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COMMENTARY

The Impact of Academic Accounting Research on Professional Practice: An Analysis by the AAA Research Impact Task Force

AAA Research Impact Task Force

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SYNOPSIS: The accounting academy has been long recognized as the premier developer of entry-level talent for the accounting profession and the major provider of executive education via master's-level curricula and customized executive education courses. However, the impact that the academy's collective ideas have had on the efficiency and effectiveness of practice has been less recognized. In this paper, we summarize key contributions of academic accounting research to practice in financial accounting, auditing, tax, regulation, managerial accounting, and information systems. Our goal is to increase awareness of the effects of academic accounting research. We believe that if this impact is more fully recognized, the practitioner community will be even more willing to invest in academe and help universities address the escalating costs of training and retaining doctoral-trained research faculty. Furthermore, we believe that this knowledge will attract talented scholars into the profession. To this end, we encourage our colleagues to refer liberally to research successes such as those cited in this paper in their classes, in their textbooks, and in their presentations to nonacademic audiences.

INTRODUCTION

The American Accounting Association's (hereafter, AAA) Research Impact Task Force was commissioned to study and document the accounting academy's impact on practice, and their work formed the basis of this paper. The worldwide community has long recognized the academy for its premier contributions of producing entry-level talent for the accounting pro-

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fession and of providing executive education via master's-level curricula and customized executive education courses. However, the community has been less aware that the academy has contributed ideas that have enhanced the efficiency and effectiveness of practice, has disciplined practice by providing constructive criticism, and has enlivened important debates until optimal or nearly optimal results have been obtained. If the effects of academic ideas were more fully recognized, we believe that the practice, corporate, and regulator communities would be even more willing to invest in academe and help universities address the escalating costs of training and retaining doctoral-trained research faculty. Furthermore, we believe that this knowledge would attract talented scholars into the profession. To this end, we encourage our colleagues to, as often as possible, refer to the underlying research in class discussions, assign readings from the research literature, cite these findings in textbooks, and refer to the research literature during presentations to nonacademic audiences.

We begin by noting that academic research conveys a major benefit that is outside the purposes of this paper; that is, much of the academy's work is to understand our world—not necessarily to change it. If our research enhances the way we think about problems, and we transmit that thinking to colleagues and students, then we have created a benefit, whether those thought processes ever appear as particular "value-creating products" in practice. Nevertheless, the academy aspires to an even higher standard. We believe that our research can, should, does, and will continue to affect the effectiveness and efficiency of individual firms, not-for-profit organizations, governments, and capital markets, as well as the governance of these entities and markets.

We would like to run an experiment that compares the world of practice with and without academic research. We cannot run this experiment, but academic research has developed or at least heavily influenced many hundreds of "products" and methods used in practice. In this paper we provide examples of best practices in the accounting, auditing, tax, and accounting information systems domains and examples of regulations that had their genesis in academic research.

We provide examples of such contributions in the forms of applications used by practitioners but designed by academics—concepts taken from academic ideas and refined by practitioners and critical thinking. The latter category includes evaluating the appropriateness and/or optimality of practitioners' and regulators' products, services, policies, and/or procedures. We emphasize applications, as these are academic research's most recognizable contributions. This does not imply that we believe applications are the most important research that we conduct. Indeed, one could argue that this category is the least important of the three. To wit, consider the medical profession. Virtually limitless economic incentive exists for private sector research to introduce effective drugs. Thus, the medical profession relies on academics as a watchdog to analyze critically the findings of private sector research. Accounting academics provide a similar service for the accounting profession, firms, governments, and capital markets.

Of course, this document cannot provide an exhaustive list of contributions. Instead, we concentrate primarily on developments that are in daily use by accountants, auditors, managers, investors, and others. To this end, more specific applications will be described in the auditing and tax sections as auditors and tax professionals use so many of our innovations daily—without knowing their genesis.

We concede that room for improvement exists in the real world applicability of academic research as well as in the role of practice-disciplining "watchdogs." However, the weaknesses in academic research have been well researched and discussed.[1] In this paper, we address successes.

[1] For example, see Heck and Jensen (2007), Zimmerman (2001), and Dyckman (1989).

THE IMPACT OF ACADEMIC RESEARCH ON FINANCIAL ACCOUNTING

Academics have made countless contributions to the public debate as well as the current state-of-the-art financial accounting. Perusal of any high-profile financial statement analysis or valuation text will reveal countless citations that reinforce the academic contribution. In this section, we summarize several notable contributions in both the production of financial reporting information and the use of the information. Academics continue to play major roles in empirically evaluating alternative accounting rules, performance measures, and valuation approaches. However, we do not provide a comprehensive review of this important critical thinking role of academicians because it involves evaluating developments rather than producing them.

REGULATION OF FINANCIAL ACCOUNTING AND FINANCIAL REPORTING

The Financial Reporting Model

Accounting academicians have played a preeminent role in accounting standard setting for the better part of the last century. From a micro-perspective, no significant regulatory accounting proposal or pronouncement has escaped academic critique. In this section, however, we emphasize the role of academics in developing the macro-level reporting model. To this end, we note that accounting academicians developed the theoretical underpinnings for the reporting models. From the 1940s through the 1970s, the prevailing reporting model emphasized matching historical costs to revenues in an income statement-based approach. This model applied the "entity" theory developed by Paton and Littleton (1940) in their monograph, *An Introduction to Corporate Accounting Standards*, which was essentially the first integrative theory of accounting. The theory's central emphasis was a measure of earning power, which enabled external users of the resulting information to assess managerial performance. This was crucial because nonowner-controlled companies proliferated during this period. Both Paton and Littleton would later serve on the Committee on Accounting Procedure, the primary standard-setting body of the day.

Since the 1980s, most new regulation has constituted a move from Paton and Littleton's historical cost-and-matching theories toward a balance sheet emphasis based on fair value measurements (e.g., accounting for marketable equity securities, financial instruments, and business combinations). Foremost in articulating fair value-based thought was Robert T. Sprouse, an academic and FASB member who served a term as president of the AAA. His writings described a process for improving financial reporting via a reporting model that emphasized the balance sheet and fair value reporting. In the 1988 commentary, "Developing a Conceptual Framework for Financial Reporting," he called for "something more fundamental and enduring than facile application of an increasingly comprehensive set of detail rules and procedures" (Sprouse 1988, 121). He eschewed what he called "current value paranoia," and joined with Raymond Chambers and Robert Sterling in calling for a model that measured all assets and liabilities based on the same attribute—current exit value. This attribute has since emerged as an increasingly important aspect in the setting of accounting standards around the world. Since Sprouse, academics such as former FASB member Katherine Schipper have been foremost in the development of the emerging fair-value-based reporting model.

Academicians also have developed models for the treatment of specific transactions. A recent example is the accounting for business combinations that are now accounted for under the "entity" viewpoint (SFAS No. 160) as opposed to the "proprietary" view. Under the "entity" view, the basis of the balance sheet is the fair value of the full entity rather than the fair value of the controlling interest combined with the historical cost of the noncontrolling interest. Hugo Nurnberg (2001) articulated and supported the "entity" viewpoint in *Accounting Horizons*.

Ongoing Regulation of Financial Accounting and Financial Reporting

Academic accounting continues to profoundly impact accounting regulation both in terms of identifying normative regulatory strategies and assessing the effectiveness of regulatory actions. For example, researchers heavily research new legislation provisions following their release such as the Sarbanes-Oxley Act of 2002, the Securities and Exchange Commission (hereafter, SEC) Regulations such as Regulation FD and G (e.g., Nichols et al. 2005; Entwistle et al. 2006; Marques 2006; Francis et al. 2006), and Financial Accounting Standards Board (hereafter, FASB) statements (e.g., Botosan and Stanford [2005] and Ettredge et al. [2005], [2006] are related to SFAS No. 131). Indeed, academic studies vet every significant regulatory action. For a review of past studies, we encourage readers to see the annual review of developments in accounting regulations published in *Research in Accounting Regulation* (Moehrle and Reynolds-Moehrle 2005, 2007; Moehrle et al. 2008).

In addition, academics respond to every significant proposal offered for public comment by the SEC, the FASB, or the Financial Accounting Foundation. We direct readers to manuscripts produced by the AAA's Financial Accounting Standards Committee and published primarily in *Accounting Horizons*. These responses summarize relevant academic research findings to inform the regulator's deliberations, and provide analysis from a dispassionate perspective. On occasions, authors also provide some research-informed opinions. The SEC and the FASB have recognized the importance of considering the academic perspective in the establishment of the Academic Fellows programs that support individuals holding academic accounting positions with expertise in financial reporting and auditing. Each year the SEC selects a number of academics through a competitive process known as SEC Academic Fellows. The FASB recently adopted a similar program with the establishment of FASB Academic Research Fellowships. Individuals holding these positions have had significant influence on financial reporting and auditing issues and the way these are addressed. The FASB also hosts online office hours to allow academics to present findings from ongoing research.

The SEC, the FASB, and other regulators use academic research extensively to inform their decisions (Jorgensen et al. 2007, 320). For example, a recent update of activities at the SEC cited several academics and academic studies. The list included but was not limited to Lie (2005) and Heron and Lie (2006) on options back-dating, Marquardt and Wiedman (2005) on transparency in financial reporting, Nelson et al. (2005) on auditor materiality decision, Hopkins et al. (2000) on purchase accounting, Aboody et al. (2004) and Marquardt (2002) on stock-based compensation, Huson et al. (2001) on earnings dilution effects, and Davis-Friday et al. (1999) on recognition versus disclosure. In addition, perusal of SEC Staff Accounting Bulletins and guidance in communiqués from the Office of the Chief Accountant often refer to academic findings (see for example the promulgation of SEC Proposed Rule S7-13-00 refers to Firth [1997], Arens and Loebbecke [1979], Previts [1985], Palmrose [1986], Simunic [1984], and Davis et al. [1993]). Finally, regulatory public hearings often include testimony from accounting academics (for example, the July 2000 public hearing on auditor independence included the views of Paul Miller from the University of Colorado–Colorado Springs, Curtis Verschoor from DePaul University, and Rick Antle from Yale University). More recently, Teri Yohn, Indiana University professor and former visiting scholar at the SEC, testified on international financial reporting standards before the Senate Subcommittee on Securities, Insurance, and Investment. Again, these are just a few examples in a long list of studies regulators have cited as having informed important decisions.

USE OF FINANCIAL ACCOUNTING INFORMATION

Academics continue to affect practice by researching how to optimize the use of accounting information. In this section, we summarize contributions in substantive user topics including financial statement reporting quality, the relation between financial statement information and stock prices (fundamental analysis and valuation), and the relation between financial statement information and risk assessment.

Financial Statement Reporting Quality

High-quality reported earnings are amounts that can be expected to persist in the future. Earnings quality is higher when it results from revenues from a sustained customer base and objective measures of related costs. Two factors primarily compromise earnings quality: (1) the degree to which reported earnings contains amounts that will not persist in the future, and (2) earnings management.

Accounting researchers have done much work related to earnings persistence and the valuation ramifications. Lipe (1986) and Freeman and Tse (1992) demonstrated that stock prices indeed react more strongly to earnings exhibiting greater sustainability. Ramakrishnan and Thomas (1998) described the three earnings components (permanent, transitory, and value irrelevant) and the stock price ramifications of each. Lev and Thiagarajan (1993) demonstrated that eliminating transitory or value-irrelevant items results in a more useful earnings measure for value prediction. Whisenant and Fairfield (2001), Schipper and Vincent (2003), and Richardson et al. (2006) confirmed these findings and provided practical avenues to enhance the value of earnings information.

