

Testimony Before the Treasury Department  
Advisory Committee on the Auditing Profession

*Human Capital and Its Impact on Audit Quality*

Ira Solomon  
R.C. Evans Distinguished Professor  
Head, Department of Accountancy  
University of Illinois  
College of Business  
#360 Wohlers Hall  
1206 S. Sixth Street  
Champaign, Illinois 61820  
[isolomon@uiuc.edu](mailto:isolomon@uiuc.edu)  
217-333-2451

December 3, 2007

Mr. Co-Chairmen and esteemed Advisory Committee Members, it is my privilege and pleasure to testify before you today with respect to human capital issues relating to the auditing profession and their audit-quality implications. I am Ira Solomon, a Professor of Accountancy, specializing in auditing for about 30 years. During the most recent 25 of these years I have served on the faculty of the University of Illinois, Urbana-Champaign (hereafter, Illinois). And, since 2002, I have served as Head of the Illinois Accountancy Department, one of the largest and most prestigious accountancy departments in the U.S..

I think it important that the Advisory Committee know that not only have I focused on auditing research, teaching and service during my career, but Illinois has been a most prominent contributor to both accountancy and auditing knowledge and education for many years. Former faculty members, such as Norton Bedford, Robert Mautz, and Art Wyatt to name just a few, have made numerous substantive contributions to accountancy and auditing knowledge and education. Illinois also was one of the first universities to adopt a broad global perspective with respect to accountancy education and research by establishment over 40 years ago of the Zimmerman Center for International Education and Research in Accountancy (CIERA). And, Illinois established one of the first accountancy doctoral programs and has awarded more doctoral degrees in accountancy than any other university in the U.S. and perhaps in the world. Today, as I will discuss shortly, Illinois has a most innovative approach to accountancy education—an approach that I will contend is extremely well suited to the emerging financial reporting and auditing environment.

I will start by posing and answering a very general question—Can increasing and enriching the pool of human capital that enters and serves in the public company auditing profession improve audit quality? The answer, of course, is “yes.” But, like in many situations, *the devil is in the proverbial details!* In particular, the extent to which audit quality improvements will be realized depends on answers to many questions, including:

- (1) Who will provide university instruction to aspiring auditors and other accountants? To answer this question, one must understand the state of the accountancy professoriate.
- (2) Who is choosing to study accountancy and in what numbers?
- (3) What is the nature and quality of accountancy educational programs?

***What is the state of the accountancy professoriate?***

It is axiomatic that the preparedness of persons entering the accountancy profession is a function of the quality of their accountancy education and, in turn, accountancy education efficacy is critically dependent on the accountancy professoriate. As is the case for most fields, accountancy professors generally are asked to make three types of contributions: (1) research, (2) teaching/education, and (3) service. By conducting research, professors advance the knowledge frontier within a discipline. To have an impact on accounting and auditing theory and practice, however, research must be disseminated. Peer reviewed journals (the gold standard), conference presentations, and other publications are the means for such dissemination. Teaching/education is concerned with effective development/delivery of appropriate educational programs and individual courses. Included here would be assuring that aspiring accountants and

auditors understand the contributions that accountancy and auditing make to market-based economies, the foundational roles of integrity, objectivity, and independence, a technical understanding of accountancy and auditing, and skills such as critical thinking and risk assessment that are foundational to our field. Service for faculty involves using one's expertise to make contributions to the accountancy profession, for example, by helping to attract prospective students to the field, commenting on exposure drafts of proposed authoritative pronouncements, and serving on professional boards (e.g., CPA Society Board of Directors).

During virtually my entire career, there has been a shortage of accountancy faculty. This shortage has influenced accountancy faculty salaries and placed pressure on universities to limit accountancy course offerings and to deploy non-doctoral qualified faculty to a greater extent than some observers would suggest is optimal.<sup>1</sup> Today, however, this situation is much more serious and complex- perhaps grave. A recent study (Plumlee et al., 2005) examined the existing and projected future stocks and flows of accountancy faculty members. Inflows predominantly come from newly graduated Ph.D.'s while outflows predominantly occur because of retirements (though career changes also cause outflows- when opportunity costs are high, faculty leave, for example, to manage hedge or pension funds). This study empirically verifies the overall shortfall familiar to most academic administrators but most importantly it projects an especially acute shortage for auditing faculty. Indeed, while the number of Ph.D.s awarded in accountancy has fallen by about 50% from the 1980s to recent years (from about 200 per

---

<sup>1</sup>Non-doctoral faculty members typically possess a wealth of experiential knowledge and skills. I am *not* suggesting that there is no place for such faculty—only that there is some tipping point beyond which the relative absence of doctoral qualified faculty will be a negative.

year to less than 100 per year), the number of new Ph.D.s who have focused on auditing is, by some accounts, in single digits per year. Current demand for auditing faculty is several times that number.

