Does Big 4 Consulting Impair Audit Quality?*

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Abstract:
Over the past decade, the Big 4 public accounting firms have experienced a steady increase in the proportion of their revenues generated from consulting services, primarily from nonaudit clients. Regulators and the business press have expressed concerns about the potential implications of this increase for audit quality. We examine the relations between Big 4 accounting firm consulting revenues and various measures of audit quality, including auditor going concern reporting errors, client misstatements, client discretionary accruals, and the probability that clients meet or just beat analyst earnings forecasts. Overall, our results suggest that a higher proportion of consulting revenue to total revenue at the accounting firm level is *not* associated with impaired audit quality; in fact, results of some tests suggest that a higher proportion of consulting revenue is associated with improved audit quality. However, results of earnings response coefficient tests suggest that investors *perceive* a deterioration in audit quality when a higher proportion of accounting firm revenue is generated from consulting services.

Keywords: audit quality, nonaudit services, consulting services, Big 4 accounting firms, earnings response coefficients

JEL classifications: M41, M42

1. Introduction

Public accounting firms provide three primary types of services to their clients – assurance services, tax services, and consulting services. Over the past decade, the Big 4 accounting firms have experienced a steady increase in the proportion of their revenues generated from consulting services. In fact, by 2013, they were generating more revenues from consulting services than from assurance services. Proponents of allowing accounting firms to further expand consulting services argue that providing consulting services can improve audit quality and thereby benefit investors. However, the Public Company Accounting Oversight Board (PCAOB) has expressed concerns about this trend and is planning to hold round-table discussions about the implications of this trend for audit quality in late 2014.

We contribute to the debate by providing empirical evidence on associations between the proportion of Big 4 accounting firm revenues generated from consulting services and various measures of audit quality, as well as between the proportion of Big 4 revenues generated from consulting and perceptions of audit quality.[1] Because SOX prohibits public accounting firms from providing a wide range of consulting services to their public audit clients, an increase in consulting services provided to nonaudit clients is the likely source of any increase in consulting revenues following SOX. Prior research examining the impact of consulting services on audit quality has focused exclusively on nonaudit services *provided to audit clients*. We contribute to the literature by examining whether accounting firms' expansion of consulting services, primarily *to nonaudit clients*, impacts audit quality and/or investor perceptions of audit quality.

[1] We focus on the Big 4 accounting firms because consulting services represent a relatively small proportion of revenues for smaller accounting firms. Furthermore, in untabulated analyses, for smaller accounting firms, we do not observe a marked decrease in consulting revenue after the passage of the Sarbanes-Oxley Act of 2002 (SOX) followed by a steady increase, as documented in Figure 1 for the Big 4 accounting firms. Nonetheless, our inferences regarding whether consulting revenue impairs audit quality remain unchanged when we extend our sample to include clients of all accounting firms.

The debate over whether providing consulting services to nonaudit clients impairs audit quality has intensified over the past decade. On the one hand, the Advisory Committee on the Auditing Profession and some academics argue that expanding the provision of consulting services diverts resources (e.g., time, attention, and personnel) away from the assurance practice and potentially alters perceptions of the firm's identity (ACAP 2008; Hermanson 2009; Dey, Robin, and Tessoni 2012). This 'resource-diversion' view suggests that expanding consulting services could undermine audit quality. On the other hand, the Big 4 accounting firms assert that consulting staff often provide valuable insights to audit staff because they act as specialists on audit engagements. This 'specialist knowledge spillover' view suggests that expanding consulting services could improve audit quality.

Accounting Today publishes an annual list of the largest 100 public accounting firms in the U.S., ranked by net revenues. This list provides the proportion of each firm's revenues generated from audit and assurance (A&A), tax, management advisory services (MAS), and other services. We use this list to measure each audit firm's consulting services as the proportion of its net U.S. revenues derived from MAS and other services.[2] Using this measure, we first examine the relations between consulting revenues and multiple measures of audit quality, including going concern reporting errors, misstatements, discretionary accruals, and meeting or beating analyst forecasts.

Overall, our results suggest that a higher proportion of accounting firm revenue derived from consulting services is not associated with impaired audit quality and is in fact associated with increased audit quality using some measures. Specifically, we find that accounting firms

[2] Although our consulting services measure includes revenues from other services, the proportion of revenues derived from other services is quite small, averaging only 3.5 percent of net revenues for Big 4 accounting firms from 2003 through 2011. However, our inferences are robust to measuring consulting services as the proportion of an accounting firm's net U.S. revenues derived from MAS only.

with a greater proportion of consulting revenues are less likely to make Type II going concern reporting errors (where the client declares bankruptcy within a year following a clean audit opinion), but are not less likely to make Type I going concern reporting errors (where the auditor issues a going concern modification that is not followed by client bankruptcy in the following year). Furthermore, we find that although the proportion of consulting revenue is positively associated with the likelihood of general misstatements, it is not associated with misstatements in core operating accounts and is negatively associated with the likelihood of an egregious misstatement. We also find that the proportion of consulting revenue is negatively associated with signed discretionary accruals, and is not associated with absolute accruals, income-increasing discretionary accruals, or the likelihood of a client meeting or just beating the consensus analyst earnings forecast. As such, our collective analyses provide little evidence of a deterioration in audit quality when accounting firms generate larger proportions of revenue from consulting services and suggest that in some cases, the knowledge gained by consulting professionals when performing consulting engagements for nonaudit clients can improve the quality of audits performed for audit clients, presumably due to 'specialist knowledge spillovers'.

Next, we examine whether investors *perceive* accounting firms' provision of consulting services as improving or impairing audit quality. We use both long- and short-window earnings response coefficients (ERCs) to proxy for market perceptions of audit quality following Ghosh and Moon (2005), Chi et al. (2009), and Ghosh et al. (2009). We find that long- and short-window ERCs are lower when a greater proportion of accounting firm revenue is derived from consulting services. Thus, although we find no evidence of an overall deterioration in audit quality associated with higher levels of consulting revenue, our results suggest that capital

market participants *perceive* a deterioration of audit quality when a higher proportion of accounting firm revenues are generated from consulting.

Our paper contributes to the academic literature and provides valuable information to regulators, accounting firms, and investors. First, we contribute to the ongoing debate regarding whether public accounting firms' continuing expansion of consulting services impacts audit quality. Our findings suggest that although actual audit quality does not suffer when accounting firms perform more consulting, investors *perceive* a deterioration in audit quality. Second, prior academic research studying the impact of accounting firms' provision of consulting services on audit quality focuses exclusively on consulting services provided to audit clients. Because the expansion of accounting firms' consulting business post-SOX is likely driven by consulting provided to nonaudit clients, our study addresses a question that has received a great deal of regulatory attention but has not been addressed in the literature. Third, our findings should be of interest to investors because they suggest that audit firms' provision of consulting services to nonaudit clients should not reduce investors' ability to rely on financial statement numbers. The remainder of the paper is organized as follows. Section 2 describes the background and reviews related literature. Section 3 develops our hypotheses. Section 4 describes our sample and data. Section 5 discusses our research design and presents our empirical results. Section 6 concludes.

2. Background and literature review

During the 1980s and 1990s, public accounting firms derived a substantial amount of revenue from providing consulting services, with a sizeable portion coming from their audit clients (AccountingWEB 2009). At that time, public accounting firms viewed assurance engagements as loss leaders, designed to secure more lucrative consulting engagements.

Consulting engagements were highly profitable and experienced growth rates nearly doubled those of typical audit work (AccountingWEB 2000).

Regulators, investors, and academics have long debated whether the provision of nonaudit services to audit clients impairs audit quality. Public accounting firms argue that the provision of nonaudit services to audit clients produces knowledge spillovers that increase both the effectiveness and efficiency of audits (Simunic 1984). Regulators, however, argue that the provision of nonaudit services to audit clients strengthens the economic bond between accounting firms and their clients, thereby threatening auditor independence (Panel on Audit Effectiveness 2000).

In the late 1990s and the early 2000s, accounting firms faced growing pressure from the Securities and Exchange Commission (SEC) and from investors to address conflicts of interest that were perceived to result from providing consulting services to audit clients (CNN/Money 2002). As a result, most large accounting firms divested their consulting practices.[3] Additionally, SOX restricted accounting firms from providing most nonaudit services to their audit clients.[4] The restrictions imposed by SOX and the divestiture of the consulting practices combined to significantly reduce the amount of consulting revenues earned by public accounting firms in the early 2000s. Since then, however, the Big 4 accounting firms have expanded their consulting

[3] Specifically, Ernst & Young (in 2000), KPMG (in 2001), Andersen (in 2001), and PricewaterhouseCoopers (in 2002) all sold or spun-off their consulting practices, making Deloitte the only Big 5 accounting firm to retain its consulting practice. In addition, in 2009, Deloitte purchased BearingPoint (the consulting practice spun-off by KPMG). See Dey et al. (2012) for a detailed discussion of the divestiture process at each firm.

[4] Specifically, SOX Section 201(a) prohibits the provision of the following nonaudit services to audit clients: 1) bookkeeping or other services related to the accounting records or financial statements; 2) financial information system design and implementation; 3) appraisal or valuation services, fairness opinions, or contribution-in-kind reports; 4) actuarial services; 5) internal audit outsourcing services; 6) management or human resources functions; 7) broker or dealer, investment adviser, or investment banking services; 8) legal services and expert services unrelated to the audit; and 9) any other service that the PCAOB determines, by regulation, is impermissible.

revenues by performing consulting services for nonaudit clients, which allows firms to avoid the appearance of impaired independence (Dey et al. 2012).

Over the past decade, the Big 4 accounting firms have rebuilt their consulting practices both organically and through acquisitions (Sorkin 2009; De La Merced and Norris 2013). PCAOB board member Steven Harris stated at the November 25, 2013 board meeting that in the U.S., the Big 4 accounting firms had announced 19 acquisitions of consulting practices in the prior 18 months and he projected that "based on acquisitions and other activities at the firms, it is likely that consulting revenue will continue its rise."[5] In response to these trends, the PCAOB plans to hold round-table discussions with the public accounting firms and other stakeholders in 2014; the purpose of these discussions is to understand the implications of public accounting firms' expansion of consulting services for the quality of their audits.[6]

Academic literature to date focusses exclusively on nonaudit services provided to audit clients and provides mixed evidence on the relation between the provision of nonaudit services and audit quality. For example, Frankel et al. (2002) find that nonaudit fees billed to audit clients are positively associated with proxies for earnings management, but Ashbaugh et al. (2003) and Chung and Kallapur (2003) find no association between the provision of nonaudit services to audit clients and earnings quality. In addition, DeFond, Raghunandan, and Subramanyam (2002) find no relation between nonaudit fees and auditors' propensity to issue going concern opinions to distressed clients. However, using pre-SOX data, Nam and Ronen (2012) and Koh et al. (2013) find evidence of improved financial statement quality as clients pay greater amounts of nonaudit fees to their auditors.

[5] See http://pcaobus.org/News/Speech/Pages/11252013_Harris_Statement.aspx.
[6] See the speech by PCOAB Chairman James Doty "Enhancing Capital Formation, Investor Protection and Our Economy" at the *AICPA National Conference on SEC and PCAOB Developments* on December 9, 2013 (available at http://pcaobus.org/News/Speech/Pages/12092013_Doty_AICPA.aspx).

To our knowledge, prior research is silent on the impact of consulting services provided to nonaudit clients on audit quality. Because SOX prohibits public accounting firms from providing most consulting services to their audit clients, the expansion of the consulting revenues over the past decade has largely been generated by providing consulting services to nonaudit clients. Thus, we contribute to the literature by examining whether the Big 4 accounting firms' expansion of consulting services, presumably to nonaudit clients, post-SOX impacts audit quality and/or market perception of audit quality.