Earnings management involves managers making accounting choices opportunistically to achieve desired outcomes, and accounting researchers have produced much research related to this important topic. Again, we summarize some of the more high-profile contributions. Burgstahler and Dichev (1997) demonstrated that firms most often manage earnings to avoid earnings decreases and losses and to meet analysts' earnings forecasts. Accounting researchers established that firms manage earnings for various other reasons as well; for example, to maximize managerial compensation under employment contracts (Watts and Zimmerman 1986; Healy 1985; Holthausen et al. 1995; Gaver and Gaver 1998; Guidry et al. 1999; Aboody and Kasznik 2000), to avoid debt covenant violations (Watts and Zimmerman 1986; Sweeney 1994; Defond and Jiambalvo 1994; Dichev and Skinner 2002), to avoid political scrutiny (Watts and Zimmerman 1986), to maintain capital adequacy (Moyer 1990), and to manage timing of earnings impact related to new standards adoption (Ayres 1986).

Research has established specific accounts and transactions used as vehicles to meet earnings targets. The following are some examples: initial public offerings (Teoh et al. 1998), receivable reserves (McNichols and Wilson 1988), asset write-downs (Elliott and Hanna 1996; Healy et al. 2002), restructuring charges (Chaney et al. 1999; Moehrle 2002), deferred taxes (Schrand and Wong 2003; Frank and Rego 2006), and stock repurchases (Hribar et al. 2006). Graham et al. (2005) surveyed 401 financial executives and produced a list of management's preferred vehicles for earnings management. Finally, Nelson et al. (2002) studied under what conditions managers will choose actions versus accounting decisions to manage earnings. They found that managers are more likely to use transaction arrangements to manage earnings when the standard for a particular transaction is relatively more precise and are more likely to use accounting choices and estimates to manage earnings when standards are imprecise. This result further helps users to recognize where financial reporting may less reflect the underlying economics, which is valuable knowledge.[2]

Researchers have demonstrated the value in managing earnings (e.g., Beneish and Press 1993; Barth et al. 1999; Skinner and Sloan 2002) to meet compensation thresholds, to avoid political scrutiny, to avoid technical default, to attain market outcomes, and other reasons. Of course,

[2] See Xu et al. (2007) for a full review of this literature.

increased earnings management compromises information. To aid users, accounting researchers have developed a scoring mechanism for accounting quality to help users assess the relative quality of financial reports. For example, Jones (1991) and Dechow et al. (1998) developed models that sought to identify firms with abnormal discretionary accruals. Beneish (1999) brought a user-friendly model to the public that measured the probability of earnings management.

Academic research has also examined the quality of international accounting reports. Although we do not summarize this work, we note one paper with significant ramifications. Leuz (2003) found no significant quality differences between reports prepared under U.S. GAAP and reports prepared using international accounting standards. His work helps users of international reports and also serves to inform the debate regarding acceptance of IFRS-based financial statements from international firms listed on U.S. stock exchanges and possibly from U.S. registrants as well.

Using Financial Statement Information to Infer Price: The Earnings/Return Relation

Accounting research has explored and established the relationship between accounting information (primarily accounting earnings) and market prices. Although investors sensed that such a relationship existed, Ball and Brown (1968) demonstrated a stronger and more complex relationship than users perceived. Significant correlated movements occur with anticipation of earnings, at the time of the actual announcement and even after the announcement date. This latter finding was an early contribution to the "anomalies" literature, which is discussed later.

Accounting researchers have devoted extensive effort to further understanding the earnings/return relationship in U.S. and overseas markets. For example, Foster et al. (1984) demonstrated the price behavior around quarterly earnings announcements. The authors constructed portfolios based on earnings outcomes and found that stock return performance matched earnings performance. Other studies (e.g., Beaver et al. 1979; Bernard and Thomas 1990) further supported this finding. Especially important for analysts, Easton et al. (1992) found that over longer intervals, earnings capture an even greater portion of economic events, which essentially demonstrated that earnings are the source of valuation creation. Findings in Kothari and Sloan (1992) suggested that earnings predictions for at least two years, but for no more than four years, are crucial in picking stocks.

Many other studies have delved more deeply into the earnings/return relation. For example, Anthony and Ramesh (1992) indicated that the market values earnings differently depending on the position of the firm's products in the growth cycle. Dechow (1994) demonstrated empirically that accrual earnings are better than cash flows to measure performance in the near term. Biddle et al. (1997) and Moehrle et al. (2001; 2003) demonstrated that economic value added (hereafter, EVA), cash earnings, and EBITDA are not more strongly correlated with share price than are GAAP-based accounting earnings.

Using Financial Statement Information to Infer Price: Fundamental Analysis

Practitioners have developed best practices in fundamental analysis (e.g., the Dupont model of analysis), as have finance academics (e.g., Altman's Z-score bankruptcy model), and accounting academics. In this section, we highlight some significant advances in fundamental analysis that accounting academics have achieved.

It is widely accepted that the value of the firm is the present value of future cash flows the firm produced. However, predicting future cash flows is nontrivial. To this end, accounting researchers have established two important facts: (1) accounting earnings in the current period more usefully predict future cash flows than do cash flows in the current period (Greenberg et al. 1986; Finger 1994; Dechow et al. 1998; Barth et al. 2001), and (2) stock price changes correlated more with changes in accrual earnings than with changes in realized operating cash flows (Dechow 1994; Lev and Zarowin 1999; Callen and Segal 2004). Thus, the forecast of future earnings and use of these predictions are paramount to investing success.

Most early research in forecasting involved understanding the extent to which current earnings predict future earnings (e.g., Ball and Watts 1972; Kothari and Sloan 1992). Each of these studies showed a high correlation between current and future earnings. In 1989, Ou and Penman (1989a, 1989b) brought additional robustness to the earnings forecast task by using multivariate analysis of many financial ratios to identify concise ratios that accurately forecast future earnings. This is an example of conceptualizing and extending the usefulness of emerging knowledge. Other academics further refined these models of fundamental analysis (e.g., Lev and Thiagarajan 1993; Penman 1996, 1998; Abarbanell and Bushee 1997, 1998; Penman and Zhang 2000; Piotroski 2000; Nissim and Penman 2001).

Yet another line of research examined particular financial disclosures that are valuable in the forecasting process. For example, Bernard and Noel (1991) showed how changes in reporting ending inventory can be used to better forecast future sales and earnings across company types. Empirical studies suggest that trading strategies that use these ratios to predict firms with abnormal earnings growth prospects can yield abnormal returns.

An example of a trading strategy application of academic research is the Piotroski Score,[3] derived from Piotroski (2000), which predicts which "value" stocks (i.e., stocks with a low market capitalization relative to current income level) have the greatest probability of yielding abnormal returns. A portfolio of the strongest stocks based on the Piotroski Score outperformed a portfolio of all "value" stocks by more than 7 percent annually for a 20-year test period.[4] The model assigns a point to a particular value stock if (1) net income was positive in the previous year; (2) operating cash flow was positive in the previous year; (3) ROA change was positive in the most recent year; (4) last year's operating cash flow exceeded income (a flag for potential accounting abnormalities); (5) ratio of long-term debt to assets decreased in the most recent year; (6) current ratio increased in the most recent year; (7) the number of shares outstanding did not increase in the most recent year; (8) gross margin increased in the most recent year; and (9) the percentage increase in sales was greater than the percentage increase in assets in the most recent year. Buy-side and sell-side analysts and financial advice firms continue to use the Piotroski Score widely.[5]

Using Financial Statement Information to Infer Price: Valuation Models

Academics have been at the forefront of valuation practice throughout history. For example, in the last half-century, Sharpe (1964) and Lintner (1965) developed the popular capital asset pricing model, later refined by the "three-factor model" of Fama and French (1993). From an accounting standpoint, James Ohlson and Gerald Feltham produced the most high-impact valuation development of recent years. In two 1995 papers, Ohlson (1995) and then Feltham and Ohlson (1995) introduced and refined the residual income model of valuation. This model is a mathematical transformation of the widely used discounted dividend model. However, the primary inputs into the residual income model are the firm's current recorded book value and forecasts of future earnings rather than the dividend or cash flow predictions required by most other models. Under their model, the value of the firm is estimated as the current recorded equity total plus the

3 See for example the Graham Investor available at http://www.grahaminvestor.com/articles/piotroski~score.
4 See the Piotroski paper for details.
5 Piotroski Score screens and data can be found on many financial websites. For example, see the Graham Investor, MSN Moneycentral, and other websites available by searching the Internet on the term *Piotroski Score*.

present value of future abnormal earnings. Abnormal earnings are earnings in excess of (less than) the product of the firm's beginning of the period book value and the firm's cost of equity capital. Frankel and Lee (1998) tested the model and demonstrated that investors can earn abnormal returns from its use. Francis et al. (2000) provided evidence that the abnormal earnings valuation model is superior to the free cash flow valuation model in predicting stock price.

Commerce has adapted this abnormal earnings valuation model under brand names such as "Cash Flow Return on Investment Valuation" (hereafter, CFROI).[6] Investment experts find the model appealing because the primary input—future earnings—is often easier to predict than key inputs for other models. For example, using a discounted dividends model is difficult for firms that do not pay dividends or may have to discontinue or greatly reduce their dividend. Predicting cash flows is often difficult for free cash flow valuation because free cash flows can vary greatly from period to period based on such variables as the timing of purchases.

Using Financial Statement Information for Risk Assessment and Bankruptcy Prediction

Understanding the relative risk of a firm is of value to both equity and debt investors. For this reason, accounting researchers have worked to refine the risk assessment process. In the 1960s, Beaver (1966) found that tracking deterioration in a cogent set of ratios can provide a valuable bankruptcy signal. Interestingly, Ohlson (1980) contributed to the bankruptcy literature by demonstrating that extant models in the finance literature were valuable but likely overstated their predictive accuracy because of a subtle research design weakness. Ohlson (1980) developed a highly regarded logit regression analysis-based model of bankruptcy prediction based on four key factors: size, financial structure, performance, and liquidity. Burgstahler et al. (1989) showed that Ohlson's model was not only valuable in the risk assessment task but also for the equity valuation task. Ball et al. (1993) soon thereafter showed that earnings changes alone are strongly related to changes in the relative risk profile of the firm. Hence the bankruptcy prediction literature is justifiably credited primarily to finance academics, but accounting academics have certainly made important contributions.

Opportunities for Abnormal Returns

Accounting academics have joined finance academics to develop a stream of apparent investing opportunities known in academe as *investing anomalies*. Anomalies are investing strategies that appear to generate abnormal investing returns. Finance academics were first to demonstrate two famous investing anomalies—the January Effect and the Low P/E. The accounting academy has contributed to this literature, including arguably the most significant anomaly first observed by Ball and Brown (1968)—the post-earnings announcement drift—which is manifested by abnormal investment profits earned from long positions in a portfolio of firms reporting the largest positive earnings surprises, and short positions in a portfolio of firms reporting the largest negative earnings surprises. Since the drift was first observed, many researchers have studied the persistence of and potential reasons for this anomaly. For example, Rendleman et al. (1987), Freeman and Tse (1989), and Bernard and Thomas (1990) collectively provided evidence that the market assumes earnings behavior reflecting a seasonal random walk process rather than a more sophisticated pattern.

Post-earnings announcement drift, although arguably the most famous of the anomalies, is not the only or even the most recent of the investing anomalies accounting research has identified. For example, Piotroski's (2000) and Abarbanell and Bushee's (1998) fundamental analysis techniques

[6] Copyright 1999 by Butterworth-Heinemann, Boston, MA.

and Sloan's (1996) accrual anomaly continue to puzzle academic researchers and continue to yield apparent abnormal return opportunities for investors. The seeming resiliency of the anomalies has spawned a line of research known as *behavioral finance* that seeks to determine processing biases that could lead to observed investing anomalies. Accounting academicians actively participate in the behavioral finance literature, demonstrating instances in which investors seem to earn abnormal returns via strategic systematic use of publicly available accounting information and studying potential biases that could generate opportunities for abnormal investing profits.

CONCLUSIONS ABOUT THE IMPACT OF FINANCIAL ACCOUNTING RESEARCH

Financial accounting researchers have in the past and continue today to profoundly impact practice. In this section, we have highlighted several studies that affected the promulgation and regulation of the financial accounting and reporting model, and several studies that have enhanced the effectiveness and efficiency of financial accounting information for users the information is designed to support. Within the user-oriented literature, we highlighted studies that help users assess the relative quality of information, future cash flows, and fundamental value of entities.