There are numerous reasons for the accountancy faculty shortage overall and the very acute shortfall of auditing faculty. One reason for the overall shortage is demographic. Indeed, many accountancy faculty, part of the baby boom generation, already have retired or are approaching retirement age. For example, at Illinois, we experienced a large number of retirements within the last decade and now another large number of retirements is looming. The average age today of the tenured accountancy faculty at Illinois (Associate and Full Professors) is 54.1 years. Many, if not virtually all, of these persons will be able to retire by age 60. Since it takes about five years on average to produce a new accountancy Ph.D., even a large doctoral program (like Illinois) which today is graduating on average, one to three new accountancy Ph.D.'s per year, will barely produce enough Ph.D.s during the next five or so years to offset its tenured faculty retirements.

A second reason is the number of persons entering accountancy doctoral programs is too low to sustain the accountancy professoriate. There are many reasons for this phenomenon but a salient one is the financial impact on the doctoral student and his/her family while enrolled as a doctoral student and the reduced earnings potential upon graduation. Doctoral education in accountancy often is virtually free to qualified candidates. Specifically, most universities will provide virtually total tuition and fee waivers. Doctoral students still, however, have to pay for their books, living expenses and incidentals. Most universities also provide stipends, regarded as very generous

within the university setting, to defray these costs. For example, at Illinois such stipends can run as high as \$30,000 per year. That said, it can be rather difficult to live off of such a salary and that is especially the case if the potential doctoral student has a family.

Of course, the observations so far comprise only part of the story. The rest of the story is revealed when one realizes that many potential doctoral students are employed in public accountancy or industry where they already are earning much more substantial salaries. Consider, for example, a person who is a manager in a large public accountancy firm but who would like to become an accountancy professor. He/she would spend, on average, five years in a doctoral program. During that time period, he/she will forego the difference between the stipend that the university will pay and his/her salary. The difference is likely to be at least \$300,000 in today's dollars and while starting accountancy faculty salaries are high relative to most other disciplines, it is likely that the future compensation levels for the accountancy professor will be a fraction of what the potential doctoral student would have earned had he/she stayed in public accountancy.

The bottom line is that one does not seek to enter the accountancy professoriate for pecuniary reasons. Rather, one must be called to the teaching, research and service challenges and opportunities. However, despite such a calling, the monetary sacrifice may be too large for many.

Although there is a serious overall shortfall of accountancy faculty, the magnitude of the shortfall is most severe for auditing faculty.<sup>2</sup> The aforementioned study by Plumlee et al., 2005 does an excellent job of documenting this *fact*. And, those of us who have university administrative assignments know full well that the shortage of auditing faculty

---

<sup>2</sup> The shortfall also is very severe for tax faculty.

is already severe and likely to become worse. What accounts for the especially severe shortfall for auditing?

My view is that the shortage is so acute in auditing mainly because of the highly constrained availability of data that are a necessity to conducting auditing research. Many people share this view. A short digression into two areas is in order before continuing to discuss the data issue and the shortage of auditing faculty.

First, a generally accepted notion within the academic community is that it is important to conduct research in the same *area* in which one teaches. Doing otherwise can make it more difficult to be successful both in terms of teaching and research as the natural synergies between teaching and research would not be available. In accountancy this notion means that if one is to teach auditing, one also should conduct auditing research.

Second, auditing research often is characterized on two dimensions: (1) the research method (analytic, archival, experimentation, and field) and (2) the supporting field of inquiry (economics/finance, psychology/sociology). Crossing these two dimensions one can distinguish eight categories of auditing research e.g., analytical with an economics/finance foundation; archival with a finance foundation; and experimentation with a psychology foundation. Importantly, the data required varies for each category of research. For example, analytical research generally requires little, if any, data as the main focus is mathematical modeling. On the other hand, the other three research methods are empirical and so require some form of data.

One form of data is data that reside within an organization such as a public accountancy firm. For example, some very important data may exist within audit

working paper files, including data on assessed risk levels, materiality levels, the number of hours worked by firm personnel at different levels (e.g., senior, manager, partner) on various audit tasks, the specific audit tasks performed in response to particular risks of misstatement, and nature and magnitude of identified audit differences. These and other similar data potentially would be of great interest to audit researchers employing archival methods. Past auditing researchers have used similar data to investigate the implications of characteristics of accountancy populations so that more efficient and effective statistical sampling techniques could be devised; how audit firms adjust their audit programs and labor assignments in response to perceived risks; and the factors that influence audit fees.