3. Development of hypotheses

Opposing views on whether providing consulting services to nonaudit clients impairs or enhances audit quality exist. On the one hand, academics and regulators suggest that the Big 4 accounting firms' increased focus on providing consulting services could impair audit quality for a number of reasons. For example, in their 2008 report to the U.S. Department of the Treasury, the Advisory Committee on the Auditing Profession expressed concerns that the expansion of consulting services to nonaudit clients merely substituted concerns regarding resource diversion for concerns regarding auditor independence (ACAP 2008). In addition, Hermanson (2009) outlines a number of ways in which an increased focus on consulting may impair audit quality, including by shifting the audit firm's culture and primary business model away from auditing and toward consulting, causing confusion about who the accounting firm's client is (management versus investors), by creating intra-firm conflicts about compensation of assurance versus consulting professionals, and by increased profit pressures which distract audit professionals from focusing on audit quality. Finally, Dey et al. (2012) suggest that the Big 4 accounting firms

may be tempted to shed audit clients in order to expand their base of potential consulting clients because consulting engagements are arguably more profitable than audit engagements.

On the other hand, the Big 4 accounting firms and some academics assert that the provision of consulting services can enhance audit quality. For example, Goldwasser and Morris (2002) suggest that nonaudit service revenues improve the viability of the public accounting industry and relieve price competition for audit services. Additionally, the Big 4 accounting firms promote the idea that the expertise developed by their consulting professionals can improve the quality of audit engagements that utilize these consultants as specialists. For example, the Big 4 accounting firms can assign personnel from their consulting practices to act as specialists on their audit engagement teams in accordance with AU336.03(c), *Using the Work of a Specialist*.[7] In its 2013 audit quality report, Deloitte states that the utilization of its financial advisory, tax, and consulting professions as specialists on audit engagements is "an indispensable asset that contributes to the quality of our audits".[8] Moreover, in its 2013 audit quality report, PricewaterhouseCoopers (PwC) explains that by utilizing the knowledge of their consultants as specialists, audit teams are able to "better evaluate complex transactions, assess accounting treatments, and identify areas where additional professional skepticism may be warranted."[9] The PwC report goes on to identify information technology (IT) specialists as a group that substantially improves audit quality because they assist audit teams in understanding complex IT internal control systems. In fact, consulting professionals play a sizeable role on audit

[7] For example, a Big 4 audit engagement team for a manufacturing client may use a valuation specialist from their financial services advisory practice to assist with evaluating management's assertions of valuation, presentation, and disclosure related to the client's financial derivatives.

[8] See page 13 of "Audit Quality: Our Responsibility, Our Commitment", available at http://www.deloitte.com/assets/Dcom-UnitedStates/Local%20Assets/Documents/AERS/us_aers_audit_quality_report_011314.pdf.

[9] See page 19 of "Our Focus on Audit Quality: 2013 Report", available at http://www.pwc.com/en_US/us/audit-assurance-services/publications/assets/2013-audit-quality-report.pdf.

engagement teams and their work comprises approximately 10 percent of PwC's total engagement hours in 2013.[10]

Because the provision of consulting services to nonaudit clients may have either a beneficial or detrimental effect on audit quality, we state our first hypothesis in the null, as follows:

> *H1: Big 4 audit quality is not associated with the proportion of accounting firm revenue generated from consulting services.*

In addition to evaluating whether consulting services impact audit quality, we evaluate whether consulting services enhance or impair *investor perceptions* of audit quality. Prior studies use ERCs to proxy for investor perceptions of audit quality. For example, Teoh and Wong (1993) interpret the higher ERCs of clients that engage Big N audit firms as suggesting that investors perceive audit firm size to enhance audit quality, presumably because Big N audit firms have more reputational capital at stake and have deeper pockets. In addition, Ghosh and Moon (2005) interpret the positive association between audit firm tenure and ERCs as suggesting that investors perceive longer audit firm tenure to enhance audit quality. In our setting, investors may perceive that audit quality will be lower (because of resource diversion) when Big 4 accounting firms generate a greater proportion of their revenues from consulting services. In this case, ERCs (i.e., the impact of earnings news on investors' beliefs about firm value) should be attenuated. Conversely, investors may perceive that audit quality will be higher (because of specialist knowledge spillovers) when clients engage audit firms that generate a greater proportion of their revenues from consulting services. In this case, ERCs should be enhanced.

[10] See page 19 of "Our Focus on Audit Quality: 2013 Report", available at http://www.pwc.com/en_US/us/audit-assurance-services/publications/assets/2013-audit-quality-report.pdf.

Because the provision of consulting services may have either a beneficial or detrimental effect on investor perceptions of audit quality, we state our second hypothesis in the null, as follows:

> *H2: Investor perceptions of Big 4 audit quality are not associated with the proportion of accounting firm revenue generated from consulting services.*

4. Sample selection and summary statistics

We collect the Big 4 public accounting firms' annual revenue from *Accounting Today*'s "Top 100 Firms" reports. *Accounting Today* is a monthly trade magazine, distributed through *Lexis Nexis*, *Business Source Complete*, and other databases, that focuses on tax and accounting news.[11] The "Top 100 Firms" rankings are compiled annually using the accounting firms' self-reported U.S. net revenues. The rankings present total net revenue as well as the percentage of net revenue from their A&A, tax, and MAS business lines. To ensure that our results reflect the current regulatory regime and are not driven by the provision of consulting services to audit clients pre-SOX, we start our sample period in 2003. Because we use misstatements as one of our proxies for audit quality, we end our sample period in 2011 (to allow sufficient time for misstatements to be revealed through subsequent restatements). The sample sizes differ across our audit quality tests because of differing data requirements. For each test, we collect the largest number of observations available from Compustat, The Center for Research in Security Prices (CRSP), I/B/E/S, and Audit Analytics.

[11] Prior research in accounting uses the "Top 100 Firms" data. For example, Chung and Kallapur (2003) use the "Top 100 Firms" data in their study of the effect of client importance on the relation between nonaudit fees paid by audit clients and audit quality.

Figure 1 presents the proportions of revenue from A&A, tax, and MAS for the Big N U.S. public accounting firms from 1999 through 2013.[12] While the percentage of revenue from tax services remained between 20 to 30 percent for most of this period, the trends for A&A and MAS services demonstrate more variation and move inversely. The majority of Big 5 revenue was generated from MAS in 1999 and 2000 (which pre-dated the divestiture of four of the Big 5 accounting firms' consulting practices and restrictions on the types of nonaudit services that could be performed for audit clients under SOX). From 2004 through 2006, as the Big N firms spun off their consulting arms and the restrictions on nonaudit services under SOX became effective, revenue from MAS fell to less than 14 percent of total revenue. Over the same time period, the percentage of A&A revenue climbed, reaching a peak of more than 60 percent by 2006. Since 2006, however, the percentage revenue from MAS has increased dramatically and the percentage of revenue from A&A has declined.[13] As of 2013, MAS has again become the largest source of revenue for the Big 4 accounting firms, slightly outpacing A&A.

Although MAS is currently the largest source of revenue for the Big 4 as it was in 1999 and 2000, there are important differences in the source of these MAS revenues because early MAS revenues were generated, at least in part, from audit clients while current MAS revenues are generated in large part from nonaudit clients. In fact, the 1999 and 2000 editions of the "Top 100 Firms" discuss the 'cross-selling' of financial planning, technology, employee benefits, and business valuation consulting to audit clients as major sources of MAS revenue generation. SOX prohibited the provision of these services to public audit clients and significantly reduced the extent of nonaudit services provided by the Big 4 accounting firms to their public audit clients

[12] We include data for Andersen from 1999 – 2002 to provide a complete picture of large accounting firm revenues in those years.

[13] Dey et al. (2012) discuss how the expiration of the non-compete agreements signed by EY, KPMG, and PwC with their former consulting arms contributed to the growth in consulting services during this time.

(Ghosh and Pawlewicz 2009). Thus, the revenue growth in MAS since 2004 is likely driven by the provision of consulting services to nonaudit clients.

Table 1 presents summary statistics for fee-related variables from the intersection of *Accounting Today* and *Audit Analytics* from 2003 through 2011. The *Accounting Today* revenue figures include revenues received from both publicly-traded and privately-held clients. *Audit Analytics* covers only publicly-traded companies and reports annual audit and audit-related fees, tax fees, and other (which we assume are MAS) fees paid to the auditor.

Using the data from *Accounting Today*, we find that the Big 4 accounting firms earn approximately 16.8 percent of their total U.S. net revenues from consulting services (*%MAS*). When we implement additional data requirements for later tests, this statistic remains roughly the same. We also find that the Big 4 accounting firms earn approximately 28.1 percent of their total U.S. net revenues from tax services (*%Tax*). Using the *Accounting Today* and *Audit Analytics* data, we find that the Big 4 accounting firms earn an average of 8.2 percent of total revenue from providing nonaudit services (other than tax services) to public audit clients (*ACCF_firm*),[14] and an average of 7 percent of total revenue from providing tax services to public audit clients (*ACTF_firm*). When we decompose revenues by client source, we find that the Big 4 accounting firms' total consulting revenues, 12.9 percent are generated from nonaudit services provided to their public audit clients. The remaining portion of the consulting revenues are generated from providing consulting services to public nonaudit clients, to private audit clients, and to private nonaudit clients. However the *AICPA Code of Professional Conduct* (Rule 101-3: Nonattest Services) instituted many of the same restrictions on the provision of consulting services to

[14] Although SOX banned a host of nonaudit services for public audit clients, all services not specifically banned by SOX are still permitted with audit committee pre-approval. These services include, but are not limited to, providing comfort letters to debt holders, regulatory filing assistance, due diligence and transaction support, forensic services, pension advisory services, employee benefit plan audits, and other attestation work outside of the audit.

privately-held clients as did SOX (for publicly-held clients) so the consulting services provided to private audit clients are limited during our sample period. In addition, conversations with experienced Big 4 consulting personnel indicate that the majority of the remaining portion of consulting revenues is generated from work for public rather than private nonaudit clients. As such, we characterize the growth in consulting revenues in recent years as stemming from the provision of consulting services to nonaudit clients.

Because prior research (e.g., Frankel et al. (2002) and Ghosh and Pawlewicz (2009)) uses fee data from *Audit Analytics*, it focuses exclusively on the effects of consulting services provided to public audit clients, leaving the effects of much of the Big 4's consulting revenues unexamined. We add to the literature by examining whether the Big 4 consulting revenue, generated primarily from providing consulting services to nonaudit clients, is associated with audit quality and investor perceptions of audit quality in the post-SOX era.

5. Research design and empirical results

In this section, we present our empirical models examining the effect of accounting firms' consulting services on audit quality and investor perceptions of audit quality as well as our findings. DeFond and Zhang (2014) explain that each audit quality proxy has its own strengths and weaknesses and that no single proxy provides a complete picture of audit quality. As such, they recommend that researchers triangulate across different measures when making inferences about audit quality. Following their suggestion, we measure audit quality using a number of proxies, including the accuracy of auditor's going concern report modifications, all material misstatements (as revealed through subsequent financial statement restatements), material misstatements due to fraud or resulting from SEC investigations (which we label 'egregious

misstatements'), and the likelihood of meeting or just beating the consensus analyst earnings forecast. We use both long- and short-window ERCs to proxy for perceived audit quality.

5.1. Going concern reporting errors

We first capture audit quality using the auditor's accuracy of going concern report modifications. Errors in reporting going concern issues can occur when an auditor issues a going concern modification and the client does not subsequently file for bankruptcy in the next 12 months (Type I error), or when an auditor issues a clean opinion and the client enters bankruptcy within the next 12 months (Type II error). Type I errors are reflective of overly conservative reporting by the auditor, likely in response to litigation risk, whereas Type II errors may suggest that an auditor succumbed to management pressure to issue an overly opportunistic opinion (Hopwood, McKeown, and Mutchler 1989; Raghunandan and Rama 1995; Myers, Schmidt, and Wilkins 2014).