IMPACT OF ACADEMIC RESEARCH ON AUDITING PRACTICE

Auditing Practice, Research, and Education, A Productive Collaboration, published in 1995 through a joint effort of the AAA and the AICPA, set the objective of preparing a monograph "documenting the successes of prior, less-harried times when collaborative efforts produced significant insights and often solutions to challenging auditing problems" (Bell and Wright 1995, 178). Their work illustrated the "rich heritage of practitioner/academician collaboration in addressing auditing challenges" (Bell and Wright 1995, 174). The authors indicated the importance of a periodic review of academic research for use by those in practice. The monograph also called for increased interaction with practitioners, the use of "academic research fellows" in practice, and integration of the research process into audit education.

The collaboration between audit practitioners and academics began with the first auditing textbook, *Audit Practice and Theory*, published in 1912, by Robert H. Montgomery (Montgomery 1912), a university instructor and founding partner at Lybrand, Ross Bros. and Montgomery (now part of PricewaterhouseCoopers). As audit research became a separate field of study, partnerships between academics and professionals in the field focused on the emerging needs of an expanding practice.

According to Bell and Wright (1995), Mautz and Sharaf's (1961) monograph *The Philosophy of Auditing* strongly influenced the development of audit research. This monograph played a role in the creation of several theoretical concepts in auditing including risk orientation, analytical procedures, and audit judgment. Their work "inspired many accounting academics to take a more serious look at auditing as a subject of scholarly interest" (Mautz and Sharaf's 1961, 27).

Bell and Wright's (1995) monograph outlined audit research contributions in the areas of risk orientation, audit judgment, audit sampling, analytical procedures, and communications with users. We highlight a few studies in these areas in this summary and refer the reader to the monograph for a more complete discussion. We then discuss additional contributions during the 1990s and early 2000s.

RESEARCH CONTRIBUTIONS: PRE-1990

Risk Orientation

Early research on audit risk began with research on audit sampling and behavioral studies. Over time, the emphasis on audit sampling declined, and the focus turned to assessing audit risk, business risk, and internal controls. The concepts of statistical sampling, audit risk, and materiality initially came from partnerships with practitioners of the (then) Big 8 firms and accounting academics during the 1950s through the 1970s. In particular, K. W. Stringer of Haskins and Sells and F. F. Stephan of Princeton University, a team that began in 1958, published several papers discussing the benefits of sampling and analytical procedures as a way to focus audit procedures. Stringer's work led to the origin of research on audit risk and materiality, and he later became a primary contributor to Statement on Auditing Procedures No. 54 titled *The Auditor's Study and Evaluation of Internal Control* (AICPA 1972), which included an equation for the audit risk model. Because of his extensive involvement in research, he received the AAA's first Distinguished Service in Auditing Award in 1981.

Research on nonsampling risk emerged in the 1970s with Altman (1968) on the use of financial information in assessing the risk of auditee failure. In 1974, the team of Altman and McGough (1974) further examined the use of financial statement ratios to assess a company's ability to continue as a going concern. Such collaborations and research on nonsampling risk continued in the 1970s in the areas of audit confirmations; the reliability, documentation, and assessment of internal controls; and audit judgment. For example, the Auditing Standards Board used Paul Caster's (1990) work on audit confirmations when they issued Statement on Auditing Standards No. 67 "Confirmation Evidence" (Levine and Fitzsimmons 1992). The International Auditing and Assurance Standards Board (hereafter, IAASB; IAASB 2006) Task Force used and cited that same work in looking at new international standards on confirmations.

In the early 1970s, Peat Marwick, Mitchell & Co. (hereafter, PMM) formed the first program with academics to fund auditing research projects. Their support helped generate greater interest in auditing research. Funded by $1 million and initiated with a monograph focusing on the importance of academic research in practice, including more than 50 potential research projects, the Research Opportunities in Auditing (hereafter, ROA) program began in 1976 and provided almost $4 million in funding for projects over the 17 years of operation (Ashton and Ciani 1998).[7] By the early 1980s, Statement on Auditing Standards Nos. 39 and 47 included the risk-based audit approach, addressed in the ROA monograph and subsequent research, signaling the end of the detailed audit of each individual balance sheet and income statement account touted by prior auditing standards, and ushered in the need for a new direction for research.[8]

Audit Judgment

The study of professional judgment in auditing began with the acknowledgment of the subjective nature of the audit process. Early research indicated that in a "perfect world" all auditors would approach the audit process similarly (Hicks 1974). Mock and Turner (1981) disproved this thinking through a study of 200 auditors who, given identical decision-making scenarios, displayed a wide array of conclusions.

Auditor judgment is pervasive throughout the audit process. Many studies in the 1970s and 1980s concentrated on auditor judgment quality, auditor consistency in decision making, and

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7 PMM's program included 10 research grants annually to fund academic work. Additionally, opportunities were provided where academics were allowed to spend up to two years of study in-house. The undertaking attracted attention to the area of auditing research, including an increase in membership in the AAA's auditing section.

8 The 1981 issuance of SAS No. 39, Audit Sampling, was also the culmination of a variety of academic research efforts published in the 1960s and 1970s. Specific research by Kinney and Uecker (1982) modified original standards related to the upper error limit and risk of incorrect acceptance to a more accurate risk-assessment measure. Yet another ROA research team, through field testing on clients, determined substantial cost savings on testing through their recommendation of a set tolerable error for classes of transactions or account balances. These findings were incorporated into SAS No. 39 and SAS No. 47 when researcher R. K. Elliott joined the Auditing Standards Board.

auditor perceptions of conclusions. Such studies revealed a definitive lack of consistency and suggested a continual need for improvement in auditor judgment, noting the strong effect of judgment on overall audit quality.[9]

Drawing on the rich foundation in psychology, additional audit judgment research included analyzing auditor heuristics, biases, judgment shortcuts, information sequence, and use of confirming strategies for evidence collection. These studies, mostly conceptual, provided great insights into the auditor's decision-making process. Studies on auditor training and outcome feedback indicated some performance improvement. Researchers also showed that the very structure of the audit firm affects judgment. This research implied that firms should carefully consider consequences of structural change.[10]

Research in decision-support aids, where specific procedures or programs are designed to guide the audit judgment process to improve auditor decision making, provided inconclusive results. However, some structured approach decision aids were found to supplement the complexities of auditor judgment. Grant Thornton, LLP (1983) developed ADAPT, an audit program generation application, largely based on academic studies. Researchers revised this audit approach throughout the 1990s.

In the area of judgment essential to the audit review process, the major implications for practice center on the determination, through various academic studies, that multi-auditor judgment, whether at the end-of-audit review stage or during the audit process with groups of individuals, tend to result in greater decision-making consistency, accuracy, and reduced bias (Bell and Wright 1995).

Audit Sampling

Much early research in audit sampling resulted from collaborative efforts aimed at reducing tests of details and thus lowering audit costs. Practitioner/academician alliances formed in the 1950s, including initial work by John Neter, a Columbia University doctoral student in statistics with a graduate degree in accounting. Robert M. Trueblood, a partner at Touche Ross, studied the use of sampling in auditing for a year at Carnegie Mellon University. His later involvement as chair of the newly formed AICPA Committee on Statistical Sampling focused on formulating standards in the area.

Arthur R. Wyatt (1968), an accounting academician before working at the FASB, wrote a monograph titled *Sampling in Auditing,* which introduced the concept of sampling to Arthur Andersen during his employment there. Anderson and Teitlebaum (1973) are attributed with developing dollar-unit sampling, and Neter and Loebbecke's (1975) paper greatly contributed to the profession's use of statistical sampling in auditing practice. The extensive body of literature on audit sampling has influenced the measurement of risk.

Analytical Procedures

Procedure manuals in CPA firms have indicated the use of analytical procedures (hereafter, AP) since the 1930s. Academic research has addressed many concerns in this area, including the decision process, estimate appropriateness, fluctuations, methods for making AP more efficient and effective, and expansion of AP use. In general, research has indicated that AP particularly helps to detect fraud and to examine financial statement estimates (St. Pierre and Anderson 1982, 1984).

As in other areas, initial research in AP occurred through practitioner/academic collaboration.

[9] See for example Ashton (1974), Mautz (1975), and Joyce (1976).
[10] For example, Uecker and Kinney (1977), Ashton and Ashton (1988), Kida (1980), and Messier and Tubbs (1994).

A partnership established at the University of Illinois Auditing Research Conference between Price Waterhouse's Wanda Wallace, audit client General Electric, and Abraham Akresh resulted in published work on the use of regression analysis to provide a statistical basis for AP (Akresh and Wallace 1982). Likewise, Deloitte, Haskins and Sells in collaboration with a statistics researcher developed a regression-based AP known as STAR (Stringer and Stewart 1996).

Once regression analysis became commonplace in AP, researchers focused on the use of judgment during interpretation. Particularly, research revealed the *halo effect* of auditor interpretation and the issue of judgment variability, indicating the need for a more structured decision-making process. Other areas of research examined the expected influence of errors and irregularities, the frequency of data examinations, the use of technology rather than auditor judgment for determining departures to investigate, and the use of algorithms in analysis. Kinney and Martin (1994) summarized the work on error analysis and analytical procedure field applications, which started once again with academician Ed Blocher and Grant Thornton, LLP, and led to several studies in comparable areas. Kinney and Felix (1980) published a descriptive piece in the *Journal of Accountancy* that contained many of the concepts appearing in SAS No. 56.

Bedard and Biggs (1991) tested a case study using an overhead allocation error embedded in financial statement accounts. The case was based on one from actual practice and was tested on practicing auditors. More than two-thirds were unable to detect the problem, with the error being blamed on the auditors' failure to recognize patterns of ratio discrepancies and the use of incorrect assumptions about these discrepancies. Academicians and practitioners called on classroom instructors to work on student analytical and communication skills. Additional research revealed the importance of industry-specific expertise and experience to alleviate this problem.

Following studies on judgment, academicians turned their attention to several additional issues found during the analytical procedure phase of the audit: the investigation of the hypothesis, researching areas of interference, recency, and the effect of the auditor's level of competency on judgment reliability.

Communication with Users

Auditing communications covers the wide range of reports and statements provided to users. Until 1917, no accounting or auditing standards guided the audit process; the auditor's work was conveyed only through audit reports. Audit research in the 1960s questioned the need for report changes because results suggested user misunderstanding, leading to the 1978 Cohen Commission modifications of the standard report.

In the 1960s and 1970s, researchers suggested modifying the standard report and later surveyed financial statement users to determine their ability to use and understand the report to make well-informed decisions. Their work revealed a need to expand the reporting options and to provide more variety in attestation services. A. J. Winters (1975), among others, suggested the need for CPAs to provide a variety of attestation services, leading to the financial statement review.

Libby (1979) found that users were able to distinguish between the levels of assurance provided on a variety of audit reports, pointing to information reliability found on qualified, unqualified, and disclaimer opinions. Overall, research found that users understand the reduced reliability of audit reports below the level of unqualified opinions. Many studies examined the effect of financial statement report modifications and found that required footnote disclosure combined with report modification is somewhat redundant, but that the "red flag" is nonetheless appropriate and should continue. Additionally, research found that the release of financial statement reports with a lower opinion generally coincided with the release of financial information that created the need for modifications such as "subject to" qualified opinions attributable to uncertainties and going-concern opinions. Research concluded that this reduced the market's reaction to audit reports because of the availability of financial information preceding the report.

Studies related to SAS No. 58, calling for explanatory paragraphs attributable to potential material losses, indicated the variation in quantifying "reasonably possible," "probable," and "substantial doubt." This research revealed an ongoing need to examine the standards for application consistency.

