The impact of Big 4 consulting on audit reporting lag and restatements

Michele D. Meckfessel
Department of Accounting, University of Missouri at Saint Louis, Saint Louis, Missouri, USA, and
Drew Sellers
Department of Accounting, Kent State University, Kent, Ohio, USA

Abstract

Purpose – This paper responds to concerns raised by the Securities and Exchange Commission (SEC), Public Company Accounting Oversight Board (PCAOB) and scholars over the rapid growth of Big 4 consulting practices. This paper aims to explores the question: Does the regrowth of sizable consulting practices by the Big 4 influence audit reporting lag and restatement rates?

Design/methodology/approach – A population of the SEC-registered US audit clients of the Big 4 was used in this study. Longitudinal data on Big 4 audit clients from 2000 through 2009 were analyzed to determine the impact of consulting practice size on the clients' audit reporting lag and restatement rate.

Findings – This paper finds that consulting practice size has a positive and statistically significant influence on audit reporting lag and restatement rate. The results are robust to alternative specifications of the sample and controlling for the level of non-audit services provided to audit clients.

Practical implications – The findings contribute to the discussion of the scope-of-services issue. They provide empirical support for Zeff's (2003) and Wyatt's (2004) intuition that the loss of Big 4 professional focus – not simply conflicts of interests – is a major factor affecting the audit quality.

Originality/value – The uniqueness of this paper is in how it counts restatements. Each year this paper counts that annual financial statements are restated as opposed to each disclosure of a restatement. This paper's contribution is to examine the association between the regrowth of Big 4 accounting firm consulting practices with audit reporting lag and restatements.

Keywords Audit quality, Consulting, Audit reporting lag, Restatements, Scope-of-services

Paper type Research paper

1. Introduction

This paper contributes to the ongoing discussion regarding regulating the scope of services offered by public accounting firms. Specifically, we explore the question: *Does the regrowth of sizable consulting practices by the Big 4 influence audit reporting lag and restatement rates?*

The question is motivated by concerns raised by regulators and accounting scholars over the potential impact of the recent burgeoning of Big 4 consulting practices. The US Public Company Accounting Oversight Board (PCAOB) Chairman James Doty summarized these concerns when he commented on growing Big 4 consulting by saying that, "We simply can't be unaware of the implications for independence, objectivity, skepticism, audit quality" (Rapoport, 2013). Such concerns are a serious matter, as recent PCAOB inspection reports find significant audit quality issues at each Big 4 firm (PCAOB, 2013a, 2013b). Accounting scholars have raised similar concerns; Hermanson (2009) noted that, "The reemergence of consulting poses a significant threat to long-term audit quality", while Fuerman and Kraten

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(2009) called for more empirical research investigating whether consulting threatens the audit quality.

We present evidence suggesting that growing Big 4[1] consulting practices, measured as the ratio of aggregate consulting practice fees per year at the firm level to total aggregate fees from all services at the firm level, increase audit reporting lag (ARL) and client restatements. The data used comprise the population of Securities and Exchange Commission (SEC)-registered US audit clients of the Big 4. During 2000 through 2009, three of the Big 4 firms divested and subsequently redeveloped their consulting practices, whereas Deloitte retained their consulting arm. Capitalizing on this natural experiment, we analyze longitudinal data on Big 4 audit clients from 2000 through 2009, to determine their annual ARL and restatement rate. This analysis controls for year and industry effects, as well as client and auditor office factors, that prior work suggests influences ARL and financial restatements (Ettredge *et al.*, 2006; Whitworth and Lambert, 2014; Stanley and DeZoot, 2007; Francis and Yu, 2009). The findings are robust to alternative specifications of the sample, for example, excluding restatements because of technical generally accepted accounting principles (GAAP) changes. These findings support Zeff's (2003b) and Wyatt's (2004) intuition that erosion of professional focus by audit firms' expansion into consulting is detrimental to the audit practice. Further, the results contribute empirical findings to the ongoing theoretical discussion on the changing nature of professional focus within the accounting field (Malsch and Gendron, 2013).

The findings extend prior research by theoretically approaching the scope-of-services issue through the lens of a reduced professional focus rather than conflict-of-interest concerns. Using a sample spanning the 2000-2009 time period permits controlling for conflicts of interest as Sarbanes–Oxley (SOX) regulations are implemented. Additionally, by using, restatements and ARL as our variables of interest, we provide less ambiguous outcome measures than much of the prior literature, which typically used accrual quality, level of audit fees and/or measures of investor perceptions (Ruddock *et al.*, 2006; Ashbaugh *et al.*, 2003; Pany and Reckers, 1987).

1.1 Background

For the past 60 years, the accounting profession has struggled toward agreement among practitioners, regulators, financial markets and the general public over the proper scope of services provided by certified public accountant (CPA) firms. The debate centers on maintaining the CPA's professional skepticism and independence, critical to the audit process, while also recognizing the valuable advice and services the CPA firm is positioned to provide to their clients. Writing on the scope-of-services issue, Previts (1985, p. 167) presciently observed:

> The jury is still out in this country [USA], and failure by the profession to adequately manage independence inevitably will lead to constraints imposed from without.

The issue gained salience as the consulting practices of the "Big 8"[2] firms grew to either equal or exceed the profitability of their respective audit groups.

During 2000 to 2002, four of the then five global accounting firms separated from their consulting practices. The fifth, Deloitte & Touche (now Deloitte) announced plans for selling their consulting group. However, the sale was cancelled, as financial markets became unfavorable. Part of the initial impetus for divesting consulting practices from the accounting firms was provided, in 1997, by Andersen Consulting's move to separate from Arthur Andersen, a process that took three years to resolve. Concurrently the SEC, under the leadership of Arthur Levitt, was pushing to limit the CPA firms' scope of services. The *Independence Risk Framework* proposed by Johnstone *et al.* (2001) highlights the consulting

practice divestitures as a step forward in mitigating audit-independence risks. A year after losing Andersen Consulting (now Accenture), Arthur Andersen earned unwanted notoriety for the destruction of audit and business records during the Enron financial scandal. This subsequently led to the firm's 2002 demise; Arthur Andersen's employees scattered among industry, entrepreneurial ventures and competing firms (Sellers *et al.*, 2012). The revelation of additional accounting scandals involving the other major firms followed, such as Tyco, Adelphia, etc. One of the commonly reported narratives arising from these incidents was that the CPA firms had lost their professional focus (Wyatt, 2004): the firms were intent on selling increasingly more varied services rather than fulfilling their mission to the investing public. Attempting to correct the situation, the Congress passed the SOX Act of 2002 (US Congress, 2002). Among the many requirements implemented by SOX is a prohibition preventing the public accounting firms from providing most non-audit services (NAS) to their SEC-registered audit clients[3]. The divestiture of most consulting practices and the SOX rules appeared to collectively render moot the scope-of-services issue. However, over the intervening years, the global CPA firms have regrown their consulting practices (See Table AI for a schedule of fees by year for the Big 4). By 2012, the Big 4 had consulting practice revenues that approached their pre-SOX level. Problems have arisen and concerns are again being raised regarding, for instance, the recent $8.2m settlement by KPMG with the SEC over violations of auditor independence rules (Rapoport, 2014). Thus, it is an appropriate time to revisit the scope-of-services question and determine if SOX has adequately addressed the issue.

This paper is organized as follows: a literature review, which leads to the paper's research propositions, is presented in Section 2. Section 3 contains a summary of the data and methods used. Section 4 presents the findings resulting from the main analysis and shares various alternative analysis and robustness check results. Section 5 concludes the paper with a discussion of these findings and their implications, limitations of the work and suggestions for further inquiry.

2. Literature review and research proposition

The paper's arguments are structured in this fashion: the history of the consulting expansion through the creation, growth, divestiture and regeneration of Big 4 consulting practices is summarized. The topic is introduced *vis-à-vis* a summary of the scope-of-services debate that identifies two streams of concern: conflict of interest and reduced professional focus. The extant regulatory response, SOX, is positioned as primarily addressing the former concern. Recent literature is reviewed developing this paper's reasoning on the potential issue of reduced professional focus because of the Big 4 firms' consulting practice expansion. The section concludes by reviewing the specific research propositions used to examine the potential persistence of the scope-of-services issue, notwithstanding the current SOX regulations.

2.1 Big 4 consulting

After the Big 8's international expansion during the 1950s and 1960s, the firms concluded that opportunities to continue to grow the audit market were limited. They compensated by expanding the scope and size of their respective consulting practices (Zeff, 2003b). By 1979, seven of the Big 8 were among the top 15 US consulting firms (Hayes, 1979), and by 1980, even Pricewaterhouse, a relative latecomer to the consulting surge, had a non-CPA on its policy board (Allen and McDermott, 1993, p. 235).

Additionally, as the relatively more profitable consulting practices grew, the audit practice partners were pressed to increase their fees to keep pace. The firms responded through layoffs and forced retirements, as firms began purging audit partners who were not

meeting the expanding revenue goals. See Stevens (1991, pp. 171-173) for a detailed discussion of Deloitte's actions under CEO Michael Cook.

While some view the Enron and WorldCom scandals as "one-off" extreme cases, many consider Arthur Andersen a prime example of consulting growth run amuck with resulting negative effects on the firm's audit practice.

From the beginning, the Arthur Andersen firm believed in providing a broad set of services to their clients including both consulting and auditing (Arthur Andersen & Co, 1974). The firm's pioneering work in applying computer technology for business, in 1953, at General Electric's New Appliance Park plant in Kentucky spawned four decades of rapid growth (Accenture, 2005, pp. 16-23). Over time, friction developed between the auditors, who controlled the firm, and the consulting division that was obligated to transfer 15 per cent of their profits to the audit division. In 1997, the transfer payment was over $100m (White and MacDonald, 1997). In December 1997, Andersen Consulting partners voted unanimously to request arbitration of their disputes with the Arthur Andersen audit firm through the International Chamber of Commerce (ICC) (MacDonald, 1997). On August 7, 2000, following more than two years of filings, rebuttals, etc. by the parties, the ICC released their ruling in favor of Andersen Consulting (Brown, 2000). Over the next six months, the firms separated, and Andersen Consulting's name was changed to Accenture. Further, in July 2001, the new firm concluded a successful initial public offering (Accenture, 2005, pp. 199-215).