To perform our tests, we estimate the following logistic regression model:

$$\begin{aligned}\Pr(\text{MissedGC}_{it}=1) = {} & \alpha_0 + \alpha_1 \%\text{MAS}_{it} + \alpha_2 \%\text{Tax}_{it} + \alpha_3 \text{ACCF\_firm}_{it} + \alpha_4 \text{ACTF\_firm}_{it} + \\ & \alpha_5 \text{MAS\_client}_{it} + \alpha_6 \text{Tax\_client}_{it} + \alpha_7 \text{LnAFEE}_{it} + \alpha_8 \text{Specialist}_{it} + \alpha_9 \text{Busy}_{it} + \\ & \alpha_{10} \text{ICMW}_{it} + \alpha_{11} \text{LnAssets}_{it} + \alpha_{12} \text{Leverage}_{it} + \alpha_{13} \text{MTB}_{it} + \alpha_{14} \text{FIN}_{it} + \alpha_{15} \text{Cash}_{it} + \\ & \alpha_{16} \text{M\&A}_{it} + \alpha_{17} \text{ROA}_{it} + \alpha_{18} \text{Zscore}_{it} + \alpha_{19} \text{Salesvolatility}_{it} + \alpha_{20} \text{LagReturn}_{it} + \\ & \alpha_{21} \text{OffSize}_{it} + \alpha_j \text{Industry FE} + \alpha_k \text{Year FE} + \varepsilon_{it} \qquad (1)\end{aligned}$$

where:

MissedGC = one of following three measures: 1) MissedGC (Type I) = 1 if the auditor issues a going concern modification that is not followed by bankruptcy in the following year, and 0 otherwise; 2) MissedGC (Type II) = 1 if the auditor issues a clean audit opinion in the year prior to the declaration of a Chapter 7 or 11 bankruptcy, and 0 otherwise; and 3) Missed GC (Type I and II) = 1 if the auditor issues a going concern modification that is not followed by bankruptcy in the following year or if the auditor issues a clean audit opinion in the year prior to the declaration of a Chapter 7 or 11 bankruptcy, and 0 otherwise;

and all other variables are as defined in the Appendix.

Consistent with prior research (e.g., DeFond et al. (2002) and Myers et al. (2014)), we limit the sample to financially distressed companies (i.e., companies reporting a net loss or negative operating cash flows) to increase the power of our tests. In order to better isolate the effects of consulting and tax services provided to nonaudit clients, we control for the proportion of U.S. accounting firm revenue generated from providing consulting services to public audit clients (*ACCF_firm*) and for the proportion of U.S. accounting firm revenue generated from providing tax services to public audit clients (*ACTF_firm*). In addition, at the client-level, we control for the proportion of total fees paid to the auditor for consulting services (*MAS_client*) and tax services (*Tax_client*).[15] Our other control variables follow prior research (e.g., Reynolds and Francis (2001), DeFond et al. (2002), and Francis and Yu (2009)). In addition, we include industry and year fixed effects to control for variation in the propensity to issue going concern modifications across industries and over time, and we cluster standard errors by client company to control for serial dependence (Petersen 2009).[16]

Panel A of Table 2 reveals that for our sample of 7,844 company-year observations, the Type I going concern error rate is 5.5 percent and Type II error rate is 0.4 percent. In Column (1) of Panel B, we examine the association between accounting firms' provision of consulting services and the likelihood of a Type I going concern error. The coefficient on *%MAS* is insignificant ($p = 0.313$), suggesting that provision of consulting services does not affect Type I errors. In Column (2), we focus on the likelihood of a Type II going concern error. The coefficient on *%MAS* is negative and significant ($p = 0.017$), revealing that the provision of

[15] In untabulated analyses, we also estimate all regression models without *ACCF_firm*, *ACTF_firm*, *MAS_client*, and *Tax_client* and find that all results remain qualitatively unchanged.

[16] To address the concern that the marked pattern in our variable of interest (*%MAS*), as depicted in Figure 1, does not confound our results, we also re-estimate all analyses substituting a time-trend variable for the year fixed effects and our results remain qualitatively unchanged.

consulting services is associated with *fewer* Type II going concern errors. When we combine Type I and Type II errors in Column (3), the coefficient on *%MAS* becomes insignificant (p = 0.676), suggesting that overall going concern reporting errors are unaffected by accounting firms' provision of consulting services. Taken together, Table 2 results suggest that accounting firms' provision of consulting services does not impair audit quality; rather, there is some evidence of improved audit quality when accounting firms expand their consulting practices.

When examining accounting firms' provision of tax services, the evidence also suggests that tax services do not impair audit quality; the coefficients on *%Tax* are insignificant in Columns (1) through (3). In addition, we document largely insignificant coefficients on client-level consulting and tax fee ratios (*MAS_client* and *Tax_client*), suggesting that consulting and tax services provided to audit clients do not impair audit quality. This is consistent with findings in the majority of prior literature (e.g., DeFond et al. (2002), Ashbaugh et al. (2003), Chung and Kallapur (2003), and Kinney et al. (2004)) examining this relation in the pre-SOX period.

5.2. Misstatements

Because auditing standards require the auditor to plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatements (PCAOB 2003), financial statement restatements are used to proxy for low audit quality (Kinney, Palmrose, and Scholz 2004; Stanley and DeZoort 2007; Cao et al. 2012; Schmidt 2012; Francis and Michas 2013; Lobo and Yuping Zhao 2013). However, some misstatements are arguably more consequential than others. For example, Plumlee and Yohn (2010) find that 26 percent of restatements filed from 2003 through 2006 had no income effect and approximately 14 percent relate to the use of judgment in applying the appropriate accounting standard. In addition, Palmrose, Richardson, and Scholz (2004) find that restatements related to core accounts (i.e.,

revenue, cost of sales, on-going operating expenses, and their related balance sheet accounts) result in much larger negative market reactions than do restatements related to non-core accounts. Moreover, restatements related to non-core accounts are not associated with increased shareholder litigation (Palmrose and Scholz 2004). As such, we separately examine misstatements of core accounts and more egregious misstatements (i.e., misstatements due to fraud or resulting from SEC investigations), which are more likely to result from intentional manipulation.

The misstatement model that we estimate is as follows:

$$\begin{aligned}\Pr(Misstate_{it} = 1) = {} & \Upsilon_0 + \Upsilon_1 \%MAS_{it} + \Upsilon_2 \%Tax_{it} + \Upsilon_3 ACCF\_firm_{it} + \Upsilon_4 ACTF\_firm_{it} + \\ & \Upsilon_5 MAS\_client_{it} + \Upsilon_6 Tax\_client_{it} + \Upsilon_7 LnAFEE_{it} + \Upsilon_8 Specialist_{it} + \\ & \Upsilon_9 SQRTTenure_{it} + \Upsilon_{10} ICMW_{it} + \Upsilon_{11} LnAssets_{it} + \Upsilon_{12} Leverage_{it} + \Upsilon_{13} MTB_{it} + \\ & \Upsilon_{14} FIN_{it} + \Upsilon_{15} FREEC_{it} + \Upsilon_{16} M\&A_{it} + \Upsilon_{17} ROA_{it} + \Upsilon_{18} Loss_{it} + \Upsilon_{19} ARINV_{it} + \\ & \Upsilon_{20} VarReturn_{it} + \Upsilon_{21} OffSize_{it} + \Upsilon_j \text{Industry FE} + \Upsilon_k \text{Year FE} + \varepsilon_{it} \end{aligned} \quad (2)$$

where:

Misstate = one of three measures: 1) Misstate (General) = 1 if the annual financial statements were misstated (as revealed through a subsequent restatement), and 0 otherwise; or 2) Misstate (Core) = 1 if the annual financial statements were misstated (as revealed through a subsequent restatement) in core accounts (i.e., revenue, cost of sales, on-going operating expenses, and their related balance sheet accounts, and 0 otherwise; or 3) Misstate (Egregious) = 1 if the annual financial statements were misstated (as revealed through a subsequent restatement) due to fraud or as the result of an SEC investigation, and 0 otherwise; and

all other variables are as defined in the Appendix. The control variables follow prior literature (e.g., Dechow, Sloan, and Sweeney (1996), Summers and Sweeney (1998), Kinney, Palmrose, and Scholz (2004), Blankley, Hurtt, and MacGregor (2012), Cao, Myers, and Omer (2012), and Lobo and Zhao (2013)) to the extent that these variables are widely available for our sample. Again, we include industry and year fixed effects and cluster standard errors by client. The sample size for this test is 28,377 company-year observations. Panel A of Table 3 reveals

that that the general misstatement rate is 11.4 percent, the rate of misstatements in core accounts is 4.1 percent, and the rate of egregious misstatement is 1.2 percent. In Column (1) of Panel B, we examine the association between accounting firms' provision of consulting services and the likelihood of general misstatements. The coefficient on *%MAS* is positive and significant (p = 0.018), suggesting that accounting firms' provision of consulting services impairs audit quality. However, results in Column (2) reveal that the provision of consulting services is not associated with the likelihood of core misstatements (the coefficient on *%MAS* is insignificant, p = 0.750). Furthermore, when we focus on the likelihood of egregious misstatements in Column (3), the coefficient on *%MAS* becomes negative and significant (p = 0.001). Thus, although we find an increased likelihood of general misstatements with the provision of consulting services, the likelihood of misstatements of a more serious nature is unaffected (for core misstatements) or is reduced (for misstatements due to financial reporting fraud or irregularities). Importantly, when considering serious misstatements as a proxy for audit quality, the provision of consulting services to nonaudit clients does not seem to impair audit quality; rather, our results suggest that the knowledge gained allows audit firms to improve audit quality such that egregious misstatements are less likely.

Regarding accounting firms' provision of tax services, the coefficients on *%Tax* are negative and significant in all the misstatement regressions. These findings suggest that the provision of tax services allows Big 4 accounting firms to provide higher quality audits. In addition, we document largely insignificant coefficients on client-level consulting and tax fee ratios (*MAS_client* and *Tax_client*); consistent with the majority of prior literature (e.g., DeFond et al. (2002), Ashbaugh et al. (2003), and Chung and Kallapur (2003)), this suggesting that providing consulting and tax services to audit clients does not impair audit quality.

5.3. Discretionary accruals

In our next set of tests, we proxy for audit quality using discretionary accruals. Prior research suggests that audit quality constrain clients' accruals-based earnings management (Becker et al. 1998), especially income-increasing accruals-based earnings management (Lys and Watts 1994). Building on prior research that uses discretionary accruals to proxy for audit quality (e.g., Hope et al. (2013) and Francis et al. (2014)), we construct the following regression model:

$$DA = \theta_0 + \theta_1\%MAS_{it} + \theta_2\%Tax_{it} + \theta_3ACCF\_firm_{it} + \theta_4ACTF\_firm_{it} + \theta_5MAS\_client_{it} + \theta_6Tax\_client_{it} + \theta_7LnAFEE_{it} + \theta_8Specialist_{it} + \theta_9SQRTSegments_{it} + \theta_{10}SQRTTenure_{it} + \theta_{11}ICMW_{it} + \theta_{12}LnAssets_{it} + \theta_{13}Leverage_{it} + \theta_{14}MTB_{it} + \theta_{15}FIN_{it} + \theta_{16}FREEC_{it} + \theta_{17}M\&A_{it} + \theta_{18}ROA_{it} + \theta_{19}Loss_{it} + \theta_{20}Litigation_{it} + \theta_{21}OffSize_{it} + \theta_jIndustry\ FE + \theta_kYear\ FE + \varepsilon_{it} \quad (3)$$

where:

DA = one of three measures: 1) DiscAcc = discretionary accruals estimated as the residual of the model in Kothari et al. (2005), Hope et al. (2013), and Francis et al. (2014);[17] or 2) absDiscAcc = the absolute value of DiscAcc; or 3) POS_DiscAcc = positive DiscAcc (i.e., income-increasing discretionary accruals);[18] and

all other variables are as defined in the Appendix. Our control variables follow prior literature and we include industry and year fixed effects and cluster standard errors by client.

Consistent with prior research, we exclude regulated industries (i.e., companies with two-digit SIC codes equal to 49 or 60 through 69). The sample size is 23,498 company-year observations for the *DiscAcc* and *absDiscAcc* regressions and 9,264 company-year observations

[17] Here, Total accruals = $\delta_0 + \delta_1 1/LagAssets + \delta_2 chgRev + \delta_3 PPE + \delta_4 ROA + e$, where: Total accruals is cash flows from operations less income before extraordinary items; LagAssets is total assets at the beginning of the year; chgRev is change in sales revenue from the prior year to the current year; PPE is raw property, plant, and equipment at the end of the year; and ROA is net income deflated by total assets at the beginning of the year.

[18] Consistent with prior research, we winsorize inputs to the discretionary accruals model at the ± one percent level to mitigate the effect of outliers. To examine positive (income-increasing) discretionary accruals, we use a tobit model when estimating equation (3).

for the *POS_DiscAcc* regression. Panel A of Table 4 reveals that mean discretionary accruals in our sample are -0.017 while the mean of the absolute value discretionary accruals is 0.086.

