadrant, the decision maker fails to investigate a situation which in fact warrants investigation, referred to as a Type II error. Wilson and Colbert [1989] reached a similar conclusion from their simulation tests that likewise focus on Type I and Type II considerations.
- Regression analysis may help to quantify important interrelationships in a client's business which the auditor suspects exist, but cannot easily express mathematically. For example, one would be able to quantify the effect of categorical variables (like location) in addition to numerical variables.

For all of these reasons, Price Waterhouse decided in 1988 to invest in a research project related to regression analysis. The technique made sense conceptually, but the big unknown was the broadness of market acceptance within Price Waterhouse. Was it reasonable to expect audit partners and staff without real expertise in statistical concepts to try regression analysis with enthusiasm and confidence? Even if they were interested, would they conclude that the benefit from using regression analysis is large enough to justify the cost of developing the applications?

Figure 1. Considering Type I and Type II errors



The Software

Regression analysis had been used on audits done by the firm since about 1980. At that time the Firm developed its own regression analysis software which ran on a central mainframe accessible from the Firm's U.S. offices. Some early successes were reported by Wallace [1983]. Such examples are augmented by three actual case examples from field applications, reported in an Appendix to this paper. However, the mainframe computing instructions were complicated for those who did not use the software often. In addition, turn-around time for regression output was sometimes measured in terms of days rather than minutes or hours. The concept of regression analysis as an iterative model-building process was not well served by the mainframe. As a result, during the decade of the 1980's, regression was used only by a small band of devotees in several of the Firm's U.S. offices, and not at all outside the U.S.

One of the first imperatives was to secure user-friendly regression analysis software for a microcomputer. Price Waterhouse considered purchasing one of the available commercial micro-based regression analysis packages, but decided against that option. Some packages were replete with complex statistical jargon which we were sure would inhibit potential users. On the other hand, certain spreadsheet software packages offered regression analysis as an option, but these were overly simplistic modules which lacked the important statistical checks necessary for auditors to have confidence that their models were statistically valid. Also, none of the packages came with audit-relevant user help. A meeting of professionals who regularly used regression analysis in consulting and litigation support settings led to the decision to modify the mainframe soft-

ware to run on the microcomputers commonly used by Price Waterhouse partners and staff. The framework for approaching regression analysis appears in Figure 2, as do sample screens that provide an idea of the user-friendliness and documentary nature of the program. The user selects whether a time series or cross-sectional regression model is to be estimated and what confidence level is used.

Data to be modeled may be assembled in a wide variety of formats, but most commonly is collected in a common spreadsheet template. The software can accommodate up to fifteen variables and up to 1,000 observations per variable, subject to a maximum limitation of 5,000 data points. We have found that this is sufficient for all but cross-sectional applications on very large multi-location clients, such as major retailers with more than 1,000 stores. For such clients we suggest partitioning the locations into groups, each containing fewer than 1,000 units, with a separate model being created for each group. Figure 2 displays a sample input screen for the software. Once entered into the software, several analysis modules are designed to assess the data set prior to creating the regression equation. These modules provide the following information (see Wallace [1991] for elaboration on statistical terms):

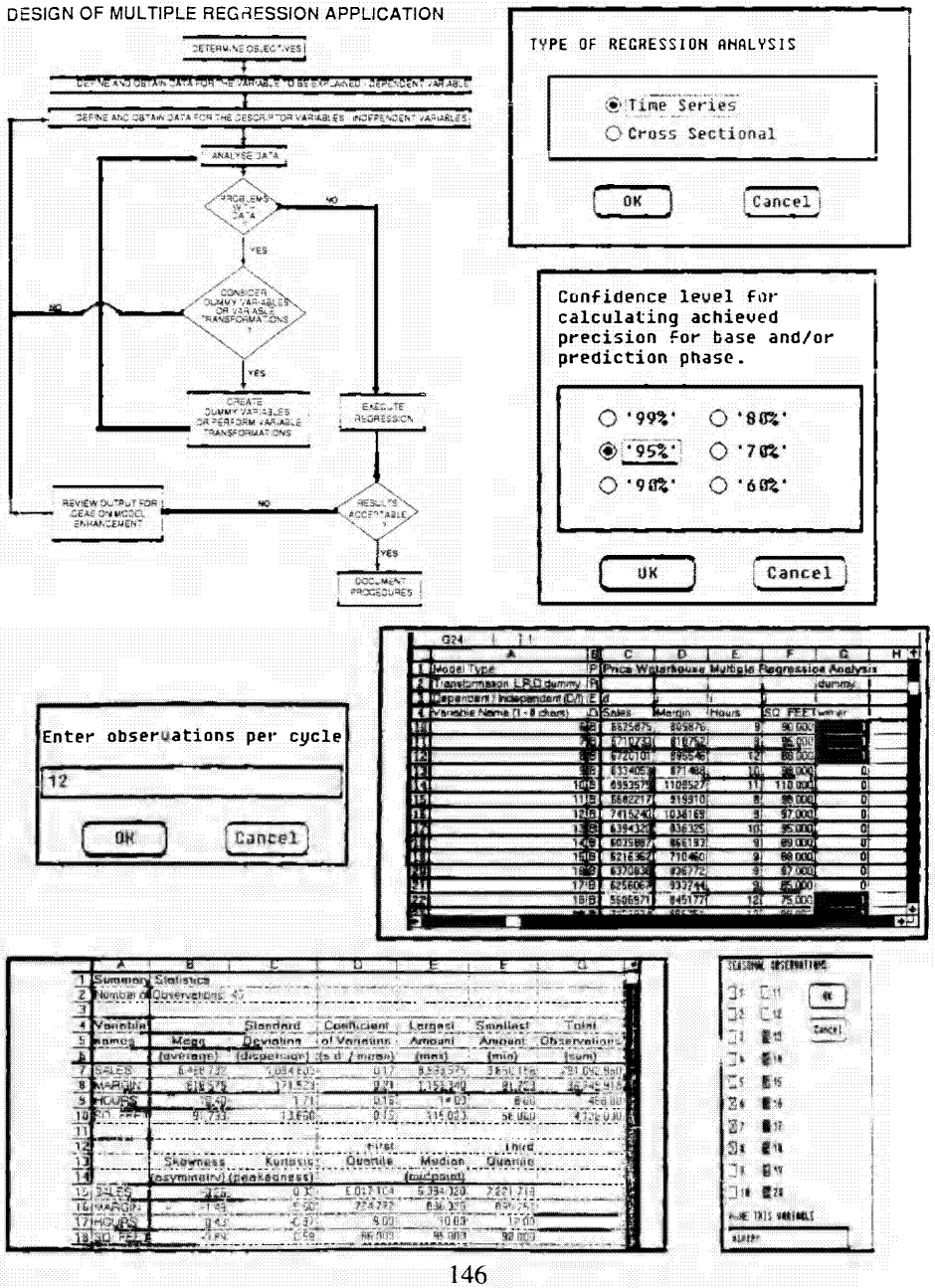
- various measures of the distribution of each variable including the largest and smallest values; the sum of all values; mean, median, and quartile statistics; and measures of variation, skewness, and kurtosis.
- a matrix showing the degree of correlation between each variable and every other variable.
- a table of autocorrelation statistics with lags from one to twenty-four for each variable.

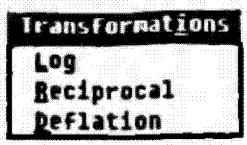
One purpose of the input analysis modules is to detect apparent data entry errors at an early stage of the process before the user's attention is drawn to outliers, precision intervals, etc. To illustrate, by examining the largest and smallest value for each variable, or by comparing the total for each variable to predetermined batch totals, one may expect to detect an incorrect value for a particular variable. A second objective is to detect an unusual distribution or pattern in the dependent variable. For example, it may prove to be skewed or to have kurtosis, or the autocorrelation test may show a seasonal or cyclical pattern. In such cases, the user is directed to the descriptor variables to see whether any reflect the same distribution or pattern. Generally this will prove to be the case, but if not, the user is asked to search for an additional descriptor variable to capture the attribute being exhibited by the dependent variable. A third purpose of input analysis is to study the correlation among the variables in the model, looking for relationships which in direction or magnitude are inconsistent with the auditor's expectations. Investigation of such surprises frequently leads to model improvements before the actual regression equation is produced.

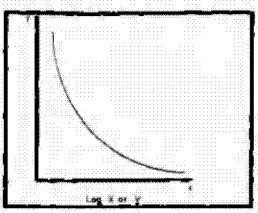
Sometimes the analysis will lead the user to transform one or more of the variables. The software allows variables to be transformed into natural logs, reciprocals, and deflated values (i.e., to remove heteroscedasticity or size effects), and also facilitates the leading or lagging of variables. Figure 2 illustrates some of these choices in menu format. Those observations to be used in the base versus prediction phase are specified, alongside descriptive statistics. Transformations are facilitated, and help screens are available to provide the sort of graphics guidance depicted in Figure 2.

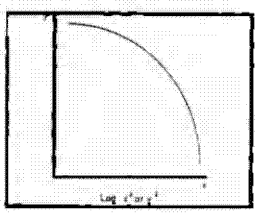
Once the user has responded to whatever conditions are revealed by the input analysis, he or she is ready to use the software to specify the regression equation. Unlike some other regression analysis products, the software does not use the stepwise technique for variable selection as the primary means of model creation, although stepwise is available as an option. We believe it is preferable

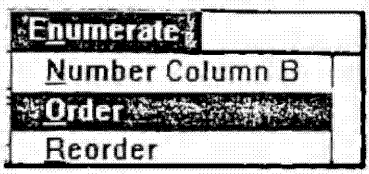
Figure 2. Overview of Software Design and Sample Screens

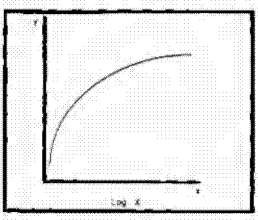


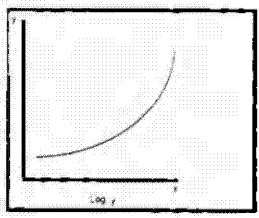

Transformations
Log
Reciprocal
Deflation

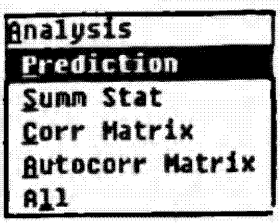


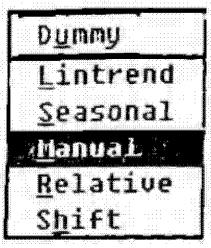


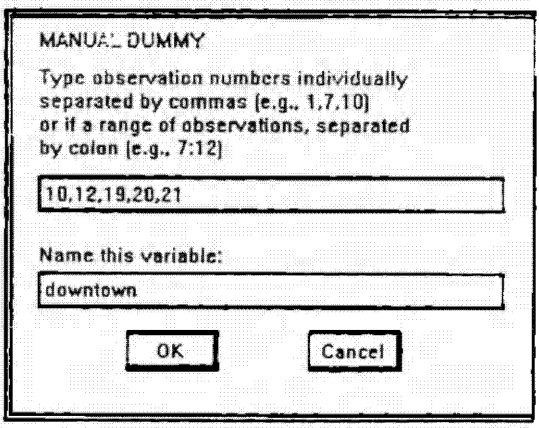

Enumerate
Number Column B
Order
Reorder

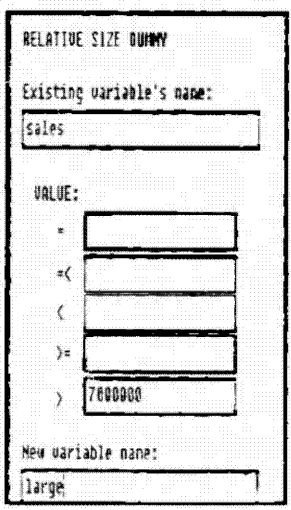


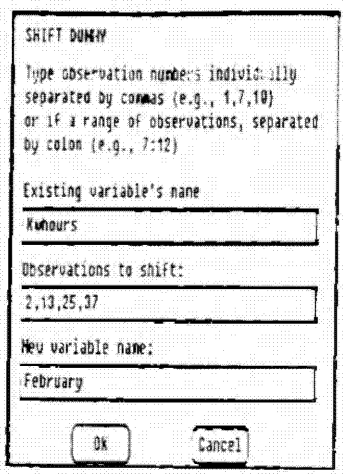


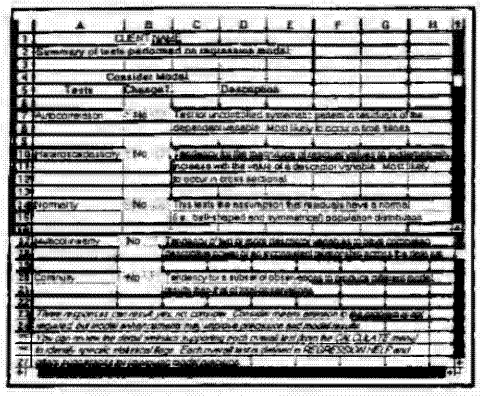

Analysis
Prediction
Summ Stat
Corr Matrix
Autocorr Matrix
All

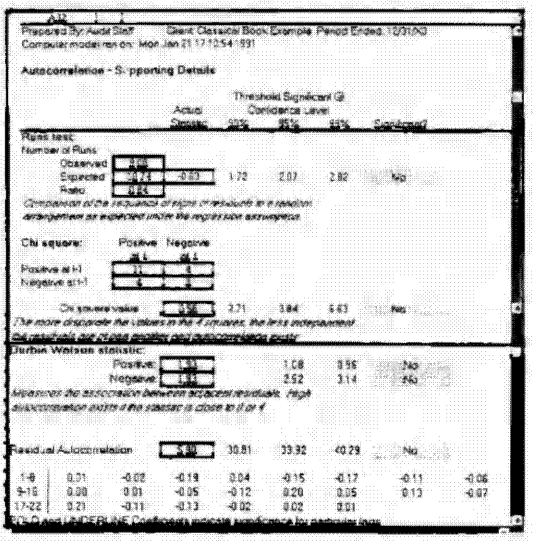

Dummy
Lintrend
Seasonal
Manual
Relative
Shift

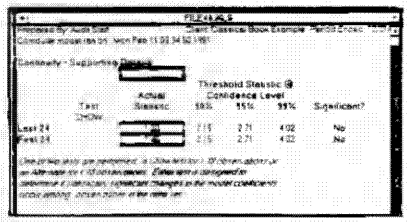

MANUAL DUMMY
Type observation numbers individually separated by commas (e.g., 1,7,10) or if a range of observations, separated by colon (e.g., 7:12)
10,12,19,20,21
Name this variable:
downtown
OK
Cancel

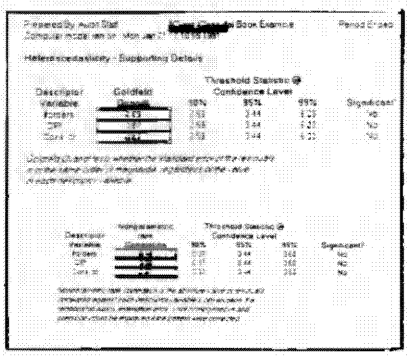

RELATIVE SIZE DUMMY
Existing variable's name:
sales
VALUE:
=
=<
<
>=
>
7000000
New variable name:
large

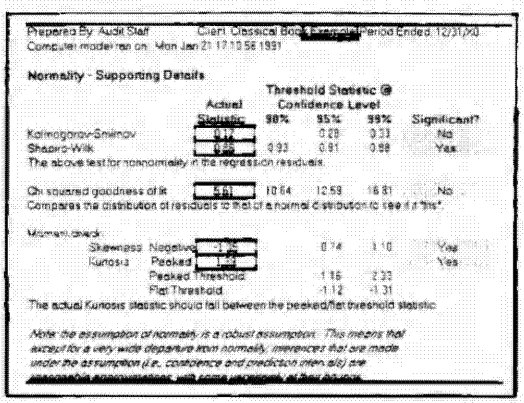

SHIFT DUMMY
Type observation numbers individually separated by commas (e.g., 1,7,10) or if a range of observations, separated by colon (e.g., 7:12)
Existing variable's name
Rumours
Observations to shift:
2,13,25,37
New variable name:
February
Ok
Cancel