Arthur Andersen's experience, *vis-à-vis* the scope-of-services concerns examined by this study, is not so unique to be *sui generis*. Three of the Big 4 exited and reentered consulting within a span of 10 years. Responding to the competitive threat of an independent Andersen Consulting and a hot market for technology investments, Ernst & Young (E&Y), PricewaterhouseCoopers (PwC) and KPMG sold their consulting practices (see Table AII for a summary of the events). Deloitte had announced plans to sell their practice. They eventually canceled the 2003 sale, as the markets became unfavorable for technology ventures (Rnes, 2007).

It is instructive to note that Arthur Andersen organized Andersen Consulting in 1989 as a separate division and then felt driven by competitive and economic factors to recreate its own audit division consulting practice five years later in 1994. A review of Big 4 firm activity over the past 10 years reveals a similar pattern. In 2004, only Deloitte reported significant consulting revenue (from their retained consulting practice), and by 2009, the other firms had rebuilt large consulting practices (Figure 1).

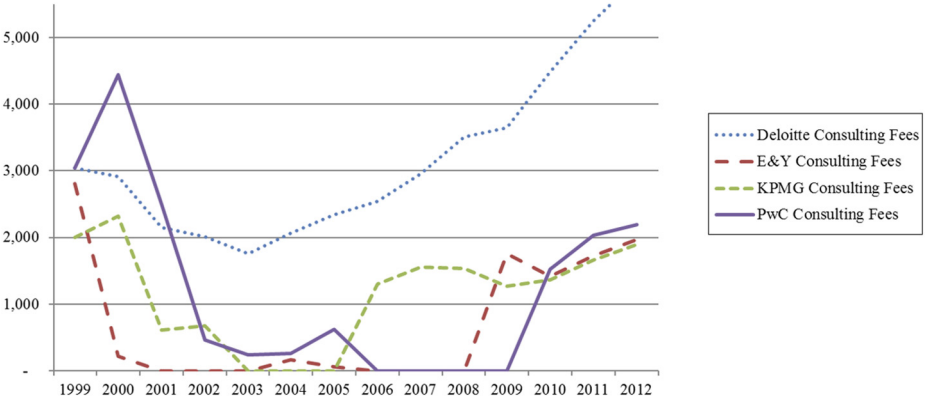

Figure 1.
US consulting fees by firm ($000,000)

2.2 Scope-of-services background

The boundaries of the US public accounting profession were shaped in the first half of the twentieth century. The Securities Act of 1933 and The SEC Act of 1934 required the publicly traded companies to provide financial statements audited by CPAs (see Previts and Merrino, 1998, chapters 4 and 5, for additional details). Granted this monopoly, CPA firms enjoyed robust growth. The American Institute of Certified Public Accountants (AICPA) membership grew from 4,500 members in 1935 to 26,000 members by 1955. Auditing became the acknowledged *rasion d'être* of the young profession. To this core responsibility, the profession quickly added claims for providing tax services, reasoning that they were a key and complex element in the financial reports the firms were asked to certify (Previts, 1985 pp. 4-5). Professional boundaries are not static, but was rather the subject of ongoing disputes (Abbot, 1988), for example, in the case of tax services, the legal profession also made and continues to make claims on the work.

The scope-of-services debate arises from two alternative conceptions of the accounting profession. On the one hand, the CPA's role could be described as a trusted business advisor to their clients, operating between the bounds of the legal and engineering professions. And from a transactional cost perspective, contracting with the audit firm for additional services may be an economically rational approach for clients under certain circumstances (Kent, 2011). Alternatively, the role of the CPA could be narrowly construed as ensuring well-functioning capital markets through an independent review of a public company's financial reporting (Abbot, 1988; Previts, 1985).

The former concept relies on the market, that is, the clients, to decide what services the CPA provides that are of value. It encourages innovation and expansion by the firms. Critics argue that such expansion comes at the expense of the firms' focus on the audit portion of their practice. The latter view sees the profession as a semiregulated oligopoly. Granted the right to provide the required attest function, it is the proper and highest calling of the profession to scrupulously discharge these duties and eschew distractions.

In addition to differing conceptions of the profession, there are two distinct views of how a broad scope of services might compromise the audit quality, namely, conflict of interest and reduced professional focus.

2.3 Conflict of interest

The conflict-of-interest view centers around the idea that providing consulting to an audit client creates conflicting pressures in fact or appearance on the audit team. Many conflict-of-interest proponents believe there are differing degrees of "corrupting" influence depending on the particular ancillary services offered by a firm. Most argue that the provision of certain services, such as recruiting, outsourcing, management activities, etc., moves a firm into the day-to-day operations of the client. This view argues that assuming a portion of such management responsibilities may compromise the independence in fact and/or appearance of the CPA firm (AICPA-Code of Conduct, 2012).

Alternatively, it is argued that earning substantial NAS fees from an attest client, regardless of the nature of the services provided, may constrain the auditor's independence. Stated simply, the risk of losing significant additional revenue makes the auditor timid, thus creating a potential conflict of interest. For example, see Zeff's (2003a, p. 203) summary of SEC Chairman Harold M. Williams's 1978 report to the Congress.

Using various measures, research findings are mixed on consulting for audit clients reducing the quality of audit services. Early experiments and survey research found that providing NAS to audit clients created a perceived auditor conflict of interest. And respondents believed that this conflict posed a threat to auditor independence and reduced

confidence in the audit (see Hartley and Ross, 1972 and Pany and Reckers, 1983, 1984, 1987 for examples of this work). Recent empirical work suggests: the initial release of NAS fee data in 2001 affected earnings response coefficients (Krishnan *et al.*, 2005) and this continued under certain circumstances, in particular, quarterly earnings surprises (Francis and Ke, 2006); client agreement with the auditor over financial reporting issues being negatively related to the level of NAS (Chen *et al.*, 2005); and significant NAS fees were linked to increased reliance by the external auditor on the internal auditor regardless of the level of quality and coordination by the internal auditor (Felix *et al.*, 2005) .

Putting aside perception, work by Ruddock *et al.* (2006) and Ashbaugh *et al.* (2003) finds no evidence of the NAS level affecting the audit quality as measured by earnings conservatism. Their findings refute or refocus on the limitations of prior work such as that of Frankel *et al.* (2002). Frankel *et al.* (2002) found that higher levels of NAS were associated with higher audit fees and more aggressive use of accruals, which they inferred represented lower audit quality. Ashbaugh *et al.* (2003) found that these results were not robust to alternative analytical approaches. Ruddock *et al.*'s (2006) findings are consistent with earlier work and testimony used by the profession in arguing against the limits on the scope of services before the SEC since the 1960s, which maintained that there is no clear evidence that providing non-audit services has resulted in reduced audit quality. This viewpoint is further bolstered by Asare *et al.*'s (2005) experiments with audit partners who found that the potential for significant NAS fees did not induce the partners to assume increased levels of audit risk. While several studies failed to find a convincing link between NAS provided by the auditor and restatements (Raghunandan *et al.*, 2003; Bloomfield and Shackman, 2008), Ye *et al.* (2011) use Australian data to examine how social and economic bonds between clients and auditors impact auditor independence. Their study finds that auditor independence is affected by the number of NAS services purchased, audit firm tenure, audit partner tenure and alumni affiliation. Reviewing pre- and post-SOX studies using NAS, Anandarajan *et al.* (2012) conclude, "So far research has not really shown us which factors investors perceived to impair independence […]".

In the wake of the 2000-2001 accounting scandals, The US Congress faced public pressure to assert control. With credible arguments made both for and against the NAS conflict-of-interest hypothesis, the Congress chose to be proactive and include the consulting prohibition in the SOX legislation. In 2002, pre-SOX, NAS comprised 51 per cent of the Big 4 firms' fees from their SEC-registered clients. By 2006, it had fallen to 20 per cent and it has remained at this level (Whalen and Cheffers, 2012). While evaluating the impact of auditor office size on restatements using post-SOX data, 2003-2006, Francis and Yu (2009) found the NAS level provided by the auditor was not significant when predicting the likelihood of audit failure. Also see Stanley and DeZoot (2007) for similar results while looking at auditor tenure.

SOX had the intended effect: it greatly reduced the level of NAS by audit firms for attest clients. And, assuming that the original conflict-of-interest argument was correct, SOX thus appears to have eliminated the associated consulting "conflict-of-interest" risk to audit quality.

2.4 Reduced professional focus

The reduced professional focus concern is based on the belief that diffusing the firm's attention puts the audit quality at risk. Knowledgeable observers cite factors such as increased pressure on audit partners to generate additional consulting fees, internal competition for resources including staff and investment dollars and distraction of senior management as a byproduct of expanding consulting practices. Providing two service lines

with such fundamental differences may dilute the CPA firm's culture, values and professionalism to the detriment of audit quality.

The institutional logic of a profession necessitates describing boundaries. These boundaries are often contested with counter-claims from competing professions (Abbot, 1988). Professionals have specialized education, certifications and licensure that they apply for the benefit of the society. They receive enhanced status, recognition, titles and financial rewards for their skills. Professionals have autonomy in their work and are typically monitored and regulated by peers through professional associations and societies (Leicht and Fennell, 2001; Barber, 1963).

Accountants are socialized into the profession's culture, values and ethics from the earliest days of their career (Sellers and Fogarty, 2010). Consulting, by contrast, lacks a formal profession to provide such institutions with structure and legitimacy. Malsch and Gendron (2013) point to the consolidation of commercial values over the past three decades as a major shift in the institutional field of accounting. We observe that the Big 8 worked to maintain the "myth and ceremony" of the accounting profession (Meyer and Rowan, 1977) while actively promoting commercial concerns within the ranks of their organizations (Suddaby *et al.*, 2009). However, the Big 8 consulting practices could metaphorically adopt and leverage their accounting practice's professionalism to their market advantage (McKenna, 2010 pp. 248). Yet, consulting remains a distinct business from public accounting. Both endeavors provide an outside perspective and specialized expertise. Consulting is typically working in collaboration with the client's management to achieve change moving forward, whereas the auditor's primary objective is to provide an independent review of the reported state of the client's past business performance. Zeff (2003b, p. 280) summarizes the subjugation of professional values by commercial concerns experienced by the firms:

> The transformation of professional firms that happened to be businesses into businesses that happened to render professional services. The audit mentality at the top management of the firms was replaced by a consulting mentality, including a headlong drive for growth, profitability and global reach – business, not professional values.

This reaction of "spreading the audit partners thin" by leveraging their time across more varied engagements is a cause for concern. Recent work suggests that audit partner busyness may negatively impact audit outcomes under some circumstances, for instance, during economic shocks or client distress (Goodwin and Wu, 2015; Gul *et al.*, 2014; Karjalainen, 2011).