In Panel B, we examine the association between accounting firms' provision of consulting services and their clients' discretionary accruals. When we focus on signed discretionary accruals, the coefficient on *%MAS* is negative and significant ($p = 0.045$), suggesting that the provision of consulting services to nonaudit clients improves audit quality. The coefficient on *%Tax* is insignificant ($p = 0.168$), suggesting that the provision of tax services to nonaudit clients does not affect audit quality. When we focus on absolute discretionary accruals, the coefficients on *%MAS* and *%Tax* are insignificant, suggesting that the provision of consulting services and tax services to nonaudit clients does not affect audit quality. Finally, because auditors face an asymmetric loss function, they may be more concerned about upward earnings management than downward earnings management. Hence, we focus on the subsample of income-increasing (positive) discretionary accruals in the last column. The coefficients on *%MAS* ($p = 0.201$) and *%Tax* ($p = 0.661$) are both insignificant (although the coefficient on *%MAS* is almost weakly significant using a one-tailed test), suggesting that the provision of consulting and tax services to nonaudit clients does not affect audit quality such that auditors constrain income-increasing earnings management. Overall, our findings provide no evidence that consulting services impair audit quality; rather, we find some evidence that consulting services improves audit quality by constraining signed discretionary accruals.

In addition, we find insignificant coefficients on client-level consulting fee ratios (*MAS_client*); Consistent with the majority of prior literature (e.g., DeFond et al. (2002), Ashbaugh et al. (2003), and Chung and Kallapur (2003)), this suggests that consulting services

provided to audit clients do not impair audit quality and this finding extends into the post-SOX period.

5.3. Meeting or just beating the consensus analyst forecast

In our last set of tests, we proxy for audit quality using the likelihood of a client's earnings meeting or just beating the most recent consensus analyst forecast. Prior research documents large negative stock price reactions to negative earnings surprises, demonstrating a high cost to missing analysts' expectations (Barton and Simko 2002; Skinner and Sloan 2002). Prior research also suggests that the consensus analyst forecast has become a more important earnings benchmark over time (Brown 2001; Bartov, Givoly, and Hayn 2002; Matsumoto 2002; Dechow, Richardson, and Tuna 2003). Surveys of chief financial officers reveal that strong pressures to meet or exceed earnings benchmarks, and in particular, analyst expectations, exist (Graham, Harvey, and Rajgopal 2005; Dichev et al. 2013). Moreover, Burgstahler and Dichev (1997) and DeGeorge et al. (1999) find that an abnormally high proportion of companies meet or just beat earnings benchmarks, suggesting that at least some companies manage earnings to meet benchmarks. Although auditors use materiality thresholds to guide their audit procedures, regulatory standards highlight the auditor's responsibility in constraining earnings management.[19]

Building on prior research that uses the likelihood of meeting or just beating the most recent consensus analyst forecast of earnings to proxy for audit quality (e.g., Ashbaugh et al. (2003)), we construct the following logistic regression model:

[19] According to SEC Staff Accounting Bulletin (SAB) No. 99, "a registrant and the auditors of its financial statements should not assume that even small intentional misstatements in financial statements, for example those pursuant to actions to 'manage' earnings, are immaterial. The staff believes that investors generally would regard as significant a management practice to over- or under-state earnings up to an amount just short of a percentage threshold in order to 'manage' earnings" (see SAB No. 99 at http://www.sec.gov/interps/account/sab99.htm).

$$\Pr(MBAF_{it}=1) = \gamma_0 + \gamma_1 \%MAS_{it} + \gamma_2 \%Tax_{it} + \gamma_3 ACCF\_firm_{it} + \gamma_4 ACTF\_firm_{it} + \gamma_5 MAS\_client_{it} + \gamma_6 Tax\_client_{it} + \gamma_7 LnAFEE_{it} + \gamma_8 Specialist_{it} + \gamma_9 SQRTTenure_{it} + \gamma_{10} ICMW_{it} + \gamma_{11} LnAssets_{it} + \gamma_{12} Leverage_{it} + \gamma_{13} MTB_{it} + \gamma_{14} FIN_{it} + \gamma_{15} FREEC_{it} + \gamma_{16} M\&A_{it} + \gamma_{17} ROA_{it} + \gamma_{18} Loss_{it} + \gamma_{19} N\_Analysts_{it} + \gamma_{20} Dispersion_{it} + \gamma_{21} Horizon_{it} + \gamma_{22} POSUE_{it} + \gamma_{23} OffSize_{it} + \gamma_j Industry\ FE + \gamma_k Year\ FE + \varepsilon_{it} \quad (4)$$

where:

MBAF = an indicator variable set equal to 1 if the company meets or beats the most recent median consensus analyst forecast by one cent or less, and 0 otherwise; and

all other variables are as defined in the Appendix. Our control variables follow prior literature (e.g., Atiase (1985), Lys and Soo (1995), Brown (1997), Matsumoto (2002), and Davis, Soo, and Trompeter (2009)) and we include industry and year fixed effects and cluster standard errors by client.

The sample size for this test is 20,915 company-year observations. Panel A of Table 5 reveals that the proportion of observations meeting or just beating analyst forecasts is 12.2 percent. In Panel B, we examine the association between accounting firms' provision of consulting services and the likelihood of their audit clients meeting or just beating the consensus analyst forecast. The coefficient on *%MAS* is insignificant (p=0.839), suggesting the provision of consulting services to nonaudit clients does not impact audit quality. The coefficient on *%Tax* is also insignificant (p = 0.539), suggesting that the provision of tax services to nonaudit clients also does not affect audit quality. In addition, we find insignificant coefficients on client-level consulting and tax fee ratios (*MAS_client* and *Tax_client*); Consistent with the majority of prior literature (e.g., DeFond et al. (2002), Ashbaugh et al. (2003), and Chung and Kallapur (2003)), this suggests that consulting and tax services provided to audit clients do not impair audit quality and this finding extends into the post-SOX period.

5.4. Long-window ERCs

We next examine whether capital market participants' *perceptions* of audit quality are affected by accounting firms' provision of consulting services. We first use long-window ERCs from annual regressions of market-adjusted returns on earnings levels and changes (following Easton and Harris (1991) and Ali and Zarowin (1992)) to proxy for market perception of audit quality (Ghosh and Moon 2005; Ghosh, Kallapur, and Moon 2009). Consistent with Ghosh and Moon (2005), we measure market-adjusted returns during the twelve month period starting nine months before the fiscal year-end and ending three months after the fiscal year-end.

Our model, adapted from Ghosh and Moon (2005) and Ghosh et al. (2009), is as follows:

$$\begin{aligned}RETURNS_{it} = {} & \Omega_0 + \Omega_1 E_{it} + \Omega_2 \Delta E_{it} + \Omega_3 \%MAS_{it-1} + \Omega_4 \%Tax_{it-1} + \Omega_5 E_{it} * \%MAS_{it-1} + \\ & \Omega_6 \Delta E_{it} * \%MAS_{it-1} + \Omega_7 E_{it} * \%Tax_{it-1} + \Omega_8 \Delta E_{it} * \%Tax_{it-1} + \Omega_9 ACCF\_firm_{it-1} + \\ & \Omega_{10} \%ACTF\_firm_{it-1} + \Omega_{11} MAS\_client_{it-1} + \Omega_{12} \%Tax\_client_{it-1} + \Omega_{13} Loss_{it} + \\ & \Omega_{14} Restructure_{it} + \Omega_{15} STD\_Return_{it} + \Omega_{16} DE_{it} + \Omega_{17} MB_{it} + \Omega_{18} LnMV_{it-1} + \\ & \Omega_{19} Age_{it} + \Omega_{20} Specialist_{it} + \Omega_{21} OffSize_{it} + \Omega_{22} E_{it} * ACCF\_firm_{it-1} + \\ & \Omega_{23} \Delta E_{it} * ACCF\_firm_{it-1} + \Omega_{24} E_{it} * \%ACTF\_firm_{it-1} + \Omega_{25} \Delta E_{it} * \%ACTF\_firm_{it-1} + \\ & \Omega_{26} E_{it} * MAS\_client_{it-1} + \Omega_{27} \Delta E_{it} * MAS\_client_{it-1} + \Omega_{28} E_{it} * \%Tax\_client_{it-1} + \\ & \Omega_{29} \Delta E_{it} * \%Tax\_client_{it-1} + \Omega_{30} E_{it} * Loss_{it} + \Omega_{31} \Delta E_{it} * Loss_{it} + \Omega_{32} E_{it} * Restructure_{it} + \\ & \Omega_{33} \Delta E_{it} * Restructure_{it} + \Omega_{34} E_{it} * STD\_Return_{it} + \Omega_{35} \Delta E_{it} * STD\_Return_{it} + \\ & \Omega_{36} E_{it} * DE_{it} + \Omega_{35} \Delta E_{it} * DE_{it} + \Omega_{38} E_{it} * MB_{it} + \Omega_{39} \Delta E_{it} * MB_{it} + \Omega_{40} E_{it} * LnMV_{it-1} + \\ & \Omega_{41} \Delta E_{it} * LnMV_{it-1} + \Omega_{42} E_{it} * Age_{it} + \Omega_{43} \Delta E_{it} * Age_{it} + \Omega_{44} E_{it} * Specialist_{it} + \\ & \Omega_{45} \Delta E_{it} * Specialist_{it} + \Omega_{46} E_{it} * OffSize_{it} + \Omega_{47} \Delta E_{it} * OffSize_{it} + \nu_{it} \end{aligned} \quad (5)$$

where:

RETURNS = twelve-month market-adjusted returns (i.e., the difference between raw returns and the value-weighted market returns from CRSP) ending three months after the fiscal year-end;

E = the level of annual earnings before extraordinary items, deflated by the beginning of year market value of equity;

ΔE = the change in annual earnings before extraordinary items, deflated by the beginning of year market value of equity; and

all other variables are as defined in the Appendix. For this test, we measure *%MAS* and *%Tax* at the end of the previous year so that the information is available to investors. Consistent with prior research, we measure the ERC as the sum of the coefficients on *E* and Δ*E* (i.e., $\Omega_1 + \Omega_2$).

The impact of the provision of consulting services on the long-window ERC is captured by $\Omega_5 + \Omega_6$, where a positive (negative) value indicates that consulting services enhance (impair) the market's perception of audit quality. Our control variables follow Ghosh and Moon (2005) and Ghosh et al. (2009). Again, we include industry and year fixed effects and cluster standard errors by company.

The sample size for this test is 29,664 company-year observations (see Panel A of Table 6). In Panel B, we examine the association between accounting firms' provision of consulting services and clients' long-window ERCs. We find positive and significant coefficients on *E* (p = 0.002) and ΔE (p = 0.010), consistent with findings in the prior ERC literature. In addition, the coefficient on *E*%MAS* is not significant (p = 0.167) but the coefficient on Δ*E*%MAS* is significantly negative ($p < 0.001$). More importantly, the sum of these two coefficients is negative and significant ($p < 0.001$). This suggests that investors perceive audit quality to be lower when accounting firms provide more consulting services. Similarly, the coefficients on *E*%Tax* (p = 0.041) and Δ*E*%Tax* ($p < 0.001$) are both significantly negative, as is the sum of these two coefficients ($p < 0.001$). This suggests that investors also perceive audit quality to be lower when accounting firms provide more tax services.