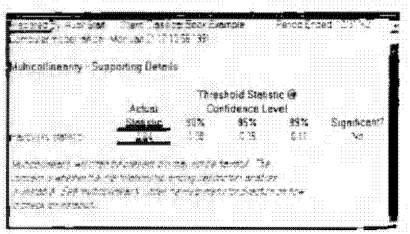


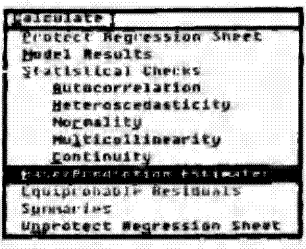


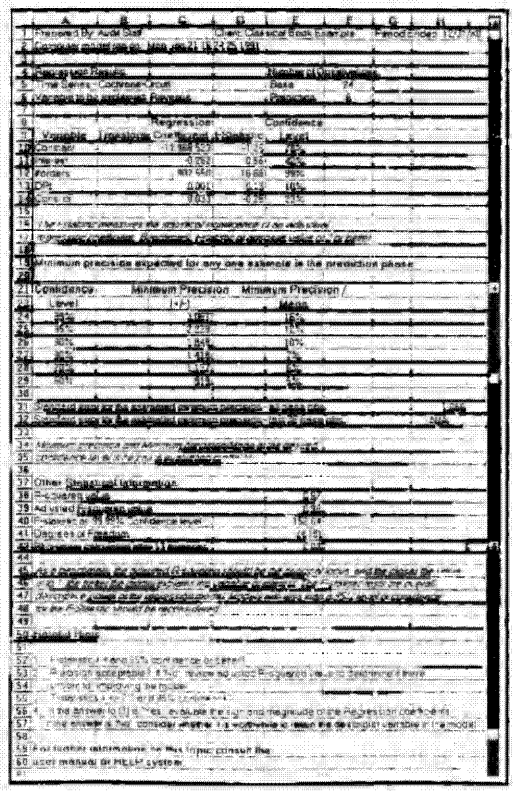


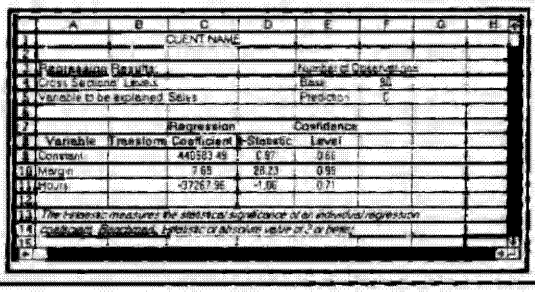


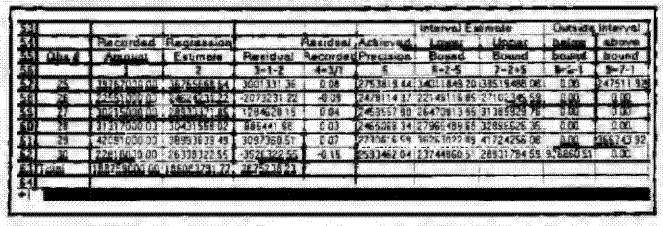


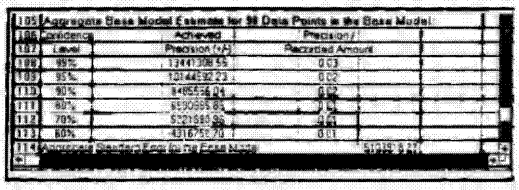


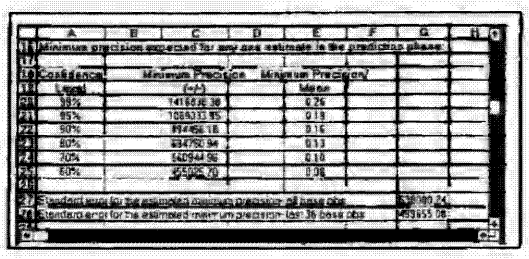

Calculate
Protect Regression Sheet
Model Results
Statistical Checks
Autocorrelation
Heteroscedasticity
Normality
Multicollinearity
Continuity
Equiprobable Residuals
Summaries
Unprotect Regression Sheet

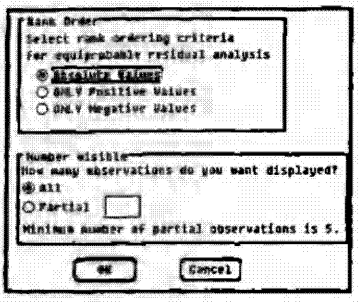


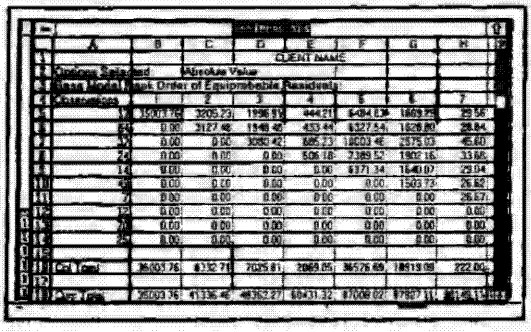


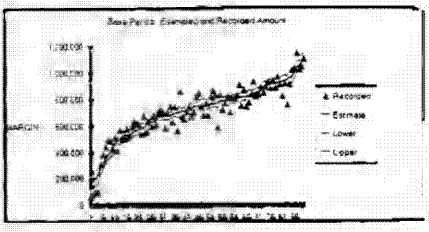


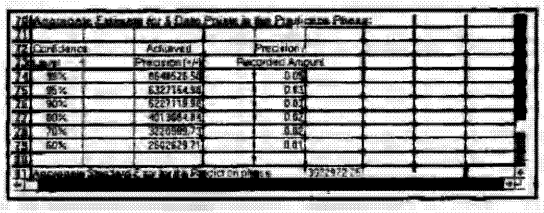


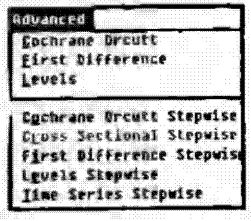


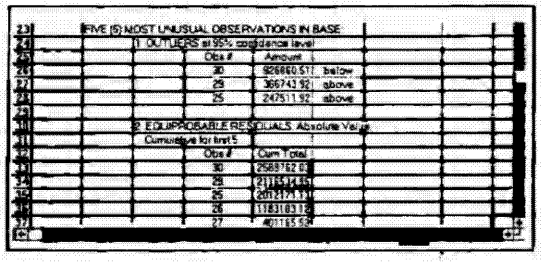

Rank Order
Select rank ordering criteria
For equiprobable residual analysis
Absolute Values
ONLY Positive Values
ONLY Negative Values
Number Visible
How many observations do you want displayed?
All
Partial
Minimum number of partial observations is 5.
OK
Cancel

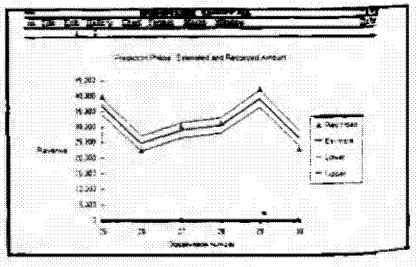


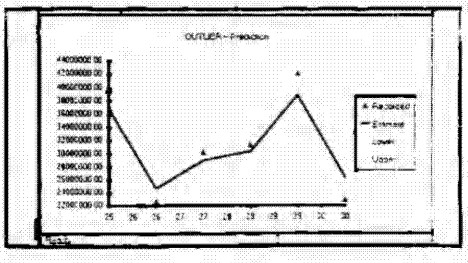


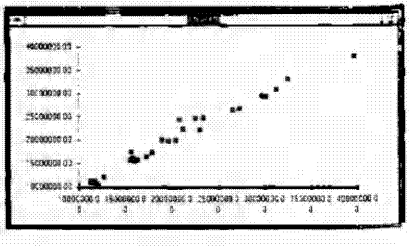



Advanced
Cochrane Orcutt
First Difference
Levels
Cochrane Orcutt Stepwise
Cross Sectional Stepwise
First Difference Stepwise
Levels Stepwise
Time Series Stepwise









for the user to specify the model based on his or her understanding of the client's business, and to think carefully about the regression coefficients to see whether they have the expected direction and magnitude. It is our judgment that in an audit context, the use of the stepwise technique runs the risk of turning the program into a "black box" which the user accepts without understanding. Moreover, statistical criteria are only one of the considerations of an auditor; indeed, descriptive power may be sacrificed intentionally in exchange for the greater evidential value provided by externally-generated independent variables, as prescribed in *Statement on Auditing Standards No. 31* [AICPA, 1980]. Nonetheless, an advanced module of the program is accessible that permits use of stepwise, and overrides certain automated decisions integrated with the core program (such as the time-series choice among levels, first-differences, and Cochrane-Orcutt models)—see the end of Figure 2 for a sample menu.

Table 1

Automatic Statistical Checks

Statistical Consideration	Tests Performed
AUTOCORRELATION	• Planning phase consideration of autocorrelation • Time-series model selection of first difference and Cochrane-Orcutt • Runs test • Chi-square test of contingency table • Durbin - Watson test • Autocorrelation of residuals for twenty-four lags
HETEROSCEDASTICITY	• Goldfeld Quandt • Non-parametric rank correlation
(These are performed for each independent variable.)	
NORMALITY	• Planning phase consideration of descriptive statistics. • Kolmogorov - Smirnov • Shapiro - Wilk • Chi squared goodness of fit. • Moment check for both skewness and kurtosis.
MULTICOLLINEARITY	• Planning phase consideration of correlation matrix • Haitovsky statistic.
CONTINUITY	• Chow test if forty-eight observations are available • Alternate dummy variable test if fewer than forty-eight observations are available

For each independent variable, the user is presented with a regression coefficient, a t-statistic, the confidence level associated with the t-statistic, and guidance on interpretation. For the model as a whole, the user is presented with various statistics, most notably R square, adjusted R square and the F statistic, again with guidance on their interpretation. A sample screen of such output is provided in Figure 2. At this stage, the user will decide whether to proceed or whether the model requires modification.

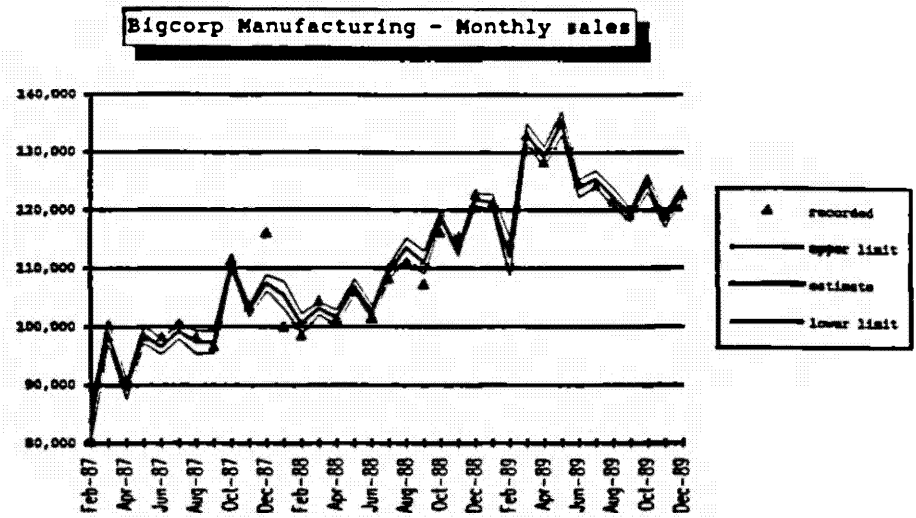
If the user proceeds, the next output module involves a series of statistical checks for autocorrelation of residuals, heteroscedasticity, multicollinearity, non-normality of residuals, and continuity. For most of these conditions, more than one test is performed. For example, the checks for autocorrelation of residuals include a runs test, a Chi-Square Test of a Contingency Table for residuals, the Durbin Watson statistic, and a test for autocorrelation in the residuals with lags from one to twenty-four. The users are not expected to know how the various statistics are calculated. More importantly from their perspective, heuristics built into the software warn them when the tests indicate that there is a problem with one or more of these conditions. If a problem is indicated, it is explained and the user is provided with on-screen guidance on how best to respond. Table 1 summarizes the automatic statistical checks performed. Figure 2 provides a sample screen for the summary of checks and illustrative detail-level screens. Test statistics are reported at ninety, ninety-five, and ninety-nine percent levels of confidence, to enable model builders to evaluate how severe the problem is, if detected.

Once the statistical checks have been reviewed, the next module compares the recorded value with the regression estimate for each observation in the data set. Confidence intervals are presented for each observation and for the data set as a whole. Over the years a variety of strategies have been presented for residual investigation—for example, by Kinney [1979], Kinney and Salamon [1982], and Knechel [1988a]. While recognizing that this is a topic on which more research is undoubtedly necessary, at present we are suggesting to users that aggregate precision for the reporting period should not exceed materiality, and that all but very small outliers should be investigated. This operationalizes the Kinney approach (extended to a multiple regression environment) of computing an aggregate standard error for the regression model in both the base and prediction phase, which can be compared with materiality. Related output appears in Figure 2. As evidenced in such illustrative screens, the focus is on precision, and the confidence level is derivative, rather than the other way around. A lower than desired level of confidence will suggest the need for additional audit procedures to be employed to achieve the desired level of audit satisfaction.

The outliers themselves are easily spotted through both tabular and graphical presentation, as illustrated in both Figures 2 and 3. To further assist the user in identifying anomalous observations requiring investigation, the last module presents a table of equiprobable residuals (and a related graphic) (again, extending work by Kinney) to complement the outliers in the previous module. Choices available for evaluating equiprobable residuals (reflective of one-tail and two-tail concerns) are shown in Figure 2, with screen output. A summary of the most unusual observations permits consideration of both evaluation tools: outliers and equiprobable residuals. Users are encouraged to consider both outliers and large equiprobable residuals when selecting items for investigation.

Some might feel that we are insufficiently prescriptive in our approach to

Figure 3. Graphic presentation of regression outliers



investigation of outliers. However, given the substantial amount of judgment which underlies the audit process (for example, materiality determination or inherent risk assessment), it seems natural to us that context-sensitive professional judgment should play a role in developing a strategy for residual investigation. Prediction phase screens analogous to base model screens, one of which is shown in Figure 2, are particularly useful in time-series applications.