Research Related to Internal Controls

Research related to internal controls was discussed throughout the Bell and Wright (1995) monograph, but we summarize a few key studies here. Bailey et al. (1985) discussed the use of software designed to analyze internal controls, and Price Waterhouse (now PricewaterhouseCoopers) later used the ideas to design and implement their technology for testing controls. When the Foreign Corrupt Practices Act was passed in 1977, the academic community was approached for assistance with issues related to internal controls. PMM's ROA program developed an internal control documentation system, System Evaluation Approach Documentation of Controls (hereafter, SEADOC), which included the use of flowcharts to document an accounting system. The program was found to increase audit efficiency and effectiveness; PMM indicated approximately 17 percent fewer audit hours and more consistent results on the control evaluation. Mathematically based sampling decision aids also resulted from the studies surrounding SEADOC. Additionally, academics were included in the training of PMM personnel to update their audit process, which allowed other academic findings to be included in training materials. Other firms soon followed, including not only flowcharts but narratives for use in their control documentation.

Currently a substantial body of literature has examined internal control issues as a result of information available through Sarbanes-Oxley disclosures. This research informs practitioners and academics of the relationships between internal control weaknesses, reporting quality, and the cost of equity capital or debt capital (e.g., Bedard and Biggs 1991; Ashbaugh-Skaife et al. 2007).

RESEARCH IN THE 1990s AND EARLY 2000s

Financial Statement Fraud

Academic research has had an ongoing impact in the detection of financial statement fraud and has helped identify risk factors commonly present in fraudulent financial statements. Albrecht and Romney (1986) validated many "red flags"; SAS Nos. 6, 16, and 53 each contain components of their work. Bell and Carcello (2000) developed a model predicting fraud and found many of the fraud-triangle factors. Other models, such as those developed by Eining et al. (1997) and Beneish (1999), suggested that regression models can be used to more effectively identify fraudulent firms. More recently, neural network models have been shown effective (e.g., Green and Choi 1997; Fanning et al. 1995; Lin et al. 2003). This research has caused auditing firms to increase the use of such models. Nigrini (1999) and others also documented auditing uses of digital analysis using Benford's Law.

Much research on fraud detection influenced SAS No. 82 and SAS No. 99, *Consideration of Fraud in a Financial Statement Audit*. The fraud triangle (pressures/incentives, opportunities, and attitudes/rationalizations) is based on early research by Cressey (1953), a criminologist, and later work by Albrecht et al. (1982).[11] Academics served on the committees that drafted SAS Nos. 82

[11] Albrecht has done research in the area of fraud for more than 25 years, was first president of the Association of Certified Fraud Examiners (ACFE), was a member of the Committee of Sponsoring Organizations (COSO) for four years, and served on the AICPA task force that wrote SAS No. 82. His work has informed and influenced both academics and practitioners.

and 99; W. Steve Albrecht served on the SAS No. 82 committee, and Mark Beasley and Zoe-Vonna Palmrose served on the SAS No. 99 committee. Academics have also served on the Auditing Standards Board; consequently, academic research has had a major influence. For example, Wilks and Zimbelman (2004) summarized audit research implications for policymakers and suggested that audit standards should encourage higher-order thinking (beyond the checklist mentality) and audit procedures should be less predictable. SAS No. 99 implemented many of their suggestions—such as brainstorming sessions and encouraging auditors to include unpredictable procedures in the audit.

Research on the use of red flag checklists has highlighted that relying on checklists is often dysfunctional. In one of the first studies related to auditors' use of checklists, Pincus (1989) found that questionnaire users identified fraud risk to be lower than did nonusers. Asare and Wright (2004) found similar results and also that auditors using a standard audit program designed less-effective audit programs than auditors not using a standard program. In support of these findings, SAS No. 99 requires many procedures above and beyond simply completing checklists.

A COSO-sponsored study by Beasley et al. (1999) that examined 200 public-company fraud cases and offered recommendations for improving U.S. financial reporting was cited in *SEC Final Rule: Audit Committee Disclosure*. It was influential in motivating the SEC, New York Stock Exchange, and NASDAQ to extend audit committee requirements proposed by the Blue Ribbon Committee to smaller public companies that initially were exempt from the requirements. The study also contributed to the SEC's and others' focus on revenue recognition and was cited in Staff Accounting Bulletin No. 101 on Revenue Recognition.

Risk Assessment

Recent collaborations between practitioners and academics on risk assessment include two monographs. The first, titled *Auditing Organizations through a Strategic Systems Lens* (Bell et al. 1997), discussed the importance of understanding a client's business and suggestions for implementing a "top-down" approach. This monograph was intended to inform academics, practitioners, and students about potential strategies and approaches to financial statement audits. The second, *21st Century Public Company Audit* (Bell et al. 2005), further discussed the process of risk assessment.

Other researchers such as Karla Johnstone and Jean C. Bedard have worked with audit firms to assess client acceptance, retention decisions, and risk assessment (e.g., Johnstone and Bedard 2003). Audit firms benefit from these collaborations because researchers address questions that are important to both academics and practitioners and because researchers bring expertise in summarizing and analyzing data.

Collaboration with the PCAOB

To facilitate the development of auditing standards and to inform regulators of insights from various areas of academic literature, the auditing section of the AAA developed a series of literature syntheses for the Public Company Accounting Oversight Board (hereafter, PCAOB). Nine research teams were formed to summarize literature in the areas of audit confirmations, audit firm quality control, the audit report model, auditor communications with audit committees, engagement quality review, financial fraud, related party transactions, auditor risk assessments, and auditing fair values. The PCAOB has hosted several symposia where the findings of the research synthesis teams have been discussed. The PCAOB has used the research syntheses in their deliberations on standard setting. For example, findings from the auditing fair value estimates project and the related parties project were presented in briefing papers made available by the PCAOB and discussed at a June 21, 2007, meeting of the PCAOB's Standing Advisory Group.[12] These deliberations were an important part of the standard-setting process. The PCAOB cited findings from the audit confirmations project in their concept release on possible revisions to the PCAOB's standard on audit confirmations (PCAOB 2009).

Collaboration with the GAO and the Treasury Department

The U.S. Government Accountability Office (hereafter, GAO) and the U.S. Department of the Treasury also cite academic research in their reports and collaborate with researchers on topics of interest. For example, Congress mandated a GAO study of the potential effects of requiring mandatory audit firm rotation, based on deliberations over whether the Sarbanes-Oxley Act of 2002 should include such a requirement. The GAO report (GAO 2003b) cited several academic research studies that aided them in developing their survey instruments and in conducting their research (e.g., Johnson et al. 2002; Casterella et al. 2002). In GAO's (2003a) study on consolidation and competition in the audit market, the GAO collaborated with R. Doogar and R. Easley and used their research method (Doogar and Easley 1998). The U.S. Department of the Treasury commissioned a study by Susan Scholz, based on her prior work in the area of restatements, to investigate the increase in financial statement restatements over 1997–2006 (Scholz 2008).

CONCLUSIONS ABOUT THE IMPACT OF AUDITING RESEARCH

We cannot possibly discuss all studies and individuals that have influenced audit practice in this limited space. However, we believe our brief discussion shows clearly that auditing researchers have played, and continue to play, an important role in the development of auditing practice and auditing standards. We highlight studies in the areas of risk assessment, audit judgment, audit sampling, analytical procedures, communication with users, internal controls, and financial statement fraud. Researchers continue to collaborate with practitioners, standard setters, and government agencies to conduct research directly relevant to these groups.

THE IMPACT OF RESEARCH ON TAX PRACTICE, TAX POLICY, AND COMPLIANCE

In this section, we discuss how academicians and academic research have affected tax practice, tax policy, and tax law compliance. We provide examples from the three broad genres of tax research: economics-based archival research, legal research, and research focused on judgment and decision making in tax. Some areas such as corporate tax have had more archival research; whereas research in areas such as compliance has tended toward behavioral decision making. Legal tax research spans all areas. We begin with a discussion of how research has affected tax law, tax implementation, and compliance. Research has been used by practitioners and the Internal Revenue Service (hereafter, IRS), considered by Congress in their deliberations, and cited by courts in their decisions. Research has also directly helped shape tax law. We then discuss how research has affected tax reporting, focusing on IRS Schedule M-3, which is one of the most important changes to corporate income tax reporting in recent years and had its genesis in academic tax research. We then highlight the increasingly important role of accounting academicians in tax policy discussions. Next, we focus on the extensive use of tax research in professional tax education. We then turn to the Scholes-Wolfson framework for considering the role of taxes in business decisions, a framework that has influenced tax education and the business community.

[12] The briefing papers are available at http://www.pcaobus.org/Standards/Standing_Advisory_Group/Meetings/2007/06-21/Accounting_Estimates.pdf and http://www.pcaobus.org/Standards/Standing_Advisory_Group/Meetings/2007-06-21/Related_Parties.pdf

Our discussion is not an exhaustive description of academic research's impact on tax practice and tax policy, but it overviews the important and continuing effects of tax research on these areas. Tax faculty members, practitioners, and policymakers have a long history of collaboration. Working with accounting firms and the IRS, tax faculty serve as instructors and develop training materials, and many faculty members have had appointments in the public sector with the IRS and other federal agencies. A significant aspect of the role of tax research on practice and policy is its impact through these interrelationships and exchanges. For example, the IRS has sponsored several conferences focusing primarily on aspects of compliance. Invitees to these conferences include practicing IRS agents and research staff, tax accounting faculty, and economists.

RESEARCH ON TAX LAW AND TAX IMPLEMENTATION

Research Used by Practitioners

Academic research on tax law and tax implementation examines the impact and problems of enacted tax laws, and sometimes proposes solutions or alternatives to address those problems. Practitioners must meet the immediate demands of addressing their firm's or client's specific tax situations, but tax accounting academics can devote their time and resources to analyzing numerous tax scenarios. Professors who teach taxation daily become well versed on the complexity and nuances of the tax law. Through these daily conversations and explanations regarding detailed tax law, they are able to identify areas where tax law is inconsistent or especially difficult to apply or understand. Research can help provide analysis and insight into these areas.

Practicing accountants often give these professors informal feedback that their articles have been useful. For example, McClain and Lechner (2000), referring to their 2000 article in *Tax Strategies* on the accumulated earnings tax, noted that a Big 4 tax partner stated that many of his colleagues keep a copy of this article to use when faced with IRS audits related to the topic. Practitioner feedback has amply supported that Raabe et al.'s (2002) work is used in determining the valuation of gross estate assets, whereas Noga and Wilkinson's (2006) and Wilkinson and Noga's (2007) work has provided practitioners useful insights in dealing with expatriate tax issues. This type of research provides comprehensive analysis of tax law and tax changes, thereby providing practitioners with ideas for tax planning, compliance, and litigation strategy.

In 2007, *The Tax Adviser* published Donald Morris's research on the tax issues related to gambling losses (Morris 2007). In response to this article, the president of the New Jersey Society of Enrolled Agents, Leonard Steinberg, contacted Morris and noted, "the information has been invaluable in my work." Steinberg reported having a close working relationship with the IRS and asked permission to forward the article to his IRS contacts. CPAs from elsewhere in the country have also contacted Morris because of his tax expertise on gambling losses.

Hughlene Burton and Stewart Karlinsky publish a yearly S-corporation update in *The Tax Adviser*, and Burton also publishes a yearly partnership update in the same journal. These recurring articles review and analyze recent legislation, rulings, and decisions. Tax practitioners regularly read and use these articles, as evidenced by the practitioners who contact these authors with interest in their work. Professors also provide research on recent legislation that is accessible to tax and nontax practitioners. For example, Pippin et al. (2008) provided an understandable but thorough discussion of the Economic Stimulus Act of 2008's tax rebate program. The authors explained the mechanics of the tax calculations, the law's intended economic effects, and the specific problems and questions surrounding the law. These types of articles are especially important for practitioners who do not have regular or easy access to update seminars. Legal research articles by tax accounting academics play an invaluable role in helping practitioners stay current and informed about constantly changing tax laws.

Research on current or unusual topics can prove especially useful to tax practitioners. Mark

Cowan has written several papers on issues regarding the federal taxation of Indian tribes. The Congressional Research Service cited Cowan (2004) in a 2007 report to Congress, and the Staff of the Joint Committee on Taxation cited Cowan (2005) in a report issued in connection with a 2008 Senate Finance Committee hearing regarding tax issues in Indian country. The head tax official at an Indian tribe contacted Cowan and indicated that Cowan (2007) provided much needed guidance to practitioners in an area where little guidance is available.