In October 2001, Enron announced financial report restatements because of accounting irregularities, and by the following summer, Arthur Andersen, Enron's auditor, had disbanded (Alexander *et al.*, 2002). Paul Volker, former Federal Reserve Chairman, offered his view of the root cause of Arthur Andersen's issues (Byrne, 2002):

> The culture of the company changed because it got deeply involved in the consulting business. There is no question in my mind that Andersen took its eye off the ball.

Arthur Wyatt's professional experiences include serving on Financial Accounting Standards Board (FASB), working as a senior partner at Arthur Andersen and as the chairman of the Institute's Accounting Standards Executive Committee (Zeff, 2003b, p. 272). Writing in *Accounting Horizons* on the lessons to be learned from the problems at Arthur Andersen, Wyatt concurred with Volker's assessment, arguing that providing consulting services did not compromise the firm's audit independence but rather it compromised its culture and professional focus (Wyatt, 2004). The problem of eroding professional focus was not confined to Arthur Andersen. Writing on the then Big 6, Stevens (1991, p. 4) observes:

> While all [of the Big 6] have clung to their heritage of "certified public accountants", a close look reveals that they are no longer accounting firms but instead are broad-based consulting practices serving an interlocking network of corporate, government and institutional clients […].

This view of recent history suggests that having a significant portion of a firm's employees and partners who are not part of the public accounting profession and who follow different business imperatives may alter the accountant's professional identify (Cooper and Robson, 2006). Thus impacting the firm's management focus, organizational identity and values. The resulting tensions may detract from the audit practice.

2.5 Audit quality

How to define, measure and mange audit quality remains a current concern for the professionals, regulators and scholars (PCAOB, 2013a, 2013b). Research suggests that there is a wide variety of client-related factors that influence the audit quality, including management background, board and audit committee attributes and client information technology capability (Aier *et al.*, 2005; Lary and Taylor, 2012; Chen *et al.*, 2014). Additionally, many client- and auditor-related factors have been found to be relevant, such as auditor tenure and auditor industry expertise (Stanley and DeZoot, 2007; Chin and Chi, 2009). Germane to this project, scholars have explored audit firm attributes that influence audit quality such as firm size, office location and busy season workload (Francis and Yu, 2009; Francis *et al.*, 2013; Skomra, 2016). Thus, examining the impact of the growth of Big 4 consulting practices on audit quality-related measures, such as restatements and ARL, extends our understanding of the set potential factors influencing the audit quality.

2.6 Research propositions

Extant research suggests that Big 4 firms have different styles that manifest discernibly different qualities in the financial reporting results (Francis *et al.*, 2014, pp. 609-610). The authors attribute these results to differences in the working rules, methodologies, technology and testing procedures funded, developed and deployed by each firm. Additionally, Fuerman and Kraten (2009) explored differences in Big 4 accounting firm audit quality using auditor litigation outcomes. Their results imply that the audit quality is not homogenous across the Big 4 accounting firms. In fact, they propose a potential relationship between Deloitte's relatively large share of global consulting revenue to their relatively low audit quality. These results imply that internal competition for investment dollars may directly affect the audit quality. These are more than theoretical concerns as PWC's recent acquisition of the Booz consulting firm illustrates. This addition of an estimated $1bn in consulting revenue drew criticism from a former SEC chairman Arthur Levitt, "We are slipping back. As the accounting profession becomes more committed to consulting, their audit activities have got to be questioned" (Marcinek and Farrell, 2013).

The consulting revenue data shown in Figure 1 reveal that by 2011, all Big 4 firms have again developed significant consulting operations. Further, by 2011, the Big 4 consulting practices generated from 23 to 44 per cent of their respective total US firm revenue (Accounting Today, 2012; see Table AI for a breakdown of fees for each firm). Given the constraints of the SOX regulations, this work is for a combination of publicly traded non-audit clients and audit clients that are private companies, thus not subject to the SOX scope-of-services restrictions. This growth is fueled by internal and external recruiting with partners, managers and staff drawn from the audit practice ranks (Cohen, 2014).

In summary, as Big 4 firms shift from focusing on the audit practice to providing a broader set of consulting services, scholars, regulators and knowledgeable insiders have raised a variety of concerns under the heading of reduced professional focus. We examine the

reduced professional focus concerns by controlling for client-specific NAS levels in our analysis. Specifically, these concerns include reduced management focus on auditing, increased pressure on audit partners to sell consulting work, internal competition between audit and consulting practices for resources and diluting the "audit culture" in the firms. This paper seeks to determine if evidence supports the need to be concerned about a Big 4 firm's consulting growth that is negatively impacting its audit practice. We leave to future research the task of attempting to tease apart the relative effect of each area of concern. If Zeff's, Wyatt's and Volker's interpretations are sound, the Congress and the SEC drew the incorrect lesson from Enron and other similar scandals. The scope-of-services rules enacted by SOX and promulgated by the SEC addressed the conflict-of-interest hypothesis and ignored the threat to firms' professional focus. This suggests that the SOX practice restrictions may turn out to be a solution to a misidentified problem. The regrowth of the Big 4's consulting practices in the USA have heightened these concerns (Tessoni, 2012). We explore the salience of these concerns by examining the impact of consulting on audit timeliness and accuracy.

ARL is the number of calendar-days from the fiscal year end to the audit report date (Knechel and Payne, 2001). FASB's Statement of Financial Accounting Concepts 2 highlights timeliness as an important qualitative characteristic of accounting data. And research suggests that companies failing to meet the SEC-mandated filing deadline are penalized by the market via negative investor reaction (Bartov *et al.*, 2011). Scholars also suggest that ARL is an important aspect of audit quality (DeAngelo, 1981; Carcello *et al.*, 1992). Prior research suggests that audit firm characteristics such as office size, industry expertise and client influence (importance) affect ARL (Whitworth and Lambert, 2014). Thus, ARL is a well-established audit practice performance measure that might be impacted by competition within the firm for resources and management attention. This leads to the paper's first research proposition, stated in the affirmative:

RP1. Percent of revenue from consulting fees paid to Big 4 auditors is positively associated with audit-reporting lag.

Knowledgeable individuals are concerned about audit firms providing NAS. Concerns were raised over the growth of Big 4 consulting at the December 2013 American Institute of Certified Public Accountants (AICPA) Conference by the SEC Chief Accountant Paul Beswick who said, "Such expansion runs the risk of damaging the accountants' reputation" (Rapoport, 2013). Further, research suggests that approximately 25 per cent of auditors from small- and medium-sized firms agree that non-audit services pose a quality risk; however, only 6 per cent of large-firm auditors shared this view (Beaulieu and Reinstein, 2010).

Financial restatements are triggered by the subsequent discovery in a published financial report of one or more material misstatements that were not detected by the management or the audit (Scholz, 2008). Scholars frequently use the restatement rate as a measure of the audit quality (Plumlee and Yohn, 2010). Prior research finds that specific client and auditor characteristics including firm size, industry expertise, office size and office expertise influence restatement rates (Francis *et al.*, 2013; Francis and Yu, 2009; Blankley *et al.*, 2012). Therefore, we use restatement rate to measure the impact of a firm's consulting business on one aspect of its audit practice quality, i.e. likelihood that audited financial statements failed to apply GAAP correctly and completely.

This leads to the paper's second research proposition, stated in the affirmative:

RP2. Percentage of revenue from consulting fees paid to Big 4 auditors is positively associated with restatements.

Simply stated, our research investigates the relationship between Big 4 firm percentage of consulting revenue and two specific and measurable indicators of audit quality, namely, audit reporting lag and financial statement restatements. We posit that a higher percentage of firm consulting fees leads to a decreased focus on auditing, and this loss of focus leads to a decrease in the audit quality.

3. Data and methods

This research project benefits from the fact that Deloitte was unable to divest its consulting practice. Thus, a natural experiment arose with Deloitte, unique among the Big 4, providing significant consulting services for several years. This gap ultimately narrowed as the remaining Big 4 firms subsequently regrew their respective consulting practices. This period of varying levels of consulting service provides useful data to examine the paper's research propositions. We operationalize the level of consulting services as the ratio of aggregate consulting practice fees per year at the firm level to the total aggregate fees from all services at the firm level.

3.1 Sample selection

We construct our sample from the population of SEC-registered US audit clients of the Big 4 using the audit and financial restatement data contained within the Audit Analytics database from 2000 through 2009. We restrict our sample to audits of US clients of US Big 4 accounting firms, as we have only the consulting revenue data related to US clients[4].

Following prior research, ARL is measured as the elapsed time from the client's fiscal year end until the date the auditors sign their report (Ettredge *et al.*, 2006; Masli *et al.*, 2010). SOX Section 409 triggered a reduction in the permitted length of ARL. The maximum ARL permitted for non-accelerated filers (less than $75m market float) was left unchanged at 90 days. The requirement for accelerated filers (greater than $75m and up to $700m market float) was reduced to 75 days effective December 15, 2003. The requirement for large accelerated filers (greater than $700m market float) was reduced to 75 days effective December 15, 2003 and then further reduced to 60 days effective December 15, 2006 (SEC, 2002, 2005). We code *FilerType* for each audit in the sample to indicate the appropriate deadline.

Our restatement group includes the restated financial statements originally issued from 2000 through 2009. During this time period, there were restatements driven by rules clarification such as lease accounting (Plumlee and Yohn, 2010) and options back-dating (Scholz, 2008). These are excluded from the restatement group[5].

Audit Analytics organizes restatements into broad categories: accounting rule (GAAP) application failures; financial fraud, irregularities and misrepresentations; accounting and clerical application errors; regulatory investigations; and other significant issues. Many restatements are included in multiple categories. Like previous researchers, Francis and Yu (2009), we found that most restatements are classified as accounting rule (GAAP) application failures. As a result, we begin our study with the 8,510 restatement periods classified as GAAP application errors. Additionally, we examine the 385 restatement periods resulting from errors and the 202 restatement periods resulting from fraud or irregularities, as defined by Audit Analytics.

We operationalize the restatement measure by counting each year that financial statements were restated as one restatement[6]. The 2009 cutoff provides a sufficient lag from the present to permit the majority of restatements to accumulate (Francis and Yu, 2009; Francis *et al.*, 2013). We classify restatements based on the auditor of record when the financial statements were originally issued based on the data contained within Audit Analytics.

We limit the sample to observations which have the needed data for our control variables: $GOING\_CONCERN_{i,t}$, the filer status control variables $LARGEACC_{i,t}$; $ACCEL\_FILER_{i,t}$; and $NONACCEL_{i,t}$, $LnAUDIT_{i,t}$, $LnNONAUDIT_{i,t}$, $TENURE_{i,t}$, $INFLUENCE_{i,t}$, $NATIONAL\_LEADER_{i,t}$, $CITY\_LEADER_{i,t}$, $OFFICE\_SIZE_{i,t}$, $LOSS_{i,t}$, $SIZE_{i,t}$ and $BOOK\_to\_Market_{i,t}$. Table I provides a summary of our sample.