Another issue raised in the literature is the linkage between regression analysis and statistical sampling. For example, Knechel [1988a, 1988b] shows how analytical procedures can reduce sample sizes. It is a logical conceptual link, because both forms of evidence lend themselves to mathematical expression—the playing out, as it were, of the multiplicative risk model. In practice, we do not expect that audit teams will often need to develop integrated strategies involving both regression analysis and sampling aimed at the same audit assertion. Sampling can be a very effective form of audit evidence when it is required, but it can be costly evidence to obtain and may not be required. For a variety of reasons, we would prefer audit planners to combine regression analysis and other analytical procedures with assessment of control risk below the maximum level where possible, including tests of the client's internal control structure. To provide perspective as to the statistical profile of past field applications, Table 2 describes a sample of models. Dependent and independent variables are described, comparisons can be made between standard deviation and standard errors achieved. The types of precision and incidence of outliers are

Table 2

Statistical Profiles of a Sample of Field Applications Using Regression Analysis

Application (Independent Variables are Italicized)	Average Value of Dependent Variable (Standard Deviation)	Standard Error (95% Precision)	Prediction Phase Achieved Precision Range 95%	Statistical Problems	R^2 (Adjusted R^2)
Benefit Reserves Life Insurance	222,347 (11,604)	577 (1,117)	1,285 to 1,784 [no outliers]	.Haitovsky .Nonparametric Rank Correlation	.35 (.15)
Number of policies, face amount in force, premiums, maturity benefits, interest component					
Supplemental Contract Reserves	26,186 (5,436)	279 (566)	586 to 762 [3 outliers]	.Durbin-Watson .Goldfeld & Quandt	.53 (.49)
Number of contracts, premiums, benefits, statutory reserves, interest					
Oil and Gas Production Revenue	64,529 (13,537)	1,486 (3,026)	2,849 to 3,859 [2 outliers] Achieved Precision in Aggregate for One Year: 12,892 or 4%	.First Differences	.89 (.89)
Volume, average price of daily crude futures, closings on the New York Mercantile Exchange for the prompt month, composite spot wellhead average prices (Natural Gas Week)					
Cost of Goods Sold: Chemicals	46,630,431 (2,056,448)	2,045,235 (4,254,088)	Residual/Recorded Value: 4% to 13% [no outliers]	.Multicollinearity	.96 (.95)
Natural gas, ethylene, chlorine, quarter, product line sales					
Retailing Cross-Sectional	203,552 (78,613)	67,640 (137,986)	Residual/Recorded Value: 3% to 170%	.Heteroscedasticity .Normality .Multicollinearity	.23 (.21)
Square footage, economic area, age, type of store, median income, population, nature of neighborhood					

Table 2 (Continued)

Application (Independent Variables are Italicized)	Average Value of Dependent Variable (Standard Deviation)	Standard Error (95% Precision)	Prediction Phase Achieved Precision Range 95%	Statistical Problems	R^2 (Adjusted R^2)
Warranty Expense	1,687 (313)	264 (538)	[no outliers]	.Haitovsky	.47 (.28)
Average labor cost, total sales, agged sales, months in service, direct labor, hours charged, part price, sales, season: May and December, quarter end, linear trend					
Gross Profit Retailing	100,736 (40,377)	2,550 (5,023)	259 to 80,835 Residual/Recorded Value: .01% to 11%	.Heteroscedasticity .Normality .Multicollinearity	.99 (.99)
Sales, square footage, economic area, nature of neighborhood					
Accounts Receivable: Utility	17,646 (3 538)	2,162 (4,365)	[2 outliers] 3713 to 5311	.Heteroscedasticity .Autocorrelation	.25 (.24)
Residential revenue, temperature bill fluctuation rate					
Retail Advertising	14,563 (2,955)	886 (1,798)	Residual/Recorded Value: 1% to 11% [no outliers]	.Cochrane-Orcutt	.90 (.89)
Linear trend, retail sales, number of weeks in a given month (measured as number of Sundays)					
Classified Advertising	11,744 (1,683)	562 (1,142)	Residual/Recorded Value: .09% to 9.7% [2 outliers)	None	.90 (.89)
Homesale index, help-wanted index, number of weeks in month, seasonality in December, lineage					

Table 2 (Continued)

Application (Independent Variables are Italicized)	Average Value of Dependent Variable (Standard Deviation)	Standard Error (95% Precision)	Prediction Phase Achieved Precision Range 95%	Statistical Problems	R^2 (Adjusted R^2)
Uncollectibles	14,178 (3,346)	534 (1,106)	1,269 to 1,584 [no outliers]	.Cochrane - Orcutt .Heteroscedasticity	.81 (.78)
Disposable personal income, unemployment rate, cash collections					
Retailing Sales Cross-Sectional	173,609 (94,407)	10,883 (21,435)	Residual/Recorded Value: .35% to 8.31% 1,439 to 6,514	.Heteroscedasticity	.99 (.987)
Cost of goods sold, payroll, square footage, age					
Bakery Sales Cross-Sectional	13,475 (6,628)	2,706 (5,320)	136 to 1,628	.Autocorrelation .Normality	.84 (.83)
Number of customers on a route, receivables, number of hours worked, number of employees on straight time, number of items shifted to thrift store					
Retailing Deposit	2,848 (4,238)	2,120 (4,169)	99 to 1,092	.Model Shift	.894 (.892)
Number of customers, hours worked, number of employees on straight time, total sales					
Manufacturing Expenses	3,649 (570)	323 (656)	Residual/Recorded Value: 24% to 82% 779 to 1,340	.Heteroscedasticity .Autocorrelation .Cochrane - Orcutt .Haitovsky	.75 (.67)
Average labor, part price, total sales, handling charge, February, March, December, quarter end					
Retail Advertising Revenue	1,069 (127)	30.3 62.8	20 to 48 [3 outliers]	.Autocorrelation .Haitovsky	.96 (.95)
Weeks, U.S. retail sales, season, lineage, linear trend					

Table 2 (Continued)

Application (Independent Variables are Italicized)	Average Value of Dependent Variable (Standard Deviation)	Standard Error (95% Precision)	Prediction Phase Achieved Precision Range 95%	Statistical Problems	R^2 (Adjusted R^2)
Classified Revenue	585,108 (95,876)	16,284 (33,685)	Residual/Recorded Value: 2% to 11% [2 outliers]	.Cochrane-Orcutt	.99 (.982)
Lineage, home index, help wanted index, weeks, season, auto sales index					
Commodity Manufacturing Cost of Sales (Refinery)	37,951 (11,014)	2,471 (4,928)	3,230 to 3,397 Residual/Recorded Value: .15% to 5% [1 outlier]	.Normality	.90 (.89)
Volume of refined weight shipped, monthly raw sugar price indices from U.S. Labor Department					
Brewery Labor Costs	11,882 (1,198)	291 (590)	Residual/Recorded Value: .44% to 7.71% 646 to 791	.Haitovsky	.95 (.94)
Sales price, material use, hourly base rate for workers, consumer price index -- all urban customers					
Educational Revenue (Cross-Sectional)	2,096 (1,994)	133 (268)	Residual/Recorded Value: .001% to 33% 47 to 147	.Haitovsky	.996 (.995)
Collections, attrition, advertising dollars, average course price, cumulative to date active students for nine months, student head count					
Course Service Costs (Cross-Sectional)	1,233 (1,109)	239 (481)	91 to 462 Residual/Recorded Value: 3% to 51%	.Haitovsky	.96 (.95)
Revenue, student head count, building rent, average number of instructors, average instructor's rate, cumulative to date active students					

Table 2 (Continued)

Application (Independent Variables are Italicized)	Average Value of Dependent Variable (Standard Deviation)	Standard Error (95% Precision)	Prediction Phase Achieved Precision Range 95%	Statistical Problems	R^2 (Adjusted R^2)
Interior Design Magazine Revenue	1,073 (453)	84.97 (172.50)	32 to 130 Residual/Recorded Value: 1% to 16%	.Heteroscedasticity	.97 (.96)
Printing, postage, paper, 100s of lines, percentage of articles that are editorial					
Cable Television Subscription Revenue	6,771 (389)	115 (299)	299 [outlier]	Cochrane-Orcutt .Normality .Haitovsky	.96 (.95)
Basic units, pay units, other units subscription, variable expenses					
Dairy Cost of Goods Sold for Fluid Milk Product	25,964,241 (11,620,268)	1,068,493 (2,192,366)	Residual/Recorded Value: 1% to 13%	.Continuity	.99 (.99)
Sales volume, milk sales in points, milk prices (class I)					
Bread Sales Time Series	152,461 (19,698)	379 (784)	840 to 897 Residual/Recorded Value: .03% to 2.37	None	.99 (.99)
Number of products produced, white bread, CPI index, other breads					

reported, alongside statistical problems and information on the descriptive power of the various analyses. This profile suggests that models typically have a limited number of independent variables, precision that ranges from under one to 237 percent on an individual observation basis, substantial descriptive power, and statistical flags that require separate attention.

Testing the Technique

The modified software was completed and alpha tested by the end of 1989. We believed that we had good, user friendly software, but the question remained: would auditors without any special mathematical training or bent want to use regression analysis on actual client engagements? We decided to use 1990 for limited beta testing of the software and the training material we had developed to support it.

Beta Testing and Field Experience in 1990

Our approach was to train the engagement teams for a small number of audits, with emphasis on large clients involved in retailing, financial services, and utilities. These industries were selected as starting points because we knew that existing audit strategies for clients in those industries often put significant emphasis on analytical procedures incorporating operating and external data, as well as accounting information. Eleven audit engagement teams were selected from the United States, the United Kingdom, Australia, and Canada and were trained in 1990. We referred to these teams as "new users", because they were deliberately selected to comprise people with no prior experience using regression analysis in auditing. Based on limited direction, each team collected data for their regression application and brought it to the training program. This facilitated "hands on" instruction using data familiar to them in a client context with which they had experience.

The results of the 1990 tests were generally positive, although inevitably they revealed a number of areas where our software and supporting training could be improved. The regression applications by these 1990 teams included:

Industry	Model Type	Dependent variable	Descriptor variables
Retailer	Cross sectional	Inventory shrink	Sales, inventory levels, store security expense, store size, type of store, store insurance rating.
Retailer	Cross sectional	Store gross profit	Sales, markdowns, inventory, shrinkage, geographic location *vis à vis* competitors.
Utility	Time series	Revenue	Volume, rate, number of customers, degree days.
Utility	Time series	Revenue	Volume, rates, number of customers, degree days, dew point, precipitation.

In addition to course attendance time, the eight teams providing formal feedback reported that they had spent an average of seventy hours (with a high of 103 and a low of twenty-eight hours) developing their models, including conceiving the application, obtaining the relevant data, and creating, modifying, and interpreting their regression model. The teams recognized that a regression application would typically require a front-end investment in the first year, but that the time required to maintain the application should drop substantially in the second and subsequent years. Considering that the average number of annual audit hours on the eight jobs was 7,700 (with a range of 1,100 to 20,000), the teams did not seem to consider that the required time investment was large.

Teams were asked whether they had changed the nature and extent of their other audit procedures as a consequence of using regression analysis. One retail team which used regression analysis primarily as an attention directing planning tool reported that it had been able to select fewer stores than normal for investigation as a consequence of improved risk identification. This was possible because regression analysis indicated that stores which were not outliers were in line with expectations, as quantified by the model. A banking team reported a similar experience and estimated that 200-250 hours of investigatory work had been saved. Four teams using regression analysis primarily as a source of audit satisfaction intended to replace other audit procedures, either less effective analytics (three cases) or detailed tests of transactions (one case). Two teams did not alter their other planned audit work in the first year because they were uncertain what they would learn by using this new technique.

Teams were also asked whether using regression analysis resulted in them learning anything new about the client. Six of the eight teams believed something important had been learned, typically additional insights into the interrelationship among financial and operational variables. Given the fact that these were large clients on which considerable audit effort was already being expended, this result is noteworthy.

All teams but one reported a favorable reaction from the client to Price Waterhouse's adoption of this new technique. Two of the clients already made some use of regression analysis as part of their business planning activity. Another client asked to license the software for use by its internal audit group.

The most revealing question concerned the teams' intentions regarding the future use of regression analysis. Seven of the eight teams planned to continue to use the application they had developed, while six of the eight planned to develop additional applications for the client. Individuals were asked whether they would like to use the technique on other clients, and eighty percent responded in the affirmative. Based on the Firm's experience in pilot testing a variety of methodological and software tools over the years, these are high approval ratings.

All eight teams believed there were industry-specific regression applications which could be used on many audits in their client's industry. To facilitate this, a central data base of all regression applications has been created which can be accessed through the Firm's wide area network. Thus a team contemplating a banking application, for example, can easily determine what regression models have been previously developed for bank audits, and who to contact for a detailed description of each application.

Following the successful completion of the pilot program and some attendant

internal publicity, a number of other engagement teams volunteered for training, with the result that by the end of 1990, about fifty engagements were using the software. Some of these represented engagements with previous mainframe applications which have been converted to the microcomputer.

Experience in 1991

By the end of 1991, approximately eighty engagement teams had been trained and more than 100 applications had been designed. Early in 1992, Price Waterhouse decided to survey users to gain a better understanding of how the use of regression analysis had affected their audit engagements. Key results based on the twenty-six replies received to date are outlined in Table 3. The relatively low response rate is the result of our sending the survey request out at a very busy time of year for the audit practice. In addition, a number of planned applications are currently in process, and so the teams were unable to report complete results at the time of this writing.

Regression analysis is being used on audits in a wide variety of industries, but as we had initially expected, retailing, financial services, and utilities seem to present particularly promising opportunities because of the wealth of objective operating information upon which models can be built to predict financial performance. Oil and gas, publishing, commodities, and hotels have also yielded several interesting applications.

There are an almost equal number of time-series and cross-sectional applications. Nearly all of the time-series applications involve modeling monthly financial data, and from two to five years of monthly observations are used to build the base model. The cross-sectional applications are generally used to identify anomalous locations in a multiple location business (e.g., retailing) and have involved from about thirty to 1,400 locations.

Most teams have chosen a confidence level of either ninety or ninety-five percent because they have found that this yields sufficiently tight precision relative to audit planning materiality, while minimizing the number of outliers to be investigated. Most of the models built have excellent explanatory power. Of the twenty-four teams which reported the value of adjusted R-squared in their application, eighteen had achieved ninety percent or better. (Note that R-square must be viewed in tandem with precision and is typically lower for balance sheet accounts than income statement accounts due to lower variability in such accounts).

The first-year time cost to develop and execute a regression application has varied considerably from twenty-two hours to 212 hours, with a mean of seventy-four hours. We estimate that the cost to repeat the application in the second year will be less than half this amount because the costs of learning about the technique, designing the application, and obtaining data will be substantially reduced.

It is currently difficult to tell how much time elsewhere in an audit can be saved because of this time investment. We have noticed that most teams, being uncertain of the value of this new technique, have opted to retain their previously planned detailed tests of balances and transactions "just in case". With only a few exceptions, the only effect of regression was to replace similar but less sophisticated analytical procedures. A better measure of savings would come in the second year of use when teams will be planning their audits with a much

Table 3

Field Study Feedback (Twenty-Six Engagements)

General

1. Industry in which the client operates

Financial services	5
Retailing	5
Oil and gas	4
Publishing	3
Utility	2
Hotels	2
Manufacturing	1
Distribution	1
Health Care	1
Communications	1
Personal services	1
	26

2. Approximate annual recurring audit hours:

High	14,000
Low	150
Mean	2,900

3. Attitude of engagement partner towards the use of regression analysis (1-5, with 5 being very supportive):

Mean	3.92

4. Knowledge level of engagement partner about the application (1-5, with 5 being very knowledgeable)

Mean	3.44

Details of the application

5. Time-series or cross-sectional:

Time-series -	12
Cross-sectional -	14
	26

6. Confidence level selected:

95% -	19
90% -	5
80% -	2
	26

7. Adjusted R squared value achieved:

95% or more	14
90% to 95%	4
80% to 90%	3
Under 80%	3
Did Not Respond	2
	26

8. Number of observations:

Time-series applications

	Base Model	Prediction Phase
High	60	12
Low	24	6

Cross-sectional applications

High	1,400
Low	33

9. Method of data entry:

Downloaded from client computer	7
Manual entry by client staff	5
Manual entry by audit	14
	26

10. Time invested in first year (hours):

	High	Low	Mean
Learning about regression analysis	32	2	1
Developing the application	80	3	18
Obtaining the data	32	1	12
Analyzing the input	30	1	3
Analyzing the output	40	2	10
Following up outliers	25	0	7
Documentation	20	1	8
Reviewing	10	2	5
Total time spent (not additive)	212	22	74

- obtaining data for model building in an audit context is simplified by its past orientation, in contrast to forecasting applications.

- follow up of outliers can involve detailed testing procedures, re-estimation of the model to see if additional descriptors explain the outliers, and other evidence-gathering procedures.

Table 3 (Continued)

Impact of regression analysis on the audit

11. Used as attention-directing tool during planning?

Yes	6
No	19
Did not respond	1
	26

12. If yes to 11, did the use during planning change the extent of the work during execution phase?

Yes	1
No	.5
	6

13. Used to provide satisfaction during execution phase?

Yes	20
No	5
Did not respond	1
	26

- note that when management inquiry suggests an explanation for results differing from expectations, the regression model can be rerun to corroborate the reasonableness and sufficiency of management's explanations.

14. Did regression replace other procedures which would otherwise have been carried out?

Yes	10
No	16
	26

- generally regression analysis replaced less sophisticated analytical procedures.

- in a small number of cases regression analysis enabled a reduction in detailed testing at various locations of multi-location clients.

15. Did regression analysis improve audit effectiveness?

Yes	12
No	14
	26

- since past audits were viewed as effective, the "No" responses can merely suggest comparable effectiveness.

16. Did you learn anything new about your client's business as a result of using regression analysis?

Yes	16
No	10
	26

17. Does the client use regression analysis for internal management purposes?

Yes	4
No	22
	26

18. Client reaction to the auditor's use of regression analysis (1-5, where 5 is very supportive)

Mean	3.59

Future plans for using regression analysis

19. Will repeat this application?

Yes	23
No	2
Did not respond	1
	26

20. Will develop other applications on this client?

Yes	6
No	20
	26

better understanding of what they can expect from regression analysis.