Other data must be obtained directly from audit firm personnel who respond to stimuli carefully designed by researchers (i.e., independent variables) in controlled settings (e.g., face-to-face or via the internet). These responses form dependent variables that then can be studied by auditing researchers. For example, auditing researchers employing experimentation with human subjects (i.e., practicing auditors) have learned about the nature of auditor expertise; gains to auditor industry specialization; influences on auditor's ability to evaluate audit evidence and to detect financial statement fraud; and how to enhance the audit review process.

For the better part of the past 15 or so years, both archival and experimental data, have become extremely scarce. This fact is not lost on accountancy faculty and doctoral students. The direct consequence is that there has been a drastic decline in auditing research among extant accountancy faculty and among accountancy doctoral students. The indirect consequence is that a significant opportunity cost has been incurred as the

knowledge and abilities of the accountancy professoriate have not been brought to bear on auditing issues. These adverse outcomes have occurred despite the desire of auditing researchers to advance the auditing knowledge frontier, and ultimately improve auditing processes and outcomes. And, improved audit processes and outcomes help to assure the efficacy of our capital markets by, among other things, reducing information risk. Thus, all persons interested in the efficient and effective operation of our capital markets should be supportive of auditing research and have an interest in ensuring that qualified auditing researchers have access to the data needed to address important audit research issues.<sup>3</sup>

It is important to know that the situation has not always been this way. For example, the predecessor to the firm that is today KPMG LLP during the 1970s and 1980s sparked a relative auditing research frenzy via its program entitled, *Research Opportunities in Auditing (ROA)*. Many of the research contributions that I mentioned earlier came directly or were stimulated by studies supported under the *ROA* Program. While that program provided funding for auditing research, a most important part of the program was enhanced access to human subjects and data. So, why has the situation changed?

I do not pretend to know the actual reasons for the highly constrained availability of auditing human subjects and data. I can report, however, what I have been told by various persons in numerous venues. An overarching issue for both types of data, seems to be that until recently there has been limited awareness of the problem. That is, the consequences of the data constraints, the reduction in auditing research, and the resultant

---

<sup>3</sup> It is interesting to note that despite this *public interest* in auditing research, unlike other fields (e.g., economics), there is very little public support for such research beyond that provided by public accountancy firms themselves.

shortage of auditing faculty only now are starting to become appreciated by thought leaders in the profession. Another over-arching issue involves potential litigation. That is, if a research study is conducted and results disseminated, some of which may not portray auditors or audit processes in a positive light, there is a belief that legal exposure may be increased.

With respect to human subjects, another problem seems to be the high opportunity cost associated with participation in auditing research studies. Even a rather small, single research study commonly would require at least 60 participants for an hour each—the opportunity costs for these persons' time could be tens of thousands of dollars. When, auditors are in essence fully chargeable, as has been the situation for a while now, these costs can be real.

With respect to data from archives including working paper files, I have been told that client confidentiality is a major constraint. The notion here seems to be that such data have been gleaned either directly from specific clients or in response to client-specific circumstances. Consequently, the position taken is that such data cannot be disclosed in any form and under most circumstances without client permission.

There are legal liability concerns in addition to the one mentioned earlier. One concern is that if data are placed into an archive, attorneys may obtain access to such data. Related, there is a concern that attorneys may be able to obtain access to data from auditing professors that might not be available from other sources.

While it is relatively easy for a member of the academic community to dismiss these concerns, I will not do so. Nevertheless, I do believe that ultimately they cannot be

the basis for not making available data that are essential for auditing research. The costs are simply too great. And, it is not necessary to incur such costs.

I suggest the formation of a high-level task force with the charge of studying issues related to auditing data availability and proposing ways of overcoming roadblocks. For example, the auditing profession is not the only profession with confidentiality concerns. Indeed patient confidentiality is a critical and long-standing concern within the medical field. That said, when one becomes an in-hospital patient, it is not at all uncommon for one to be asked (required) to sign a release acknowledging that some of one's tissues may be provided to researchers who will use them in an attempt to push the medical knowledge frontier and ultimately, improve medical processes and outcomes. Why would a similar approach not work in auditing to overcome client confidentiality concerns? Specifically, could client confidentiality concerns be overcome by placing in engagement letters a disclosure about providing data to researchers with the goal of pushing the auditing knowledge frontier and ultimately, improving audit processes and outcomes? Related, I have learned from faculty members working in the Illinois National Center for Supercomputing Applications (NCSA) and the Information Trust Institute that advances are being made in the relatively new field of *Anonymization* that may be of help to those persons who seek to balance protection of confidential and private data with the good that can come from making such data available to researchers.