5.5. Short-window ERCs

Following Francis and Ke (2006) and Ghosh et al. (2009), we also use the short-window ERC (in the three days around the earnings announcement) to proxy for market perception of audit quality. Here, we estimate the following regression model:

$$\begin{aligned} CAR = {} & \beta_0 + \beta_1 FERR_q + \beta_2 \%MAS_{it-1} + \beta_3 FERR_q * \%MAS_{it-1} + \beta_4 \%Tax_{it-1} + \\ & \beta_5 FERR_q * \%Tax_{it-1} + \beta_6 ACCF\_firm_{it-1} + \beta_7 \%ACTF\_firm_{it-1} + \beta_8 MAS\_client_{it-1} + \\ & \beta_9 Tax\_client_{it-1} + \beta_{10} absFERR_q + \beta_{11} Loss_q + \beta_{12} Restructure_q + \beta_{13} DE_q + \\ & \beta_{14} QTR4_q + \beta_{15} LnMV_{q-1} + \beta_{16} STD\_Return_{q-1} + \beta_{17} Specialist_q + \beta_{18} OffSize_q + \\ & \beta_{19} FERR_q * ACCF\_firm_{it-1} + \beta_{20} FERR_q * \%ACTF\_firm_{it-1} + \\ & \beta_{21} FERR_q * MAS\_client_{it-1} + \beta_{22} FERR_q * Tax\_client_{it-1} + \beta_{23} FERR_q * absFERR_q + \\ & \beta_{24} FERR_q * Loss_q + \beta_{25} FERR_q * Restructure_q + \beta_{26} FERR_q * DE_q + \end{aligned}$$

$$\beta_{27}FERR_q*QTR4_q + \beta_{28}FERR_q*LnMV_{q-1} + \beta_{29}FERR_q*STD\_Return_{q-1} + \beta_{30}FERR_q*Specialist_q + \beta_{31}FERR_q*OffSize_q + \varepsilon_{it} \quad (6)$$

where:

CAR = abnormal (i.e., market-adjusted) returns cumulated over days [-1, +1] relative to the quarterly earnings announcement;

FERR = analyst forecast error, measured as the difference between reported quarterly earnings per share and the most recent median consensus analyst earnings forecast, deflated by prior quarter stock price; and

all other variables are as defined in the Appendix. As in the long-window ERC test, *%MAS* and *%Tax* are measured at the end of the previous year so that the information is available to investors. Consistent with prior research, the ERC is the coefficient on *FERR* (β_1). In addition, the impact of consulting services on the short-window ERC is captured by $\beta_{3;}$ a positive (negative) value indicates that consulting services enhance (impair) the market's perception of audit quality. Our control variables follow prior literature (e.g., Francis and Ke (2006) and Ghosh et al. (2009)). Again, we include industry and year fixed effects and cluster standard errors by client.

Panel A of Table 7 reveals that the sample size for this test is 84,111 company-quarter observations. In Panel B, we find a positive coefficient on *FERR* ($p = 0.006$), consistent with prior ERC literature. More importantly, the coefficient on *FERR***%MAS* is significantly negative ($p = 0.022$), suggesting that investors perceive audit quality to be lower as accounting firms provide more consulting services. Because the coefficient on *FERR***%Tax* is not significantly different from zero ($p = 0.274$), short-window ERC tests suggest that investors do not perceive the provision of tax services to impair audit quality. In addition, we find insignificant coefficients on client-level consulting and tax fee ratios (*FERR***MAS_client* and *FERR***Tax_client*),

suggesting that consulting and tax services provided to audit clients do not impair investor perception of audit quality.

5.6. Summary of results

Collectively, the majority of results in Tables 2 through 7 suggest that accounting firms' provision of consulting services does not impair audit quality (as measured by the incidence of Type I errors and the combination of Type I and Type II errors in going concern reports, the incidence of misstatements in core operating accounts, the level of absolute and income-increasing discretionary accruals, and the likelihood of meeting or just beating the consensus analyst forecast). In addition, some evidence suggests that consulting services actually improve audit quality (e.g., a lower incidence of Type II going concern errors, a lower incidence of egregious misstatements, and lower signed discretionary accruals), presumably because of 'specialists' knowledge spillovers' that occur when consulting personal are used as a resource on audit engagements. However, investors appear to *perceive* that the provision of consulting services impairs audit quality (as measured by long- and short-term ERCs).

6. Conclusion

Over the past decade, the Big 4 accounting firms have steadily increased the proportion of their revenues generated from consulting services, primarily to nonaudit clients. Regulators have expressed concerns about the effect of this trend on the quality of audit services because they suggest that expanding the provision of consulting services to nonaudit clients diverts resources away from the assurance practice and potentially alters the firm's identity. The Big 4 accounting firms, however, argue that providing consulting services improves audit quality because consulting personnel often provide valuable insights to audit staff when they act as specialists on audit engagements.

We provide empirical evidence on the association between the proportion of Big 4 accounting firm revenue generated from consulting services and audit quality. To this end, we employ multiple measures of audit quality, including auditors' going concern reporting errors (Type I and Type II), clients' likelihood of misstatements (general, core-account, and egregious), clients' discretionary accruals (signed, absolute, and income-increasing), and clients' probability of meeting or beating the consensus analyst earnings forecast. Collectively, our findings suggest no deterioration in audit quality when the Big 4 accounting firms generate larger proportions of revenue from consulting services and even suggest that expertise from consulting personnel can improve audit outcomes in some cases.

We also examine investor perceptions of the Big 4 accounting firms' provision of consulting services on audit quality. We find clients' long- and short-window ERCs are lower when their auditors provide more consulting services to nonaudit clients, suggesting investors *perceive* a deterioration in audit quality when Big 4 accounting firms generate a larger proportion of their revenue from consulting services.

Our paper makes several contributions to the literature. First, we contribute to the ongoing debate among regulators, accounting firms, and investors regarding whether (and how) public accounting firm's continuing expansion of consulting services impacts audit quality. Our analyses suggest that although there is no evidence of an overall deterioration in audit quality, the Big 4 accounting firms face a perception problem with investors. Second, prior academic research has focused exclusively on the impact of providing consulting services to audit clients. Since the expansion of the Big 4 accounting firms' consulting revenues post-SOX should be mainly due to the provision of consulting services to nonaudit clients, our study sheds light on a questions that have not been addressed in the literature to date – whether the provision of

consulting services to nonaudit clients impairs or improves audit quality and perceptions of audit quality. Taken together, the results in our study show that investor perceptions reflect a deterioration in audit quality associated with Big 4 consulting revenue that is not borne across an array of audit quality proxies.

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Appendix

Variable Definitions

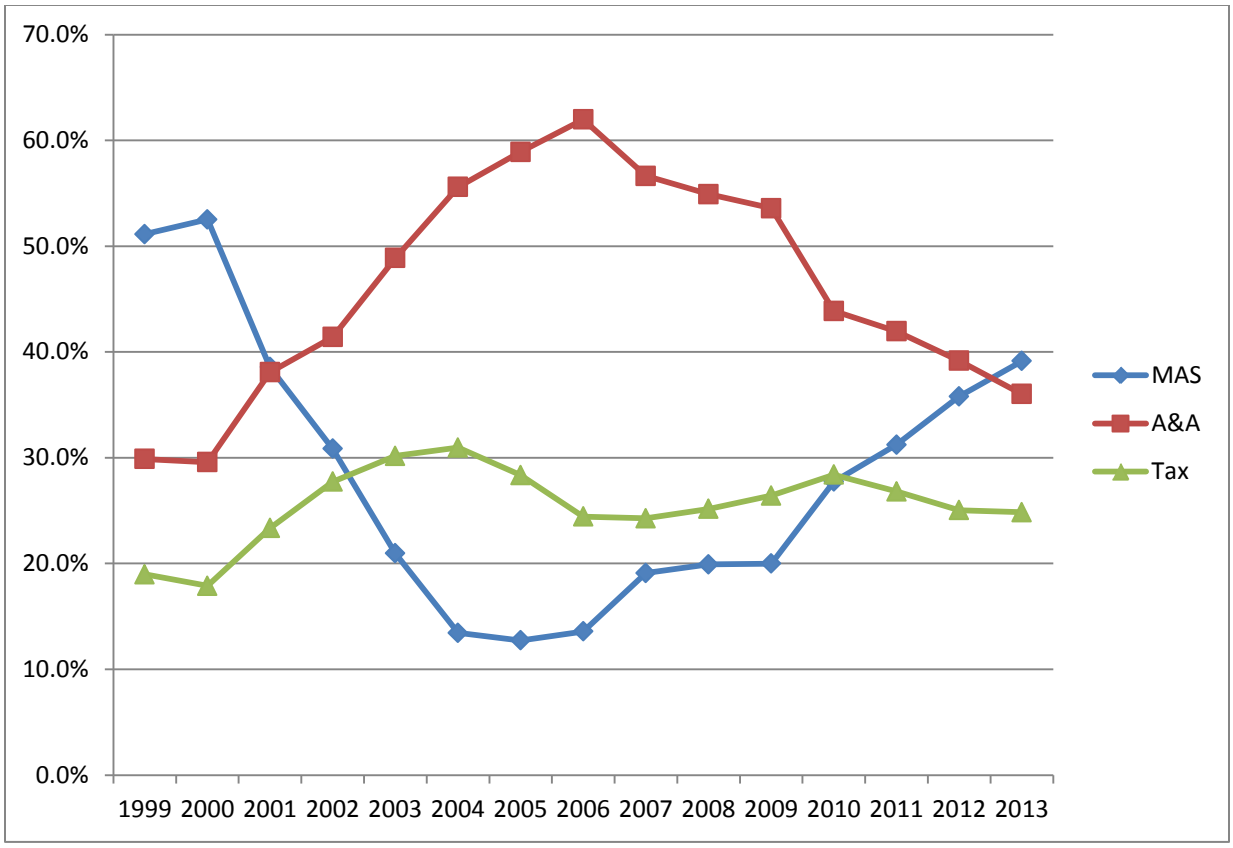
Variable	Definition
%MAS	Accounting firm level - the proportion of U.S. management advisory and other fees to total U.S. revenue; data from Accounting Today
%PublicAuditFees	Sum of audit and audit-related fees for all clients of each accounting firm in AuditAnalytics divided by total Audit&Assurance Revenue for the accounting firm from Accounting Today; proportion of an accounting firm's audit fee revenue generated from public audit clients.
%PublicConsultingFees	Sum of nonaudit fees less tax fees for all clients of each accounting firm in AuditAnalytics divided by consulting revenue (MAS Revenue + Other Revenue) for the accounting firm from Accounting Today; proportion of an accounting firm's consulting revenue generated from public audit clients.
%PublicTaxFees	Sum of tax fees for all clients of each accounting firm in AuditAnalytics divided by Tax Revenue for the accounting firm from Accounting Today; proportion of accounting firm's tax revenue generated from public audit clients.
%Tax	Accounting firm level - the proportion of U.S. tax fees to total U.S. revenue (data from Accounting Today)
ΔE	The change in annual earnings before extraordinary items (Compustat variable IB) from the prior year, deflated by the beginning of year market value of equity (Compustat variablse PRCC_F*CSHO)
absFERR	The absolute value of FERR, where FERR is analyst forecast error measured as the difference between reported quarterly earnings per share and the most recent median consensus analyst forecast (per I/B/E/S) deflated by prior quarter stock price (Compustat variable PRCCQ)
ACCF_firm	Accounting firm level - the proportion of nonaudit fees (excluding tax fees) from all U.S. public audit clients (data from AuditAnalytics) to total U.S. revenue (data from Accounting Today)
ACTF_firm	Accounting firm level - the proportion of tax fees from all U.S. public audit clients (data from AuditAnalytics) to total U.S. fees (data from Accounting Today)
Age	The number of years the company has reported total assets on Compustat following Myers et al. (2003)
ARINV	The sum of accounts receivable and inventory (Compustat variables RECT and INVT) scaled by total assets (Compustat variable AT)
Busy	An indicator variable set equal to one if the company has a

