National and Office-Specific Measures of Auditor Industry Expertise and Effects on Audit Quality*

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Abstract

Our paper examines whether audit quality is higher for Big 4 industry audit specialists at the national and city-office levels using the framework developed in Ferguson et al. [2003] and Francis et al. [2005]. We find that Big 4 auditors who are both national and city-specific industry experts have clients with lower abnormal accruals, suggesting that joint national and city-specific industry experts have higher audit quality. In contrast, abnormal accruals of firms audited by national industry experts alone (without also being city-specific industry experts) or by city industry experts alone (without also being national-specific industry experts) are not significantly different from those audited by non-industry experts. Using alternative measures of audit quality, we find that when the auditor is both a national and city-specific industry expert, that its clients are less likely to meet or beat analysts' forecasts by one penny and less likely to report small earnings increases. Moreover, these joint national and city-specific industry experts also have a greater propensity to opine a going-concern audit opinion or an internal control weakness opinion. Together these results provide consistent evidence that audit quality is higher when the auditor is both a national and city-specific industry expert, suggesting that auditors' national positive network externalities and the individual auditors' deep industry knowledge at the office level are jointly important factors in delivering higher audit quality.

Keywords: *Earnings quality, abnormal accruals, earnings benchmarks, auditor industry expertise, Big 4 accounting firms; modified audit opinions; going-concern audit opinions; internal control weaknesses; Sarbanes-Oxley Act Section 404.*

Data Availability: Data are publicly available.

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1. Introduction and Background

The objective of this study is to determine if audit quality is higher for Big 4[1] industry experts at the firm-wide (i.e., national) and the office level (i.e., city). Prior studies report that abnormal accruals are smaller for the clients of auditors that are national industry experts (Balsam et al. [2003]; Krishnan [2003]), that national industry experts are more likely to issue a going-concern audit opinion (Lim and Tan [2008]), and that clients audited by national industry experts disclose information of higher quality (Dunn and Mayhew [2004]). While these studies provide robust evidence that auditor's national industry expertise is associated with better audit quality, recent studies have also documented that auditor's city-specific industry expertise plays an important role in audit pricing. In particular, Ferguson et al. [2003] and Francis et al. [2005] document that joint national and city industry experts in the audit market charge significantly higher fees than other auditors, ceteris paribus. We extend this line of research by examining the impact of auditor's national and city-specific industry expertise on audit quality.

The research question is important in several aspects. First, the key feature between "national" and "city" perspectives on industry expertise is the degree to which there are positive network externalities (Katz and Shapiro [1985]; Bental and Spiegel [1995]).[2] At the firm-wide (national) level, positive externalities arise when accounting firms capture industry expertise through knowledge-sharing practices such as internal benchmarking of best practices, the use of standardized industry-tailored audit programs, and extending the "reach" of professionals from

[1] Big 4 auditors are PriceWaterhouseCoopers, Ernst & Young, Deloitte & Touche and KPMG.

[2] Ferguson et al. [2003] point out that there are positive network externalities for Big 5 firms due to the benefit of multiple offices in lowering the transaction costs of auditing large multi-location clients. However, this production efficiency characterizes all of the Big 5 firms and has nothing to do with industry specialization per se.

their primary local-office clientele to other clients through travel and internal consultative practices. At the office (city) level, auditor expertise is specifically tied to individual professionals who have deep personal knowledge of clients, that cannot be readily captured and distributed to other offices and clients. The existing literature on audit quality and auditor industry expertise has unanimously assumed that positive externalities exist in audit firms. However, audit firms are partnerships where key audit decisions are made at local offices. Thus, the auditor's individual industry knowledge at the local level may also play an essential role in the perceived audit quality of audit firms and thus should not be ignored.

The second motivation is the unapparent connection between the implied audit quality from an audit fee premium, documented in Francis et al. [2005], and observable audit quality from measures such as earnings quality, propensity to issue a going-concern audit opinion and propensity to issue an internal control weakness opinion. Arguably, if higher audit fees lead to greater audit effort, then higher audit fees lead to higher audit quality (Simunic [1980]). However, an audit fee premium may also result from the industry auditor specialist's superior reputation and greater client market share that strengthens their bargaining power to command a fee premium for an assumed differentiated service. The audit quality of a reputed industry auditor specialist is not readily discernable from that of a non-specialist, since clients (existing or prospective) rarely have the opportunity or capacity to compare auditor quality with that of other auditors. Evidently, Craswell et al. [2002], using Australian data, fail to find evidence that clients paying higher fees are associated with a greater propensity to receive a going-concern opinion. To the best of our knowledge, no other published study has reported an association between an audit fee premium and audit quality. Therefore, it is unclear whether, an audit fee premium among U.S. firms, as observed by Francis et al. [2005], leads to better audit quality.