The use of regression analysis has had a number of very positive results. One positive result was that sixteen of the twenty-six teams reported gaining new insights into their client's business as a consequence of the use of regression analysis. Most often, the learning involved an improved appreciation of how key financial variables respond to changes in different operating variables. Another positive result was the reaction of clients, very few of whom make use of regression analysis themselves. Most were very interested in and supportive of what the auditors were doing. However, there was some degree of polarization in the answers, because a small minority of the clients were somewhat skeptical of a technique with which they were not familiar.

The most revealing question concerned the teams' intentions regarding the future use of regression analysis. Nearly all teams intend to continue with the application which they had developed. However, somewhat surprisingly, only six teams indicated plans to develop other applications for the same client. Since cross-sectional applications often focus on a single model, this result could be skewed by the nature of respondents. Moreover, training tends to focus on the revenue stream, whereas multiple-year experience has led to diverse modeling of income and expense streams, as well as balance sheet accounts.

Conclusions

Our experiences to date with regression analysis have been generally positive:

- The software works well and teams find it easy to use.
- Once teams build an application, they nearly always maintain it.
- Auditors have been able to improve their understanding of clients' businesses through the use of this technique.
- Most clients react positively to the use of a technique which they consider to be thoughtful and innovative.

On the other hand, some sobering realities are apparent:

- A minimum of two days' training is required before auditors are reasonably self-sufficient.
- Building a regression application is time-consuming, particularly when the values of key operating variables are not immediately available (as is frequently the case). At the same time, it should be noted that a significant portion of the first-year time investment is non-recurring.
- The firm must maintain, as a centralized resource, people who possess an enhanced level of understanding of both theory and application issues regarding regression analysis.
- Even after implementing the technique on a significant number of engagements, it is not yet obvious that regression analysis will save more audit time than it costs.

While teams generally reported that the use of regression analysis improved the effectiveness of their audit, it is difficult to link the identification of specific adjusting journal entries to the sample under study. However, it would be wrong to conclude that regression analysis failed to find significant errors which existed. Most of the clients in this sample are large and well-controlled, and would not be expected to make significant errors in their financial statements. Our

experience to date does not lead us to challenge the results reported by researchers who have studied the performance of regression analysis in simulation experiments. Indeed, among the findings of past regression applications are:

- discovery of reporting errors by branch operations,
- a theft ring that accounted for a retailer's poor performance,
- recognition of a change in cost allocation techniques that had not been disclosed,
- identification of a $300,000 transaction improperly placed in a suspense account which should have been in the share balance, and
- selection of five units to visit, three of which had just been discovered by management as having serious problems.

It is the intention of Price Waterhouse, for the balance of 1992, to continue to expand the use of the technique in a controlled manner, focusing on industries such as financial services and retailing where we have begun to accumulate a significant number of successful applications, with underlying concepts that can be easily replicated at other client settings.

We believe that for regression analysis to have a chance of success in auditing, auditors need software which is audit-oriented and easy to understand, yet statistically rigorous. They also need proper training and support, and an appropriate client situation in which to use the technique. Given all of these requirements, regression analysis can be a very useful tool. Its promise is at last being realized.

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Appendix

Field Applications

A Time-Series Illustration for Revenues

Bank audits are often highly reliant on analytical procedures. One reason is the availability of a pervasive, readily available, totally objective descriptor variable in the form of the bank prime rate of interest.

The audit team at a money center bank decided to build a regression model to predict the bank's interest income each month on the commercial loan portfolio. The bank was well-controlled and the team reasoned that if they satisfied themselves with the controls over the production of accounting information using an integrated test facility, and did quality analytical procedures on the aggregate commercial loan interest income, it would be possible to eliminate much time-consuming detailed testing of individual interest income calculations.

Often regression models are built by thinking of the price and quantity dimensions of the variable of interest. In this case, a quantity dimension was the average monthly loan portfolio, for which audit satisfaction had been derived in part from a test circularization of customers. However, the team first excluded non-performing loans from the portfolio since they were typically not generating any income. A second quantity dimension included in the model was time, since the number of days in a given month could vary from twenty-eight to thirty-one. The price dimension was provided by the average market rate of interest for each month. Some experimentation was done with both U.S. prime and the London interbank overnight rate (LIBOR) individually and in combination, before it was established that the inclusion of U.S. prime alone resulted in the model with the best predictive power.

The model was built to predict monthly recorded interest income. However,

the auditors recognized that monthly income was sometimes affected by certain non-routine transactions, of which the three most common examples were the following:

- Interest was sometimes received on non-performing loans and credited to income.
- When a loan was classified as non-performing, any unpaid interest accrued on that loan was reversed.
- On occasion, a non-performing loan was restored to the performing category, and previously reversed income was restored (usually because the customer had paid the arrears).

The audit team decided that it would wish to know of and examine non-routine transactions individually, and so they were extracted from the monthly recorded income figure used for the regression model.

Monthly data for the two years preceding the year subject to audit were obtained for average adjusted performing loans, average U.S. prime, number of days in the month, and adjusted interest income. The resulting regression model was able to predict about ninety-four percent of the month-to-month fluctuation in interest income during this base period, which the auditors regarded as satisfactory reliability. All of the descriptor variables had significant t-statistics, indicating that they were contributing meaningfully to the model. Statistical tests did not indicate any problems. Therefore, the model was used to predict monthly interest income for the year subject to audit.

The results were very satisfactory. The aggregate of the twelve months' recorded income was only thirteen percent different from the aggregate of the twelve months' regression predictions, a difference which the audit team did not consider to be significant. The aggregate precision of the estimates for the prediction period was +/- 2.1%, which was considered to be acceptably tight relative to the materiality for the engagement. In fact, this precision will very likely improve in the future as more months' data are added to the base model used to create the regression equation. Finally, none of the individual monthly recorded balances were statistically different (ninety-five percent confidence was used) from the corresponding regression estimates.

In this case the audit team believes that the use of regression analysis has helped to reduce substantially the time required by them to obtain audit satisfaction with respect to a substantial proportion of the client's interest income. At the same time, the auditors' awareness of the non-routine transactions was heightened by their need to identify them and exclude them from the recorded income figures used in the regression model. The audit effort is properly focused on ensuring that the accounting for these transactions is correct.

A Time-Series Illustration for Expenses

The auditors of a Fortune 500 company decided to use regression analysis software for their audit of payroll costs at a major division. Their objective was to assess the risk that recorded payroll costs might be misstated for any quarter.

They decided to use gross payroll costs as the dependent variable, after first excluding incentive compensation which they decided to test in detail. As explained above, many regression models have measures of price and quantity as descriptor variables. After considering various possibilities, the audit team selected the average monthly number of employees as the quantity variable, as

obtained from personnel department statistics, and the consumer price index as the price variable.

Actual data was obtained for the previous five years, or for twenty quarters in total. It was then realized that during the period, two special events had occurred which were not reflected in the model. During one quarter, the division had incurred a significant level of severance costs as part of a staff reduction program, while just before the end of another quarter a significant level of new hiring had taken place, affecting the headcount statistics significantly for that quarter, but having only a negligible effect upon the compensation costs. Additional variables were created to control for the effect of those two programs.

Based on the data for the twenty quarters, a regression model was created which was able to explain about ninety-five percent of the quarter-to-quarter fluctuation in payroll costs. However, six of the twenty quarters exhibited differences between actual and predicted payroll costs which were statistically significant at a confidence level of ninety-five percent. Of those six, two quarters had particularly large differences on the order of four to five percent of the recorded payroll costs. Further analysis was planned to understand better the causes of these fluctuations. If the causes, once understood, were reflected in the model, the model would become an even more effective prediction tool. In other payroll applications, descriptor variables have included vacation pay, sick pay, overtime, down-time, and part-time employee factors, as well as the influence of the mix of unionized and non-union personnel.

While possible refinements to the base model differences were being investigated, the audit team used the existing model to assess the risk of error in payroll costs for the first two quarters of the current year. The aggregate payroll cost for the six months exceeded the regression estimate by about two percent, and the auditors decided that no further detailed testing of payroll costs was required.

The benefit of this regression application was to direct the attention of the auditors to quarters where payroll costs were significantly different from expectation, and to minimize or even eliminate work on quarters which were closely aligned with expectations. It should be noted that the concept would apply equally to monthly payroll data, except that fewer than five years' history would suffice for model-building purposes.

A Cross-Sectional Illustration

A large food processor operates about forty plants producing the same baked goods product line for sale to food retailers in their local geographic area. Part of the audit strategy calls for field visits to a selected number of plants to assess internal controls and to test accounting balances and transactions. The auditors desired to develop a more sophisticated risk-based approach for deciding which plants they would visit.

Each plant is a profit center with its own balance sheet and income statement. The principal items on the balance sheet are receivables, inventories, and accounts payable. Two important income statement items are cost of ingredients and payroll costs. The auditors decided to build separate cross-sectional predictive models for each of these five accounting variables, using as independent variables other accounting information and operating statistics such as sales, pounds produced, and number of employees. The descriptor variables for each

model varied depending on what was considered to be most relevant. The models produced were all effective at predicting most of the plant-to-plant variability, ranging from about eighty-two percent of the fluctuations in payables to ninety-eight percent of the fluctuations in payroll costs.

The auditors judgmentally ranked the risk of material error for each of the five dependent variables as 3, 2 or 1 (3 being highest risk) based on the past history of errors and other factors. The regression models were run, and the residuals captured for each variable for each plant (the residual is the difference between the recorded amount and the regression estimate). The five residuals for each plant were first standardized to take into account differences in the size of the plants and the variables, then were weighted by the inherent risk factors, and finally were added together to produce a single overall risk score for each plant. The auditors intend to focus their location visits on the plants with the highest risk scores. In addition, unusual fluctuations for any of the variables for a location not visited are to be at least discussed with the plant controller to determine whether there is a plausible explanation.

The auditors believe they have developed a much more objective approach to selecting plants to visit. However, they recognize that their models are capable of continuous improvement as they gain an improved understanding of the business by investigating differences between actual and expected performance. These investigations have identified such relevant factors as the introduction of new product lines, unionization, intracompany purchases, economies of scale effects, private label arrangements, and the possibility of obsolete wrappers or similar disruptive factors influencing descriptor variables.

Discussant's Response to "Practical Experiences with Regression Analysis"

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Introduction

It has become a contemporary commonplace to characterise approaches to audit methodologies as either "quantitative" or "judgemental", and within the profession Price Waterhouse has traditionally been seen as occupying a place at the judgemental end of the spectrum. A study of the application of regression analysis within such a firm, examining its acceptability within a culture where quantified methods—statistical sampling, for example—have not been widely used, is of particular interest to those who have not yet found a place for it within their own armoury of audit tools.

My own firm, Grant Thornton, has adopted a structured audit approach incorporating a number of quantified audit methods, and yet even so regression analysis has not found favour. My discussion of this paper is no doubt coloured both by my own interest in quantified audit methods and by the limited acceptance of regression analysis within the auditing profession in general. It may be helpful if I begin, then, by making explicit some of my prior expectations before reading this paper. They could be summed up, I suppose, by saying that I was looking to see what answers I might find to a number of difficulties that may be encountered by auditors seeking to apply regression analysis. These include:

1. Theoretical problems, such as:
   - How are the calculations for regression analysis carried out?
   - How is the validity of a regression model controlled?
   - What do the various statistical terms associated with regression analysis mean?
2. Conceptual problems, such as:
   - When is regression analysis applicable?
   - What audit conclusions can be drawn from a regression analysis?
   - How can regression analysis be integrated with other audit procedures?
   - How are the results of regression analysis related to planning materiality?
   - What degree of reliance can be placed on the results of regression analysis?
3. Practical problems, such as:
   - Can plausible models be built within acceptable audit timeframes?
   - Is sufficient client data available for regression analysis to be carried out?

- What is the auditor's position when the regression analysis does not appear to support the client's reported results?

I shall comment a little later on the extent to which the paper addresses my prior concerns.

Background

In a paper presented to this symposium in 1990, Kinney and Haynes [1990] traced the history of analytical procedures back over sixty years. The discussant at that time (Abe Akresh) generally agreed with the analysis of the usefulness of analytical procedure results as substantive evidence. In recent years, competitive pressures driving the never-ending search for improved audit cost-effectiveness have created greater emphasis on analytical procedures, as have changes in professional literature in the U.S. (see, e.g., SAS 56 [AICPA, 1988]) and elsewhere (e.g., *Auditing Guideline 417* in the U.K. [ICAEW, 1988]). The *idea* of using regression analysis in auditing goes back at least twenty years, and perhaps even longer, but as the authors of the present paper note, actual use of regression analysis has been relatively rare [See, e.g., Daroca and Holder, 1985]. David Scott and Wanda Wallace cite numerous advantages of using regression analysis, as do other authors [see, e.g., Stringer, 1975], and yet it has never been widely used in the auditing profession. Certainly, it has long been a disappointment to me that auditors are generally so reluctant to take advantage of mathematical tools. The questions that the authors of this paper have chosen to address, then, are both important and interesting ones. I commend them for that.

General Observations

Nevertheless, there are a number of criticisms of a general nature that can be made of this paper:

- Firstly, there are several important questions that the authors do not deal with, which I shall comment on in detail later; in the authors' defence, it may be said that these are not issues that they intended to address—however, to take one specific example, it seems a great shame that the authors have not tackled the integration of regression analysis with other forms of audit evidence.
- Secondly, it may be said that the results reported in this paper do not greatly add to the sum of human learning—helpful software has been developed, and it may be interesting to know that most of the audit teams intend to maintain their regression applications in future, but it will be more interesting to know, in a year or two, whether or not they have; this is, of course, a criticism of the paper rather than the underlying project.
- Thirdly, it is questionable how relevant the authors' findings are to auditors who do not have access to the software developed during this project, and for whom an average time spent per application of seventy-four hours would be extravagant; the mean annual recurring hours is reported as 2,900, and there is no reason given to suppose that for an engagement with 290 recurring hours, a useful regression analysis could be completed in 7.4 hours—although this is not a problem of the authors' making.

These are very general, and somewhat sweeping, criticisms, and I should like to balance them with some more positive comments. It is gratifying to see a firm that has not previously been known for its acceptance of quantified audit tools investigating the application of regression analysis. I for one am glad that the authors have chosen to share their findings with the rest of the professional and academic communities, and pleased to note that so far they have enjoyed a measure of success. The conclusions that the authors reach are frank, realistic, and plausible. I congratulate them on all this. Furthermore, the authors have demonstrated successfully that audit software can be used to tackle the first group of problems that I outlined in my introduction, by performing the regression analysis, helping the auditor control its validity, and protecting the auditor from the need to be able to define and explain kurtosis (or to pronounce heteroscedasticity). This is a significant step, and again I congratulate the authors. Obviously, this is a project which will continue for some time yet, and I look forward to hearing how it progresses.

Detailed Comments

It is perhaps inevitable, given the nature of the critical process, that my detailed comments are largely, though not entirely, adverse. It may be appropriate, then, to put them in context by making it clear that many of them are criticisms of the paper in which David Scott and Wanda Wallace have presented their findings, and not of the project itself; many of them, therefore, could easily be resolved. I should also like to emphasize that my comments do not, in the end, diminish my enthusiasm for the work that the authors have carried out.

According to the authors, Knechel [1986] and Wilson and Colbert [1989] have reported that regression analysis "... is a more *accurate* tool for identifying errors...." What is intended by "accurate" here? Does it concern the precision with which misstatements may be evaluated? Knechel [1988] concluded that regression analysis increased audit effectiveness and was very efficient in detecting potentially material misstatements. There is scope for greater clarity here. I am also not clear what the authors have in mind when they report that "one accounting firm seems to have used it regularly, in *sampling applications.*"

A more substantial comment, however, concerns the distinction that the authors draw between the use of regression analysis for *risk identification* and for *error detection.* My interpretation is that they are referring to the uses of analytical procedures at the planning stage of the audit, and as substantive evidence as an alternative to detailed testing. From evidence that analytical procedures are effective in discovering errors, the authors conclude that they are "clearly an important risk assessment tool." My problem is with the justification for the use of "clearly," and the applicability of the conclusion to regression analysis. Analytical procedures at the planning stage should be efficient at identifying areas where misstatements are likely to occur. Analytical procedures as substantive evidence should be effective at detecting misstatements. If the authors are claiming that a procedure that is effective at detecting errors that *have* occurred is efficient at identifying where errors are *likely* to occur, some supporting argument is needed. In any event, knowledge that the stock controller at one location is living beyond his perceived means, and has a criminal record for fraud in a previous employment, is likely to be a more efficient way of identifying a branch at risk than a cross-sectional regression analysis. In my

view, the costs of carrying out regression analysis, as described in this paper, are likely to mean that it is more attractive as a substitute for other substantive procedures than as an attention-directing device at the planning stage.