3.2 Research design

Prior research has recognized the importance of ARL. In their 2006 study, Ettredge *et al.* (2006) use audit delay to describe the length of time from a company's fiscal year end to the date the auditors sign their report. Their study uses OLS regression to examine the impact of SOX on audit delay. Their models control for factors that are likely to affect ARL. Of specific interest in our venue are: restatements of financial reports, client size, client industry, client financial condition, client losses, audit fees and auditor change. To evaluate the impact of Big 4 firm consulting practice size on ARL, we modify the ARL multivariate model published in previous research by Ettredge *et al.* (2006). Our model uses consulting practice size as our variable of interest and includes controls for various client, auditor, industry and market factors. Consistent with prior work regarding the determinants of ARL, we include a dichotomous variable *RESTATEMENT* to control for the significant amount of additional

Sample	*N*
Number of restatement events for US registrants of all accounting firms on the Audit Analytics data base during the sample period	9,063
Number of restatement events resulting from accounting rule (GAAP) application failures for US registrants of all accounting firms on the Audit Analytics data base during the sample period	8,548
Number of restatement events for US registrants of Big 4 accounting firms on the Audit Analytics data base during the sample period	4,429
Number of restatement events resulting from accounting rule(GAAP) application failures for US registrants of Big 4 accounting firms on the Audit Analytics data base during the sample period	4,142
Number of restatement events resulting from errors for US registrants of Big 4 accounting firms on the Audit Analytics data base during the sample period	253
Number of restatement events resulting from fraud/irregularities for US registrants of Big 4 accounting firms on the Audit Analytics data base during the sample period	117
Number of restatement periods for US registrants of Big 4 accounting firms on the Audit Analytics data base during the sample period	8,942
Number of restatement periods resulting from accounting rule (GAAP) application failures for US registrants of Big 4 accounting firms sample period 2000-2009	8,510
Number of restatement periods resulting from errors for US registrants of Big 4 accounting firms sample period 2000-2009	385
Number of restatement periods resulting from fraud/irregularities for US registrants of Big 4 accounting firms sample period 2000-2009	202
Number of audit opinions issued by US Big 4 accounting firms for the sample period 2000-2009	93,390

Notes: Restatements on the Audit Analytics data base can have more than one classification; Therefore, the sum of the restatement periods resulting from GAAP application failures, errors and irregularities exceeds 8,942, the number of restatement periods on Audit Analytics for US Registrants of Big 4 accounting firms

Table I.
Sample summary

audit work the auditors face in the year of a restatement (Palmrose and Scholz, 2004; Blankley *et al.*, 2014)[7].

We control for year fixed effects to deal with the changing filing deadlines, industry fixed effects (two-digit SIC codes) to control for a firm's industry characteristics and systematic audit firm differences based on Ashbaugh *et al.* (2003). Additionally, we added indicator variables to control for the differences among accelerated filers, large accelerated filers and nonaccelerated filers based on the previous work by Lambert *et al.* (2011). We estimate the following model using the least-squares dummy variable model in Stata to test our research proposition:

$$ARL_{i,t} = \beta_0 + \beta_1 PERCENT\_CONSULTING_{i,t} + \beta_{2-14} CONTROL\_VARIABLES_{m,i,t} + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + Audit\ Firm\ Fixed\ Effects + \varepsilon \quad (1)$$

Francis *et al.* (2013), in their study, use the natural log of the number of US SEC registrants audited by each Big 4 engagement office and the "raw" client count data to examine the relationship between Big 4 engagement office size and the likelihood of client restatements. To complete the multivariate analysis, we modify the restatement risk probit model published in previous research by Francis *et al.* (2013). Our model uses consulting practice size as our variable of interest and includes controls for various client, auditor, and industry and market factors found to be determinants of restatements by Francis *et al.* (2013). The following probit model is used to test our research proposition:

$$RESTATEMENT_{i,t} = \beta_0 + \beta_1 PERCENT\_CONSULTING_{i,t} + \beta_{2-10} CONTROL\_VARIABLES_{m,i,t} + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + Audit\ Firm\ Fixed\ Effects + \varepsilon \quad (2)$$

Like Francis *et al.* (2013) we estimate equation (2) with three sets of fixed effects for additional controls. Year and industry (two-digit SIC codes) are used to control for the idiosyncratic effects of time, and a firm's industry characteristics on restatement rates. Big 4 audit firm fixed effects control for systematic differences in restatement rates across audit firms to better isolate the effects of consulting practice size independent of any systematic effects of specific Big 4 firms.

3.3 Variable definitions

$ARL_{i,t}$: Audit Reporting Lag is the number of calendar days from the fiscal year-end to the audit report date (Knechel and Payne, 2001; Ettredge *et al.*, 2006).

$RESTATEMENT_{i,t}$: Restatement information is obtained from the Audit Analytics data source for the SEC-registered companies audited during years 2000-2009. $RESTATEMENT_{i,t}$ is a dichotomous variable taking on the value of 1 for each firm-year observation that contains a financial statement restatement and is equal to 0 otherwise.

$PERCENT\_CONSULTING_{i,t}$: A variable of interest for our research, *PERCENT_CONSULTING* is defined as the ratio of aggregate consulting practice fees per year at the firm level (as reported at www.accountingtoday.com/) to total aggregate fees from all services at the Big 4 firm level (in $ million). Our research hypothesizes that the growth of Big 4 consulting practices negatively impacts the firm's audit practice, *ceteris paribus* (increases ARL and restatement rates). Therefore, we predict that *PERCENT_CONSULTING* will be positively related to *ARL* and *RESTATEMENT*.

$CONTROL\_VARIABLE_{m,i,t}$: Our model uses multiple control variables, m, which have been used in prior literature, such as Ettredge *et al.* (2006), Hoitash *et al.* (2007), Francis and Yu (2009) and Francis *et al.* (2013), as predictors of audit quality: $LnAUDIT_{i,t}$, $LnNONAUDIT_{i,t}$, $LOSS_{i,t}$; $OFFICE\_SIZE_{i,t}$, $INFLUENCE_{i,t}$, $TENURE_{i,t}$, $NATIONAL\_LEADER_{i,t}$, $CITY\_LEADER_{i,t}$, $SIZE_{i,t}$, $BOOK\_to\_MARKET_{i,t.}$

3.4 Control variable definitions:

$LnAUDIT_{i,t}$: Is defined as the natural log of the client's audit fees.

$LnNONAUDIT_{i,t}$: Is defined as the natural log of the client's non-audit fees.

$LOSS_{i,t}$: Is an indicator variable that takes on the value of 1 if the company has negative earnings in the current year and 0 otherwise.

$OFFICE\_SIZE_{i,t}$: Based on the results of previous research that suggests larger audit firm offices have higher audit quality than smaller offices (Francis and Yu, 2009), we include a control variable to control for the impact of office size on audit quality. Following Francis *et al.* (2013) *OFFICE_SIZE* is based on the number of SEC-registered clients audited by a specific office for a given year.

$INFLUENCE_{i,t}$: Following Craswell *et al.* (2002); Reynolds and Francis (2000) and Francis and Yu (2009), we include a variable to control for the auditor's office-level incentives as they pertain to important clients. *INFLUENCE* measures the relative size of a client to an office. *INFLUENCE* is measured as a client's total fees for all services to the sum of all fees of all SEC-registered clients for a practice office for a given year. As previous research has yielded mixed results, we make no directional prediction for this variable.

$TENURE_{i,t}$: Previous research (Johnson *et al.*, 2002) found that shorter auditor tenure is related to lower client earnings quality. Additionally, Lim and Tan (2010) found that audit quality is higher for firms audited by industry specialists when auditor tenure increases. Our study measures auditor tenure using an indicator variable, that takes on the value of 1 if a client has been audited by a particular accounting firm for four years or longer; 0 otherwise. Based on previous research, *TENURE* is predicted to be negatively related to *RESTATEMENT*.

$NATIONAL\_LEADER_{i,t}$: Based on previous research (Francis and Yu, 2009; Francis *et al.*, 2013), we include a variable to control for the auditor's national-level industry experience as it has been shown to be positively related to higher audit quality. *NATIONAL_LEADER* is an indicator variable that takes on the value of 1 if a specific practice office, by city, has the largest audit fees from clients in a particular industry as defined by two-digit SIC codes in a specific fiscal year; 0 otherwise. Our research predicts *NATIONAL_LEADER* will be negatively related to *RESTATEMENT*.

$CITY\_LEADER_{i,t}$: An indicator variable that takes on the value of 1 for a specific office with the largest audit fees in an industry as defined by two-digit SIC codes within that city in a specific fiscal year; 0 otherwise. As previously stated, industry experience has been found to be positively related to higher audit quality. Our research predicts that *CITY_LEADER* will be negatively related *RESTATEMENT*.

$SIZE_{i,t}$: A client-level control variable. Previous research finds that larger clients are likely to have higher earnings quality and will therefore be negatively related to *RESTATEMENT*. *SIZE* is defined as the natural log of client's total assets (in $ million).

$BOOK\_to\_MARKET_{i,t}$: A market-related control variable. *BOOK_to_MARKET* is the ratio of book value to market value of equity. As a measure of a client's growth potential, *BOOK_to_MARKET* is predicted to be negatively related to *RESTATEMENT*.

For equation (1), we also include the variables $GOING\_CONCERN_{i,t}$ and the filer status control variables $LARGEACC_{i,t}$, $ACCEL\_FILER_{i,t}$ and $NONACCEL_{i,t}$.

Additional equation (1) control variable definitions:

GOING_CONCERN$_{i,t}$: An indicator variable that takes on the value of 1 if a company receives a going concern opinion; 0 otherwise.

FilerType$_{i,t}$: One of three potential indicator variables that take on the value of 1 if a company falls within one of the following three classifications: *LARGEACC*$_{i,t}$, *ACCEL_FILER*$_{i,t}$ and *NONACCEL*$_{i,t}$. *LARGEACC*$_{i,t}$, takes on the value of 1 when a company has a market float greater than $700m; 0 otherwise. *ACCEL_FILER*$_{i,t}$ takes on the value of 1 when a company has a market float greater than $75m and up to $700m; 0 otherwise. *NONACCEL*$_{i,t}$ takes on the value of 1 when a company has a market float less than $75m; 0 otherwise.