Karen Miller, Tonya Flesher, and Riley Shaw have published several articles on the complex and specialized tax issues surrounding corporate aircraft. Their research has been used by tax practitioners, businesses, and the IRS. A number of practitioners—both CPAs and attorneys—have contacted the authors with follow-up questions generated from these articles. At least two businesses requested permission to post Miller and Flesher (2003) on their business websites. The IRS found Shaw et al. (2008) useful in its discussion of income allocations and deduction limitations surrounding the personal use of corporate aircraft. An IRS agent found this article particularly informative and forwarded it to his boss, who then forwarded it to the field agents dealing with corporate aircraft. Although written for a general audience and not a specific client, these research articles provide relevant and useful information for practicing accountants.

Tax accounting academics provide in-depth analyses of current topics that are of immediate interest to the practitioner community. Research by Donald Williamson, Blair Staley, and James Gale (Williamson et al. 2009) on planning for federal appointees' conflict of interest requirements has proven particularly timely. Several practitioners as well as the Chief Counsel's Office of the IRS have contacted the authors about their article, and representatives of at least one member of the Obama Cabinet are using the article in advising their client. Hennig, Wang, and Yuan (Hennig et al. 2006) published research on the cross-border taxation of employee stock options, using the United States and the People's Republic of China (PRC) to illustrate the complex multi-jurisdictional tax issues. Their research is expected to inform lawmakers and government officials when revising the tax treaty between the United States and the PRC.

Professors even find their work referenced in blogging communities. For example, a legal tax blog cites the work by Terando et al. (2008)[13] who examined whether and when taxes should be assessed on virtual world income. This area has no well-developed body of tax law, and their detailed discussion and analysis fills a substantial void. Congress is also considering taxation of virtual world income, and the work should inform those debates. In the future, we are likely to see an increase in academic research's impact on the practitioner community because of the Internet's ability to disseminate information to an almost unlimited audience at little-to-no cost.

Committees of the American Taxation Association (hereafter, ATA) often publish special reports that summarize tax law and discuss consequences of specific tax policies. Although practitioners and policymakers are likely to find these special reports useful, they are unlikely to have the time or resources to devote to research that is not cost effective. In contrast, this type of research is especially well-suited for tax accounting researchers because they have the interest, requisite knowledge, and incentives to invest time and energy in such projects. For example, the ATA's Multi-State Tax Policy Committee recently completed their analysis of state tax amnesty programs and published a special report in *State Tax Notes* (Luna et al. 2006). Their report informed state policymakers by providing a thorough discussion of state tax amnesty programs since their 1982 inception, of specific amnesties directed at tax shelter participants and remote vendors, and of trends and tradeoffs inherent in tax amnesty programs.

[13] See http://taxprof.typepad.com/taxprof_blog/2008/11/tax-policy-in-virtual-worlds.html. Terando et al. (2008) concluded that an in-game sale of a virtual asset constitutes an income realization event for federal income tax purposes, but that members should be allowed to defer recognizing their virtual earnings until they are converted into real world currency.

In spring 2007, PricewaterhouseCoopers (hereafter, PwC) initiated the PwC INQuires program,[14] a program of funding for applied research designed to specifically encourage faculty and Ph.D. students to undertake research that will increase the knowledge base that contributes to the practice of auditing and tax. Proposals are evaluated not only on the quality of research questions and research methodology, but also on expected contribution to knowledge and practicality and relevance to auditing and tax practice. A recent example in the tax area is the proposal by Jones and Noga (2008), who were awarded a 2008 PwC INQuires grant. Their study examined book-tax differences to determine what specific components of book-tax differences are most related to a company's future financial distress. Knowing financial statement information that is associated with greater bankruptcy risk could help accountants identify areas of increased risk as they plan their audits. This would enhance the quality of auditor opinions and reduce public accounting's professional risks.

Research Used by the IRS

Implementation research can also affect IRS policy and practices. One such example is Seago et al. (1992), which ultimately affected the IRS procedures for changes in accounting methods and that provided a model for determining the expected costs associated with a taxpayer's voluntarily changing accounting methods. IRS personnel working on the IRS project dealing with accounting methods told the authors that the paper influenced the IRS's policy with respect to classifying changes in accounting methods, determining when voluntary changes should be permitted, and determining the period over which adjustments should be spread.

Research has also significantly affected how the IRS looks at compliance. The National Taxpayer Advocate 2007 Annual Report to Congress focused on the cash economy and potential solutions. The report included six academic studies focusing on tax compliance. For example, the study considered research by Kathleen Carley, Carnegie Mellon University, which analyzes simulated filing behavior related to the earned income tax credit. The report contained specific recommendations derived from the studies to help reduce the cash economy and the tax gap. The report also recommended that the IRS establish a research unit devoted to tax compliance (National Taxpayer Advocate 2007).

Hasseldine et al. (2007) examined the impact of written communications to taxpayers on compliance for sole practitioner-prepared returns in the United Kingdom. They examined five treatment conditions ranging from a tax authority's offer of assistance to various sanctions. The results showed that all letters had some impact on compliance. Based on the study, the U.K. tax authorities subsequently adopted letters to increase voluntary compliance. Hite and Hasseldine (2003) presented a paper on the letter effects at an IRS research conference. Subsequently it was reported that the IRS began a pilot program of sending letters to taxpayers encouraging them to check tax returns for missing 1099 information that should be included in income (Kiplinger 2008).

Hite and Hasseldine (2003) studied IRS office audits and found fewer errors on paid-preparer returns than on self-prepared returns and fewer adjustments on CPA-prepared returns than on non-CPA prepared returns. Recently the IRS suggested that non-CPA preparers should be required to pass exams or undertake some licensing procedure.

Research Used in Congressional Deliberations

Congressional committees have also considered research by accounting academics in their tax policy deliberations. For example, Bauman and Mantzke (2004) related a "Submission for the

[14] In the first two years, PricewaterhouseCoopers awarded more than $1 million to 52 researchers. See http://www.pwc.com/extweb/aboutus.nsf/docid/5549011A12E167CF852573A00067B44D.

Record" as part of the Subcommittee on Oversight Hearing on Fraud in Income Tax Return Preparation. The authors examined the National Taxpayer Advocate's proposed regulation of federal tax return preparers, reviewed the development of similar regulatory proposals over the past several decades, outlined current and proposed federal regulation of tax preparers, and described concerns with increased regulation. Perhaps most importantly, the authors explicitly outlined their support for using education and enforcement rather than regulation to curb tax preparer abuses. Congress and the IRS continue to be interested in their work as they address the problems of unscrupulous tax preparers. In February 2008, a member of the IRS Oversight Board requested a copy of the paper. In 2009 members of the Senate Finance Committee and AICPA Tax Division requested copies to inform the continuing debate about regulating preparers.

Academic research papers are also used in deliberations on tax legislation at the state level. In their 2007 article, Cowan and Kakstys (2007) explained the current problems with state corporate tax codes and the common planning techniques that taxpayers employ to avoid the corporate income tax. They used surveys to discover how some states have attempted to address the problems, and analyzed in detail the 2002 New Jersey and 2004 Vermont tax reforms. Their primary purpose was to determine whether the state-enacted tax reforms can guide other states hoping to repair their corporate tax systems. Their article was cited in an August 2008 special report prepared for the governor of Idaho by an independent CPA. The report used the article to support a discussion on the inherent complexity in multistate taxation and to show how such complexity must be considered when analyzing and reforming state tax policies.

As states face budget crises and look for alternative revenue sources, Wright and Karlinsky (2007) were particularly timely in their discussion of the blurred distinction between fees and taxes, particularly for states like California where enactment of a tax requires a two-thirds vote, while fees can be enacted with a simple majority. The authors focused on *Sinclair Paint* (15 Cal. 4th 866, 1997), the California Supreme Court decision wherein the court broadly defined a fee. The authors examined the trend in fee legislation and found that California has continued to assess fees rather than taxes. Since 1999, at least 15 bills have become law imposing fees on industries to fund California governmental agencies or processes related to the industries. (During this time, 118 bills were introduced, 24 were sent to the governor, and nine were vetoed.) A legislative aide from California contacted the authors about similar legislation that was currently being considered. Their article methodically and thoroughly discussed the issues in a nonpartisan fashion, providing valuable insights to state legislators.

William Raabe has actively affected Alabama tax legislation. Based on his reputation and expertise, the governor and legislature of Alabama commissioned him to study combined and consolidated reporting for the Alabama corporate income tax. He subsequently published his findings in *State Tax Notes* (Raabe 1998). The legislature and revenue department used the study's results in crafting tax law and regulations. Raabe testified before revenue committees, worked with attorney and CPA groups, business leaders, and legislators, and saw his version of the law adopted by unanimous vote and enacted without further revision.

Research Directly Affecting Tax Law

Tax research has also directly and measurably affected tax law. Several specific tax provisions can be tied directly to research written by accounting academics. Williamson and Law (1992) discussed an inconsistency in certain sourcing rules that Congress subsequently corrected with the passage of *Internal Revenue Code* Section 904(f)(3)(D) in 2004 (Public Law 108–357, Sec. 895(a)). Their research helped identify and provide insight on very complex tax rules regarding the foreign tax credit.

O'Neil-Hennig and Nelsestuen (1994) used IRS statistics of income data and discovered that the earned income credit (EIC) subsidized taxpayers who had substantial wealth, as indicated by the interest and dividend income reported on their tax returns. The authors also noted that 1993 tax law changes liberalizing the EIC exacerbated the unintended subsidy to "wealthy" EIC recipients. The authors suggested using portfolio income (interest plus dividend income) as a wealth measure to exclude taxpayers with portfolio income above a certain threshold from qualifying for the EIC. In 1995, President Clinton signed tax legislation that enacted a modified version of the wealth restriction they had suggested, for an estimated 5-year tax savings of $4 billion.

A recent example provides evidence that researchers are still active in analyzing tax legislation and providing suggestions for improvement in tax law. Raabe, Hennig, and Everett (2009) argued that Congress should extend the availability of the election to forgo bonus depreciation at least through 2009 so that corporations could react appropriately to this provision. In the American Recovery and Reinvestment Tax Act of 2009, Congress specifically followed one of the authors' recommendations.

Research Cited in Court Decisions

Particularly rewarding for a tax accounting academic is when research is specifically cited in a court case. A few examples highlight the diversity of topics that the courts have used and cited in tax cases. Donald Williamson and A. Blair Staley wrote a series of articles on the timely filing of tax returns. Their article on proposed IRS regulations on timely filing (Williamson and Staley 2005) was cited by the Third Circuit Court of Appeals in *Philadelphia Marine Trade Association* (101 AFTR 2d 2008–1759). Burton and Emmel's (1996) article on the tax treatment of limited liability company members was cited by the District Court of Oregon in *Gregg* (87 AFTR 2d 2001–337). Raabe and Whittenburg (1998) discussed the appropriateness of the capital asset pricing model in tax litigation and were cited by the U.S. Tax Court in *Furman* (TC Memo 1998, 157).