*Who is Choosing to Study Accountancy and in What Numbers?*

In addition to answering the question that forms the heading for this section of my testimony, here I also briefly address the impact of the 150-hour requirement to sit for the Uniform CPA Exam and diversity issues.

It has been well documented that enrollments in accountancy undergraduate and masters educational programs and persons graduating with accountancy degrees have risen significantly over the past several years. For example, the number of students earning bachelor degrees in accountancy at Illinois has increased from 249 in academic year 1997-98 to 449 for the twelve months ending August 2007—an increase of about 80%. During that same time period, the number of students at Illinois earning masters degrees in accountancy has increased even more, from 84 in academic year 1997-98 to 274 in academic year 2006-2007—an increase of about 325%. And, based on current enrollments, I am expecting that even greater numbers of both bachelors and masters degrees in accountancy will be earned at Illinois during the current academic year, 2007-08.

With respect to student quality, reliable data are more difficult to acquire. I was able, however, to obtain ACT and class rank data for Illinois undergraduate accountancy students over about a ten-year period. I learned that the average class rank for accountancy undergraduate students at Illinois has stayed pretty much the same from academic year 1997-98 to 2006-07 i.e., about the top 10% of the high school graduating class. I also learned that average ACT scores increased from about 27 (89th percentile) in academic year 1997-98 to almost 29 in academic year 2007-08 (94th percentile). It is worthy of note that even in the late 1990s, these two quality metrics suggest that students

studying accountancy possess strong academic credentials. Moreover, while these are only two indicators of student quality, it is interesting that the large increase in student quantity has not been associated with a decrease in the academic credentials of undergraduate students majoring in accountancy and there even is some evidence of a modest increase.

It also is interesting to note that these student quantity and quality attributes have been realized in Illinois, a state in which the 150-hour law became effective in 2002. Illinois did experience a temporary drop in the total number of students majoring in accountancy and the number graduating with bachelor degrees in accountancy during the first year in which the 150-hour law was effective. However, both of these numbers rebounded quickly to their former levels and beyond. Indeed, a recent Illinois CPA Society report documents that many, if not most, Illinois high school students do not view the 150-hour requirement as a significant barrier to studying accountancy and entering the accountancy profession (see Illinois CPA Society *150-Hour Requirement Report*, 2006 ). The one exception, documented in the Illinois CPA Society report, may be traditionally underrepresented minority students for whom there can be significant pressure to join the work force as soon as possible. At Illinois, the percentage of such students has ranged over the past 10 years from 6.9% to 9.8%-- in academic year 2007-08, the percentage of traditionally underrepresented minority accounting students is 9.8%.

I believe that these data and trends for Illinois generally are consistent with trends at other universities and in other states in the U.S. That said, I recognize that present systems for obtaining data germane to the accountancy profession are *ad hoc* or periodic.

There would be great benefit to establishment of a continuous and comprehensive system that produced more timely and reliable supply and demand data. The Illinois data do, however, suggest that students are majoring in accountancy in universities at the undergraduate and masters levels at very high, if not record numbers. And, student academic quality has remained the same or even increased somewhat at least along the two dimensions for which I was able to obtain data. And, all of this has been achieved in a context in which the education requirement for entry into the field has increased and there is great competition for the hearts and minds of university students.<sup>4</sup> With respect to traditionally underrepresented minority students, one can frame the situation either positively—given the explosive growth in enrollments, there has not been a decline in the percentage of such students or negatively—there has not been any progress in terms of increasing the percentage of traditionally underrepresented minority students majoring in accountancy.

***What is the quality of accountancy educational programs?***

In addition to answering the question that forms the heading for this section of my testimony, here I also briefly address the implications of adoption of International Financial Reporting Standards (IFRS) and the need for aspiring auditors and other accountants to obtain 150-hours of university education.

---

<sup>4</sup> Data and anecdotal reports in Illinois suggest, however, that the rate of increase in the number of students who are qualified to sit for the CPA exam is not matched by the increase in the number of students taking the CPA exam. Ironically, given the increase in the frequency with which the exam is offered, one reason often cited is that, because of demands on their time are work, they are unable to take the exam. Another reason seems to be that they do not plan to stay in the field and thus, do not see the need to become a CPA.