It is not necessarily important to an understanding of the work and findings presented in this paper to know why Price Waterhouse chose to develop its own software. The arguments given in the relevant part of the paper, however, are insufficiently detailed to be convincing. The comment that commercial packages were replete with complex statistical jargon looks weak, for example, in the light of the terminology introduced in Figure 2 and Table 1. Of course, it is quite possible that the quality of the software itself dispels this concern better than the reasoning provided in the paper. I could not help wondering, for example, what help the software gives the auditor in assessing the implications of information it provides as to "various measures of the distribution of each variable including ... skewness and kurtosis ... a matrix showing the degree of correlation between each variable and every other variable ... a table of autocorrelation statistics with lags from one to twenty-four for each variable."

We are told that the software can accommodate up to 1,000 observations per variable, subject to a maximum limitation of 5,000 data points. Whilst this may be necessary for some of the audits referenced in the paper, many auditors considering the use of regression analysis are inhibited more by a paucity of data than by such an excess. It would be interesting to know what protection the software offers by way of minimum acceptable numbers of observations prior to attempting a regression.

Successful use of regression analysis in the auditing environment (as indeed for other analytical procedures) is largely dependent on a good understanding of the client's business, and this is a point well recognised by the authors. This is reflected in their view that specification of the independent variables by the auditor is preferable to automatic stepwise regression. Nevertheless, whilst a manual stepwise regression can be stopped when the results appear to be acceptable, software offers the opportunity to combine stepwise regression with backwards elimination, and a "best regression" identified in this way may itself provide the auditor with additional insights. Some discussion of the implications of this would be welcome.

One further thought on how automation can assist auditors in dealing with the complexities of regression analysis: it would be attractive to see some work on the use of robust regression to identify outliers.

The authors recognize that the issue of residual investigation requires further research. Kinney and Salamon [1982], Stringer and Stewart [1986] and Knechel [1988] all offer perspectives on this problem. A key part of the Price Waterhouse approach is that the focus is on precision, and the confidence level is derivative. Although Price Waterhouse does not take this line, this sits well with those of us who might want to combine the confidence derived from the regression analysis with other forms of audit assurance in some explicit form of the Audit Risk Model. The authors, however, take the view that audit teams will not often need to develop integrated strategies involving both regression analysis and sampling aimed at the same assertion. This might initially seem plausible enough, but really it will not do for a variety of reasons:

- Even if the issue is not expected to arise often, some treatment will be required when it does.

- It may sometimes be desirable to combine regression analysis with forms of detailed testing other than sampling, and this begs the question.
- Some professional literature (e.g., Auditing Guideline 417 in the U.K.) expects that "...in most cases, analytical review procedures will be used in conjunction with other substantive tests." The onus may be on the auditor, then, to show why this was not appropriate; if an approach is taken whereby the confidence level is derivative, there may well be some "topping up" necessary to achieve the desired overall confidence.
- This may still be true even when reliance on the environment or internal controls are added.

In 1990, it appears that eleven teams were trained, but that eight teams provided formal feedback. We are not told what conclusion can be drawn as to the missing three teams.

For Price Waterhouse, the positive feedback from the teams involved in the project is clearly important. From the methodological standpoint, however, it is by no means clear what significance can be attached to it by readers of the paper. For example, "... one retail team ... reported that it had been able to select fewer stores than normal for investigation as a consequence of improved risk identification." What does this mean? How did they know that they had improved risk identification? Does this simply mean that they had greater confidence in the technique than in their previous methods, and so they chose to visit fewer stores? Why did they not conclude instead that as the technique identified fewer stores than usual, it was a more risky planning tool? What impact did reducing the number of stores have on the effectiveness of the audit? Or, to take another example, "... a banking team ... estimated that 200-250 hours of investigatory work had been saved." What does this mean? Presumably, the 200 hours work in question was not done—but how did the team establish that the regression analysis was just as effective? Did they not, rather, avoid the detailed work because they believed the regression was effective? But, then, was this a conclusion based on the application, or on the training that Price Waterhouse had given them?

I am not, of course, suggesting that any of the conclusions these teams reached were wrong. I am suggesting, however, that there is no objective evidence to support them. This is not itself a criticism of the project; one of the aims was to establish whether "... partners and staff ... would ... conclude that the benefit from using regression analysis is large enough to justify the cost of developing the application." It does mean, however, that we should be careful not to cite these results as evidence of the effectiveness of regression analysis. The more hesitant results reported from the 1991 experience are perhaps more representative of the reality of the situation. It remains to be seen what implication the low response rate for 1991 has for the overall results of the experiment.

Conclusions

I have already commented that the authors addressed the technical problems I raised in the introduction by the design and application of audit software. I have also suggested that I did not find in the paper satisfactory answers to my concerns about the conceptual difficulties of integrating regression analysis within a structured audit approach; there is little in the paper that addresses

when to use or not use regression analysis, and why. What about my third category of prior issue, the practical problems?

Within the scope of the reported project there is no discussion of the practical difficulties that arise when the auditor who has used regression analysis concludes that the client's recorded figures are misstated. Without detailed results as to what caused the misstatement, or a clear idea of where the other side of the correcting journal entry should be posted, the attempt to persuade the client to make an adjustment can be tricky. The study has shown that positive results can be obtained from regression analysis, but that they require a significant time investment. Whether there are audit situations where acceptable results can be obtained at less cost is by no means certain. Finally, the paper has nothing to say regarding the difficulties that arise on smaller audits of obtaining sufficient reliable data to support regression analysis.

On the whole, although the project is not yet complete, the results for the authors appear to be substantially positive. It is no fault of the authors that they offer little comfort to the auditors of smaller businesses where development costs of more than a day or two would be unacceptable, and where monthly accounts do not exist and quarterly accounts are unaudited and unreliable.

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8

Internal Control: Progress And Perils

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"Progress might have been alright once but it has gone on too long."
Ogden Nash

Over the last five years, internal control has been a matter of widespread interest and vigorous debate, a subject where action is fast-paced and still gaining momentum. During the two preceding decades, however, internal control was an off-and-on again parochial topic, subject to the vagaries of groups who perceived it to be relevant and beneficial to their objectives. These groups included entity managers and owners, internal and external auditors, regulators and legislators, private sector policy makers, and independent commissions. In varying degrees, each of these groups has proffered internal control as a solution to a number of problems.

The intense attention devoted to internal control over the last five years (since 1986) has undoubtedly made progress in our understanding of what internal control is and how it can be used. Professional standards, private sector proposals, legislative and regulatory initiatives, and practice and academic research have addressed many conceptual and practical issues. However, not everyone would agree that all of these developments represent progress. Although some problems have been solved, some have not, and other problems have been created. In other words, internal control theory and applications have progressed, perhaps in an evolutionary leap since 1986, but perils remain.

The purpose of this paper is to survey the progress and perils related to internal control developments over the last five years. The content of both categories is likely to be disputed and the coverage will probably be incomplete. Even the co-authors of this paper are not in total agreement about what is progress and what is peril. Nevertheless, our objective is to review the most prominent advances and the most serious unresolved problems associated with internal control over the last half-decade. We leave it to our reviewer to propose our misclassifications and omissions.

Some of the developments discussed in this paper are neither new nor little known. They are presented for perspective and in an attempt to be thorough. Other developments we discuss, however, are emerging and not yet widely known. We believe that both areas contain pressing questions in need of research. As in many other areas of accounting research, research in internal control lags behind the needs of, or is overlooked by, policy makers and practitioners. This is likely a problem with the process used to identify and communicate policy and practice issues, stimulate research about them, and to foster an

awareness of existing research — that is, our internal control over useful and relevant research may contain a material weakness or, at least, a reportable condition. We hope that our paper gives better focus to research needs in internal control.

This paper is organized into three major sections each framed as a question: (1) What is internal control? (2) What is the relationship of internal control to an effective audit strategy? and (3) What is the value of information about internal control? To some extent these categories overlap and other organizational frameworks certainly exist, but we believe these categories aptly identify the major areas where key developments have occurred during the last five years.

What Is Internal Control?

Prior to 1987, there were many efforts to define and describe internal control. A number of these efforts were rooted in the need to postulate and understand the relationship of internal control to financial reporting and auditing, commonly referred to as "internal accounting control." Several notable examples of these efforts are *Statements on Auditing Procedure No. 54, The Auditor's Study and Evaluation of Internal Control* [AICPA, 1972], *The Report of the AICPA's Special Advisory Committee on Internal Control* [AICPA, 1979], and *Internal Control in U.S. Corporations: The State of the Art* [Mautz, et.al. 1978].

Other treatises on internal control took a broader perspective, probing internal control as it relates to the organization as a whole. Some prominent examples of these works are: *Management Control Systems* [Anthony and Dearden, 1972], *Control in Business Organizations* [Merchant, 1985], and *Statement on Internal Auditing Standards No. 1, Control: Concepts and Responsibilities,* [IIA, 1983].

In 1987, two separate and extensive endeavors to redefine and redescribe internal control began. Each of these undertakings broadened and refined the concept of what internal control is and, in somewhat different ways, addressed the need for an authoritative or "generally accepted" definition of internal control. We refer to those endeavors as SAS 55 [AICPA, 1988] and the Treadway/COSO [COSO, 1992] reports.

SAS No. 55

In February 1987, an exposure draft of a proposed statement on auditing standards (later to become SAS 55) was released. Although the proposal dealt principally with the relationship of internal control to an audit of financial statements, it also broadened the AIPCA's authoritative definition of internal control beyond that in SAP 54 and elaborated on its elements.

Statement on Auditing Standards No. 55, *Consideration of the Internal Control Structure in a Financial Statement Audit,* (SAS 55) was issued in April 1988. It introduced the term internal control structure and defined it as consisting of an entity's "policies and procedures established to provide reasonable assurance that specific entity objectives will be achieved." The standard subdivided the internal control structure into three major elements: the control environment, the accounting system, and control procedures. An appendix to SAS 55 and a subsequent audit guide elaborate on these three elements in considerable detail.

We believe that SAS 55 improved the definition and description of internal control, as it relates to financial statement audits, in three principal ways. First,

it expanded the elements that comprise internal control over financial statements and that auditors, therefore, should consider when assessing control risk. Second, it linked consideration of internal control to financial statement assertions, requiring auditors to focus their consideration of internal control on its effect on the specific assertions being audited. Both of these definitional improvements should bring progress in the form of better control risk assessments. Third, the revised definition specifically embraced internal control over data used to apply audit procedures, for example internal control over nonfinancial data used in analytical procedures. This definitional change brought the "operational" aspect of internal control squarely within the purview of a financial statement audit. By removing the clouded and unworkable distinction between accounting and administrative control in SAP 54, the new definition should improve both audit effectiveness and efficiency through the use of operational information.

These areas of progress, however, are not without perils. One of the elements included in the expanded definition of internal control, the control environment, contains several components that auditors may find difficult to evaluate and relate to financial statement assertions. For example, judgments about what constitutes an appropriate management philosophy and operating style or an effective organizational structure or audit committee and how those components affect specific financial statement assertions are somewhat subjective and somewhat new to auditors. In addition, what constitutes effective internal control over operational information and, in turn, how such information relates to financial statement assertions is largely unexplored and, we expect, not yet widely used in auditing.

Research needs concerning the progress and perils of SAS 55's definition of internal control include the following questions:

- To what extent are auditors considering the control environment components in assessing control risk (as opposed to assuming control risk is maximum)?
- How do auditors evaluate the effectiveness of control environment components and what specific problems are they encountering?
- How do auditors combine or integrate the control environment with the other two internal control structure elements in assessing control risk?
- How do auditors link the control environment (as a whole or by components) to financial statement assertions?
- Have auditors' assessments of control risk improved by considering the control environment components?
- How and to what extent is nonfinancial data used in an audit and how are controls over such data identified and evaluated?

Treadway/COSO Reports

In October 1987, the National Commission on Fraudulent Financial Reporting (Treadway Commission) issued its report. Included among its numerous recommendations for reducing the incidence of fraudulent financial reporting were several recommendations concerning internal control. One of these recommendations was specifically addressed to the question of what is internal control and suggested that the committee of organizations sponsoring the Treadway Commission (COSO) develop integrated guidance on internal con-

trol. The report's discussion of the recommendation stated that varying interpretations and philosophies of internal control existed and that a common reference point about what effective internal control is was needed.

In response to this recommendation, COSO, through an outside consultant, (Coopers & Lybrand) embarked on a project to develop integrated, generally accepted internal control guidance. An exposure draft of this guidance was issued in March 1991. After considering comments, a revised exposure draft was issued in February 1992, and the final report is expected to be issued in September 1992.

The stated objectives of the report are to establish a common definition of internal control which serves the needs of different parties (general acceptance) and to provide a standard against which the internal control effectiveness can be evaluated (criteria). These are admirable but ambitious goals. Their achievement would represent substantial progress. Agreement about what internal control is and how effective internal control can be achieved would be a major step toward helping entities establish sound internal control and providing useful information about internal control. Indeed, initial indications suggest that these goals may be attainable. For example, regulatory agencies charged with implementing the FDIC Improvement Act of 1991 have indicated they will adopt the COSO report as the standard against which both the required management and auditor assessments of internal control effectiveness required by the act should be judged. The growth in other legislative and regulatory interest in internal control may provide additional impetus for imbuing the COSO report with "general acceptance" (in the AICPA's auditing standards division, for example, we have been involved with over a dozen regulatory agency proposals for auditor reports on internal control within the last four months).

More experience implementing the COSO report is needed, however, before its success can be evaluated. There are a number of critics of the report who see more peril than progress in its content. The major perils posed by the report can be classified into two areas: (1) the definition of internal control and the related components (criteria) the report establishes for effective internal control, and (2) the measure of significant deficiencies the report sets forth.

COSO defines internal control broadly as "a process, effected by an entity's board of directors, management and other personnel, which is designed to provide reasonable assurance regarding the achievement of objectives in one or more categories: effectiveness and efficiency of operations, reliability of financial information, and compliance with applicable laws and regulations." The report also identifies five components of effective internal control: (1) control environment, (2) risk assessment, (3) control activities, (4) information and communication, and (5) monitoring. These components represent criteria or standards for establishing and evaluating effective internal control.

It seems intuitively reasonable to establish internal control categories that correspond to the three major categories of entity objectives (financial reporting, compliance, and operations). This categorization permits universal criteria to be applied to major segments of internal control. As the COSO report states, these categories allow a directed focus on internal control by different parties to suit their specific needs. Such a categorization, however, also creates a perception that internal control components within these categories are clearly identifiable and distinguishable and that experience and expertise in applying the COSO criteria is equally well-developed for each of these categories.

This perception is not valid and, although the COSO report attempts to dispel the inference, our experience with numerous regulatory requests for auditor services on internal control demonstrates that the misperception is common. For example, the Chief Financial Officers Act of 1990 requires an auditor's opinion on internal control over financial reporting, compliance with laws and regulations, and certain operations objectives. In addition, the act requires auditors to "review management's process for evaluating and reporting on internal control."

While we have a fairly well-developed body of knowledge about how to apply the COSO criteria to internal control over financial reporting, our knowledge of how to implement these criteria for internal control over compliance and operations is extremely limited. For example, how do we implement the risk assessment, control activities, and information and communication criteria for the categories of compliance with laws and regulations or operations?

Regulatory initiatives calling for such implementation are fast outpacing our ability to provide those services. We have found in our experience at the AICPA that regulators often have unachievable expectations about the services independent auditors can provide regarding internal control in the compliance and operations categories. For example, we have had requests for auditors to provide opinions that an entity has adequate internal control to ensure compliance with laws and regulations requiring drug free workplaces and nondiscrimination in providing housing. Consequently, when legislative and regulatory bodies request services concerning internal control, we are careful to always use a modifier with the term internal control—financial reporting, compliance, or operations—to help avoid misunderstanding.