A third motivation is that the results in Francis et al. [2005] indicate a three-level hierarchy in the pricing of audits: (1) auditors that are joint national and city-specific industry leaders have the largest fee premium; (2) auditors that are city-leaders alone, but not national leaders, have a significant but smaller fee premium; and (3) fees of auditors that are national leaders alone, but not city-specific leaders, are never significantly different from the fees of non-leaders.[3] If their findings hold, it implies that the city-specific industry expertise dominates national industry expertise. Consequently, the results in other studies (Balsam et al. [2003]; Krishnan [2003]; Lim and Tan [2008]) may be solely driven by the auditor's city-specific industry expertise. Furthermore, the Francis et al. [2005] paper was based on the first disclosed audit fee data in 2000 and 2001 and thus city-specific leadership dominance over national leadership may not generalize to subsequent years. Our paper can further clarify this issue.

Audit quality is defined as the market-assessed joint probability that a given auditor will both (a) discover a breach in the client's accounting system and (b) report the breach [DeAngelo 1981]. Following prior literature, audit quality is higher if clients' earnings are of a higher quality, evident from lower abnormal accruals (Balsam et al. [2003]; Krishnan [2003]; Lim and Tan [2008]), and lower frequency of either meeting or beating analysts' forecast by one penny (Lim and Tan [2008]) or reporting small earnings increases (Frankel et al. [2002]; Ashbaugh et al. [2003]). Both abnormal accruals and earnings benchmark tests have been used in prior research to identify firms that engage in earnings management behavior. Prior literature has also used the propensity to issue a qualified going-concern opinion as a measure of audit quality (Lim

[3] Using 10-K disclosures, Francis et al. [1999] and Francis et al. [2005] document that the engagement office administering the audit and issuing the audit report is usually located in the same city as the client's corporate headquarters, and this is the basis for calculating city-level clienteles and industry market shares.

and Tan [2008]). We introduce an additional measure of audit quality, the auditor's propensity to report that internal controls of a client's financial reporting process are ineffective.

What do we find? When the auditor is both a national and city industry expert clients report smaller abnormal accruals, are less likely to meet or beat analysts' forecasts by one penny, have fewer small earnings increases, are more likely to receive a going-concern audit opinion, and are more likely to receive a qualified audit opinion that their internal controls over financial reporting are not effective. In all tests, the results indicate that the joint city industry expertise and national industry expertise are important determinants of higher audit quality. In other words, the joint positive externalities at the national level and individual accountants' deep industry knowledge at the office level contribute the most to higher audit quality. All tests control for client characteristics (size, risk, etc.) and are robust to alternative measures of industry auditor expertise. Thus we conclude from these analyses that joint national-specific and city-specific industry expertise is a fundamental element of differential audit quality.

Our results partly support the argument that positive externalities from national industry expertise play an important role in providing higher quality audit. However, the argument of positive externalities can only be valid when auditors in the local office are also industry experts, indicating that the auditor's industry expertise is indelibly tied to individual professionals and their deep personal knowledge of clients. Positive externalities and auditor's individual industry expertise are the two necessary conditions for providing higher audit quality. On the one hand, without the local auditors' individual deep industry expertise, the knowledge-sharing practices do not seem to result in better audit quality. While on the other hand, our results seem to support the argument that without the knowledge-sharing practices across offices such as internal

benchmarking of best practices, and the use of standardized industry-tailored audit programs, the individual auditor's industry expertise in their office does not guarantee higher audit quality.[4]

We mitigate the possibility that our results are driven by auditor selectivity bias. If joint national and city industry experts had selected clients with better earnings quality (in order to reduce audit risk) we would also expect to find that their clients had fewer internal control weaknesses over financial reporting, since prior research finds that larger positive abnormal accruals are associated with weaker financial reporting internal controls (Doyle et al. [2007b]; Ashbaugh-Skaife et al. [2008]) To the contrary, we find that clients of joint national and city industry experts have fewer positive abnormal accruals and are more likely to have weaker financial reporting controls, thus mitigating the possibility of self-selection bias.