I believe that innovation in accountancy education has been too limited during the past 15 or so years. During this time period, due largely to innovations in information, communication, and transportation technologies, there have been massive changes in the business world. Business models and business processes often are radically different today and such changes have major implications for financial reporting and auditing.

In the present and emerging environment, preparers of accounting information and auditors of that information must have a deep appreciation for foundational elements of accounting and auditing. These elements include the role of accounting and auditing in market-based economies and the centrality of integrity, objectivity and independence. Too often today, these matters are either given very limited coverage or are covered in way that make them seem like necessary evils i.e., compliance activities when, in reality, they are indeed foundational elements of accountancy and major components of the auditing profession's *raison d'être*. Accountancy and auditing students also need a rock-hard understanding of accounting and auditing concepts along with a deeper understanding of the complex business contexts in which they must apply these concepts.<sup>5</sup> Such deeper business understanding will be even more important if IFRS become more generally accepted in the U.S.. To the extent that IFRS are more principle- (vs. rule-) based than U.S. Generally Accepted Accounting Principles (GAAP), it will be important for preparers of accounting information to deeply embed one's choice of accounting method and measures within the business context. And, it will be crucial for

---

<sup>5</sup> My colleagues and I at Illinois have found discovery-based education which embraces constructivist learning theory to be an effective way for students to acquire the deep and hard insights about which I am speaking. For more information, please refer to [http://www.business.uiuc.edu/accountancy/about/project\\_discovery/](http://www.business.uiuc.edu/accountancy/about/project_discovery/).

auditors to be able to judge the veracity of financial reports in terms of the context of the business that is disseminating the financial information.

In addition to the knowledge foci just mentioned, accountancy and auditing education should include an emphasis on critical thinking and other skills that serve as the bedrock for professional judgment skills. And, accountancy and auditing education should directly address critical attitudes such as professional skepticism. It simply is not possible, however, to accomplish these knowledge, skill, and attitudinal learning objectives as well as enriched general education and requisite business core learning objectives within a 120-hour context. My own experiences at Illinois suggest both that socialization into a professional mindset as well as accomplishment of the fuller set of learning objectives requires a 150-hour degree program.

Please note that I am *not* saying that no change has occurred in accountancy and auditing education. Rather I am saying that the nature and pace of change in accountancy education have been inadequate. Please also note that I am well aware that many accounting and auditing educational programs address these skill and attitudinal matters but they do so in too cursory a fashion. That is, they are covered in passing with the goal seemingly being to free up time for more technical matters, especially authoritative accounting and auditing pronouncements which are the traditional foci of accountancy and auditing education. Unfortunately, educational materials and assessment vehicles that encourage low-level memorization, e.g., application of accounting or auditing rules in rather black-and-white business contexts often accompany such pronouncement-oriented education. One end result is that aspiring auditors and other accountants do not learn how to use the business context to sufficiently inform accounting and auditing

judgments. Another end result is that university accounting and auditing educational programs start to take on the feel of vocational or firm training programs. And, perhaps even more importantly, young auditors and other accountants fail to fully internalize what it means to be a *professional* auditor or accountant.

### ***Concluding Comments***

I conclude with four recommendations:

- At present, data necessary for conducting auditing research are not generally available. Members of the auditing practice, academic and regulatory communities should work together to make data for auditing research much more available to accountancy doctoral students and faculty. A task force should be formed to identify the barriers to audit data availability and to propose ways of overcoming them.
- At present and traditionally, the limited funding for auditing research generally has been provided directly or indirectly by auditing firms. Given the public interest in research in that improves audit processes and outcomes, consideration should be given to new sources of financial support for such research.
- At present, there only are periodic or *ad hoc* systems for obtaining supply and demand data germane to the accountancy profession. A continuous and comprehensive system should be set up to collect more timely and reliable supply and demand data.

- At present, accountancy and auditing education is too oriented toward accounting and auditing rules, giving many such programs a vocational and even training feel. Accountancy and auditing education should be re-balanced with a greater emphasis on learning objectives involving foundational accountancy concepts, skills, and attitudes. Members of the auditing practice, academic and regulatory communities should work together to stimulate educational innovations along these lines while reaffirming support for 150-hours of university education for entry into the auditing profession.

Thank you.

## References

Illinois CPA Society *150-Hour Requirement Report*, Illinois CPA Society, Chicago, Illinois, March 2006.

Plumlee, D., Kachelmeier, S.J., Madeo, S.A., Pratt, J.H. and Krull, G., *Report of the AAA/AAPLG Ad Hoc Committee to Assess the Supply and Demand for Accounting Ph.D.s*, Sarasota, Florida, 2005.