Another concern about the COSO criteria is that certain components may be so subjective as to not be susceptible to reasonably consistent estimation or measurement. Those components most often cited include integrity, ethical values, and management competence. Management (or auditors) may not be able to determine objectively whether those criteria have been satisfied, yet their existence as criteria is likely to create the expectation that they have. On the other hand, however, the COSO criteria may currently be at the same evolutionary stage that generally accepted accounting principles were at forty years ago. Refinement is probably necessary and likely to occur.

Another peril arises because the report uses the concept of a material weakness to separate effective from ineffective internal control. Using this measure causes two problems. First, no conceptual or empirical construct of a material weakness exists for internal control over either compliance or operations. The construct has been developed only for internal control over financial reporting by relating deficiencies in internal control to the likelihood of material misstatements in the financial statements. Obviously, such a construct is not an appropriate measure of a material weakness in either internal control over compliance or operations. In the absence of sound definitions of material weaknesses pertaining specifically to both the compliance and operations categories, the decisions of those who evaluate internal control in those categories and those who use such evaluations will be subject to extreme variations in consistency and usefulness.

Even though an accepted material weakness concept exists for internal control over financial reporting, it also poses complications. There are strong disincentives to concluding that such weaknesses exist. Practice experience in both

financial statement audits and in engagements to report on internal control under SAS 30 indicates that material weaknesses rarely exist. This rarity stems from the perception that their existence constitutes a violation of the Foreign Corrupt Practices Act of 1977. As a result, deficiencies in internal control are almost never deemed sufficiently significant to be material weaknesses and useful information about internal control is suppressed. Indeed, SAS 60 was developed to foster the flow of useful information about internal control over financial reporting by creating an additional, lower-level deficiency not embedded in legislation—a "reportable condition." Because of the legal implications of material weaknesses, COSO's decision to adopt that concept is likely to perpetuate their rarity.

An additional concern with the material weakness construct (for each of the three control categories) is that it may not be operational for some of the criteria—particularly the control environment criteria. What constitutes a material weakness in integrity, ethical values, management competence, or management philosophy and operating style? Applying the material weakness concept to these criteria is likely to create a very fuzzy line between effective and ineffective internal control, with the result that the identification of such weaknesses will be rare. Moreover, the lack of material weaknesses may lead to unwarranted implications, for example, that management is effective.

Research needs concerning the progress and perils of the internal control definition and criteria in the COSO report include the following areas:

- The extent to which the COSO report definition and criteria has been adopted, voluntarily or mandatorily, by entities that report on internal control.
- The implementation of the five COSO criteria in each of the three internal control categories, with special considerations to the compliance and operations categories—problems encountered and refinements needed.
- The decision processes management and auditors use in deciding whether material weaknesses exist in each of the three categories.
- The application of COSO criteria to smaller entities and specific industries.
- The relationship between the SAS 55 definition of internal control and the COSO definition and the need for reconciling SAS 55 to COSO.

What Is the Relationship of Internal Control to an Effective Audit Strategy?

The proposal and ultimate issuance of SAS 55 sparked considerable controversy about the validity of some of its concepts and whether its implementation would have a positive or negative effect on financial statement audits. Because SAS 55 is the authoritative guidance for forming judgments about internal control effectiveness and incorporating them into a financial statement audit, concerns about its conceptual validity and implementation are critical. Moreover, portions of SAS 55 are being adapted as guidance in attestation standards the Auditing Standards Board (ASB) is developing for auditors to use in performing and reporting on internal control effectiveness using the COSO report. Thus, issues concerning SAS 55 have taken on added significance.

Some of the potential progress and perils associated with SAS 55 were discussed in the previous section. This section will consider other significant areas

of advances and hazards directly attributable to SAS 55. The areas of controversy we believe to be of the greatest consequence are: (1) the meaning of control risk and (2) the nature and application of tests of controls.

What Is Control Risk?

The concept of control risk was first recognized in auditing standards with the issuance of SAS 39. Control risk was further refined and given more prominence by SAS 47; SAS 55 sets forth the most recent amplification of that concept. Some commentators, however, believe that SAS 55 changed the concept of control risk significantly from that in prior standards and made it theoretically and operationally unsound [Morton and Felix, 1990, 1991].

SAS 55 defines control risk as "the risk that a material misstatement that could occur in an assertion will not be prevented or detected on a timely basis by the entity's internal control structure policies and procedures." This definition is essentially the one in SAS 47 modified to accommodate the SAS 55 requirement that control risk be assessed at the assertion level. The fundamental disagreement over this definition is whether it means that the assessed level of control risk must always represent the auditor's belief (estimate) about the true but unknown level of control risk or whether, for audit efficiency reasons, an auditor may decide not to confirm that belief and arbitrarily set control at the highest possible level (100%).

The essence of this disagreement was stated clearly and concisely by Morton and Felix [1990] " ...[I]t seems unreasonable to assume that an auditor either has no beliefs until competent evidential matter is collected, or that his beliefs are irrelevant unless sufficient evidential matter is collected to provide a basis for reliance thereon." Some believe that such an assumption, instead of being unreasonable, is prudent. Stated differently, what support should exist for a belief that the level of control risk is below 100% before that belief can be used in the audit? Should auditors be permitted[1] to use beliefs for which they have not gathered evidence or should they be required to obtain evidence to support those beliefs before they are used in the audit process?

Research about internal control judgments has been abundant and fruitful. Additional consideration is needed, however, of how audit effectiveness differs when auditors use beliefs about control risk that are unsupported by tests of controls as opposed to when auditors assume control risk is 100%. Some important questions are:

- When an auditor has a tentative but unconfirmed belief that control risk is less than 100% but believes it is inefficient to perform tests of controls to confirm the belief, what is the role of those unconfirmed beliefs in the audit process (normative and descriptive)?
- When an auditor has a tentative but unconfirmed belief that control risk is less than 100% but believes it is inefficient to perform tests of controls to confirm the belief, what is the affect on the audit process of setting control risk at 100%?

[1] Morton & Felix [1991, pp. 4-5] strongly imply that use of an unsubstantiated belief that control risk is less than 100% should not only be permitted but required. The rationale is that the audit will be more effective than if the auditor assumes control risk is 100% and audits accordingly.

The meaning of control risk raises other questions apart from financial statement audits. Because the risk model is incorporated in the attestation standards, control risk applies to assertions other than financial statements. Therefore, in addition to questions about the meaning of control risk in financial statement audits, audit policy makers are being confronted with questions about the meaning of control risk in the context of an audit of an entity's compliance with laws and regulations and its operations results. Even more modernistic and intriguing are questions about the meaning of control risk in an audit of internal control—that is, what does control risk mean and how should it be considered when an auditor is engaged to express an opinion on the effectiveness of internal control over financial reporting, compliance, or operations?

What Are Tests of Controls?

Tests of controls are audit procedures performed to evaluate the effectiveness of the design or operation of internal control structure policies or procedures. They consist of four major categories:

(1) Inquiry of appropriate entity personnel.
(2) Inspection of documents and reports.
(3) Observation of the application of policies or
(4) Reperformance of the application of policies or procedures by the auditor.

This definition and description of tests of controls, summarized from SAS 55, is probably the most controversial aspect of the standard.

Some commentators on SAS 55 believe that its construct of tests of controls has reduced the extent and relaxed the nature of control testing [for example, Kinney and Felix, 1992] Other commentators believe that the construct has achieved exactly the opposite effect—control testing is more prevalent and more focused than it was prior to SAS 55 [see, for example, Sullivan, 1988].

Commentators in the first group believe that "tests of controls" has had a deleterious effect on audit effectiveness that manifests itself in (1) a de-emphasis of testing controls at the transaction level, (2) a de-emphasis of reperformance tests, and (3) a decline in the use of sampling in testing controls. They believe that these conditions are symptomatic of underauditing; that inquiry, observation, and document inspection are inherently less rigorous and reliable than reperformance; and that sampling is significant, if not essential, to proper evaluation of control effectiveness.

Remarkably, commentators who support the test of controls concept in SAS 55 agree that the three conditions enumerated above have occurred, but believe that they reflect a shift to a more effective audit approach brought about by SAS 55. In other words, SAS 55 was intended to create the above three conditions as a means of improving audit effectiveness.

Indeed, the explanation for different interpretations of the same set of events lies in the perception of what constitutes audit effectiveness. Most proponents of SAS 55 believe that previous internal control standards failed to concentrate the auditor's internal control consideration on the primary sources of misleading financial statements: improper or biased selection and application of accounting principles, biased judgments about accounting estimates, and inaccurate or incomplete disclosures. Instead, in their view, the old standards focused the auditor's internal control efforts primarily on financial statement misstatements

resulting from clerical or processing mistakes.

This perception of what the focus of internal control work should be underlies the broadening of the definition of the internal control structure in SAS 55. The expansion was intended to direct the auditor's control work toward control components considered to be most relevant to the major sources of financial statement misstatements. As a result, the expanded definition brought the control environment and the accounting system directly into the scope of the auditor's consideration. SAS 55 accommodated these two new control components by recognizing tests suitable to their nature. These tests were labeled tests of controls and included the types of procedures set forth in the initial paragraph of this section.

The design and operation of most of the control environment components and many of the accounting system components cannot be tested at the transaction level, or by reperformance, or through the use of sampling. Yet these components are much more closely associated with the primary causes of financial statement misstatements than are controls over individual transactions. Furthermore, because of the increased use of EDP applications, the most effective approach to considering the control procedures component is often to focus on the higher-level, supervisory control procedures (general controls). These control procedures also cannot be tested at the transaction level, or by reperformance, or through the use of sampling.

Whether SAS 55 has created a proper focus on internal control, whether auditors have understood and implemented that focus in their audit approaches, and whether the tests of controls established by the standard provide reliable evidence and are being implemented properly will no doubt continue to be debated. These questions pose important research opportunities for assessing the progress and perils of SAS 55.

What Is the Value of Information About Internal Control?

Effective internal control is valuable because it helps achieve objectives. In addition, however, there is a growing belief that information (reports) about the effectiveness of internal control is also valuable. The value of such reports is virtually indisputable for some uses. For example, reports about internal control effectiveness are indispensable to management in achieving sound control. In fact, one of the five COSO criteria, monitoring, explicitly recognizes the need for such information. Reports about internal control for other than management's use, however, is viewed as progress by some and peril by others. It is the value of these other uses we discuss in this section. Throughout the remainder of the paper, we use the term "reports" to mean an independent auditor's report on an entity's internal control. Although such reports may not be accompanied by a separate management assertion on internal control effectiveness, we consider such an assertion to be at least implicit.

Calls for reports on internal control are not new. Various bodies have proposed or supported both voluntary and mandatory reports. These groups include independent private-sector commissions (Cohen & Treadway Commissions), legislators & regulators (Wyden & Dingell and SEC), and professional groups (AICPA and FEI). Although it is not our purpose to recount this history, a good summary of it can be found in Appendix A of the COSO report.

More activity in the area of reports on internal control effectiveness has occurred during the last five years than at anytime in the past. Although some

recommendations have come from the private sector (notably the Treadway Commission) and some reports have been issued voluntarily by public companies, by far the most activity has been in government. The following list provides some examples of internal control reports that the government has mandated within the last five years and that involve independent auditors.

- FDIC Improvement Act of 1991
- CFO Act of 1990
- OMB Circular A-133
- Government Auditing Standards (Yellow Book)
- HUD Program Audit Guide
- Student Financial Assistance Programs Guide
- Mortgage Banker Single Audit Program
- REA Borrower Audits Program
- Aviation Safety & Capacity Expansion Act of 1990

In addition to these recent initiatives, other requirements for reporting on internal control have existed for some time, for example reports involving casinos, investment companies, depository trust companies, securities transfer agents, and a myriad of entities subject to OMB Circular A-128—each of these situations also include some type of independent auditor involvement.

The content of current internal control reports varies in at least eight major areas:

(1) Category of internal control reported on (financial reporting, compliance, or operations).
(2) Aspect of internal control reported on (design, placed in operation, or operating effectiveness).
(3) Presence or absence of separate management assertion (report) about internal control.
(4) Criteria used to judge internal control quality (SAS 30, SAS 55, COSO, agreed-upon criteria).
(5) Measure of deficiencies to be reported (material weakness, reportable condition, material inadequacy).
(6) Auditor service (examination, agreed-upon procedures, by-product of other services).
(7) Assurance provided (opinion, negative assurance, negative/positive assurance, findings only).
(8) Report distribution (public, restricted).

This brief overview of current reporting on internal control demonstrates a strong demand for such reports and the serpentine reporting practices associated with them. Whether the demand reflects an intrinsic utility in such reports is arguable. (After all, the demand is largely regulator induced and not subject to free market considerations of cost and benefit.) Whether the cobweb of report contents enhances or diminishes the meaningfulness of such reports is also an open question.

Report Demand

The fundamental proposition underlying a demand for reports on the quality of internal control is that reporting on the *output* of a *process* is not enough. Reporting on the process itself is also necessary. Stated somewhat differently, if

a report about the output of a process is available, does a report about the process that produced that output add incremental value?—is one type of report simply a substitute for the other? Exhibit 1 illustrates this concept using the three categories of objectives presented in the COSO Report.[2]

Exhibit 1
Relationship Between Internal Control Structures and Products

Internal Control Structure	Product
Financial Reporting	Financial Statements
Compliance with Laws & Regulations	Compliance Performance
Operations Requirements	Operations Performance

Currently, independent auditors provide assurance about each of the three outputs in Exhibit 1. They audit financial statements, express opinions on whether the requirements of laws or regulations have been complied with, and provide assurance about whether the outcome of operations meets certain specifications.[3] As noted earlier, however, auditors also currently provide assurance about internal controls over financial reporting, compliance with laws and regulations, and operations. If this latter type of service satisfies an unmet need in a cost-beneficial manner without creating unwarranted expectations, then such services represent progress. If not, perils exist. There are arguments for both positions.

Those who advocate reports on internal control usually cite two major benefits. One benefit pertains to the act of reporting itself (a behavioral effect) rather than to the information content of such reports. The premise is that reports on an entity's internal control will cause its management to devote more attention to internal control quality and, therefore, better internal control will result. Improved internal control, in turn, will yield improved output, e.g., more reliable financial reporting, greater compliance with laws and regulations, and better operating performance.

This perceived benefit may pertain more to compliance and operations objectives than to financial reporting objectives. If internal control (process) does not achieve financial reporting objectives, then an audit of the current-period financial statements (output) can be used to achieve those objectives—change the financial statements based on the audit. Thus, even if the act of reporting on internal control over financial reporting (process) does improve that internal control, it does not add anything to the achievement of financial reporting objectives beyond what an audit of the financial statements (output) can achieve.

The same is not true for the compliance and operations categories of internal control. If internal control (process) does not achieve current-period compliance

[2] Although this relationship is seemingly straightforward, our experience has been that internal control over a specific process is often confused with the output that process produces.

[3] As an example of an engagement involving operations specifications, the Environmental Protection Agency has requested that auditors provide assurance on the oxygenate content of gasoline distributed in various areas of the United States.

and operations objectives, an audit of the current-period compliance and operations performance (output) cannot be used to change the current-period results to achieve those objectives. Consequently, if the act of reporting on internal control causes management to devote more attention to internal control and thereby improve it, then reports on internal control over compliance and operations may add to the achievement of current-period objectives in each of those areas beyond what an audit of the output provides.

The other major benefit of reports on the quality of internal control relates to their information content. The premise is that such reports provide information that is not available from reports on the output of the process. That is, reports on internal control provide information relevant to decisions about an entity that cannot be satisfied by reports on the output.

In the area of internal control over financial reporting, the argument has been made that reports about the quality of internal control serve to provide needed information about an entity that is not available from its financial statements [Hooten and Landsittel, 1991] For example, two entities might have the same financial position and operating results for a given period yet one entity have sound internal control and the other inadequate internal control. Financial statements do not provide information about the quality of internal control. Yet, the argument goes, the quality of internal control is a critical indicator of the entity's future success. Those who make decisions about an entity need information about internal control to be effective decision makers.

Opponents of this argument point out that its validity depends heavily on what categories of internal control are reported on. Poor internal control over financial reporting can be compensated for by auditing the financial statements—annual, interim, or both. Thus, for the financial reporting category, the argument boils down to which type of information is least costly to provide. Providing information about internal control over financial reporting does not seem to supply any incremental value beyond that afforded by audited financial statements—no progress, just peril.