By specifically including the level of non-audit fees (*LnNONAUDIT*) provided by the auditor, we control for the conflict-of-interest argument. Prior research notes a general increase in the number of restatements and a concurrent reduction in the market reaction post SOX, suggesting enhanced vigilance by auditors (Burks, 2011). We control for the potential systematic effects of specific Big 4 Audit firm, time period and industry (two-digit SIC codes) characteristics through the use of fixed effects in the model estimations.

3.5 Descriptive statistics

Table II reports descriptive information about the independent variables used in our analysis. Table III shows the correlation matrix for all variables. Correlations (Pearson and Spearman) provide initial evidence in favor of our research proposition, and as predicted, ARL and *RESTATEMENT* are both positively correlated with *PERCENT_CONSULTING* at the 0.01 level. The correlations between *LnAUDIT* and *NONAUDIT*, *SIZE* and *LnAUDIT*, *SIZE* and *LnNONAUDIT*, *INFLUENCE* and *LnNONAUDIT*, *INFLUENCE* and *LnAUDIT* and *OFFICE_SIZE* and *INFLUENCE* are greater than ±0.4. However, based on the variance inflation factor values, all 1.61 or less, multicollinearity does not appear to be an issue (Belsley *et al.*, 1980).

Variable	*N*	Mean	SD	25%	Median	75%
RESTATEMENT	90,045	0.157	0.364	0.000	0.000	0.000
PERCENT_CONSULTING	93,390	0.214	0.172	0.010	0.230	0.340
ARL	83,307	67.470	61.070	45.000	57.000	74.000
GOING_CONCERN	90,045	0.024	0.153	0.000	0.000	0.000
LARGEACC	82,627	0.112	0.315	0.000	0.000	0.000
ACCEL_FILER	82,627	0.203	0.402	0.000	0.000	0.000
NONACCEL	82,627	0.671	0.470	0.000	0.000	0.000
LnAUDIT	90,045	12.821	1.769	11.435	12.985	14.087
LnNONAUDIT	81,439	11.443	2.064	9.903	11.567	12.899
TENURE	90,045	0.061	0.239	0.000	0.000	0.000
INFLUENCE	90,045	0.065	0.156	0.002	0.011	0.047
NATIONAL_LEADER	90,045	0.118	0.322	0.000	0.000	0.000
CITY_LEADER	90,045	0.198	0.398	0.000	0.000	0.000
OFFICE_SIZE	90,045	143	196	23	60	220
LOSS	81,439	0.151	0.358	0.000	0.000	0.000
SIZE	82,774	20.518	2.157	19.153	20.474	21.867
BOOK_to_MARKET	53,099	0.984	0.189	0.328	0.913	0.833

Table II.
Firm-year descriptive statistics (2000-2009)

Notes: Reports summary statistics for selected variables; Restatement is an indicator variable which takes on the value of 1 for each period in which a firm restates its financial statements due to a GAAP violation, error or irregularity

Table III.
Correlations (Pearson above and Spearman below the diagonal)

	RESTATEMENT	*PERCENT_CONSULTING*	*ARL*	*GOING_CONCERN*	*LARGE ACCEL*	*ACCEL_FILER*	*NONACCEL*	*LnNONAUDIT*
RESTATEMENT		0.0983*	0.0554*	0.0071*	0.0163*	0.2253*	−0.1972*	0.0942*
PERCENT_CONSULTING	0.0222*		0.0157*	0.0192*	−0.0418*	−0.2073*	0.2021*	0.0469*
ARL	0.1031*	0.0028		0.0936*	−0.0378*	−0.0125*	0.0252*	−0.0197*
GOING_CONCERN	0.0124*	0.0065	0.1067*		−0.0488*	−0.0249*	0.0273*	−0.0172*
LARGEACCEL	0.0899*	−0.0087*	−0.0876*	−0.0484*		−0.1789*	−0.5067*	0.1000*
ACCEL_FILER	0.1277*	−0.1796*	0.2568*	−0.0228*	−0.4538*		−0.7200*	0.0041
NONACCEL	−0.0390*	0.1808*	−0.2361*	0.0307*	−0.3997*	−0.5938*		−0.0689*
LnNONAUDIT	0.1151*	0.0460*	−0.0805*	−0.0547*	0.2564*	0.0202*	−0.2188*	
LnAUDIT	0.0879*	−0.0560*	0.1829*	−0.0496*	0.5068*	0.1511*	−0.5884*	0.5743*
TENURE	−0.0580*	0.0450*	0.0076	−0.0038	0.0465*	−0.0009	−0.0452*	−0.0024
INFLUENCE	0.0819*	0.0532*	0.0279*	−0.0225*	0.2791*	0.0617*	−0.2985*	0.5210*
NATIONAL_LEADER	−0.0118*	−0.0109*	−0.0357*	−0.0223*	0.0075	−0.0453*	0.0444*	0.0264*
CITY_LEADER	0.0079*	0.0251*	−0.0296*	−0.0108*	0.0891*	−0.0405*	−0.0313*	0.1095*
OFFICE_SIZE	−0.0506*	−0.0182*	−0.0575*	−0.0176*	−0.0360*	−0.0846*	0.1263*	−0.0882*
LOSS	−0.0038	0.0394*	0.0957*	0.1334*	−0.1317*	0.0038	0.0744*	−0.0839*
SIZE	0.0266*	0.0261*	−0.1505*	−0.1277*	0.4940*	−0.0628*	−0.3305*	0.5196*
BOOK_to_MARKET	−0.0514*	0.0853*	−0.0354*	−0.0068	−0.1777*	−0.1343*	0.2773*	−0.2544*

(*continued*)

Notes: * indicates significance at the $p < 0.01$; Reports correlation coefficients. Restatement is an indicator variable which takes on the value of 1 for each period in which a firm restates its financial statements because of a GAAP violation, error or irregularity

Table III.

	LnAUDIT	*TENURE*	*INFLUENCE*	*NATIONAL_LEADER*	*CITY_LEADER*	*OFFICE_SIZE*	*LOSS*	*SIZE*	*BOOK_to_MARKET*
RESTATEMENT	0.0962*	−0.1169*	0.0799*	−0.0563*	0.0118*	−0.1628*	0.0880*	−0.0025	−0.0355*
PERCENT_CONSULTING	−0.0206*	0.0540*	0.0585*	−0.0569*	0.0183*	0.0422*	0.0063*	−0.0163*	0.0670*
ARL	0.0672*	−0.0198*	0.0367*	−0.0465*	−0.0137*	−0.0283*	0.0403*	−0.1159*	−0.0136*
GOING_CONCERN	−0.0136*	−0.0285*	0.0363*	−0.0361*	−0.0057*	−0.0725*	0.1287*	−0.1980*	−0.0113*
LARGEACCEL	0.2879*	0.0013	0.1629*	−0.0435*	0.0713*	−0.1061*	−0.0132*	0.3547*	−0.1570*
ACCEL_FILER	0.0317*	−0.0339*	0.0590*	−0.0796*	−0.0005	−0.1746*	0.0861*	−0.0651*	−0.1105*
NONACCEL	−0.2298*	0.0283*	−0.1706*	0.1048*	−0.0482*	0.2332*	−0.1009*	−0.1661*	0.2352*
LnNONAUDIT	0.5667*	−0.0210*	0.2668*	−0.0071*	0.1218*	−0.0218*	−0.0021	0.3306*	−0.0548*
LnAUDIT		−0.0228*	0.2450*	0.0176*	0.1590*	−0.0314*	0.0023	0.4286*	−0.0508*
TENURE	0.0367*		0.0066*	0.0123*	−0.0105*	0.0586*	−0.0300*	−0.0104*	−0.0086*
INFLUENCE	0.5848*	0.0490*		−0.0523*	0.2729*	−0.3047*	0.0301*	0.2007*	−0.0754*
NATIONAL_LEADER	0.0492*	−0.0034	0.0056		0.0954*	0.0899*	−0.0386*	0.0940*	0.0836*
CITY_LEADER	0.1512*	−0.0154*	0.1924*	0.1278*		−0.0535*	0.0042	0.1365*	0.0106*
OFFICE_SIZE	−0.1054*	−0.0028	−0.6884*	0.0221*	−0.0970*		−0.0949*	0.0596*	0.0912*
LOSS	−0.0936*	−0.0225*	−0.0638*	−0.0034	−0.0067	0.0136*		−0.2566*	0.0292*
SIZE	0.6459*	−0.0028	0.4569*	0.0440*	0.1520*	−0.0662*	−0.2512*		0.0736*
BOOK_to_MARKET	−0.3002*	−0.0085*	−0.2529*	0.0444*	−0.0202*	0.1223*	0.0677*	−0.0286*	

4. Results

Examining *RP1*, we find that *PERCENT_CONSULTING* is significant and positively related to ARL (coefficient 12.199, $p < 0.001$), indicating that clients of Big 4 firms with larger consulting practices experience greater ARL. The control variables follow expectations based upon prior research. For example, *RESTATEMENT*, *LOSS*, *INFLUENCE and GOING_CONCERN* are significant and increase ARL. Conversely *TENURE*, *SIZE* and *BOOK_to_MARKET* are significant and decrease ARL. The three control variables associate with filing status *LARGEACC*, *ACCEL_FILER* and *NONACCEL* are significant and negatively related to ARL. Consistent with regulatory requirements, large accelerated filers have the most reduction in ARL followed by accelerated filers and finally non-accelerated filers. See Table IV.

Exploring *RP2*, the results of our probit estimates from equation (2) can be found in Table V. Panel A contains probit estimations of the variable of interest, *PERCENT_CONSULTING*, and the control variables, when the dependent variable is restatement periods resulting from accounting rule/GAAP application failures. Panel B contains probit estimations of the variable of interest, *PERCENT_CONSULTING*, and control variables, when the dependent variable is restatement periods resulting from errors as classified by Audit Analytics. Panel C contains the probit estimations for our variable of interest, *PERCENT_CONSULTING*, and control variables, when the dependent variable is restatement periods resulting from either fraud or irregularities as classified by Audit Analytics.