As a caveat we note that the results of the study are not pejorative with respect to Big 4 auditors who are not industry experts. All Big 4 audits are assumed to meet minimum legal and professional standards of quality, as are audits performed by non-Big 4 accounting firms. However, the evidence does indicate that within the dominant Big 4 group of auditors there is differential audit quality based on joint national and city-specific industry expertise. The remainder of the paper is organized as follows. Section two presents the background to the study, reviews relevant prior literature, and forms the hypotheses. Section three describes the sample and industry specialist definitions. Sections four through eight report our empirical test results: abnormal accrual tests, meeting or beating analysts' earnings forecast tests, small

[4] The findings are somewhat different than the findings in Francis et al. [2005] which document a three-level hierarchy of audit pricing. More specifically, Francis et al. [2005] find that the auditor's city-specific industry expertise dominates the national level industry expertise. We find that the joint national and city-specific industry expertise are important in providing higher audit quality. We argue that the difference is possibly because the fee premium does not exactly map to better audit quality. Another possible reason is that Francis et al. only use first-time reported audit fees, namely 2000 and 2001 data, while our study uses data from 2003 to 2006.

earnings increase tests, going-concern audit opinion tests, and internal control weakness opinion tests. The study concludes in section nine.

2. Background and Prior Studies

Industry Expertise and Audit Quality

The notion that auditors have differential industry expertise has been around for some time; e.g. Eichenseher and Danos [1981]. Industry experts appear to charge a higher price for audits, which in turn implies they produce higher quality audits (Craswell et al. [1995]; DeFond et al. [2000]). There is also recent evidence that audited financial statements are of higher quality when audited by industry experts. For example, Balsam et al. [2003] and Krishnan [2003] document that abnormal accruals are smaller for companies audited by national-level industry experts (measured in various ways), which implies there is less managerial discretion and higher earnings quality for audit clients of national-level industry experts.

Our analysis builds on these studies plus recent research arguing that auditor industry expertise may have both "localized" (office-specific) characteristics as well as a "national" (firm-wide) dimension. Ferguson et al. [2003] and Francis et al. [2005] argue that industry expertise derives from deep client knowledge of professionals working primarily out of practice offices that are typically located near their clients. Audit reports are issued on office-specific letterhead by the lead engagement partner administering an audit, and even though other offices may participate in the audit, the lead engagement partner directs the total effort, interprets the audit evidence and ultimately determines the appropriate audit report. The degree to which industry expertise is firm-wide versus office-specific depends on the extent to which the deep expertise of office-based professionals can be captured and distributed within the firm through knowledge sharing practices (Francis et al. [1999]; Reynolds and Francis [2000]).

Recent evidence in the audit pricing literature indicates that both national-level and office-level industry expertise appear to affect auditor reputations for industry expertise (Ferguson et al. [2003]; Francis et al. [2005]). Using Australian data, Ferguson et al. [2003] document that audits are priced as if both national and office-specific market shares jointly affect the market's perception of auditor industry expertise. They document an audit premium for auditors that are both the national industry expert and the city-specific industry expert in the city where the client is headquartered (and which administers the audit engagement). Francis et al. [2005] examine the U.S. audit market using the framework in Ferguson et al. [2003] and also document that audit fees are highest when auditors are jointly the national industry expert and the city-specific expert. The research question investigated in this study is whether auditors who are jointly the national expert and the city-specific expert of a Big 4 based on audit fee premia in Francis et al. [2005], maps to systematic differences in audit quality.[5] For the purpose of this study, we define audit quality as 1) clients' earnings quality, 2) the propensity to issue a going-concern opinion, and 3) the propensity to issue a SOX 404 internal control weakness opinion.

Industry Expertise and Clients' Earnings Quality

During his term as SEC Chairman, Arthur Levitt [1998] was critical of earnings quality in the U.S. due to what he termed the "numbers game" or aggressive earnings management behavior in order to meet quarterly earnings targets. While stopping short of declaring such

[5] We acknowledge there are unpublished studies examining office size as a determinant of audit quality (Choi et al. [2007]; Francis and Yu [2008]). Our paper complements these studies by examining joint national-city auditor expertise and audit quality, and by examining SOX 404 audit opinions as measure of audit quality which these two papers do not. We include the office size variable as measured by the natural logarithm of total audit fee revenues of the office in all models. Our inferences are not affected.

behavior fraudulent, he nevertheless believes it fundamentally undermines the credibility of accounting and lowers investor confidence in the securities market. Levitt [1998] stated:

"Too many corporate managers, auditors, and analysts are participants in a game of nods and winks. In the zeal to satisfy consensus earnings estimates and project a smooth earnings path, wishful thinking may be winning the day over faithful representation. As a result, I fear that we are witnessing an erosion in the quality of earnings, and therefore, the quality of financial reporting. Managing may be giving way to manipulation; integrity may be losing out to illusion."