If, however, the compliance and operations categories of internal control are reported on, additional information value may arise. The rationale relates to the inherent difference, discussed earlier, between the category of financial reporting objectives and the categories of compliance and operations objectives. Current-period compliance and operations performance cannot be changed to meet objectives based on an audit of actual results, as can financial reporting performance. Thus, reports on the quality of internal control over compliance and operations may indeed provide "early warning" information about whether objectives in either of those areas will be achieved. That is, reports on internal control quality in each of these areas may provide information about risks and uncertainties attendant to achieving the related objectives that audits of the actual results cannot provide as quickly or cannot provide at all. Stated differently, although an audit of the compliance or operations output may reveal that objectives were not achieved, it may be too late to do anything about it. On the other hand, reports on internal control over both areas may provide time to make adjustments to accomplish these objectives.

Not everyone agrees, however, that reports on internal control over compliance and operations provides incremental information in the most cost-effective manner. Opponents to such reports often argue that the type of output provided is the key consideration. If historical results do not provide timely information,

other types of output do. For example, improved reporting of specific risks and uncertainties or required financial forecasts, both attested to by independent auditors, have been suggested as better alternatives to reports on internal control.

In our view, not much progress has been made in resolving the questions concerning the relative merits of reports on internal control versus reports on output. Although the demand for reports on internal control is growing, much of it stems from legislative and regulatory requirements. This source of demand raises the question of whether reports about the quality of internal control are of more value to specific users than to the general public.

Report Users

Currently, reports on internal control are issued to both specific parties, such as regulatory agencies, and to the general public. Unlike the general public, however, a specific party's relationship with an entity may be directly affected by the entity's internal control. For example, a specific party may provide funding to an entity under the condition that certain internal control requirements be met to help ensure that the funds are used appropriately. Because of such relationships, specific parties usually have a clearer understanding of the purpose and limitations of internal control, internal control reports and the auditor's services are generally tailored to their specific needs, and they are able to require the entity to take certain actions if internal control is deficient. We believe, therefore, that internal control reports are much more useful for these parties than for the general public, and less likely to create perils for management and their auditors.

Reports to the general public are much more hazardous than those to specific users; hazardous to the public, the entity, and its auditors. The public, in general, does not have as clear an understanding of the purpose and limitations of internal control as specific parties do. In addition, the general public cannot take specific actions to compel an entity to alter its internal control on the basis of an internal control report. At most, members of the investing public might alter their investment decisions about an entity based on the reported quality of its internal control. Investors' ability to factor information about internal control into their investment decisions, as alluded to earlier, is contentious and largely unexamined. Public reports on internal control should be discouraged until there is a better understanding of the relationship between information about an entity's internal control and its potential for success.

Report Content

As noted previously, the content of internal control reports varies considerably. Much of the variation is attributable to the piecemeal fashion in which reporting on internal control has developed. Professional standards, instead of providing a general framework for reporting on internal control, have permitted considerable flexibility in such reporting. These standards have, for the most part, addressed individual internal control engagements as the need arose, creating a wide diversity of performance and reporting requirements. The myriad forms of internal control reports has created confusion not only among report users, but also among the practitioners who are asked to provide them.

Only recently has the ASB acted to promulgate a general framework for reporting on internal control. Currently, the ASB has an exposure draft of an

attestation standard for reporting on internal control over financial reporting outstanding and is developing another for reporting on internal control over compliance with laws and regulations. These standards should help achieve greater consistency in both the performance standards for internal control engagements and the resulting reports.

There is concern, however, that, through the combination of the COSO report criteria and the proposed attestation standard on internal control over financial reporting, too much homogeneity in reports will result. If the concept of material weaknesses, as prescribed in both the COSO report and the proposed attestation standard, results in the virtual absence of material weaknesses (for reasons discussed earlier), all reports will look alike. These boilerplate reports are not likely to have much information content and, instead, serve only as a basis for litigation against management and auditors if the entity encounters problems in the future.

Research needs concerning the progress and perils of the value of reports on internal control include the following questions:

- Does the act of reporting on internal control cause management to improve internal control quality?
- Can reports on internal control over financial reporting, compliance, or operations provide information beyond that available from reports on the output?
- How do regulators (or other classes of specific parties) determine their information needs about internal control and use the information in internal control reports?
- How does the general public perceive and use internal control reports?
- What is the content of internal control reports issued to the general public and in what significant ways do these reports differ?

Summary

The brisk activity in internal control over the last five years has raised new issues about internal control and renewed emphasis on old issues. Many of the developments flowing from this activity have gone beyond the discussion stage and into implementation. In several instances, implementation has been undertaken on the faith or perception that the actions will be beneficial and, thus, have bestowed an urgency on the need to understand their effects.

Because implementation is taking place, data now exists, and we hope is accessible, for empirical research on many theoretical internal control issues. We hope that efforts will be devoted to this research and that this paper will help to focus them.

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Discussant's Response to "Internal Control: Progress and Perils"

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Introduction

This comment is organized around the Winters and Guy paper and the COSO (Committee of Sponsoring Organizations) Internal Control-Integrated Framework project [COSO, 1992; Winters and Guy, 1992]. I was a member of the Project Advisory Council to COSO, Guidance and Oversight. This group included representatives from each of the COSO participating organizations, FEI (Financial Executive Institute), IIA (Institute of Internal Auditors), IMA (Institute of Management Accountants), AICPA (American Institute of Certified Public Accountants), and AAA (American Accounting Association). As the AAA representative, I participated in all COSO Advisory Council deliberations. As is the habit of the AAA, I was not authorized to speak for the Association. The AAA Executive Committee recently endorsed the private sector initiative represented by the internal control framework project, but did not endorse the specific contents of the report. Discussions with the AAA were still in progress when this paper was submitted. Any comments made by me concerning the results of the framework study are mine and not those of the AAA or other COSO Advisory Council members.

Background

Some background, as I interpret it, on the evolution of the COSO Internal Control project may be of use. In developing the COSO response to the Treadway recommendations concerning an integrated definition of internal control, it was decided to develop the project within the existing FERF (Financial Executive Research Foundation) research framework. The usual research process involves a task force, such as the COSO Project Advisory Council, but drawn from FEI members. Ordinarily a FERF project team is in direct charge of their project and accepts direction from the task force as it deems reasonable. It is the project team's option to reject advice and FERF's option to publish or not publish the resulting report. Given the nature of this project and the perception by many that the internal control project was essential to providing a basis for potential legislation and/or regulation in the area, the COSO Advisory Council wanted to take a much more direct hand in setting direction for the resulting report. The initial relations between the Coopers & Lybrand project team and

* The author wants to thank the members of the COSO Advisory Council for their valuable input on an earlier version of this paper. Interpretations remain my own.

the COSO Advisory Council required some effort due to these circumstances. The Coopers & Lybrand team, quite reasonably, considered all COSO Advisory Council input as just that — advisory. They chose to accept some, but certainly not all, of the advice. The COSO Advisory Council found this difficult to deal with; however, an amicable set of protocols was developed over time.

Changed Project Management

During this period, I believed that both the Coopers & Lybrand project team and the COSO Advisory Council anticipated that the final product would be a FERF monograph. However, approximately halfway through the effort it was concluded that a more extensive public disclosure effort than originally planned would enhance the possibility of general acceptance of the project results. Because of the advocacy implications, FERF withdrew from the management of the project. As a result, no monograph would be published by FERF. Discussions following this decision focused on the means of developing the COSO project in a form more like that of a standard setting effort. The resulting public exposure process can be characterized as a standard setting effort; however, as COSO has no standard setting authority, whether the results will constitute a standard will depend solely upon the degree of acceptance this document generates.

The COSO Framework Study

The COSO Framework is premised on the idea that internal control is essential to the efficient and effective operations of a business, reliable external financial reporting (note that COSO only went this far on the topic of external reporting) and compliance with laws and regulations. It is also influenced by a belief that legislators and regulators have misconceptions about the value of internal controls or, at least, about the value of external reporting on internal controls. The concern with legislators and regulators explains some of the positions adopted by COSO.

Serious questions arise as to the importance of internal controls and reporting on internal controls. First, is internal control necessary to meet the operations, reporting and compliance objectives of a firm? If we can rely on even the simplest biological analogies to the marketplace, survival of the fittest, we can pretty well accept that internal control is important to the management of a firm. As a corollary, we can assume that some form of internal reporting will take place on this topic. Virtually all successful firms commit some fraction of their resources to development, maintenance, and reporting on internal control systems. A virtually unqualified "yes" seems to be appropriate with respect to this point. How much firms commit is, at this time, based on a firm by firm cost/benefit analysis, taking into consideration current mandated regulations. Less obvious is the answer to the second question: Is external reporting on internal control useful? There is little empirical evidence to support the demand for external reports on internal controls other than from legislative and regulatory bodies. Winters and Guy [1992, p. 183] contend that "Those who advocate reports on internal control usually cite two major benefits...a behavioral effect...[and an] information content [benefit]."

The COSO Framework is composed of four separate volumes: Executive Summary; Framework Study; Management Reporting to External Parties; and Tools. This structure seems quite obvious with the possible exception of the

separation of the Management Reporting to External Parties from the Framework Study. The separation is the result of COSO advisory members' deliberations on the topic of external reporting and significant contradictory commentary on the same topic from those receiving the exposure draft. The contradictory commentary, disagreements and concerns are, in my opinion, reflected in the final document in a number of ways: external reporting is not required for good internal control; only external financial reporting is addressed in any substantive and explicit way by the report; and external auditing is not given much explicit prominence in any of the volumes. This latter point may reflect management's concern for expanding audit fees and a general feeling that the audit adds little value in the circumstances addressed by the report. The public accounting participants in the process would undoubtedly not accept the lack of value added position; however, concern for extended legal exposure, a desire to make progress on a common set of definitions and criteria and the inclusion of a volume specifically addressing external reporting issues may influence them to accept the report.

Summary of the COSO Documents

The following comments are based on the COSO report, *Internal Control-Integrated Framework*, Committee of Sponsoring Organizations of the Treadway Commission, Revised Draft, February 1992, revised based on recommendations of the April 13, 1992 COSO Advisory Committee meeting [COSO, 1992]. Subsequent changes are reflected where they are known to be part of the planned revisions.

Throughout this paper I have drawn very heavily (in fact, as much as possible) on the actual words used in the COSO documents. I have not used quotation marks or page references, as they would be distracting. However, subject to my errors in transcription or subsequent COSO changes, statements attributed to COSO use COSO's words. As you will have noted above, I have also drawn from SAS 55 and the Winters and Guy paper [AICPA, 1988; COSO, 1992; Winters and Guy, 1992]. In these cases, I have endeavored to use page and paragraph references as well as quotation marks. These quotations and observations are inserted at the points where they seem to bear on the COSO volumes discussed. I have endeavored to clearly distinguish my opinions, which are mine alone.

a. *Objectives of Framework Study:* COSO established two objectives for its integrated framework study, (emphasis added) to:
   - Establish a common *definition* serving the needs of different parties.
   - Provide a *standard* against which business and other entities—large or small, in the public or private sector, for profit or not—can assess their control systems and determine to improve them.

b. *Success in meeting these objectives requires:*
   - A common and generally accepted *definition* of internal control.
   - A generally accepted set of *standards for assessing whether an organization's internal control system meets* effectiveness standards.

The COSO document does present a definition and standards, but it is too early to know whether either will be accepted as the common definition and standards for internal control. There was certainly a good deal of discussion about the definition and standards among all parties to the process. Many of the

exposure draft comments have been incorporated into the definition and standards. These comments were incorporated, both to improve the definition and standards and also in an attempt to assure the general acceptance necessary to meet the COSO study objectives. Without additional exposure efforts, one could expect continuing dissatisfaction with specific aspects of the definition. Some of these disagreements would clearly be a matter of editorial choices, e.g., where the wording is not that used by a particular organization in its current literature. These disagreements are unlikely to persist if the COSO framework gains any significant degree of prominence. Other matters may prove more substantive but will have to await attempts to apply the COSO framework in the field to existing and newly arising problems, e.g., external compliance reporting in the banking industry. Disagreements about the breadth or narrowness of the definition and standards (both exist) are unlikely to be resolved at this late date. The broader definition adopted by COSO had the predominant level of support from both COSO participants and those responding to the report drafts.

It is too early to know whether the COSO framework will become the standard of application. However, there are forces that encourage its adoption. The Congress and its regulatory arms may find it a useful point of departure when considering new legislation or regulation in the internal control reporting arena. There are already indications that at least part of the COSO document will be included in pending regulations. The private sector participants clearly hope for such reliance and for an understanding on the part of the lawmakers that the COSO framework also addresses the limits of lawmaker requests. Some private sector participants hope that it will act as a brake on regulators' desires for additional mandated public reporting and auditing. At the same time, the public accounting sector may find that the COSO framework provides them with a ready marketing tool. However, while there are incentive compatible reasons to expect acceptance by many of the principals involved, this acceptance is only likely to be retained among the participants based on early successes or failures in application. Winters and Guy say [p. 180]:

> Agreement about what internal control is...may be attainable. For example, regulatory agencies...have indicated they will adopt the COSO report as the standard against which both the required management and auditor assessments of internal control effectiveness...should be judged...imbuing the COSO report with 'general acceptance'....
>
> More experience implementing the COSO report is needed...before its success can be evaluated....

Realistically, I believe that the COSO framework will become an integral part of the internal control literature for the next five to ten years. During that time events will determine its survival as a seminal work or as a useful effort needing elaboration, extension or revision. In any case, it will have set the agenda for consideration and action and moved the internal control discussion forward.

Definition

COSO defined internal control [COSO Advisory Committee meeting, February 1992; revised based on April 13, 1992] as follows (emphasis added):

> Internal control is a *process,* effected by an entity's board of directors,

management and other *personnel, designed* to provide *reasonable assurance* regarding the achievement of objectives in the following categories:

- Effectiveness and efficiency of *operations.*
- Reliability of *external* financial *reporting.*
- *Compliance* with applicable laws and regulations.

According to SAS 55, Para 6:

> An entity's internal control structure consists of the policies and procedures established to provide reasonable assurance that specific entity objectives will be achieved. (Note: The SAS focus of interest is on those parts of the internal control structure "...relevant to an audit of the entity's financial statements.")

The categories of internal control form the expanded basis of the COSO definition. The explicit incorporation of operations and compliance categories substantially expands the usual ASB (Auditing Standard Board) definition. While SAS 55 broadened the definition of internal control and eliminated the accounting and administrative controls distinction and as a result recognized the importance of operations, SAS 55 only addresses the context of reliable external financial reporting and the planning of an audit for that purpose. The COSO definition envisions these categories as important in their own right, perhaps even more important than the more limited outlook suggested by the ASB. COSO recognizes that there is no sharp line delineating these categories and that consideration of any category will likely involve consideration of aspects of another category. COSO also recognizes that the methods of measurement needed to address these categories are not equally well developed. They do not consider the measurement problem to be sufficient to suggest that the categories should be ignored or de-emphasized. Those concerned with the regulators' apparently lesser concern for the limitation of measurement in these areas may continue to be concerned about the inclusion of these categories.

According to Winters and Guy [p. 180-181]:

> ... Such a categorization...creates a perception that internal control components within these categories are clearly identifiable and distinguishable and that experience and expertise in applying the COSO criteria [see Components below] is equally well-developed for each of these categories.
>
> This perception is not valid and, although the COSO report attempts to dispel the inference, our experience with numerous regulatory requests for auditor services on internal control demonstrates that the misperception is common....
>
> Regulatory initiatives calling for such implementation are fast outpacing our ability to provide those services....

While the broader definition had the preponderance of support, some of those commenting on the definition felt that it was too broad to the point of defining not internal control, but management. Others felt that it should be narrowed to encompass only financial statement preparation. There was a good deal of concern that the broad definition would extend the litigation exposure of anyone associated with the design, functioning or reporting on internal control,

and that it would encourage regulators to extend their reach in this area.

Components

Integral to the definition are five interrelated components. The drafters of the COSO framework indicate that these components are derived from the way management runs its business. The definitions below are drawn from the related chapters in the Framework document. I have, as noted earlier, used the document's wording.

Control Environment - Control environment factors include: the integrity, ethical values and competence of the entity's people; management's philosophy and operating style; the way management assigns authority and responsibility and organizes and develops its people; and the attention and direction provided by the board of directors.

Winters and Guy point out [p. 181]:

> Another concern about the COSO criteria is that certain components may be so subjective as to not be susceptible to reasonably consistent estimation or measurement. Those components most often cited include integrity, ethical values and management competence.