As shown in Table V, Panel A, when the dependent variable is restatement periods resulting from accounting rule/GAAP application failures, the coefficient of our variable of interest, *PERCENT_CONSULTING*, is 0.503 and is significant at the $p < 0.001$ level, indicating that, as predicted, the relative size of consulting practice is positively related to the likelihood of restatement. Results for our control variables are generally as expected based on previous research with *OFFICE_SIZE* being negatively related to *RESTATEMENT* (coefficient = −0.005, $p < 0.001$). *LnAUDIT* (coefficient = 0.203, $p < 0.001$) is positively related to *RESTATEMENT* and significant at $p < 0.01$, indicating that firms with high audit fees are more likely to have restatements. Our measure of the relative size of a client's fees to the practice office, *INFLUENCE*, is negatively related to *RESTATEMENT* (coefficient = −0.305, $p < 0.001$), indicating that auditors may be more conservative for the larger clients in their practice offices. *TENURE* (coefficient = −0.458, $p < 0.01$) is negatively related to *RESTATEMENT* and indicates that longer auditor tenure contributes to a decreased likelihood of restatement. This result contributes evidence relevant to the continuing discussion regarding the potential costs of mandatory auditor rotation. Additionally, the control variable *SIZE* (coefficient = −0.063, $p < 0.01$) indicates that larger firms may be less likely to have restatements. *BOOK_to_MARKET* (coefficient = −0.034) is also significant ($p < 0.001$).

When our dependent variable is restatement periods resulting from errors (Table V Panel B), our variable of interest, *PERCENT_CONSULTING*, is positively related to the likelihood of restatements resulting from errors (coefficient = 0.117, $p < 0.05$). Our control variables generally behave as expected with two interesting exceptions. In this specification, while *OFFICE_SIZE* is still negatively related to the likelihood of restatements, it is no longer significant (coefficient = −0.0005, $p = 0.123$). Additionally, in this specification, *NATIONAL_LEADER* is significant and negatively related to the likelihood of restatements resulting from errors (coefficient = −0.335, $p < 0.05$). This result provides evidence that offices that are national leaders may be less likely to be involved in a restatement because of an error.

Dependent Variable = ARL Variable	Pred	Coeff	*t*-stat	*p*-val
PERCENT_CONSULTING	+	12.199***	9.52	0.001
RESTATEMENT'	+	5.456***	11.83	0.001
GOING_CONCERN	+	9.339***	6.42	0.001
LARGEACC	−	−10.452***	−7.48	0.001
ACCEL_FILER	−	−8.441***	−6.29	0.001
NONACCEL	−	−4.725***	−3.44	0.001
LnAUDIT	+	12.810***	53.52	0.001
LnNONAUDIT	+	−1.957***	−14.28	0.001
NATIONAL_LEADER	−	−0.967	−1.43	0.152
CITY_LEADER	−	−0.748	−1.67	0.094
LOSS	+	2.604***	5.93	0.001
OFFICE_SIZE	−	0.004**	2.90	0.004
INFLUENCE		9.518***	8.39	0.001
TENURE	−	−4.927**	−3.16	0.002
SIZE	−	−7.615***	−45.39	0.001
BOOK_to_MARKET	−	−1.501***	−9.08	0.001
INTERCEPT		69.453***	24.36	0.001
Industry Fixed Effects			Yes	
Year Fixed Effects			Yes	
Audit Firm Fixed Effects			Yes	
Total Number of Observations			46,118	
Model *p*-value			<0.001	
Adjusted R^2			14.74%	

Notes: ***, ** and *indicate significance at or below the 0.001, 0.01 and 0.05 levels (two-tailed), respectively; ARL is the dependent variable. ARL is measured as the elapsed time from the client's fiscal year-end until the date the auditors sign their report; PERCENT_CONSULTING is defined as the ratio of aggregate consulting practice fees per year at the firm level to total aggregate fees from all services at the Big 4 firm level. RESTATEMENT is a dichotomous variable taking on the value of 1 for each firm year observation that contains a financial statement restatement and is equal to 0 otherwise. GOING_CONCERN is a dichotomous variable that takes on the value of 1 if a company receives a going concern opinion; 0 otherwise. LARGEACC is a dichotomous variable that takes on the value of 1 when a company has market float greater than $700m; 0 otherwise. ACCEL_FILER is a dichotomous variable that takes on the value of 1 when a company has market float greater than $75m and up to $700m; 0 otherwise. NONACCEL is a dichotomous variable that takes on the value of 1 when a company has a market float less than $75m; 0 otherwise. LnAUDIT is defined as the natural log of the client's audit fees. LnNONAUDIT is defined as the natural log of the client's non audit fees. NATIONAL_LEADER is an indicator variable that takes on the value of 1 if a specific practice office, by city, has the largest audit fees from clients in a particular industry as defined by two-digit SIC code in a specific fiscal year; 0 otherwise. CITY_LEADER is an indicator variable that takes on the value of 1 for a specific office with the largest audit fees in an industry as defined by two-digit SIC code within that city in a specific fiscal year; 0 otherwise. LOSS is an indicator variable that takes on the value of 1 if the company has negative earnings in the current year and is 0 otherwise. OFFICE_SIZE is based on the number of SEC-registered clients audited by a specific office for a given year. INFLUENCE is measured as a client's total fees for all services to the sum of all fees of all SEC-registered clients for a practice office for a given year. TENURE is an indicator variable that takes on the value of 1 if a client has been audited by a particular accounting firm for four years or longer; 0 otherwise. SIZE is defined as the natural log of client's total assets (in $ million). BOOK_to_MARKET is the ratio of book value to market value of equity

Table IV.
Analysis of Big 4 size of consulting practice and the regression of percent consulting on audit reporting lag

Table V, Panel C, shows our probit results when the dependent variable is restatements because of fraud or irregularity. In our final model specification, *PERCENT_CONSULTING* is positively related to the likelihood of restatement, but is no longer significant (coefficient = 0.197). Additionally, in this final specification, *OFFICE_SIZE*, *NATIONAL_LEADER*,

Dependent Variable = Prob. (RESTATEMENT = 1) Variable	Pred	Coeff	*z*-stat	*p*-value
Panel A: Accounting Rule/GAAP Application Failures				
PERCENT_CONSULTING	+	0.503***	3.59	0.001
LnAUDIT	+	0.203***	13.57	0.001
LnNONAUDIT	+	0.010	1.19	0.232
OFFICE_SIZE	−	−0.005***	−5.64	0.001
NATIONAL_LEADER	−	−0.023	−0.54	0.591
CITY_LEADER	−	0.045	1.60	0.110
LOSS	+	0.120***	4.43	0.001
INFLUENCE		−0.305***	−3.95	0.001
TENURE	−	−0.458**	−4.03	0.004
SIZE	−	−0.063***	−6.31	0.001
BOOK_to_MARKET	−	−0.034***	−3.48	0.001
INTERCEPT		−2.827***	−18.25	0.001
Industry Fixed Effects			Yes	
Year Fixed Effects			Yes	
Audit Firm Fixed Effects			Yes	
Total Number of Observations			53,099	
Number of Restatement Periods			8,510	
Model *p*-value			<0.001	
Pseudo R^2			8.49%	
Panel B: Errors				
PERCENT_CONSULTING	+	0.117*	0.32	0.023
LnAUDIT	+	0.273***	6.28	0.001
LnNONAUDIT	+	−0.059**	−2.71	0.007
OFFICE_SIZE	−	−0.000	−1.54	0.123
NATIONAL_LEADER	−	−0.335*	−2.18	0.030
CITY_LEADER	−	0.098	1.31	0.191
LOSS	+	0.144*	2.11	0.035
INFLUENCE		−0.209	−1.00	0.293
TENURE	−	−0.297*	−2.07	0.038
SIZE	−	−0.084**	−3.05	0.002
BOOK_to_MARKET	−	−0.047	−1.72	0.085
INTERCEPT		−3.883***	−8.80	0.001
Industry Fixed Effects			Yes	
Year Fixed Effects			Yes	
Audit Firm Fixed Effects			Yes	
Total Number of Observations			53,099	
Number of Restatement Periods			385	
Model *p*-value			<0.001	
Pseudo R^2			13.21%	
Panel C: Fraud				
PERCENT_CONSULTING	+	0.197	0.40	0.689
LnAUDIT	+	0.303***	4.73	0.001
LnNONAUDIT	+	0.046	1.35	0.177
OFFICE_SIZE	−	−0.004	−1.13	0.257

(*continued*)

Table V.
Analysis of Big 4 size of consulting practice and the likelihood of restatements

Dependent Variable = Prob. (RESTATEMENT = 1) Variable	Pred	Coeff	*z*-stat	*p*-value
NATIONAL_LEADER	−	−0.014	−0.09	0.925
CITY_LEADER	−	−0.174	−1.73	0.084
LOSS	+	−0.042	−0.42	0.672
INFLUENCE		0.239	1.08	0.281
TENURE	−	−0.189	−0.98	0.328
SIZE	−	−0.111**	−2.80	0.005
BOOK_to_MARKET	−	−0.005	−0.14	0.891
INTERCEPT		−4.402***	−8.03	0.001
Industry Fixed Effects			Yes	
Year Fixed Effects			Yes	
Audit Firm Fixed Effects			Yes	
Total Number of Observations			53,099	
Number of Restatement Periods			202	
Model *p*-value			<0.001	
Pseudo R^2			14.29%	

Notes: ***, **and *indicate significance at or below the 0.001, 0.01 and 0.05 levels (two-tailed), respectively. Pseudo R^2 is measured using Mcfadden's R^2. RESTATEMENT is a dichotomous variable taking on the value of 1 for each firm year observation that contains a financial statement restatement and is equal to 0 otherwise. PERCENT_CONSULTING is defined as the ratio of aggregate consulting practice fees per year at the firm level to total aggregate fees from all services at the Big 4 firm level. BOOK_to_MARKET is the ratio of book value to market value of equity. CITY_LEADER is an indicator variable that takes on the value of 1 for a specific office with the largest audit fees in an industry as defined by two-digit SIC code within that city in a specific fiscal year; 0 otherwise. INFLUENCE is measured as a client's total fees for all services to the sum of all fees of all SEC-registered clients for a practice office for a given year. LnAUDIT is defined as the natural log of the client's audit fees. LnNONAUDIT is defined as the natural log of the client's non audit fees. LOSS is an indicator variable that takes on the value of 1 if the company has negative earnings in the current year and is 0 otherwise. NATIONAL_LEADER is an indicator variable that takes on the value of 1 if a specific practice office, by city, has the largest audit fees from clients in a particular industry as defined by two-digit SIC code in a specific fiscal year; 0 otherwise. OFFICE_SIZE is based on the number of SEC-registered clients audited by a specific office for a given year. SIZE is defined as the natural log of client's total assets (in $ million). TENURE is an indicator variable that takes on the value of 1 if a client has been audited by a particular accounting firm for four years or longer; 0 otherwise

Table V.