SCHEDULE M-3

Arguably one of the most important changes to corporate income tax reporting in recent years is the creation of Schedule M-3, *Net Income (Loss) Reconciliation for Corporations with Total Assets of $10 Million or More*. Schedule M-3 became effective December 31, 2004, and replaced Schedule M-1, which had remained virtually unchanged since its introduction in 1963. Schedule M-3 was designed to standardize reporting across firms and to distinguish permanent from temporary book-tax differences. The U.S. Department of the Treasury and the IRS expect Schedule M-3 to increase transparency, reduce the time required to examine tax returns, and help provide consistent tax reporting from year to year. Schedule M-3 is also expected to help the IRS identify returns that should be audited, issues that should not be audited, and trends and areas of greater compliance risk.[15]

The impetus for the Schedule M-3 can be directly traced to Mills and Plesko's (2003) "Bridging the Reporting Gap: A Proposal for More Informative Reconciling of Book and Tax Income." Mills and Plesko evaluated the usefulness of the then-current Schedule M-1 for providing the audit data needed by the IRS and the statistical information needed by government analysts. The authors reviewed accounting concepts under both tax and financial reporting, discussed specific situations that give rise to book-tax differences, provided a detailed analysis of the M-1's reporting requirements, and concluded that the M-1 does not provide sufficient detail about book-tax differences

[15] See http://www.ustreas.gov/press/releases/reports/m3generalexplanationfinal1.28.2004.pdf. Weiner (2007) reported that the IRS expects Schedule M-3 to reduce by 20 percent the time spent on site audits and to shorten to two years the nearly six-year lag between the receipt of a tax return and an audit.

for IRS officials to effectively assess noncompliance risk or for government analysts to perform meaningful analysis. Most importantly, Mills and Plesko specifically recommended how to revise the M-1 to improve its role in tax enforcement and analysis. In sum, the authors made three major recommendations, and all three were incorporated into the M-3 that was eventually adopted: the revised schedule should (1) directly reconcile a firm's public financial statement worldwide net income (from the firm's SEC Form 10-K) with taxable income; (2) provide more uniform and detailed reconciliation categories that include consolidation differences, stock options, depreciation, and other specific items; and (3) separately identify the effects of permanent and temporary accounting differences for each reconciliation category. Mills and Plesko's (2003) work provided the initial template for the Schedule M-3 that was ultimately adopted.

Research also played a critical role in the genesis of Mills and Plesko's (2003) paper written for a research conference in April 2003 on "Public Disclosure of Corporate Tax Returns: An Academic Look at Whether (and How) It Would Work." Doug Shackelford initiated the conference, which was jointly sponsored by the Urban-Brookings Tax Policy Center, the University of North Carolina Tax Center, and the National Tax Association. Doug Shackelford and the conference organizers invited Mills and Plesko to present their paper at the conference. As Mills noted, "To the surprise of both authors and the Internal Revenue Service, there was no public disagreement to the proposal concept from audience members, including representatives from the Tax Executives Institute" (Boynton and Mills 2004, 764). Two months after the conference, in June 2003, the IRS and the U.S. Department of the Treasury formed a joint working group to revise Schedule M-1. The group included Mills, in her capacity as a consultant to IRS research, and also included Charles Boynton, a tax accounting academic who was serving as a Surrey Fellow in the U.S. Department of the Treasury. The IRS/Treasury working group designed the Schedule M-3 draft between June 2003 and January 2004, and the M-3 became effective for tax years ending on or after December 31, 2004.

It should be noted that Mills and Plesko relied heavily on research papers written by other accounting academics to assess the usefulness of Schedule M-1 and to develop recommendations that would increase the schedule's informativeness. The research studies cited by Mills and Plesko (2003) provided evidence that book-tax differences dramatically increased during the 1990s (Plesko 2000b; Manzon and Plesko 2002; Mills et al. 2002). These research studies also showed that researchers could not easily determine the book-tax differences for consolidated entities, even when tax return and financial statement information were both available (Mills and Newberry 2000; Plesko 2000a, 2003b). Stock options play a large role in book-tax differences, and academic research has provided evidence on the causes, reporting, and magnitude of book-tax differences related to stock options (Hanlon and Shevlin 2002; Manzon and Plesko 2002; McGill and Outslay 2002; Shevlin 2002; Graham et al. 2003). Last, numerous studies have provided evidence on how conflicting incentives lead to different reporting for tax, financial, and regulatory purposes (Shackelford and Shevlin 2001; Mills and Newberry 2001; Joos et al. 2002; Phillips et al. 2003; Hanlon 2003; Cloyd 1995; Cloyd et al. 1996; Mills 1998; Mills and Sansing 2000; Plesko 2000a, 2003b). This prior research provided the foundation for Mills and Plesko to evaluate the existing Schedule M-1 and recommend change.

The importance of Schedule M-3 continues to evolve and expand. More entities are required to file Schedule M-3 beginning with the 2006 tax returns. This includes S-corporations, insurance companies, partnerships, and limited liability companies, with more than $10 million of assets. Beginning in the 2008 tax year, two additional schedules are required by entities that file Schedule

M-3. These schedules are intended to promote taxpayer compliance by accurately reflecting an entity's ownership structure so that the IRS can efficiently assess the risk of noncompliance (Internal Revenue Service 2007).[16]

In sum, research conducted by tax accounting academics was a driving force in all stages of the Schedule M-3 project. These individuals and their research were instrumental in documenting the M-1's inadequacies, increasing awareness among policymakers of the specific problems with the M-1, recommending specific changes, and helping draft the Schedule M-3 currently in effect. Given that the old Schedule M-1 was in effect for 40 years, it is not unreasonable to expect that Schedule M-3—and the work of the accounting researchers involved—will be felt for several decades.

TAX POLICY DISCUSSIONS

One of the most important contributions of tax research in accounting over the last 20 years is that accounting academics are increasingly being included in tax policy discussions. For example, the President's Advisory Panel on Federal Tax Reform contacted several accounting academics about the accounting considerations of different tax changes and the general economics of those proposals. In the past, economists and lawyers have dominated tax policy discussions—to the detriment of the accounting profession and society in general. Now, however, accounting academics have become increasingly involved in tax policy deliberations, and their involvement will likely increase in the future. Policymakers are increasingly concerned with the financial accounting implications of tax provisions and various tax reforms, and tax accounting academics are ideally suited to inform policymakers about these issues. Lawyers possess detailed tax knowledge, and economists are trained in economic theory, but they are generally untrained in financial accounting. In contrast, accounting researchers possess institutional knowledge about the tax law and are trained to consider not only the economic consequences of a tax law but also its financial accounting consequences.

The role of tax accounting academics in tax policy discussions is more conceptual and cannot generally be linked to a specific research paper, or even a few research papers. Rather, the inclusion of these researchers in policy discussions directly results from the expertise they have acquired from a career of research projects. In other words, their expertise comes from a body of research work, not a single project. In the past five years, tax accounting academics have been invited to participate in at least six different Congressional hearings. In 2003, Edward Outslay, George Plesko, and James Seida testified before the U.S. Senate Finance Committee on the release of the Joint Committee on Taxation's Investigative Report on Enron. These three professors were invited to testify because of their extensive knowledge and research on the relation between financial and tax reporting of income and/or their studies on Enron's tax transactions. They testified on the limitations of using financial accounting information to infer tax-related information and provided suggestions for increasing the transparency of a corporation's tax activities by enhancing financial and tax disclosures (Outslay 2003; Plesko 2003a; Seida 2003; McGill and Outslay 2004).

Also in 2003, Douglas Shackelford testified before the U.S. House Committee on Ways and Means regarding the provisions in the *President's Economic Growth Proposal* designed to eliminate the double taxation of corporate earnings. In his remarks, Shackelford (2003) detailed the complexity of the proposal and discussed dividend deductibility as an alternative approach. His

[16] The IRS released drafts of these schedules in August 2007. Form 1120, Schedule B, asks for information concerning ownership, allocations, transfers of interest, cost sharing arrangement, and changes in accounting methods. Form 1065, Schedule C, requires partnerships to provide additional information about ownership and related party transactions.

comments also addressed the possible stock market effects of the proposal. His conjectures were based largely on tax accounting research suggesting that marginal shareholders in dividend-paying companies face low marginal tax rates (Blouin 2003; Engel et al. 1999; Frank 2002; Kemsley and Nissim 2002) and that these shareholders would benefit little from the proposal. He also used Lang and Shackelford's (2000) results to predict the likely effects of the proposal on investors in nondividend-paying firms (or low-dividend-paying firms).

In 2005, Shackelford testified before the President's Advisory Panel on Federal Tax Reform, where the panel's mission was to make the tax code simpler, fairer, and better able to promote economic growth. In his testimony, he made two main points. First, lawmakers should not implement book-tax conformity because the two systems have entirely different purposes. The tax system is meant to collect revenue, while book numbers are intended to provide information to market participants such as shareholders and bondholders. Second, the current corporate tax system has fundamental flaws, in part because of the change over time from an industrial economy to a service-oriented economy. The tax reform panel's ultimate proposals to the U.S. Department of the Treasury included Shackelford's key points: (1) encourage more research on the issue of book-tax conformity; (2) eliminate the alternative minimum tax; and (3) integrate the individual and corporate tax systems (University of North Carolina Kenan-Flagler Business School 2005).

In 2006, Shackelford again testified on corporate tax reform, this time before the Subcommittee on Select Revenue Measures of the U.S. House Committee on Ways and Means. He was invited to speak because of policymakers' growing awareness of the impact of financial reporting on tax policy. Shackelford's (2006) comments addressed the interplay of financial reporting and taxation and proposals for book-tax conformity. He warned policymakers about the dangers of underestimating the importance of financial reporting. He discussed studies that find that managers are often more concerned with financial reporting considerations than with tax considerations.[17] This research provided ample evidence that some firms structure their activities to increase financial income, even though it may also increase taxable income and the resulting tax liability. It is essential that policymakers understand the importance of financial reporting to corporate management and appreciate the critical role that financial statements play in a firm's ability to raise capital. Failure to understand the importance of financial reporting could cause policymakers to implement ill-advised or uninformed tax policies, leading to unexpected or unintended consequences (Shackelford 2005).

Other researchers also testified to Congressional committees in 2006. Steven Balsam, from Temple University, testified before the U.S. Senate Finance Committee on the effectiveness of Section 162(m) in controlling executive pay. He provided evidence that Section 162(m) has been only marginally effective in limiting executive pay or in making it more responsive to performance. Balsam's conclusions on Section 162(m)'s effectiveness were based on his own research as well as the research of others, and Balsam specifically discussed evidence provided by Balsam (1995), Balsam and Ryan (1996), Balsam and Yin (2005), and Balsam and Ryan (2007a, 2007b).

Plesko (2006) testified before the U.S. Senate Committee on Finance on current issues in corporate taxation. His testimony dealt primarily with the last-in, first-out (LIFO) inventory method, but he also addressed the possibility of increased book-tax conformity and the effectiveness of current disclosures of tax information by publicly traded corporations. He was able to inform the committee because of his research and his intimate familiarity with the research of others.

[17] See Shackelford and Shevlin (2001) for a review of the literature.

PROFESSIONAL TAX EDUCATION

Tax researchers have also developed materials that are used to educate tax professionals. William Hoffman, David Maloney, William Raabe, James Smith, and Eugene Willis have written a series of textbooks that are used by accounting firms and the IRS in training.[18] The Court of Federal Claims cited one of these textbooks in two of their 2008 cases.[19] *Federal Tax Research* (Raabe, Whittenburg, and Sanders 2009) is a graduate textbook that accounting firms use in their training programs and that an accounting firm used to create an online training course. These professors have produced invaluable reference tools that are used not only by university students but also by practitioners across the country.

Individual research articles have also been used in conferences and training programs. For example, Reichenstein and Raabe (1985, 1989) and Raabe and Toolson (2002) have written a series of papers on the factors affecting decision rules for retirement contributions and withdrawals. These papers were used in a New York conference for mutual fund and investment managers. Raabe and Toolson's (2002) work was also discussed in a syndicated newspaper column. Dellinger and Lassar's (2007) research on tax preparer penalty standards was reprinted twice in materials for CPE seminars, including the California Society of CPA (hereafter, CalCPA) Foundation's annual tax and planning update. Sonnier and Lassar's (2009) article in *Taxes-The Tax Magazine* is being reprinted for Commerce Clearing House's (hereafter, CCH) *Financial and Estate Planning Reporter,* which has existed for more than 20 years.

Behavioral tax research has impacted tax education and training as well. Roberts and Ashton (2003) examined the role of expertise in tax judgment. They developed a declarative knowledge intervention that improved both knowledge and performance. Roberts reported that a major international professional accounting and auditing firm subsequently used this method in practice.