	December fiscal year-end, and zero otherwise
CAR	Abnormal (i.e., market-adjusted) returns cumulated over days [-1, +1] relative to the quarterly earnings announcement
Cash	Cash (Compustat variable CHE) scaled by total assets (Compustat variable AT)
DE	The ratio of short- and long-term debt (Compustat variables DLC and DLTT) to total equity (Compustat variable SEQ)
DE_q	The ratio of short- and long-term debt (Compustat variables DLCQ and DLTTQ) to total equity (Compustat variable SEQQ) for the quarter
Dispersion	The standard deviation of the most recent earnings forecasts made for the firm before the earnings announcement (I/B/E/S variable STD)
E	The level of annual earnings before extraordinary items (Compustat variable IB), deflated by the beginning of year market value of equity (Compustat variablse PRCC_F*CSHO)
FERR	Analyst forecast error measured as the difference between reported quarterly earnings per share and the most recent median consensus analyst forecast (per I/B/E/S) deflated by prior quarter stock price (Compustat variable PRCCQ)
FIN	The sum of cash raised from the issuance of long-term debt, common stock, and preferred stock (Compustat variables DLTIS and SSTK) divided by total assets (Compustat variable AT)
FREEC	The sum of cash from operations less average capital expenditures (Compustat variables OANCF and CAPX) scaled by lagged total assets (Compustat variable AT)
Horizon	The forecast horizon, equal to the number of months between the earnings announcement and the month when the most recent forecast before the earnings announcement was made;
ICMW	An indicator variable set equal to one if a material weakness in internal controls over financial reporting is disclosed in the year, and zero otherwise
LagReturn	The market-adjusted stock returns in the prior year where market-adjusted stock returns are the difference between stock returns and value-weighted CRSP market returns
Leverage	Long-term debt plus the current portion of long-term debt (Compustat variables DLC and DLTT) scaled by total assets (Compustat variable AT)
Litigation	An indicator variable set equal to one if the company operates in a high litigation industry (SIC codes of 2833-2836, 3570-3577, 3600-3674, 5200-5961, and 7370, and zero otherwise
LnAFEE	The natural log of audit and audit-related fees from AuditAnalytics
LnAssets	The natural log of total assets (Compustat variable AT)

LnMV	The natural log of the market value of equity (Compustat variables PRCC_F and CSHO)
Loss	An indicator variable set equal to one if net income (Compustat variable NI) is less than zero, and zero otherwise;
$Loss_q$	An indicator variable set equal to one if net income for the quarter (Compustat variable NIQ) is less than zero, and zero otherwise;
M&A	An indicator variable set equal to one if there was a merger or acquisition in the year (Compustat variable AQP or AQC is positive), and zero otherwise;
MAS_client	Client level - the proportion of nonaudit service fees (excluding tax fees) paid to the auditor to total fees paid to the auditor
MB	The sum of the market value of equity (Compustat variables PRCC_F*CSHO) and the book value of debt (Compustat variables (DLC and DLTT) divided by the book value of total assets (Compustat variable AT)
MBAF	An indicator variable set equal to one if the company meets or beats the most recent median consensus analyst forecast by one cent or less, and zero otherwise
MissedGC (Type I)	An indicator variable set equal to one if the auditor issues a going concern modification that is not followed by bankruptcy in the following year, and zero otherwise (data of going concern modifications and chapter 7 and 11 bankruptcy proceedings from Audit Analytics)
MissedGC (Type II)	An indicator variable set equal to one if the auditor issues a clean audit opinion in the year prior to the declaration of a Chapter 7 or 11 bankruptcy (data of audit opinion and chapter 7 and 11 bankruptcy proceedings from Audit Analytics)
MissedGC (Type I and Type II)	An indicator variable set equal to one if the auditor issues a going concern modification that is not followed by bankruptcy in the following year or if the auditor issues a clean audit opinion in the year prior to the declaration of a Chapter 7 or 11 bankruptcy, and zero otherwise (data of audit opinions and chapter 7 and 11 bankruptcy proceedings from Audit Analytics)
Misstate (Egregious)	An indicator variable set equal to one if the annual financial statements were misstated (as revealed through a subsequent restatement) due to fraud or as the result of SEC investigations, and zero otherwise(restatement data from Audit Analytics exclude clerical errors)
Misstate (General)	An indicator variable set equal to one if the annual financial statements were misstated (as revealed through a subsequent restatement), and zero otherwise (restatement data from Audit Analytics exclude clerical errors)
MTB	Market-to-book ratio (measured with Compustat variable

	PRCC_F*CSHO divided by Compustat variable SEQ)
N_Analysts	The number of analysts making forecasts for the firm for the most recent consensus before the earnings announcement (I/B/E/S variable NUMEST)
OffSize	The natural log of an auditor office's aggregate audit fees for public company audits each year using all observations in Audit Analytics following Francis and Yu (2009)
POSUE	An indicator variable set equal to one if earnings per share in the current year is greater than last year (I/B/E/S variable ACTUAL)
QTR4	An indicator variable set equal to one for the fourth fiscal quarter, and zero otherwise
Restructure	An indicator variable set equal to one if special items (Compustat variable SPI) as a percentage of total assets (Compustat variable AT) are less than or equal to -5%, and zero otherwise
RETURNS	Twelve-month market-adjusted returns (i.e., the difference between raw returns and the value-weighted market returns from CRSP) ending three months after the fiscal year-end
Revenue ($mn)	An accounting firm's total U.S. revenue in millions (data from Accounting Today).
ROA	Return on assets (Compustat variable IB divided by AT)
Salesvolatility	Sales volatility measured as the standard deviation of sales revenue over the past three years following Francis and Yu (2009)
Specialist	An indicator variable set equal to one if the auditor is an industry specialist, defined following Reichelt and Wang (2010) as an auditor whose audit fee market share in the 2-digit SIC code exceeds 30 percent at the national level, and zero otherwise;
SQRTSegments	The square root of the number of operating segments
SQRTTenure	The square root of auditor tenure, where tenure is measured as the number of consecutive years of the auditor-client relationship
STD_Return	The standard deviation of market-adjusted returns (where market-adjusted stock returns are the difference between stock returns and value-weighted CRSP market returns) over the previous 60 months
Tax_client	Client level - the proportion of tax fees paid to the auditor to total fees paid to the auditor
VarReturn	The standard deviation of market-adjusted returns (where market-adjusted stock returns are the difference between stock returns and value-weighted CRSP market returns) over the previous twelve months
Zscore	Bankruptcy risk measured using Altman's Z-score

Figure 1
Revenues from Audit and Assurance (A&A), Tax, and Management Advisory Services (MAS) as a percentage of total U.S. revenue for the Big 5 public accounting firms (1999 – 2013)



Source: *Accounting Today* "Top 100 Firms"

Table 1
Descriptive statistics of fee-related variables

This table reports the descriptive statistics of fee-related variables for the Big 4 accounting firms (Deloitte, Ernst & Young, KPMG, and PricewaterhouseCoopers) based on their U.S. revenues and clients from 2003 through 2013. The descriptive statistics are based the samples before implementing requirements for control variables in subsequent regression analyses. See the Appendix for variable definitions.

Variable	N	Mean	Std	P25	Median	P75
$\%MAS_{it}$	32,368	0.168	0.140	0.030	0.140	0.280
$\%Tax_{it}$	32,368	0.281	0.045	0.250	0.270	0.310
$ACCF\_firm_{it}$	32,368	0.082	0.031	0.064	0.075	0.095
$ACTF\_firm_{it}$	32,368	0.070	0.037	0.043	0.058	0.086
$\%PublicAuditFees_{it}$	32,368	0.862	0.171	0.748	0.857	0.980
$\%PublicConsultingFees_{it}$	32,368	0.129	0.094	0.050	0.106	0.194
$\%PublicTaxFees_{it}$	32,368	0.243	0.096	0.167	0.210	0.300

Table 2
Likelihood of Type I and Type II errors in going concern opinions

This table reports the relation between the Big 4 accounting firms' provision of consulting services and the likelihood of Type I and Type II errors in going concern opinions for a sample of financially-distressed companies from 2003 through 2011. Type I error in going concern opinion is where the auditor issues a going concern modification that is not followed by the client's bankruptcy in the following year. Type II error in going concern opinion is where the auditor issues a clean audit opinion in the year prior to the client's declaration of bankruptcy. Panel A provides descriptive statistics and Panel B provides the results of logistic regressions. *, **, and *** indicate statistical significance at 10%, 5%, and 1%, respectively, based on two-tailed tests. See the Appendix for variable definitions.

Panel A: Descriptive statistics

Variable	N	Mean	Std	P25	Median	P75
MissedGC (Type I)$_{it}$	7,832	0.055	0.228	0.000	0.000	0.000
MissedGC (Type II)$_{it}$	7,832	0.004	0.061	0.000	0.000	0.000
MissedGC (Type 1 and Type II)$_{it}$	7,832	0.059	0.235	0.000	0.000	0.000
%MAS$_{it}$	7,832	0.164	0.138	0.030	0.140	0.270
%Tax$_{it}$	7,832	0.282	0.045	0.250	0.280	0.300
ACCF_firm$_{it}$	7,832	0.080	0.031	0.061	0.073	0.092
ACTF_firm$_{it}$	7,832	0.069	0.037	0.043	0.057	0.085
MAS_client$_{it}$	7,832	0.079	0.113	0.000	0.033	0.109
Tax_client$_{it}$	7,832	0.089	0.109	0.000	0.051	0.136
LnAFEE$_{it}$	7,832	-0.261	1.174	-1.033	-0.296	0.403
Specialist$_{it}$	7,832	0.267	0.442	0.000	0.000	1.000
Busy$_{it}$	7,832	0.755	0.430	1.000	1.000	1.000
ICMW$_{it}$	7,832	0.076	0.265	0.000	0.000	0.000
LnAssets$_{it}$	7,832	5.833	2.000	4.380	5.631	7.132
Leverage$_{it}$	7,832	0.249	0.291	0.002	0.156	0.399
MTB$_{it}$	7,832	2.598	5.584	0.832	1.541	3.218
FIN$_{it}$	7,832	0.196	0.371	0.005	0.054	0.265
Cash$_{it}$	7,832	0.305	0.285	0.063	0.201	0.509
M&A$_{it}$	7,832	0.087	0.282	0.000	0.000	0.000
ROA$_{it}$	7,832	-0.218	0.349	-0.270	-0.091	-0.027
Zscore$_{it}$	7,832	2.243	12.737	0.062	1.338	3.230
Salesvolatility$_{it}$	7,832	0.158	1.195	0.031	0.080	0.172
LagReturn$_{it}$	7,832	0.074	0.223	-0.011	0.130	0.193
OffSize$_{it}$	7,832	17.594	1.382	16.726	17.781	18.586

Panel B: Regression analysis

Variables	DV=Missed GC (Type I) Coeff	p-value		DV=Missed GC (Type II) Coeff	p-value		DV=Missed GC (Type I+Type II) Coeff	p-value	
Intercept	1.488	0.350		-6.721	0.308		1.428	0.358	
$\%MAS_{it}$	0.835	0.318		-5.230	0.016	**	0.331	0.679	
$\%Tax_{it}$	-2.631	0.439		-6.378	0.525		-2.989	0.361	
$ACCF\_firm_{it}$	0.550	0.944		7.369	0.719		1.733	0.818	
$ACTF\_firm_{it}$	9.054	0.305		-18.648	0.397		6.068	0.474	
MAS_client_{it}	0.804	0.139		1.672	0.276		0.932	0.078	*
Tax_client_{it}	-0.935	0.178		1.000	0.564		-0.733	0.286	
$LnAFEE_{it}$	0.297	0.017	**	0.427	0.326		0.329	0.008	***
$Specialist_{it}$	0.052	0.755		-0.026	0.960		0.072	0.657	
$Busy_{it}$	0.038	0.835		0.493	0.372		0.051	0.773	
$ICMW_{it}$	0.589	0.003	***	0.953	0.085	*	0.631	0.001	***
$LnAssets_{it}$	-0.533	<.0001	***	-0.085	0.741		-0.510	<.0001	***
$Leverage_{it}$	0.485	0.046	**	2.337	0.000	***	0.661	0.005	***
MTB_{it}	-0.014	0.132		0.024	0.259		-0.012	0.200	
FIN_{it}	0.115	0.429		0.029	0.958		0.131	0.354	
$Cash_{it}$	-2.262	<.0001	***	-4.122	0.088	*	-2.310	<.0001	***
$M\&A_{it}$	-0.350	0.120		-1.323	0.168		-0.425	0.054	*
ROA_{it}	-1.372	<.0001	***	-0.309	0.657		-1.376	<.0001	***
$Zscore_{it}$	-0.018	0.007	***	0.028	0.069	*	-0.017	0.011	**
$Salesvolatility_{it}$	-0.271	0.372		-0.234	0.828		-0.300	0.326	
$LagReturn_{it}$	0.285	0.397		-0.188	0.903		0.241	0.462	
$OffSize_{it}$	-0.066	0.218		0.147	0.459		-0.054	0.299	
Industry FE	Yes			Yes			Yes		
Year FE	Yes			Yes			Yes		
N	7,832			7,832			7,832		
N Missed GC (Type I or 2)	430			29			459		
Area under ROC	0.837			0.931			0.830		
Pseudo R square	0.221			0.253			0.208		

Table 3
Likelihood of misstatements

This table reports the relation between the Big 4 accounting firms' provision of consulting services and the likelihood of client misstatements from 2003 through 2011. Panel A provides descriptive statistics and Panel B provides the results of logistic regressions. *, **, and *** indicate statistical significance at 10%, 5%, and 1%, respectively, based on two-tailed tests. See the Appendix for variable definitions.