TENURE and *BOOK_to_MARKET* are still negatively associated with the likelihood of restatements; however, they are no longer significant.

In concert with recent analysis, we find the level of nonaudit-related services yield inconsistent results (Anandarajan *et al.*, 2012). It is positively associated with restatements in the GAAP application failures and fraud groups while being negatively associated with restatements because of errors.

4.1 Additional analysis and robustness checks

Our research benefits from the natural experiment that existed because of Deloitte maintaining its consulting practice as the other Big 4 accounting firms sold and the subsequently regrew theirs. As a result, there was the potential that the results documented previously are driven by the presence of Deloitte.

To examine this issue, we replicate models (1) and (2) without Deloitte in our sample. When we performed this analysis, our results were quantitatively the same (Table VI). In the results of the estimation of equation (1) with only non-Deloitte Big 4 firms in our sample, our variable of interest, *PERCENT_CONSULTING* (coefficient = 2.706, $p < 0.01$), is still

Dependent Variable = ARL Variable	Pred	Coeff	*t*-stat	*p*-value
PERCENT_CONSULTING	+	2.71**	2.55	0.010
RESTATEMENT	+	7.13***	13.85	0.001
GOING_CONCERN	+	9.20***	3.27	0.001
LARGEACC	−	−9.73***	−5.22	0.001
ACCEL_FILER	−	−8.31***	−4.74	0.001
NONACCEL	−	−6.33***	−3.35	0.001
LnAUDIT	+	15.05***	17.81	0.001
LnNONAUDIT	+	−2.55***	−11.73	0.001
NATIONAL_LEADER	−	−0.49	−0.61	0.539
CITY_LEADER	−	1.36*	2.28	0.022
LOSS	+	2.27***	3.96	0.001
OFFICE_SIZE	−	−0.02	−1.17	0.242
INFLUENCE		2.14	1.12	0.262
TENURE	−	−3.18***	−3.75	0.001
SIZE	−	−8.88***	−14.42	0.001
BOOK_to_MARKET	−	−1.24***	−6.50	0.001
INTERCEPT		71.78***	20.83	0.001
Industry fixed effects			Yes	
Year fixed effects			Yes	
Audit firm fixed effects			Yes	
Total number of observations			30,866	
Model *p*-value			<0.001	
Adjusted R^2			13.12%	

Notes: ***, **and *indicate significance at or below the 0.001, 0.01 and 0.05 levels (two-tailed), respectively. ARL is the dependent variable. ARL is measured as the elapsed time from the client's fiscal year-end until the date the auditors sign their report. PERCENT_CONSULTING is defined as the ratio of aggregate consulting practice fees per year at the firm level to total aggregate fees from all services at the Big 4 firm level. RESTATEMENT is a dichotomous variable taking on the value of 1 for each firm year observation that contains a financial statement restatement and is equal to 0 otherwise. GOING_CONCERN is a dichotomous variable that takes on the value of 1 if a company receives a going concern opinion; 0 otherwise. LARGEACC is a dichotomous variable that takes on the value of 1 when a company has market float greater than $700m; 0 otherwise. ACCEL_FILER is a dichotomous variable that takes on the value of 1 when a company has market float greater than $75m and up to $700m; 0 otherwise. NONACCEL is a dichotomous variable that takes on the value of 1 when a company has a market float less than $75m; 0 otherwise. LnAUDIT is defined as the natural log of the client's audit fees. LnNONAUDIT is defined as the natural log of the client's non audit fees. NATIONAL_LEADER is an indicator variable that takes on the value of 1 if a specific practice office, by city, has the largest audit fees from clients in a particular industry as defined by two-digit SIC code in a specific fiscal year; 0 otherwise. CITY_LEADER is an indicator variable that takes on the value of 1 for a specific office with the largest audit fees in an industry as defined by two-digit SIC code within that city in a specific fiscal year; 0 otherwise. LOSS is an indicator variable that takes on the value of 1 if the company has negative earnings in the current year and is 0 otherwise. OFFICE_SIZE is based on the number of SEC-registered clients audited by a specific office for a given year. INFLUENCE is measured as a client's total fees for all services to the sum of all fees of all SEC-registered clients for a practice office for a given year. TENURE is an indicator variable that takes on the value of 1 if a client has been audited by a particular accounting firm for four years or longer; 0 otherwise. SIZE is defined as the natural log of client's total assets (in $ million). BOOK_to_MARKET is the ratio of book value to market value of equity

Table VI.
Analysis of non-Deloitte Big 4 size of consulting practice and the regression of percent consulting on audit reporting lag

significant and positively associated with *ARL*. *RESTATEMENT* (coefficient = 7.129, $p <$ 0.001) and *GOING_CONCERN* (coefficient = 9.203, $p < 0.001$) are also consistent with our main results. *OFFICE_SIZE* and *INFLUENCE* are insignificant in this specification as opposed to our main result. As anticipated with only the non-Deloitte Big 4 firms in this

specification, the three control variables associated with filing status *LARGEACC*, *ACCEL_FILER* and *NONACCEL* are still significant and negatively related to ARL results.

In the estimation of equation (2) with only the non-Deloitte Big 4 firms in our sample, our variable of interest, *PERCENT_CONSULTING* (coefficient = 0.150, $p < 0.001$) is still positively related to *RESTATEMENT* and significant (Table VII). Similar to our main results, *LnAUDIT* (coefficient = 0.223) is positively related to *RESTATEMENT* and significant at $p < 0.001$. In this specification, *OFFICE_SIZE* is still negatively related to *RESTATEMENT*, but unlike in our main regression, it is significant (coefficient = −0.007, $p < 0.01$).

Similar to Gunny and Zhang (2013), our results are robust for excluding those categories of restatements such as adoption of new standards or change in accounting principal. We use

Dependent variable = Probability (RESTATEMENT = 1)
Panel A: Accounting Rule/GAAP Application Failures

Variable	Pred	Coeff	*z*-stat	*p*-value
PERCENT_CONSULTING	+	0.150***	4.81	0.001
LnAUDIT	+	0.222***	14.20	0.001
LnNONAUDIT	+	0.008	0.12	0.901
OFFICE_SIZE	−	−0.007***	−5.99	0.001
NATIONAL_LEADER	−	−0.066	−1.68	0.093
CITY_LEADER	−	0.126	5.41	0.001
LOSS	+	0.117***	5.04	0.001
INFLUENCE		−0.434***	−7.03	0.001
TENURE	−	−0.599**	−4.58	0.004
SIZE	−	−0.021*	−2.48	0.013
BOOK_to_MARKET	−	−0.003	−0.35	0.728
INTERCEPT		−2.618***	−20.74	0.001
Industry Fixed Effects			Yes	
Year Fixed Effects			Yes	
Audit Firm Fixed Effects			Yes	
Total Number of Observations			33,847	
Number of Restatement Periods			6,141	
Model *p*-value			<0.001	
Pseudo R^2			7.89%	

Notes: ***, ** and *indicate significance at or below the 0.001, 0.01 and 0.05 levels (two-tailed), respectively. Pseudo R^2 is measured using Mcfadden's R^2. RESTATEMENT is a dichotomous variable taking on the value of 1 for each firm year observation that contains a financial statement restatement and is equal to 0 otherwise. PERCENT_CONSULTING is defined as the ratio of aggregate consulting practice fees per year at the firm level to total aggregate fees from all services at the Big 4 firm level. BOOK_to_MARKET is the ratio of book value to market value of equity. CITY_LEADER is an indicator variable that takes on the value of 1 for a specific office with the largest audit fees in an industry as defined by two-digit SIC code within that city in a specific fiscal year; 0 otherwise. INFLUENCE is measured as a client's total fees for all services to the sum of all fees of all SEC-registered clients for a practice office for a given year. LnAUDIT is defined as the natural log of the client's audit fees. LnNONAUDIT is defined as the natural log of the client's non audit fees. LOSS is an indicator variable that takes on the value of 1 if the company has negative earnings in the current year and is 0 otherwise. NATIONAL_LEADER is an indicator variable that takes on the value of 1 if a specific practice office, by city, has the largest audit fees from clients in a particular industry as defined by two-digit SIC code in a specific fiscal year; 0 otherwise. OFFICE_SIZE is based on the number of SEC-registered clients audited by a specific office for a given year. SIZE is defined as the natural log of client's total assets (in $ million). TENURE is an indicator variable that takes on the value of 1 if a client has been audited by a particular accounting firm for four years or longer; 0 otherwise

Table VII.
Analysis of non-Deloitte Big 4 size of consulting practice and the likelihood of restatements

Audit Analytic descriptions to remove the categories of restatements that may not be reflective of an audit quality issue.

5. Discussion

The data presented support the concern that Big 4 audit practices are not immune to the presence of large consulting practices within the same firm. This is not a trivial matter, as previously noted recent PCAOB inspection reports find significant audit quality issues at each Big 4 firm (PCAOB, 2013a, 2013b). Although the bulk of consulting-revenue growth comes from companies that are not audit clients, Lynn Turner, a former SEC chief accountant, reports concerns with the Big 4 consulting growth, "I think that this is an indication they're more focused on the bottom line than they are on their audits" (Rapoport, 2014). It is clear that the clients, regulators and the public have an ongoing cause for unease.

Auditing is not a high-growth business. And, audit practice margins are eroded by litigation costs that may increase with expanding disclosure requirements, i.e. publishing the audit partner's name. Non-audit services can be readily marketed and rendered by accounting firms with relatively little risk. So, the Big 4 naturally expand their businesses into higher growth and more profitable consulting practices to the point that they eclipse the scale and profitability of their audit operations (Cohen, 2016). Yet, running a consulting practice consumes management attention and firm resources; frequently new practices siphon off existing talented staff who may perceive enhanced career opportunities in a nascent venture. And, as an audit firm's consulting practice grows, it typically recruits additional employees with different education and work experiences. New business models are introduced by consulting practices, including joint ventures, outsourcing contracts, software marketing agreements, etc. This disruption to the firm's homogeneity may have a deleterious impact by distorting the firm culture, reducing professional focus and exacerbating internal competition. The result, following Wyatt's and Zeff's narratives, is commercial concerns subsuming professional values.