Cuccia and McGill (2000) looked at how decision strategies affect judgment and concluded that tax professionals' expertise facilitated the development of decision strategies. While working on the paper, one author spoke with professionals who were interested in how judgment biases affect decision strategies; they raised and discussed these issues in planning staff training activities. One author said that a major impact of behavioral tax work on professional tax training has been development of more systemic approaches that reflect awareness of human judgment processes.

Some tax accounting academics have produced research specifically for professional tax education. Williamson (2009) wrote the Bureau of National Affairs (BNA) *Portfolio 583: The Investment Credit and Cost Segregation* and revised numerous BNA *Tax Practice Series* chapters on S-corporations.[20] BNA is the largest independent publisher of information and analysis products for professionals in business and government, and the practitioner community considers their portfolios to be among the very best treatises on topics in tax law. Portfolio authors are considered leading tax authorities in their respective areas, and are chosen for their expertise and for the clarity of their insights and detailed guidance on highly complex tax issues.

Some tax accounting academics have pursued research in specific areas and then have developed educational materials based on that research. Two notable examples are research projects that each won the American Taxation Association (hereafter, ATA)/Deloitte Teaching Innovation

[18] For example, see Willis et al. (2009).
[19] *Bush* et al. (102 AFTR 2d 2008–6300) and *Shelton* (102 AFTR 2d 2008–6287) cite examples from Smith et al. (2007, Chapt. 11) when discussing partnership taxation and the calculation of partnership basis.
[20] Williamson received the BNA Distinguished Author Award in 2005. Criteria for this award include an author's tax planning insights and analysis, as well as their exemplary standards and significant contributions to the BNA Tax Management Portfolios.

Award.[21] The first project was titled "Improving Written Communication Skills of Tax Students." Based on their research and classroom experiences, professors teaching in the master of taxation program at Georgia State University developed a website in response to the accounting profession's continued and increasing demand that new hires possess excellent communication skills (see http://www2.gsu.edu/~accerl/). The website requires no password, is available at no cost, and teaches basic writing skills (punctuation, wordiness, passive voice) and forms of written communication (including research memos, client letters, and judicial briefs). For each topical area, the authors provide lessons, examples, and self-assessment tests. Ernest Larkins, a developer of the writing website, designed four related websites that help tax students and professionals develop their legal tax research skills. The sites have lessons on identifying issues, locating and evaluating tax authority, and understanding marginal tax rates.[22] The authors have first-hand knowledge that tax professionals across the country use these websites. Concurrent with developing these websites, Larkins (2005) published an article in *Journal of Legal Tax Research*. An IRS appeals officer asked him for permission to distribute the article at a nationwide course about tax research and litigation. The course was to be delivered in-house to IRS appeals officer trainees, and was expected to be taught about six times to more than 200 employees. The IRS appeals officer also requested permission to have the IRS personnel in attendance use the websites to help develop their research skills.

The second example of research being developed into educational materials used by tax practitioners involves a case study focusing on cost segregation for tax purposes. The professors who developed these materials conducted research on cost segregation, incorporated the topic into their graduate tax course, and eventually developed an online training program. Their online case study on cost segregation develops the relevant body of tax law, analyzes planning implications, discusses practitioner ethics and responsibility, and outlines filing requirements. Participants must use research, analytical, and spreadsheet skills. Sharon Lassar noted that practitioners who use the website have contacted her for clarification or with follow-up questions on this complex tax area.

TAXES AND BUSINESS DECISIONS: THE SCHOLES-WOLFSON FRAMEWORK

Scholes and Wolfson (2002) transformed thinking about tax issues within the accounting academic community and also in the finance and economics communities. They developed a framework that explicitly considered the role of taxes in investment strategies and financing decisions. Their work integrated institutional knowledge of tax laws and regulations with financial decision making and showed how to analyze how tax rules affect decision making. This approach changed tax research, tax teaching, and tax practice. The Scholes-Wolfson framework provided tax educators with a workable framework for explicitly incorporating finance and agency theory into the teaching of tax. Scholes and Wolfson combined these ideas into a seminal text, *Taxes and Business Strategy: A Planning Approach*, first published in 1992 and now in its third edition (Scholes and Wolfson 2002). In developing the framework outlined in their book, the authors were influenced by their academic research on taxpayers' investment and financing behavior, as well as others' research in the accounting and finance communities.

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21 The annual award is cosponsored by the Deloitte Foundation and the ATA and is designed to encourage tax professors to develop new teaching methods that stimulate students' critical thinking skills and enhance the learning experience. Calegari, Cleaveland, Fenn, Geisler, Larkins, Ransopher, and Richards won the 2004 award for Improving Written Communication Skills of Tax Students. Lassar, Duncan, Everett, and Lassar won the 2005 award for *Second Chance for Depreciation: A Case Study Analyzing Tax Planning Opportunities after Asset Disposition*. Their website is at http://www.fiu.edu/~mktgctr/case/default.htm.

22 The locating and evaluating tax authority websites jointly received the 2006 AAA Innovation in Accounting Education Award.

Although most academic tax researchers know well the impact of this book and the authors on tax teaching and research, its impact on tax practice has not been as clearly documented. Prior to Scholes and Wolfson's work, much of the literature and guidance on investment decision making either ignored taxes or assumed simplified "rules of thumb" that did not accurately depict the importance of taxes in managerial planning. Similarly, tax policymakers, mostly economists, developed tax policies based on assumed behavior, which often did not mirror actual behavior. As a result, neither financial decision makers nor policymakers were fully considering how decision makers respond to tax policies and how their responses affect the economic impact of tax policies.

The impact of the Scholes-Wolfson approach was to explicitly develop the theory and concept of the role of taxes on asset prices and the role that taxes play in determining contracts and business organizational structures. As a result, policymakers began to understand the critical need to consider not only explicit tax law but to more carefully model how changes in tax law would impact economic decisions including organizational structures, global taxes, and individual taxes. Research papers in this area are extensive and deal with a wide range of topics including state tax planning (Klassen and Shackelford 1998; Lightner 1999), multinational tax planning (Klassen et al. 1993), personal taxes (Seida and Stern 1998), and organizational form (Wolfson 1985; Guenther 1992). In addition, implicit taxes, tax clienteles, and arbitrage were incorporated into the tax planning literature (Dhaliwal et al. 1999; Erickson 1998; Erickson and Maydew 1998; Shackelford 1991; Scholes et al. 1990).

This stream of research has begun to affect tax policy; policymakers and economic advisers now consider the role of economic decision makers and organizational structures when they determine and evaluate current and proposed tax policy (Kopczuk and Slemrod 2006; Slemrod 2005a, 2005b).

CONCLUSIONS ABOUT THE IMPACT OF TAX RESEARCH

The foregoing discussion highlighted research's important role on tax practice and tax policy. Although a comprehensive review of this topic is beyond the scope of this paper, we believe it is clear that practitioners have used and continue to use tax research. This research provides guidance regarding interpretations of tax law implementation and is used for designing and implementing training for tax professionals, including IRS personnel. Our discussion has provided examples where tax research was presented and cited in Congressional deliberations, leading in some cases to changes in tax law. Notable examples include the change in legislation governing the earned income credit and the creation of the Schedule M-3. Many tax faculty members have contracted with national practice offices of major firms to provide guidance and training, and others have held policy positions with the U.S. Department of the Treasury, the IRS, and other governmental tax agencies. Tax academicians continue to publish work that spans both practice and theory and continue to affect tax practice through research, testimony, and roles in policy positions and professional education.

THE IMPACT OF ACADEMIC RESEARCH ON MANAGEMENT ACCOUNTING

Management accounting poses the greatest difficulty in documenting the effects of academic research. Companies rarely report their management accounting practices, particularly if they are innovative. Notable exceptions are Hewlett-Packard's dissemination of its work on activity-based costing and General Electric's dissemination of its work on residual income. But these are exceptions, not common practice. Management accounting practitioners and academics do not testify before Congressional committees as they do in taxation. Good and bad company practices do not make headlines in the business press as they do in financial accounting or tax. For the most part, management accounting practices remain confidential.

In view of the confidential nature of management accounting practices, we have relied on a number of sources of information: personal experiences observing managerial accounting practices in hundreds of organizations, reviews of case studies, articles from the business press, and practitioner-oriented research studies such as those published by the Institute for Management Accounting and Financial Executives International. This background work suggests three uses of management accounting research in practice:

- conduit of research developed by practitioners that helps other practitioners;
- creation of knowledge that leads to specific methods and systems; and
- conceptual framework for thinking about problems.

Conduit of Research Developed by Practitioners

Since the mid-1980s, we have seen a surge of management accounting research derived from field studies. In his famous speech at the 1983 AAA Annual Meeting, Robert Kaplan (1984) chided academic researchers for ignoring innovations in practice. Kaplan and his colleagues at the Harvard Business School developed a series of case studies for classroom use and, along with researchers at other universities, began extensive field research. That research led to an understanding and assessment of innovations in cost management in practice.

Perhaps the major cost innovation that management accounting researchers documented was the use of activity-based costing (hereafter, ABC), activity-based management, and ABC in budgeting, cost modeling, transfer pricing, and other cost management applications. John Deere and Hewlett-Packard were early ABC initiators, but it took managerial accounting researchers to provide a conceptual framework for generalizing ABC to a broader set of organizations. Researchers have conducted many surveys about the use of ABC in practice, with results showing that roughly one-quarter of the organizations use or have used ABC in several European and North American countries (Gosselin 2007). The consulting arms of all major accounting firms have ABC products for application in both the private and public sectors.

Creation of Knowledge that has Led to Specific Methods and Systems

Starting in the 1950s, managerial accounting researchers applied mathematical modeling and statistical methods to numerous areas in managerial accounting, such as cost allocation (e.g., reciprocal cost allocations), transfer pricing (e.g., shadow prices), cost estimation (e.g., regression, learning curves), inventory management (e.g., economic order quantity models), uncertainty in cost-volume structures, and variance investigation. The Ford Foundation, among others, stimulated this line of research to create business schools that had strong academic roots and research agendas (Maher 1997, 2000). An excellent review of this work, which dominated managerial accounting research in the 1960s and 1970s, can be found in Demski and Kreps (1982). This line of research was superseded by other work after the 1970s, but it has had a lasting impact on practices in many companies.

Perhaps the best-known and widely used application in recent years has been the balanced scorecard. Developed by Robert Kaplan and his colleagues, the balanced scorecard links performance evaluation to strategy (Kaplan and Norton 1996, 2004) and operations (Kaplan and Norton 2008). According to a study by the Institute of Management Accountants, the balanced scorecard has become the leading system for managing performance, exceeding other popular performance appraisal methods such as six sigma and economic value added (Lawson et al. 2008, 59–60). Consulting firms such as Bain & Company and companies such as Mobil (now ExxonMobil), Ricoh, and Cigna have found the balanced scorecard to be useful for implementing strategy.

Numerous academic researchers have studied the balanced scorecard in practice and recommended improvements and additional applications (e.g., Lipe and Salterio 2000; Malina and Selto 2001; Ittner et al. 2003).

Drawing on Porter's (1980, 1985) seminal work, management accounting researchers developed links between costing and strategy (e.g., Shank and Govindarajan 1992, 1994). In particular, research showed that managers who want their companies to be cost leaders must link strategy, value chain, cost structure, and cost drivers. For an excellent discussion of strategic cost management research, see Anderson (2007, 483–86).

Work on real options extends the ideas in strategic cost management and develops new applications in capital budgeting and cost management. Real options provide an opportunity to exercise future alternatives. Often associated with capital investment analysis (where it is covered in cost accounting textbooks), real options allow firms to flexibly react to conditions of uncertainty. For example, Kallapur and Eldenburg (2005) showed that increased uncertainty increased the value of real options resulting in a shift in investment strategies to technologies with low fixed costs of investment and high variable costs of operations. "Real options are implicated in strategic cost management because the real option in question often has direct bearing on the firm's future cost structure or the level or volatility of future costs" (Anderson 2007, 497). Studies of real options have considerable potential for companies that are managing risk through cost structures and capital investment decisions.