Panel A: Descriptive statistics

Variable	N	Mean	Std	P25	Median	P75
Misstate (General)$_{it}$	28,353	0.114	0.318	0.000	0.000	0.000
Misstate (Core)$_{it}$	28,353	0.041	0.199	0.000	0.000	0.000
Misstate (Egregious)$_{it}$	28,353	0.012	0.108	0.000	0.000	0.000
%MAS$_{it}$	28,353	0.162	0.139	0.030	0.140	0.280
%Tax$_{it}$	28,353	0.281	0.045	0.250	0.270	0.310
ACCF_firm$_{it}$	28,353	0.083	0.031	0.064	0.076	0.095
ACTF_firm$_{it}$	28,353	0.071	0.037	0.044	0.061	0.086
MAS_client$_{it}$	28,353	0.086	0.112	0.005	0.046	0.119
Tax_client$_{it}$	28,353	0.104	0.120	0.007	0.063	0.158
LnAFEE$_{it}$	28,353	0.138	1.256	-0.674	0.068	0.886
Specialist	28,353	0.284	0.451	0.000	0.000	1.000
SQRTTenure$_{it}$	28,353	2.932	1.181	2.000	2.828	3.606
ICMW$_{it}$	28,353	0.047	0.212	0.000	0.000	0.000
Lnassets$_{it}$	28,353	7.016	2.083	5.586	6.956	8.374
Leverage$_{it}$	28,353	0.223	0.229	0.026	0.177	0.341
MTB$_{it}$	28,353	2.804	4.366	1.263	1.971	3.287
FIN$_{it}$	28,353	0.139	0.369	0.006	0.035	0.148
FREEC$_{it}$	28,353	0.009	0.172	-0.010	0.033	0.082
M&A$_{it}$	28,353	0.095	0.294	0.000	0.000	0.000
ROA$_{it}$	28,353	-0.009	0.224	-0.003	0.030	0.072
Loss$_{it}$	28,353	0.261	0.439	0.000	0.000	1.000
ARINV$_{it}$	28,353	0.250	0.209	0.083	0.199	0.358
VarReturn$_{it}$	28,353	0.040	0.018	0.026	0.033	0.056
OffSize$_{it}$	28,353	17.596	1.401	16.688	17.815	18.612

Panel B: Regression analysis

	DV=Misstate (General)			DV=Misstate (Core)			DV=Misstate (Egregious)		
Variable	**Coeff**	**p-value**		**Coeff**	**p-value**		**Coeff**	**p-value**	
Intercept	-2.836	<.0001	***	-3.723	<.0001	***	-1.140	0.468	**
$\%MAS_{it}$	0.662	0.021	**	0.333	0.454		-2.382	0.001	***
$\%Tax_{it}$	-3.913	0.000	***	-0.628	0.692		-10.722	0.001	***
$ACCF\_firm_{it}$	-6.183	0.034	**	-5.621	0.252		-18.316	0.046	**
$ACTF\_firm_{it}$	18.184	0.001	***	12.652	0.177		39.327	0.022	**
MAS_client_{it}	0.020	0.923		0.291	0.376		0.757	0.191	
Tax_client_{it}	-0.131	0.632		0.060	0.887		0.415	0.522	
$LnAFEE_{it}$	0.129	0.004	***	0.245	0.002	***	0.384	0.004	**
Specialist	0.014	0.823		0.112	0.277		0.094	0.604	
$SQRTTenure_{it}$	0.030	0.242		0.040	0.328		-0.091	0.209	
$ICMW_{it}$	1.211	<.0001	***	1.180	<.0001	***	0.802	<.0001	***
$Lnassets_{it}$	-0.060	0.037	**	-0.202	<.0001	***	-0.097	0.263	
$Leverage_{it}$	0.449	0.000	***	0.489	0.008	***	0.138	0.728	
MTB_{it}	-0.008	0.134		-0.016	0.038	**	0.003	0.833	
FIN_{it}	0.037	0.467		0.103	0.087	*	-0.031	0.879	
$FREEC_{it}$	0.183	0.430		0.137	0.745		0.027	0.964	
$M\&A_{it}$	0.067	0.414		0.095	0.481		0.041	0.884	
ROA_{it}	0.205	0.237		0.573	0.048	**	0.131	0.727	
$Loss_{it}$	0.205	0.001	***	0.107	0.281		0.283	0.126	
$ARINV_{it}$	0.065	0.685		0.081	0.762		0.680	0.148	
$VarReturn_{it}$	15.529	<.0001	***	16.058	<.0001	***	20.155	0.008	***
$OffSize_{it}$	0.030	0.183		0.022	0.573		-0.075	0.177	
Industry FE	Yes			Yes			Yes		
Year FE	Yes			Yes			Yes		
N	28,353			28,353			28,353		
N misstate	3,243			1,173			335		
Area under ROC curve	0.676			0.702			0.739		
Pseudo R square	0.060			0.064			0.068		

Table 4
Discretionary Accruals

This table reports the relation between the Big 4 accounting firms' provision of consulting services and client discretionary accruals from 2003 through 2011. Panel A provides descriptive statistics and Panel B provides regression results. *, **, and *** indicate statistical significance at 10%, 5%, and 1%, respectively, based on two-tailed tests. See the Appendix for variable definitions.

Panel A: Descriptive statistics

Variable	N	Mean	Std	P25	Median	P75
DiscAcc	23,498	-0.017	0.141	-0.067	-0.018	0.031
absDiscAcc	23,498	0.086	0.113	0.023	0.052	0.101
$\%MAS_{it}$	23,498	0.159	0.139	0.030	0.140	0.270
$\%Tax_{it}$	23,498	0.282	0.045	0.250	0.280	0.310
$ACCF\_firm_{it}$	23,498	0.083	0.031	0.064	0.078	0.095
$ACTF\_firm_{it}$	23,498	0.072	0.037	0.046	0.061	0.086
MAS_client_{it}	23,498	0.084	0.113	0.004	0.042	0.113
Tax_client_{it}	23,498	0.108	0.122	0.009	0.068	0.166
$LnAFEE_{it}$	23,498	0.075	1.259	-0.734	0.052	0.855
$Specialist_{it}$	23,498	0.300	0.456	0.000	0.000	1.000
$SQRTSegments_{it}$	23,498	2.311	0.946	1.732	1.732	3.000
$SQRTTenure_{it}$	23,498	2.960	1.191	2.000	2.828	3.606
$ICMW_{it}$	23,498	0.054	0.226	0.000	0.000	0.000
$LnAssets_{it}$	23,498	6.614	2.016	5.246	6.570	7.930
$Leverage_{it}$	23,498	0.214	0.234	0.009	0.168	0.327
MTB_{it}	23,498	2.907	4.608	1.304	2.108	3.579
FIN_{it}	23,498	0.144	0.284	0.007	0.036	0.164
$FREEC_{it}$	23,498	0.001	0.188	-0.024	0.038	0.088
$M\&A_{it}$	23,498	0.097	0.295	0.000	0.000	0.000
ROA_{it}	23,498	-0.019	0.240	-0.024	0.038	0.080
$Loss_{it}$	23,498	0.305	0.461	0.000	0.000	1.000
$Litigation_{it}$	23,498	0.185	0.388	0.000	0.000	0.000
$OffSize_{it}$	23,498	17.523	1.392	16.634	17.744	18.561

Panel B: Regression Analysis

	DV=DiscAcc			DV=absDiscAcc			DV=POS_DiscAcc		
Variable	**Coeff**	**p-value**		**Coeff**	**p-value**		**Coeff**	**p-value**	
Intercept	0.060	0.003	***	0.156	<.0001	***	0.059	0.032	**
$\%MAS_{it}$	-0.021	0.045	**	0.005	0.624		-0.018	0.201	
$\%Tax_{it}$	-0.054	0.168		0.022	0.505		-0.026	0.661	
$ACCF\_firm_{it}$	-0.035	0.687		-0.060	0.441		-0.082	0.454	
$ACTF\_firm_{it}$	0.054	0.553		0.037	0.649		0.018	0.884	
MAS_client_{it}	0.008	0.341		0.023	0.002	***	0.020	0.046	**
Tax_client_{it}	0.003	0.668		-0.004	0.499		-0.015	0.110	
$LnAFEE_{it}$	0.004	0.012	**	0.007	<.0001	***	0.005	0.014	**
$Specialist_{it}$	-0.001	0.531		0.000	0.906		0.001	0.576	
$SQRTSegments_{it}$	0.003	0.001	***	-0.003	0.000	***	0.003	0.017	**
$SQRTTenure_{it}$	0.001	0.185		-0.002	0.002	***	0.001	0.428	
$ICMW_{it}$	-0.003	0.440		-0.005	0.150		0.002	0.731	
$LnAssets_{it}$	-0.006	<.0001	***	-0.011	<.0001	***	-0.013	<.0001	***
$Leverage_{it}$	0.020	<.0001	***	-0.001	0.857		0.029	<.0001	***
MTB_{it}	0.000	0.285		0.001	<.0001	***	0.000	0.957	
FIN_{it}	-0.022	<.0001	***	0.017	<.0001	***	-0.015	0.000	***
$FREEC_{it}$	-0.630	<.0001	***	0.019	0.189		-0.709	<.0001	***
$M\&A_{it}$	-0.003	0.245		0.001	0.580		-0.003	0.456	
ROA_{it}	0.301	<.0001	***	-0.101	<.0001	***	0.338	<.0001	***
$Loss_{it}$	-0.027	<.0001	***	-0.006	0.010	**	-0.023	<.0001	***
$Litigation_{it}$	-0.012	<.0001	***	0.003	0.136		-0.025	<.0001	***
$OffSize_{it}$	-0.001	0.126		0.000	0.592		-0.002	0.047	**
Sigma							0.133	<.0001	***
N	23,498			23,498			9,264		
Adjusted R square	0.269			0.144					

Table 5
Likelihood of meeting or just beating analyst forecasts

This table reports the relation between the Big 4 accounting firms' provision of consulting services and the likelihood of client earnings per share meeting or just beating consensus analyst forecasts by 1 cent from 2003 through 2011. Panel A provides descriptive statistics and Panel B provides the results of logistic regressions. *, **, and *** indicate statistical significance at 10%, 5%, and 1%, respectively, based on two-tailed tests. See the Appendix for variable definitions.