Speaking of the Big 4 firms as "professional" may be misleading. They are large, bureaucratic, multinational for-profit concerns. If today's economic reality requires a growth engine, currently consulting services, to fund the somewhat moribund audit practice, then regulators and the public may need to adjust their expectations of audit firms. Only by seeing clearly the dominance of commercial over professional values can more appropriate policy and regulatory practices emerge to ameliorate the apparent quality risks. But, as a first step, this requires recognizing the reality of the current state of affairs and being willing to discard cherished notions that anchor the practice of accounting to a bygone era. The public and the accounting profession must relinquish its image of the small bands of independent professionals practicing their craft. How the Big 4 structure their organizations, measure and reward performance and oversee audit quality are no longer matters of private concern. Increased transparency by the Big 4 on the nature of all their operations is needed if we are to develop evidenced-based regulations. Additionally, the PCAOB's inability to release detailed data on its inspections and their findings, thus preventing researchers from a more thorough analysis of audit practice issues, needs to be addressed. Otherwise, one can easily envision at some not-too-distant nadir, an SOX II prohibiting the Big 4 from providing all non-audit services.

5.1 Limitations and opportunities for future inquiry

While the findings suggest that financial reporting timeliness and quality may suffer as Big 4 firms diversify away from their audit focus, further research is needed to explore the specific concerns voiced by experts, namely, NAS fee pressure on audit partners, internal competition for resources and staff, diluting management's attention and altering firm

culture. Uncovering how these or other additional mechanisms are involved will be useful to inform future policy development.

A limitation of the work is that this project was focused on the US audit market. Expanding the investigation to include non-US markets may provide new insights. Additionally, recent work on audit quality has explored differences by office within a firm (Francis and Yu, 2009). Discussions with Big 4 partners indicate that the consulting practices frequently operate on either a regional or national basis and are generally organized by technical and functional specialty. Therefore, the office-based logic often does not apply. Regardless, the authors are unaware of any available data tracking Big 4 consulting fees by office. Thus, the firm was the practical level of analysis for this initial project. If more granular consulting fee data can be compiled an analysis by office, practice or region would be useful.

An additional limitation of the study is that the data end in 2009. There have been some developments in the audit industry that might be relevant for future research on the impact of consulting on the loss of professional focus. First, consulting continues to grow both through acquisitions and hiring. At the same time, recent emphasis by the clients, firms and AACSB on Big Data and the use of data analytics by auditors mean that more than ever audit and consulting practices are competing for the same scarce skills. Second, local office effects are now recognized as important elements for audit scholars to study. Researchers should investigate the impact of the location of the consulting resources *vis-à-vis* these local offices. These investigations could include such topics as the relative size of the local audit practice versus the size of the consulting practice. Another potentially fruitful topic could be to investigate the effect of the industry expertise of the consulting practice versus the audit practice. Third, the growth of audit fees has slowed following the attenuation of the initial SOX peak and because of the recession putting downward pressure on audit fees. Investigations into the rate of audit fee recovery compared to the growth in consulting fees could be insightful. Finally, the current generation of new audit partners did not experience the pre-SOX turmoil of the consulting boom. Researchers could provide insight, inform regulators and educate the accounting industry, as this current generation of audit partners may be subject to same pressures and hubris of prior generation.

This is an important topic for additional research. Scholars need to provide insight to motivate effective public policy. The tale of burgeoning consulting practices within leading CPA firms accompanied by growing audit quality concerns should be familiar to all accounting regulators and scholars. The previous version of this story did not end well.

Notes

1. The Big 4 comprise the global public accounting firms: Ernst & Young, Deloitte, KPMG and PricewaterhouseCoopers.
2. The Big 8 comprised the global public accounting firms: Arthur Andersen & Company, Arthur Young & Company, Coopers & Lybrand, Deloitte Haskins & Sells, Ernst & Whinney, Peat Marwick Mitchell, Pricewaterhouse and Touche Ross.
3. Nine categories of non-audit services were prohibited: (*1) bookkeeping*; *(2) financial information systems design and implementation*; *(3) appraisals*; *(4) actuarial services*; *(5) internal audit outsourcing services*; (*6) management functions*; *(7) investment adviser services*; *(8) legal services*; *(9) expert services.* Firms were permitted to continue to provide tax services. See http://sec.gov/rules/final/33-8183.htm for additional details.
4. An advantage of restricting the study to a single country is that it avoids confounding effects of regulatory, structural and cultural differences.
5. Audit Analytics defines restatement as "a revision of previously filed financial statements as a result of an error, fraud or GAAP/foreign principle misapplication. We read all the restatement disclosures and

manually remove all the retrospective revisions for comparative purposes, retrospective application of accounting principles such as adoption of SFAS 123R and changes in presentation as a result of mergers/acquisitions (assuming that accounting was applied correctly)." – *Audit Analytics Data Definitions Frequently asked Questions Section.*

6. As an example of our audit quality measure: WebMD Health Corp., an E&Y client, disclosed on 5/1/2007 via 8-K that they were restating financials during the time period from 1/1/2004 to 12/31/2006. Because WebMD Health Corp. restated financials in 2004, 2005 and 2006, we count that as three restatements and attribute each restatement to its respective year. Data source: the Restatement screen in the Audit Analytics database.
7. As a result of the helpful comments from an anonymous reviewer, we ran the Durbin–Wu–Hausman test for endogeneity to ensure that *RESTATEMENT* is consistent.

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Appendix

Year	Audit	Tax	Consulting	Other	Total	% Consulting	% Other
Deloitte fees							
1999	2,362.50	1,350.00	3,037.50	–	6,750.00	45	
2000	1,809.78	1,109.22	2,919.00	–	5,838.00	50	
2001	2,022.90	1,287.30	2,145.50	674.30	6,130.00	35	11
2002	2,135.88	1,245.93	2,017.22	533.97	5,933.00	34	9
2003	2,539.29	1,627.75	1,757.97	585.99	6,511.00	27	9
2004	2,750.40	1,787.76	2,062.80	275.04	6,876.00	30	4
2005	3,438.16	1,719.08	2,344.20	312.56	7,814.00	30	4
2006	3,946.05	1,929.18	2,543.01	350.76	8,769.00	29	4
2007	4,334.00	2,167.00	2,955.00	394.00	9,850.00	30	4
2008	4,392.00	2,525.40	3,513.60	549.00	10,980.00	32	5
2009	3,967.14	2,573.28	3,645.48	536.10	10,722.00	34	5
2010	3,718.92	2,296.98	4,484.58	437.52	10,938.00	41	4
2011	3,820.48	2,387.80	5,253.16	477.56	11,939.00	44	4
2012	4,050.77	2,482.73	5,880.15	653.35	13,067.00	45	5
Ernst & Young fees							
1999	2,231.25	1,338.75	2,805.00	–	6,375.0	44	
2000	2,433.90	1,622.60	213.50	–	4,270.00	5	
2001	2,601.30	1,749.15	–	134.55	4,485.00	0	3
2002	2,663.85	1,715.70	–	135.45	4,515.00	0	3
2003	3,261.20	1,841.00	–	157.80	5,260.00	0	3
2004	3,692.61	1,653.41	165.34	–	5,511.36	3	0
2005	4,558.06	1,709.27	63.31	–	6,330.64	1	0
2006	4,960.80	1,860.30	–	68.90	6,890.00	0	1
2007	5,292.70	2,192.69	–	75.61	7,561.00	0	1
2008	5,597.83	2,469.63	–	164.64	8,232.10	0	2
2009	3,124.20	2,514.60	1,752.60	228.60	7,620.00	23	3
2010	2,982.00	2,272.00	1,420.00	426.00	7,100.00	20	6
2011	3,000.00	2,325.00	1,725.00	450.00	7,500.00	23	6
2012	3,198.00	2,542.00	1,968.00	492.00	8,200.00	24	6
KPMG fees							
1999	1,629.60	1,024.32	2,002.08	–	4,656.00	43	
2000	1,890.00	1,188.00	2,322.00	–	5,400.00	43	
2001	1,496.00	1,292.00	612.00	–	3,400.00	18	0
2002	1,496.00	1,224.00	680.00	–	3,400.00	20	0
2003	2,541.31	1,251.69	–	–	3,793.00	0	0
2004	2,962.80	1,152.20	–	–	4,115.00	0	0
2005	3,630.55	1,084.45	–	–	4,715.00	0	0
2006	2,448.51	1,056.22	1,296.27	–	4,801.00	27	0
2007	2,571.36	1,232.11	1,553.53	–	5,357.00	29	0
2008	2,725.92	1,419.75	1,533.33	–	5,679.00	27	0
2009	2,436.48	1,370.52	1,269.00	–	5,076.00	25	0
2010	2,248.94	1,271.14	1,368.92	–	4,889.00	28	0
2011	2,305.23	1,393.86	1,661.91	–	5,361.00	31	0
2012	2,301.20	1,553.31	1,898.49	–	5,753.00	33	0

Table AI.
Big 4 US revenue by practice area–1999 to 2012

(*continued*)

Year	Audit	Tax	Consulting	Other	Total	% Consulting	% Other
PricewaterhouseCoopers fees							
1999	2,362.50	1,350.00	3,037.50	–	6,750.00	45	
2000	2,903.11	1,535.89	4,439.00	–	8,878.00	50	
2001	2,819.95	1,611.40	2,497.67	1,127.98	8,057.00	31	14
2002	3,000.92	1,552.20	465.66	155.22	5,174.00	9	3
2003	3,007.00	1,600.50	242.50	–	4,850.00	5	0
2004	3,373.18	1,556.85	259.48	–	5,189.51	5	0
2005	3,885.21	1,603.42	616.70	61.67	6,167.00	10	1
2006	4,153.43	1,799.82	–	969.13	6,922.38	0	14
2007	4,403.62	2,015.22	–	1,044.93	7,463.77	0	14
2008	4,243.85	2,273.49	–	1,060.96	7,578.30	0	14
2009	3,979.50	2,284.53	–	1,105.42	7,369.45	0	15
2010	4,097.34	2,410.20	1,526.46	–	8,034.00	19	0
2011	4,245.12	2,564.76	2,034.12	–	8,844.00	23	0
2012	4,775.76	2,578.91	2,196.85	–	9,551.52	23	0

Note: Fees for US Audit, Tax, Consulting practices and other; $000,000
Source: Accounting Today (2012)

Table AI.

Firm	Transaction	Date	No. Employees	Revenue ($ billion)	Selling Price ($ billions)	Non-compete expiration
E&Y	Sold to Cap Gemini	February-2000	18,000	3.4	11.1	2005
KPMG	IPO	February-2001	9,100	2	2.3	2006
Accenture	IPO[a]	July-2001	75,000	10.1	1.7	NA
PWC	Sold to IBM	October-2002	30,000	4.9	3.5	2006

Note: [a] Controlling interest was retained by the partners

Table AII.
Separation of Big 5 consulting practices

Corresponding author
Michele D. Meckfessel can be contacted at: meckfesselm@umsl.edu