The effect of earnings management on earnings quality cannot be directly observed but is instead inferred by researchers from certain statistical properties and characteristics of earnings numbers (Schipper and Vincent [2003]). We examine three widely investigated properties of earnings numbers: abnormal accruals, the likelihood of meeting or beating analyst forecasts, and the likelihood of small but positive earnings increases. Abnormal accruals are derived from an econometric estimation of "expected accruals" and represent the degree to which accruals have been potentially managed in order to achieve strategic earnings objectives (Jones [1991]; DeFond and Jiambalvo [1994]; Dechow et al. [1995]; Kothari et al. [2005]).

The second and third analyses are based on the likelihood of companies meeting or beating analysts' earnings forecasts, and the likelihood of reporting small earnings increases. Berenson [2003] chronicles the market's increasing pressure on companies to meet earnings benchmarks such as analysts' forecasts and exceeding last year's earnings. The failure to meet earnings forecasts by even one cent per share can result in significant stock price declines and reduced CEO compensation (Barth et al. [1999]; Matsunaga and Park [2001]). Thus there is a strong incentive to manage earnings in order to meet analysts' forecasts and to avoid a small earnings decrease. Burgstahler and Dichev [1997] and Degeorge et al. [1999] report evidence consistent with incentives to exactly meet or beat earnings' forecasts by one cent and to report small earnings increases above zero by documenting a discontinuity around zero in the

corresponding distributions. Specifically, there is over-representation of firms that exactly meet or beat analysts' forecasts by one penny or report small earnings increases and under-representation of firms in the distribution just missing analysts' forecasts by one cent or reporting a small earnings decrease, which is consistent with the use of earnings management to "push" earnings upward for firms that otherwise may have fallen short of the benchmark earnings targets.

How do industry audit experts reduce earnings management behavior and improve earnings quality? First, industry experts presumably have a greater knowledge of industry accounting practices and therefore are better able to identify and reign in more aggressive practices. Second, because industry audit experts have developed a reputation for industry expertise, they have an incentive to protect their reputation in order to earn audit fee premia for that expertise (Craswell et al. [1995]). In general, auditors protect their reputation by resisting client pressure for greater discretion and imposing stricter standards on clients in order to minimize the risk of misleading reporting (Reynolds and Francis [2000]). Thus if industry experts are stricter and are better able to constrain their clients' earnings management behavior, then their clients earnings reports should have smaller abnormal accruals relative to the clients of other auditors, and are less likely to meet or beat analysts' earnings forecasts and report small earnings increases, ceteris paribus.

Industry Expertise and Going-concern Audit Opinions

The notion that higher quality auditors are more likely to issue a going-concern audit opinion (GCAO)[6] has been well established in the literature, but whether office level industry expertise increases the likelihood to issue a GCAO has not been clearly established. Extant

[6] SAS No. 59 requires an auditor to evaluate whether there is substantial doubt about a firm's ability to continue as a going-concern for one year beyond the financial statement date.

literature suggests that larger auditors (Weber and Willenborg [2003]), larger audit fees (Geiger and Rama [2003]), and *national* industry expertise (Lim and Tan [2008]) are positively associated with an auditor's propensity to issue a GCAO. A limited number of studies examine the relation between the propensity to issue a modified audit opinion and the client fee influence at the *office* and national levels, by examining GCAOs in the U.S. (Reynolds and Francis [2000]; Li [2008]) and qualified audit opinions in Australia (Craswell et al. [2002]). However, these studies do not clearly examine whether office level expertise affects the propensity to issue a going-concern opinion. Prior literature has established that joint national and office level auditor experts command a higher fee premium (Ferguson et al. [2003]; Francis et al. [2005]; Basioudis and Francis [2007]) suggesting that they offer a more differentiated and higher quality audit service. If joint national and office level auditor experts perform a higher quality audit, then arguably they are more likely to issue a GCAO.

How do industry audit experts, both national and city-level, possess a greater propensity to express a GCAO? First, industry experts presumably have a greater knowledge of their client's industry and are better able to evaluate whether an industry specific client has substantial doubt about their ability to continue as a going-concern. Prior literature argues that auditors which specialize in particular industries build expertise in these specific areas and make greater specific investments in building up their reputation of superior quality (O'Keefe et al. [1994]; Craswell et al. [1995]; Solomon et al. [1999]; Owhoso et al. [2002]; Carcello and Nagy [2004]; Kwon et al. [2007]; Lim and Tan [2008]). For instance, higher quality auditors deploy more audit effort in a more contextual and less procedural approach by allocating more resources to planning and risk assessment (Blokdijk et al. [2006]). Consequently, they have more effective procedures to measure a client's risk of business failure and would impose stricter quality