Conceptual Framework for Thinking about Problems

Probably the most lasting contribution of management accounting research has been to change the way that practitioners look at the world. This work on "how to think about problems" disseminates to practice through articles in professional journals, by students and consultants who carry this new line of thinking into their jobs, and through professional (or "trade") books. Some of the most influential works started with studies of the interaction between managerial accounting and people, such as Argyris's (1952) work on the impact of budgets on people and Stedry's (1960) work on budgetary control and cost behavior. These studies provided a foundation for improving understanding of the effects of managerial accounting methods on behavior and the effect of people on the accounting methods that has drawn heavily on literature in psychology and sociology. Birnberg et al. (2007) and Miller et al. (2007) provided excellent reviews of this work, which has included studies of participation in budgeting, difficulty of targets, budgetary slack, cognitive limitations, motivation, various types of controls (output, action, and diagnostic), and ethical behavior.

Starting in the 1970s, economics-based research provided a conceptual cornerstone for much of managerial accounting (Zimmerman 2001). Information economics research formalized ways to think about the costs and benefits of managerial accounting information and the role of information provider *vis-à-vis* decision makers. In the 1980s, agency theory formalized accountability relations between superiors and subordinates in organizations, where managerial accounting information played a key role. The language and concepts of agency theory are found in incentive contracting and compensation in many companies and compensation consulting firms. One example is relative performance evaluation, which can be found not only in top executive compensation plans but also in budget targets.

Conclusions about the Impact of Managerial Accounting Research

In this limited space, we can name only a few areas in which management accounting has affected practice. Industry studies, such as the extensive work in healthcare, green accounting, nonfinancial performance measures, congestion and complexity, sticky costs, coordination within and at the boundaries of the firm, incentives and compensation, ethical issues, and comparisons of the effect of management control systems around the world, are only some contributions that managerial accounting researchers have made to practice. Managerial accounting researchers continue to examine organizational practices in many industries around the world with the intent of promulgating the best ideas; they revise and develop new practices and demonstrate new ways of thinking about the world of business.

THE IMPACT OF RESEARCH ON ACCOUNTING INFORMATION SYSTEMS

The accounting information systems (hereafter, AIS) community has a longstanding commitment to the application of research to practice (Sutton 2005). For example, the *Journal of Information Systems*—from the information systems section of AAA—has a practice section that systematically bridges practice and research. Research in AIS brings theories from computer science, artificial intelligence (hereafter, AI), and management information systems to the practical problems of accounting and auditing. At the same time, the AIS research community contributes to those disciplines.

The Design of Accounting Information Systems

A significant proportion of AIS research over the last couple of decades has considered the design of accounting systems that explicitly consider ontological representations of business processes. Sorter (1969) proposed early ideas on how accounting systems could record and report accounting events at the atomic level, relying on semantic representations of these events (see also Ijiri 1967; Mattessich 1964). These systems would overcome many of the restrictions imposed by traditional double-entry techniques. McCarthy built on these foundations in accounting and then recent research in database and systems analysis to develop the REA model (David et al. 2002; Dunn and McCarthy 1997; McCarthy 1982). Subsequent work by McCarthy, his colleagues, and other researchers enhanced our understanding of the relationship between business processes and accounting system design (Geerts and McCarthy 2000, 2002, 2006; Gerard 2005; Klamm and Weidenmier 2004). This work includes several studies that test aspects of REA and associated work in the laboratory (Dunn and Grabski 2000, 2001, 2002). REA plays an important role in AIS education. More importantly for practice, it has also been influential in practical accounting information systems design (for example, in the web-based ERP system Workday) and recently in the design of e-commerce systems and standards (Batra and Sin 2008; Hruby 2006).

Auditing "Within the Box"

The corporate adoption of sophisticated information systems such as enterprise-wide integration of ERP systems challenges both internal and external auditing. The audit must now address many risks that can only effectively be investigated "within the box" rather than "around the box" (Vasarhelyi and Greenstein 2003). Although the enhanced technology environment is an added control risk, auditors can employ a variety of information technologies to assist with the audit process in mitigation of this risk. Research on the application of technology to the audit process includes significant contributions in AI and expert systems (Boritz and Wensley 1990, 1992; Leech and Sangster 2002; Meservy et al. 1986; Steinbart 1987; Vasarhelyi 1995). AI techniques are now part of a variety of audit techniques, notably in risk identification and management. KPMG's KRisk is an example of such techniques in practice (Bell et al. 2002). We will return to AI and expert systems shortly.

An important contribution of AIS research to practice in the auditing and assurance domain is in continuous assurance and monitoring. The work of Miklos Vasarhelyi and his colleagues on continuous assurance demonstrates the application of strong theoretical foundations to the practical problems of the auditor. Given the investment in technology required to implement continuous assurance and the assurance objectives, most practical implementations and research focuses on the work of the internal auditor. Commencing with pioneering work at AT&T Bell Laboratories (Vasarhelyi and Halper 1991), Vasarhelyi, his colleagues, and other academics developed test beds with data from cooperating corporations to improve our understanding of continuous assurance concepts, tools, and techniques (Alles et al. 2002, 2004; Vasarhelyi and Kogan 2004; Vasarhelyi 2002). Their recent work reported on practical implementations that are in place today (Alles et al. 2006). Other work in this area has considered the impact on fraud detection (Kuhn and Sutton 2006), Internet applications (Murthy and Groomer 2004), and software tools, including embedded audit modules (Murthy 2004). Continuous assurance is now an integral part of the internal audit process in many, particularly larger, corporations (Coderre 2005; KPMG 2007; O'Reilly 2006; PricewaterhouseCoopers 2006).

The Impact of Internet Technologies on Business Reporting

The Internet and World Wide Web technologies have significantly changed many areas of human endeavor. In the accounting domain, the immediate impact has been on financial and business reporting. Corporations turned to the Internet for disclosure purposes as soon as the World Wide Web became available commercially. Early contributions to research on Internet financial reporting chronicled corporation's move to the Web (Ashbaugh-Skaife et al. 1999; Craven and Marston 1999; Deller et al. 1999; Flynn and Gowthorpe 1997; Louwers et al. 1996; Lymer 1999). Later literature applied well-established theories of voluntary disclosure to Internet financial reporting (Bollen et al. 2006; Debreceny et al. 2002; Ettredge and Scholz 2000, 2002a, 2002b; Richardson and Scholz 1999). The AIS academic research community also played an essential role in determining the approach of standards setters and professional organizations to Internet financial reporting (FASB 2000; Lymer et al. 1999; Trites 1999). A series of papers added to the contributions by speculating on the future of reporting in an Internet-enabled environment (Baldwin and Williams 1999; Ettredge and Scholz 2001). Recent research has provided significant insights into user preferences and interaction with different modes of Internet financial reporting (Hodge 2001; Rowbottom et al. 2005; Hodge and Pronk 2006).

A key aspect of research on the Internet and the Web has been on the eXtensible Business Reporting Language (hereafter, XBRL) and closely related XML-based technologies. These technologies allow for interactive and searchable forms of disclosure. Recently, as a mark of the maturity of XBRL, the SEC has mandated the use of XBRL for reporting by corporate and mutual fund registrants. Practical research on XBRL has tracked the development of the technology over the last decade. Research has come from two directions. One strand primarily relates to the possibilities of Internet technology for business reporting (Debreceny et al. 1998; Debreceny and Gray 2001; Jensen and Xiao 2001). A second strand has come from a broader research agenda in harnessing text-based disclosures, particularly those originating from the SEC's EDGAR system (Bovee et al. 2005). Academic research on XML and XBRL covers user interaction (Hodge et al. 2004), taxonomy quality (Bovee et al. 2002), assurance (Boritz and No 2004, 2005; Murthy and Groomer 2004) and the impact of the SEC's adoption of XBRL (Debreceny et al. 2005; Pinsker and Li 2008). Taken together, this research has affected the direction of XBRL adoption in the United States and elsewhere.

Artificial Intelligence and Knowledge Management

An important long-term strand in research in accounting information systems has been in AI, expert systems, and knowledge management. As we discussed earlier in this section, much of this research has traditionally considered a variety of applications in audit and assurance. The risk management and audit workbench applications put into the field by the major audit firms employ AI techniques. Other areas of concern for AI researchers include cost accounting (Murthy and Swanson 1992), internal controls (Pei et al. 1994), bankruptcy prediction, and visual representation (Dull et al. 2003).

A more recent development in this domain is in knowledge management, which draws on a variety of disciplines including social engineering, AI, collaboration, document management, and information as strategy. Accounting is essentially a knowledge industry. Knowledge management is critical for the success of professional accounting services (Chen 2006; Elliott 2002; Elliott and Jacobson 2002; Vera-Munoz et al. 2006). Research in knowledge management in accounting and auditing (Leech and Sutton 2002; O'Leary 2002b) has concentrated on particular domains or in more broad applications in decision support. For example, in some of his extensive research O'Leary (2002a) considered the implications of knowledge management for enterprise resource program (hereafter, ERP) rollout in organizations and other implications of enterprise-wide systems for knowledge management (O'Leary 2007, 2008). Interestingly, as a tangible example of the practical application of this research, at least 10 patents cite O'Leary's research. A research team centered at the University of Melbourne worked on decision support, an important aspect of knowledge management, in areas such as auditing (Dowling and Leech 2007) and insolvency management (Arnold et al. 2006, 2004).

Return on Investment in Information Technology

In the 1990s, economists and information systems researchers posed an important and intriguing question: What evidence do we have that organizations are making adequate returns on their significant investments in IT? AIS researchers have investigated this question at the micro level and have provided vital evidence on these returns. These researchers combined their field knowledge of the nature of IT investment and potential sources of gains in corporate comparative advantage with their expertise in the conduct of capital markets-based research techniques (Dehning and Richardson 2002; Dehning et al. 2005). This strand of research considers issues such as the market effects of investment on ERP (Hayes et al. 2001; Hunton et al. 2003), supply chain technologies (Dehning et al. 2007), e-commerce (Dehning et al. 2004, 2003), e-commerce outages (Anthony et al. 2006), and security issues (Ettredge and Richardson 2003). This strand of research goes some considerable way to allow managers to understand return on IT investment as well as IT infrastructure quality and availability.

Conclusions about the Impact of Accounting Information Systems Research

Increasingly, accounting and auditing depend on computerized information systems (hereafter, IS). Entities and a variety of intermediaries and regulators use IS and the Internet to communicate with business partners, investors, and other stakeholders. AIS researchers have contributed to practice in a variety of domains. Particularly important examples are contributions to the design of computerized AIS, rethinking the nature of internal and external audits, and use of the Internet for communication of entity performance including XBRL. Accounting researchers have also significantly contributed to analysis of returns on IT investments. Researchers have employed a wide variety of methodologies, tools, and techniques from computer science and IS. We see the influence of academic research in a variety of practice innovations at the intersection of IS and accounting and auditing.

CONCLUSION AND RECOMMENDATIONS

The charge to the AAA's Research Impact Task Force was to study and document the accounting academy's impact on practice. Long recognized as the premier producer of entry-level talent into the accounting profession and the major provider of executive education via master's-level curricula and customized executive education courses, the academy is less recognized for its impact on the efficiency and effectiveness of professional practice. We believe that if the practice community more fully understood the immense practical value of academic research, it would be willing to invest even more to support the expensive proposition of developing and retaining doctoral-trained accounting researchers. In addition, we believe that talented scholars, armed with an understanding of the importance of our research, would more likely choose to pursue a doctorate in accounting and join us in the quest for important knowledge.

To this end, we have provided examples of best practices in the accounting, auditing, tax, and AIS professions that had their genesis in academic research. We also provided examples of financial accounting, audit, and tax regulation that resulted from or under the strong influence of academic research. This list of contributions is not exhaustive. Instead, we concentrated primarily on relatively recent developments that are in daily use by accountants, auditors, managers, investors, and others.

We concede that room certainly exists for improvement. However, many impressive successes can be lauded. We encourage authors to refer to these developments in their textbooks, and encourage our international colleagues to cite and discuss the academic literature frequently in classes so that the next generation of practitioners will more fully understand academicians' contributions to the practice of accounting.

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