These are actually all a part of a single component, Control Environment. They also say, [p. 185]:

> ...[T]he expanded definition [of internal control in SAS 55] brought the control environment and the accounting system directly into the scope of the auditor's consideration. ...[t]hese components are much more closely associated with the primary causes of financial statement misstatements than are control over individual transactions.

Given the above two statements by Winters and Guy, I am not sure why the first comment is offered as the concepts are already in SAS 55. Do Winters and Guy mean that SAS 55 already allows auditors to rely on overly subjective inputs to too great a degree? This point has been argued elsewhere by Morton and Felix [1991] and Kinney, et. al. [1990].

Risk Assessment - Risk assessment involves identification and analysis of relevant risks to achievement of the objectives as a basis for determining how risk should be managed.

Winters and Guy comment that [p. 184]:

> ...Even more modernistic and intriguing are questions about the meaning of control risk in an audit of internal control—that is, what does control risk mean and how should it be considered when an auditor is engaged to express an opinion on the effectiveness of internal control over financial reporting, compliance, or operations?

I am unclear as to the uniqueness of the problem as it applies to financial reporting as this concept seems quite well established, i.e., the probability of material error occurring and not being identified and corrected by the control system. With respect to operations and compliance, the problem relates to the materiality measurement concept discussed elsewhere and the definition of error. In both of these cases, Winters and Guy have a point.

Control Activities - Control activities are policies and procedures (which are the actions of people to implement the policies) to help ensure that management

directives identified as necessary to address risks are carried out. Control activities can be divided into three categories, based on the nature of the entity's objectives to which they relate: operations; financial information reporting; or compliance.

Information and Communication - Pertinent information must be identified, captured and communicated to people in a form and timeframe that enables them to carry out their responsibilities. Information systems produce the reports containing operational, financial and compliance-related information that make it possible to run and control the business. They deal not only with internally generated data, but also with information about external events, activities, and conditions necessary to informed business decision making and external reporting.

Monitoring - Internal control systems need to be monitored — a process that assesses the quality of the system's performance over time. This is accomplished through ongoing monitoring activities, separate evaluations, or a combination of the two.

The tests of controls discussion in Chapter 6, Monitoring, implies that the "actual functioning" of a system can be established by discussion with personnel. This is recognized to be a weak statement of the evidence required to establish "actual" functioning and likely to be a satisfactory approach in only rare circumstances. In my opinion, it allows too much evidential weight on discussion with personnel.

SAS 55, Para 51 states: "Inquiry alone generally will not provide sufficient evidential matter to support a conclusion about the effectiveness of design or operation of a specific control procedure." The use of the word "generally" is, in my opinion, a weak statement similar to that in the COSO report. Also, SAS 55, Para 8 says:

> For purposes of an audit of financial statements, an entity's internal control structure consists of the three following elements: The control environment; The accounting system; and Control procedures.

Note that, from above, it would appear that the SAS and COSO Control environments are pretty much the same. However, the SAS Accounting system and Control procedures appear to be included primarily in the COSO Control activities. Clearly, the SAS envisions Risk Assessment, Information and Communication and Monitoring as part of internal control. This is seen in SAS 55, Para 29: "Control risk should be assessed in terms of financial statement assertions."

The original exposure draft of the framework included a larger number of components. Based on exposure draft responses, several new aspects of internal control were added to the components and the components were reduced in number. It would appear that COSO has incorporated virtually all of the exposure draft commentary in this area. Remaining debate seems to be focused more on presentation and integration within the model. Those who feel that the components should be incorporated directly into the definition in order to produce, in their view, a more complete stand alone definition will be disappointed.

All components apply to all categories and are, in that sense, an integral part of the definition of internal controls.

The Framework takes the position that all components must be present to have an effective internal control system in each of the category areas. It is rec-

ognized that some trade-off may exist as to the strength of one component versus another and still have an effective internal control system, but all components must be present. It is hard to imagine an entity that is devoid of some aspect of each of these components.

Effectiveness

Internal control can be judged *effective* in each of the three categories, respectively, if the board of directors and management have *reasonable assurance* that (emphasis added):

- They understand the extent to which the entity's *operations objectives* are being achieved.
- *Financial reports* are being prepared *reliably.*
- Applicable laws and regulations are being *complied* with.

Commentary on this aspect of the study tended to concentrate on the meaning of reasonable assurance as it applied to the reliability and compliance categories. Those with a legal background tended to be concerned because of the meanings applied to these terms in the law. COSO decided to continue with these commonly used terms and to rely on explanatory materials to make their meanings, in this context, clear. Some expressed concern about the focus on boards and management assurance as opposed to third party assurances. As third party assurances come only with external reporting, COSO decided to address that issue only where third party reporting was discussed, i.e., external financial reporting.

As stated in SAS 55, Para 17:

> Whether an internal control structure policy or procedure has been placed in operation is different from its operating effectiveness...This Statement does not require the auditor to obtain knowledge about operating effectiveness as part of the understanding of the internal control structure.

Further in Para 29, SAS 55 states that:

> Assessing control risk is the process of evaluating the effectiveness of an entity's internal control structure policies and procedures in preventing or detecting material misstatements in the financial statements.

	OPERATION	COMPLIANCE	EXTERNAL REPORTING
CONTROL ENVIRONMENT			
RISK ASSESSMENT			
CONTROL ACTIVITIES			
INFORMATION AND COMMUNICATION			
MONITORING			

Internal Control Model - Categories And Components

While not presented in the currently revised document, an internal control model is implicit in the above (the model was developed and presented to the COSO Advisory Committee by the drafters and may appear in a future draft of the report). I will present a slightly adapted model framework from that derived directly from the above and discuss its relationship to the current COSO Framework document.

Note that the internal control definition *categories* form the columns of the matrix and the five *components* the rows. In the current document the column labeled above as "External Reporting" is labeled "Reliability of financial reporting." I have used the more general, "External Reporting" because I believe that it provides a more internally consistent model and allows for all forms of external reporting. There may be a bit of confusion about my apparent switch to "external" reporting as a header in that the definition does not include the word "external" in the financial reporting category. Thus, the financial reporting category refers to all financial reporting, internal and external. However, other forms of internal and external reporting considered by COSO are a part of the information and communications component. Treating the financial reporting category as primarily a concern for external reports seems, to me, more appropriate and consistent for model purposes. It also seems appropriate to do so because of the external reporting emphasis given this category in the separate volume on the matter. The following discussion as it relates to financial reporting has an external reporting orientation.

Winters and Guy believe that "[I]nternal control theory and applications have progressed,...." [p. 177] It is not clear to me that we have made much progress to a normative theory of internal control beyond general control theory as appearing in the industrial engineering literature. We do have some conceptual models, such as the one above, that form the basis for developing criteria for internal control. These are descriptive theories of internal control derived largely from the observation of practice.

The rationale behind the three categories can be developed along several different lines of thought. When approaching it from the COSO Framework writers' point of view, the three categories are considered in terms of an entity's conditions for continued economic existence and success. The operations category represents the need to transform inputs into outputs in an economic manner that will satisfy the customer's needs. The compliance category may be viewed as meeting the essential restrictions placed on an entity by various sanctioned governmental and voluntary external entities. Where inability to supply the customer market will result in failure through competitive market forces, lack of compliance with critical laws and regulations can result in entity failure even when some parts of the market are clamoring for the product. External reporting may be required under a variety of circumstances. The one most obviously envisioned by the current COSO document and present practice is external financial reporting. In a financial market environment like our own, obtaining the necessary capital to permit continuing operations requires communications with external capital providers. Others may also use external financial reports for purposes such as credit setting, contract negotiations, etc., and these are envisioned by COSO as well. The broader category I have used, "External Reporting," also envisions external reporting not currently considered

commonplace, e.g., external reports to bank regulators, external reports of compliance with environmental laws and regulations, etc. The COSO Framework document considers that external reports other than external financial reports reside in either the operating or compliance categories of the definition through the component "Information and Communication." They also believe that the inclusion of only the more limited external financial reporting category will better retain and highlight the link to the separate volume on external financial reporting. Thus while the COSO form of the model allows for other than financial external reports, it does so only indirectly.

The above comments address materials embodied in Chapter 1 of the COSO Framework document. The balance of the COSO statement is an elaboration on the above definition, components and effectiveness statement. Five additional chapters are devoted (one each) to the five components, a sixth chapter to limitations of internal controls and a final chapter to the roles and responsibilities of the various parties within an entity.

Management Reporting to External Parties

This section deals only with external financial reporting. The issues of external reporting on operations and compliance are not dealt with by the COSO Framework.

There is a major discontinuity between the process orientation of the Framework document and the state orientation adopted in this volume. The Framework's definition of internal control as a process seems to be appropriate and creates no problem until we encounter reporting issues. In that context, two problems arise. First, there is the matter of the current level of technology and cost of auditing a process. This problem exists for both internal and external reports, but is probably most significant for external reports where an audit might be considered. Second, particularly in an external report, the degree of exposure when expressing an opinion on the continuing operation of a process is perceived to be more extensive than expressing an opinion on the point-in-time state of a system. There can be little argument that as no actions actually occur at a point-in-time, more exposure with respect to actions exists if one expresses an opinion covering a period of actual system operation. These issues become evident in the external reporting volume where point-in-time reporting is selected, i.e., a report on a state of the process but not the process itself.

The volume indicates that users may be most interested in whether the system was functioning and will function in the future. However, the volume also indicates that management and/or auditors cannot provide much evidence on either. With respect to the future, there can be no question that evidence is not obtainable; with respect to the past, the evidence is obtainable. However, in the context of this volume, even if obtained and indicative of a material weakness, it would be reported only if management had not corrected and tested the change.

Winters and Guy [pp. 186-188] argue that the behavioral and information content benefits of reporting on internal controls do not flow to external financial reporting because if a material error occurs, it can be corrected and the external financial reports will be reliable; this may miss the point or simply be a matter of definition. They are certainly correct that the final product of the successful audit will be reliable financial statements even if the internal control system did not produce them as desired. However, in the interim, the failure of

an internal control system to produce such statements may be costly in terms of decisions made with faulty information or losses incurred through resource dissipation. Perhaps the poor decision and resource loss issues are really an operations issue. This is the position of the COSO Framework. Nevertheless, I do not agree with the statement by Winters and Guy [p. 188] that "... for the financial reporting category, the argument boils down to which type of information is least costly to provide." Reports on internal control provide different information about the firm than the output contained in the financial statements. It remains an empirical issue as to whether this different information is worth the cost of production. I see the internal control reporting on financial issues in pretty much the same light as that on operations and compliance. In all three areas internal reports are provided to management; in all three areas there is different information than would be provided by an output report only. In all three areas there are, internally, actions that can be taken to create a more effective and efficient environment; in all three areas, externally, there is very little empirical evidence as to the demand for reports on these matters. In all three areas, a conceptual argument can be made that the information would provide another means of evaluating management performance and thus in making decisions on retention and rewards for management. I would agree with Winters and Guy [p. 189] that "In our view, not much progress has been made in resolving the questions concerning the relative merits of reports on internal control versus reports on output," although I do not see it as a versus issue.

Unfortunately, whether by intent or not, and as noted by Winters and Guy, the COSO report reads like an attempt to avoid ever having to report a material weakness:

> Another peril arises because the report uses the concept of a material weakness to separate effective from ineffective internal control. Using this measure causes two problems. First, no conceptual or empirical construct of a material weakness exists for either internal control over compliance or operations.... In the absence of sound definitions...such evaluations will be subject to extreme variations in consistency and usefulness.
>
> Even though an accepted material weakness concept exists for internal control over financial reporting, it also poses complications. There are strong disincentives to concluding that such weaknesses exist [pp. 181]
>
> ...If the concept of material weaknesses, as prescribed in both the COSO report and the proposed attestation standard, results in the virtual absence of material weaknesses..., all reports will look alike. These boilerplate reports are not likely to have much information content and, instead, serve only as a basis for litigation.... [p. 190]

The position adopted on reporting material weaknesses is supported as a constructive focus designed to encourage monitoring and correction throughout the period. Admittedly, it does encourage correction and "testing" on a "timely" basis. However, it assumes very little value in the disclosures exercise, but provides no evidence to support that view. Winters and Guy assert that [p. 189]:

> ...We believe...that internal control reports are much more useful for these [specified] parties than for the general public, and less likely to create perils for management and their auditors.

> Reports to the general public are much more hazardous than those to specific users; hazardous to the public, the entity, and its auditors.... At most members of the investing public might alter their investment decisions....

The reasons given by them are the usual "it will confuse the public" statements.

The COSO document asserts that external reporting is not an element of internal control, but provides no evidence that such reports do not contribute to internal control. The document also asserts that point-in-time reporting is, in general, most appropriate, but offers no evidence. Further, the document specifically asserts that point-in-time reporting meets the needs of security holders and other external parties, but provides no evidence.

The discussion concerning interim reporting reduces, in my opinion, to reporting on system design for interim reporting, a point of view rejected when discussing the need to report on effectiveness. This is perhaps a bit too harsh a judgment, but it definitely reads as an attempt to avoid reporting any material weaknesses.

Conclusions

What can we expect the debate over internal controls to be like during the coming years? First, the debate over the definition of internal control is not over. Despite COSO's valiant attempt, the lack of a theory of internal control beyond that found in engineering control theory assures that the debate will continue. COSO has provided one model with its categories and components of internal control. Like many other models, it does not derive from some fundamental postulates but rather from a studied consideration of what occurs in the business environment. This does not make these models useless. In fact, the very lack of a theory makes them particularly important for the improvement of practice as well as for their potential contribution to the eventual creation of a more fundamental theory.

Second, there are even more pragmatic reasons to expect the debate to continue. While the COSO report will gain acceptance as a point of departure when considering internal control issues, there will be debate over the details whenever there is a disagreement among participants as to the desirability of some action bearing on internal controls. For example, a regulator under pressure to accomplish some goal, such as the perceived protection of the general public, may come to believe that a report by management, attested to be the auditor's, will serve to create that protection. Whether the regulator is correct or has more than political support for the position may be of less consequence than the need to take action.

This is already evident in the recent banking regulation requirements for reporting on compliance with laws and regulations. Adherents to the COSO report may arrive at differing positions on the desirability of this particular action. Those who desire to have such reports could take the position that COSO addressed the standards for such reports, even though they provided some cautions and no example reports. Others might believe that COSO was more than cautionary in its concern for the expansion of external reporting in this area and that, in fact, COSO would not support the extension of external reporting in this area. Whatever the *"facts"* in this particular case, it would appear that the regulations will stand and that the debate will move in the direc-

tion of limiting the laws and regulations to which the opinion will apply, specifying the detailed attestation work necessary and attempting to specify and limit the risk exposure to the auditor, i.e., in large part dealing with those details of measurement and risk not addressed by COSO in the area of external reporting on compliance with laws and regulations.

As there are already many other such reports being prepared for internal or limited use (for example, on environmental control matters), we might expect to see a series of proposals for additional public disclosures. We can all think of public interest groups that may find it worthwhile to push for such action.

The internal control debate is only one of many areas where the profession's exposure has increased in recent years. There is little doubt that the profession has had a long standing role with respect to the evaluation of internal controls. However, since the enactment of the FCPA (Foreign Corrupt Practice Act), the nature of that role has been expanding. FCPA opened up avenues for increased service to clients in satisfying the requirements of that act. At the same time, meeting this client service clearly opened up the potential for auditor attestation exposure. For some time the profession resisted offering an external attestation opinion on internal controls. It now appears that the profession supports some form of external attestation report. The argument appears to be that the professionals are being held liable in any case, so let's do the work and get paid for the risk. However, this is only one area of increased risk in the ever expanding client service domain of the profession.

As the profession has moved or been pushed, depending upon your perspective, from its traditional franchise as the auditors of external financial reports to client service organizations, its practitioners have found themselves caught in the muddy waters of marketing essentially new services while attempting to limit exposure. Unfortunately, one gets the impression that each service is opening up substantial, unanticipated exposures and that attempting to limit the exposure is akin to holding back the tides. I have no solution. Perhaps limited liability corporations and tort reform will help, but I am fearful that even with such reform the profession is in danger of losing its franchise or being charged so high a price for its franchise as to lose its business viability. Neither of these results is in our interests or the interests of the broader society.

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