Panel A: Descriptive statistics

Variable	N	Mean	Std	P25	Median	P75
$MBAF_{it}$	20,901	0.123	0.328	0.000	0.000	0.000
$\%MAS_{it}$	20,901	0.162	0.138	0.030	0.140	0.270
$\%Tax_{it}$	20,901	0.281	0.044	0.250	0.270	0.300
$ACCF\_firm_{it}$	20,901	0.081	0.030	0.064	0.073	0.092
$ACTF\_firm_{it}$	20,901	0.069	0.036	0.043	0.057	0.078
MAS_client_{it}	20,901	0.082	0.107	0.006	0.044	0.112
Tax_client_{it}	20,901	0.103	0.119	0.008	0.062	0.157
$LnAFEE_{it}$	20,901	0.315	1.153	-0.444	0.194	0.989
$Specialist_{it}$	20,901	0.295	0.456	0.000	0.000	1.000
$SQRTTenure_{it}$	20,901	2.990	1.188	2.236	2.828	3.742
$ICMW_{it}$	20,901	0.043	0.204	0.000	0.000	0.000
$LnAssets_{it}$	20,901	7.314	1.892	5.950	7.218	8.508
$Leverage_{it}$	20,901	0.225	0.223	0.033	0.185	0.343
MTB_{it}	20,901	2.820	4.137	1.330	2.046	3.354
FIN_{it}	20,901	0.137	0.377	0.007	0.036	0.142
$FREEC_{it}$	20,901	0.027	0.135	0.000	0.041	0.088
$M\&A_{it}$	20,901	0.107	0.309	0.000	0.000	0.000
ROA_{it}	20,901	0.013	0.163	0.006	0.036	0.077
$Loss_{it}$	20,901	0.215	0.411	0.000	0.000	0.000
$N\_Analysts_{it}$	20,901	7.809	6.600	3.000	6.000	11.000
$Dispersion_{it}$	20,901	0.056	0.215	0.010	0.020	0.050
$Horizon_{it}$	20,901	0.699	1.083	0.267	0.500	0.867
$POSUE_{it}$	20,901	0.642	0.479	0.000	1.000	1.000
$OffSize_{it}$	20,901	17.676	1.357	16.802	17.861	18.676

Panel B: Regression analysis

	DV=MBAF	
Variable	**Coeff**	**p-value**
Intercept	-0.695	0.234 **
$\%MAS_{it}$	-0.053	0.858
$\%Tax_{it}$	-0.793	0.517
$ACCF\_firm_{it}$	0.130	0.959
$ACTF\_firm_{it}$	-0.024	0.993
MAS_client_{it}	0.291	0.212
Tax_client_{it}	0.222	0.256
$LnAFEE_{it}$	-0.016	0.693
$Specialist_{it}$	-0.009	0.879
$SQRTTenure_{it}$	0.002	0.940
$ICMW_{it}$	-0.295	0.021 **
$LnAssets_{it}$	-0.094	0.001 ***
$Leverage_{it}$	-0.409	0.002 ***
MTB_{it}	0.017	0.002 ***
FIN_{it}	0.026	0.597
$FREEC_{it}$	-0.127	0.641
$M\&A_{it}$	0.105	0.170
ROA_{it}	0.036	0.885
$Loss_{it}$	-0.285	0.001 ***
$N\_Analysts_{it}$	0.044	<.0001 ***
$Dispersion_{it}$	-10.815	<.0001 ***
$Horizon_{it}$	-0.288	<.0001 ***
$POSUE_{it}$	0.191	0.000 ***
$OffSize_{it}$	-0.016	0.425
Industry FE	Yes	
Year FE	Yes	
N	20,901	
N MBAF	2,561	
Area under ROC	0.696	
Pseudo R square	0.066	

Table 6
Long-window ERC tests

This table reports the relation between the Big 4 accounting firms' provision of consulting services and clients' long-window (one-year) earnings response coefficient (ERC) for the sample period from 2003 to 2011. Panel A provides descriptive statistics for the variables involved in this test. Panel B provides the results of the OLS regression. *, **, and *** indicate statistical significance at 10%, 5%, and 1%, respectively, based on two-tailed p-values. See Appendix for variable definitions.

Panel A: Descriptive statistics

Variable	N	Mean	Std	P25	Median	P75
$RETURNS_{it}$	29,716	0.118	0.233	0.047	0.118	0.179
E_{it}	29,716	-0.008	0.278	-0.006	0.047	0.076
ΔE_{it}	29,716	0.046	0.486	-0.017	0.007	0.034
$\%MAS_{it-1}$	29,716	0.172	0.151	0.030	0.140	0.330
$\%Tax_{it-1}$	29,716	0.283	0.054	0.230	0.270	0.330
$ACCF\_firm_{it-1}$	29,716	0.081	0.031	0.064	0.073	0.093
$ACTF\_firm_{it-1}$	29,716	0.070	0.036	0.043	0.057	0.085
MAS_client_{it-1}	29,716	0.085	0.112	0.004	0.045	0.118
Tax_client_{it-1}	29,716	0.102	0.119	0.007	0.061	0.156
$Loss_{it}$	29,716	0.262	0.440	0.000	0.000	1.000
$Restructure_{it}$	29,716	0.008	0.089	0.000	0.000	0.000
STD_Return_{it}	29,716	0.012	0.008	0.004	0.012	0.016
DE_{it}	29,716	0.902	2.504	0.020	0.383	1.038
MB_{it}	29,716	1.579	1.497	0.770	1.143	1.835
$LnMV_{it-1}$	29,716	6.766	1.947	5.465	6.686	7.984
Age_{it}	29,716	21.245	15.042	10.000	16.000	27.000
$Specialist_{it}$	29,716	0.283	0.450	0.000	0.000	1.000
$OffSize_{it}$	29,716	17.602	1.397	16.694	17.823	18.615

Panel B: Regression analysis

	DV=RETURNS		
Variable	**Coeff**	**p-value**	
Intercept	0.155	<.0001	***
E_{it}	0.179	0.073	*
ΔE_{it}	0.098	0.089	*
$\%MAS_{it-1}$	0.281	<.0001	***
$\%Tax_{it-1}$	0.369	<.0001	***
$E_{it} * \%MAS_{it-1}$	-0.060	0.333	
$\Delta E_{it} * \%MAS_{it-1}$	-0.213	<.0001	***
$E_{it} * \%Tax_{it-1}$	-0.316	0.082	*
$\Delta E_{it} * \%Tax_{it-1}$	-0.598	<.0001	***
$ACCF\_firm_{it-1}$	-3.010	<.0001	***
$ACTF\_firm_{it-1}$	3.746	<.0001	***
MAS_client_{it-1}	0.068	<.0001	***
Tax_client_{it-1}	0.063	<.0001	***
$Loss_{it}$	0.007	0.061	*
$Restructure_{it}$	-0.053	0.000	***
STD_Return_{it}	-4.840	<.0001	***
DE_{it}	-0.001	0.190	
MB_{it}	0.007	<.0001	***
$LnMV_{it-1}$	-0.010	<.0001	***
Age_{it}	0.001	<.0001	***
$Specialist_{it}$	-0.011	<.0001	***
$OffSize_{it}$	-0.007	<.0001	***
$E_{it} * ACCF\_firm_{it-1}$	1.124	0.019	**
$\Delta E_{it} * ACCF\_firm_{it-1}$	1.512	<.0001	***
$E_{it} * ACTF\_firm_{it-1}$	-0.260	0.513	
$\Delta E_{it} * ACTF\_firm_{it-1}$	-1.364	<.0001	***
$E_{it} * MAS\_client_{it-1}$	-0.117	0.017	***
$\Delta E_{it} * MAS\_client_{it-1}$	-0.022	0.435	
$E_{it} * Tax\_client_{it-1}$	-0.024	0.680	
$\Delta E_{it} * Tax\_client_{it-1}$	0.042	0.116	
$E_{it} * Loss_{it}$	-0.369	<.0001	***
$\Delta E_{it} * Loss_{it}$	0.013	0.103	
$E_{it} * Restructure_{it}$	-0.017	0.543	
$\Delta E_{it} * Restructure_{it}$	0.020	0.194	
$E_{it} * STD\_Return_{it}$	4.021	0.000	***
$\Delta E_{it} * STD\_Return_{it}$	2.039	0.002	***
$E_{it} * DE_{it}$	0.000	0.687	
$\Delta E_{it} * DE_{it}$	0.000	0.799	
$E_{it} * MB_{it}$	-0.003	0.510	
$\Delta E_{it} * MB_{it}$	0.004	0.300	

E_{it} * $LnMV_{it-1}$	0.021	<.0001	***
ΔE_{it} * $LnMV_{it-1}$	0.021	<.0001	***
E_{it} * Age_{it}	0.000	0.432	
ΔE_{it} * Age_{it}	-0.001	0.001	***
E_{it} * $Specialist_{it}$	0.027	0.080	*
ΔE_{it} * $Specialist_{it}$	0.011	0.237	
E_{it} * $OffSize_{it}$	0.001	0.830	
ΔE_{it} * $OffSize_{it}$	0.000	0.924	
Industry FE	Yes		
E_{it} * Industry FE	Yes		
ΔE_{it} * Industry FE	Yes		
N	29,716		
Adj. R square	0.194		
Test:			
E_{it} * $\%MAS_{it-1}$ + ΔE_{it} * $\%MAS_{it-1}$ = 0	-19.20	<.0001	***
E_{it} * $\%Tax_{it-1}$ + ΔE_{it} * $\%Tax_{it-1}$ = 0	-19.62	<.0001	***

Table 7
Short-window ERC tests

This table reports the relation between the Big 4 accounting firms' provision of consulting services and clients' short-window (three days around quarterly earnings announcements) earnings response coefficient (ERC) for the sample period from 2003 to 2011. Panel A provides descriptive statistics for the variables involved in this test. Panel B provides the results of the OLS regression. *, **, and *** indicate statistical significance at 10%, 5%, and 1%, respectively, based on two-tailed p-values. See Appendix for variable definitions.

Panel A: Descriptive statistics

Variable	N	Mean	Std	P25	Median	P75
CAR_{it}	84,083	0.003	0.085	-0.036	0.002	0.042
$FERR_{q}$	84,083	-0.001	0.070	-0.001	0.000	0.002
$\%MAS_{it-1}$	84,083	0.169	0.148	0.030	0.140	0.290
$\%Tax_{it-1}$	84,083	0.282	0.052	0.240	0.270	0.310
$ACCF\_firm_{it-1}$	84,083	0.079	0.030	0.061	0.073	0.092
$ACTF\_firm_{it-1}$	84,083	0.067	0.035	0.043	0.057	0.077
MAS_client_{it-1}	84,083	0.077	0.102	0.005	0.042	0.106
Tax_client_{it-1}	84,083	0.103	0.119	0.008	0.062	0.157
$absFERR_{q}$	84,083	0.008	0.069	0.001	0.002	0.005
$Loss_{q}$	84,083	0.219	0.414	0.000	0.000	0.000
$Restructure_{q}$	84,083	0.035	0.184	0.000	0.000	0.000
DE_{q}	84,083	0.843	2.274	0.031	0.401	1.031
$QTR4_{q}$	84,083	0.253	0.435	0.000	0.000	1.000
$LnMV_{q-1}$	84,083	7.053	1.665	5.891	6.922	8.058
STD_Return_{q-1}	84,083	0.042	0.018	0.026	0.033	0.056
$Specialist_{it}$	84,083	0.291	0.454	0.000	0.000	1.000
$OffSize_{it}$	84,083	17.715	1.333	16.848	17.891	18.682

Panel B: Regression analysis

	DV=CAR		
Variable	**Coeff**	**p-value**	
Intercept	0.020	0.000	***
$FERR_q$	1.035	<.0001	***
$\%MAS_{it-1}$	-0.012	<.0001	***
$FERR * \%MAS_{it-1}$	-0.377	0.037	**
$\%Tax_{it-1}$	-0.042	<.0001	***
$FERR * \%Tax_{it-1}$	-0.845	0.265	
$ACCF\_firm_{it-1}$	-0.045	0.090	*
$ACTF\_firm_{it-1}$	0.086	0.000	***
MAS_client_{it-1}	0.002	0.528	
Tax_client_{it-1}	0.001	0.618	
$absFERR_q$	0.031	0.332	
$Loss_q$	-0.019	<.0001	***
$Restructure_q$	0.000	0.957	
DE_q	0.000	0.217	
$QTR4_q$	-0.002	<.0001	***
$LnMV_{q-1}$	0.002	0.004	***
STD_Return_{q-1}	0.094	<.0001	***
$Specialist_{it}$	0.000	0.627	
$OffSize_{it}$	0.000	0.508	
$FERR * ACCF\_firm_{it-1}$	-0.269	0.895	
$FERR * ACTF\_firm_{it-1}$	-0.308	0.863	
$FERR * MAS\_client_{it-1}$	0.016	0.953	
$FERR * Tax\_client_{it-1}$	0.024	0.910	
$FERR * absFERR_q$	-0.016	0.065	*
$FERR * Loss_q$	-0.185	0.007	***
$FERR * Restructure_q$	-0.188	0.001	***
$FERR * DE_q$	0.000	0.299	
$FERR * QTR4_q$	0.036	0.007	***
$FERR * LnMV_{q-1}$	-0.091	0.002	***
$FERR * STD\_Return_{q-1}$	-0.643	0.536	
$FERR * Specialist_{it}$	-0.018	0.710	
$FERR * OffSize_{it}$	-0.029	0.004	***
Industry FE	Yes		
Industry FE*FERR	Yes		
N	84,083		
Adj R square	0.029		