standards on their staff when performing these procedures. Secondly, industry experts have developed a reputation for higher audit quality, so they have a greater incentive to protect their reputation against possible litigation in the event of a client's business failure.[7] To protect themselves against client pressures to express an unqualified opinion, which would otherwise increase their risk of litigation, an industry specialist will express a going-concern audit opinion based on a lower probability of client business failure than that of a non-specialist. In short, national and office level industry expert auditors can better assess their clients' business risk and they will protect their reputation by expressing a more conservative audit opinion to minimize litigation risk. We expect that national and office level industry expert auditors more frequently issue a going-concern audit opinion to their clients, ceteris paribus.

Industry Expertise and Financial Reporting Internal Control Opinions

Section 404 of the Sarbanes-Oxley Act requires that public company financial statements filed on Form 10-K or Form 10-Q contain an assessment by management of the design and operating effectiveness of its financial reporting internal controls, and that the external auditor, on an annual basis, provide an opinion on management's assessment of internal controls. This audit opinion is reported on the form 10-K with the audit opinion of the client's financial statements, thus making the audit opinion public knowledge. Starting with fiscal years ending November 15, 2004, accelerated filers (those in excess of $75M market capitalization) require an independent audit opinion of the effectiveness of the internal controls over financial reporting. In turn, the auditor tests the internal control processes by inquiry, observation, examination of the control process documentation, and re-performance of the control. Unlike a traditional audit of financial statements, where weaker internal controls typically result in less compliance testing

[7] Loss of reputation is more costly to a specialist than to a non-specialist, since a specialist's reputation for higher quality differentiates themselves from non-specialists.

and more extensive substantive testing, in a SOX 404 audit the detection of weaker internal controls typically results in more extensive compliance testing in order for the auditor to adequately assess their reliability. If the auditor detects one or more material weaknesses, Auditing Standard No. 5 (previously No. 2) deems that the company's internal controls are not effective, (Public Company Accounting Oversight Board (PCAOB) [2007]).

In recent years, accounting research has examined the impact of SOX 302 and 404 finding that the clients with internal control weaknesses are smaller, younger, and more complex (Ge and McVay [2005]; Ashbaugh-Skaife et al. [2007]; Doyle et al. [2007a]), and have weaker audit committees (Zhang et al. [2007]). The effect of a client having weaker internal controls includes delays in issuing financial statements (Ettredge et al. [2006]), higher audit fees and client related costs (Raghunandan and Rama [2006]; Hogan and Wilkins [2008]; Hoitash et al. [2008]; Krishnan et al. [2008]), negative capital market reactions - particularly from SOX 302 disclosures (Ogneva et al. [2007]; Beneish et al. [2008]; Hammersley et al. [2008]), and adverse lending decisions (Schneider and Church [2008]). More notably, internal control weaknesses more often relate to accrual accounts such as accounts receivable, revenue recognition, and inventory (Ge and McVay [2005]) causing weaker accrual quality (Doyle et al. [2007b]; Ashbaugh-Skaife et al. [2008]) which later improves if the client makes remedial efforts.

While prior literature has examined the effect of SOX 404 on earnings quality, it is not yet clear how industry auditor expertise would affect the propensity to issue a qualified audit opinion which concludes that internal controls over financial reporting are not effective. We posit that national and office level industry auditor experts are more effective in issuing such an opinion, and we parallel our arguments from those that we posited earlier on their propensity to issue a going-concern audit opinion. Prior literature argues that auditors who specialize in

particular industries build expertise in these specific areas and make greater specific investments in building up their reputation of superior quality (O'Keefe et al. [1994]; Craswell et al. [1995]; Solomon et al. [1999]; Owhoso et al. [2002]; Carcello and Nagy [2004]; Kwon et al. [2007]; Lim and Tan [2008]). Since industry experts possess a greater in-depth knowledge of the industry's internal control practices, they would have more competent staff (and with higher quality control standards) to detect internal control weaknesses and assess their materiality. While clients of industry auditors are expected to have higher earnings quality, the industry expert should have a greater propensity to conclude that the internal controls are not effective for those clients with weaker earnings quality. Secondly, industry experts have developed a reputation for higher audit quality, so they have a greater incentive to protect their reputation by imposing a stricter standard to assess whether an internal control weakness is indeed material or not, in order to minimize their litigation risk. In short, national and office level auditor industry experts are more likely to conclude that a client's internal controls over financial reporting are not effective, since they can better assess their clients' internal controls and they protect their reputation by expressing a more conservative audit opinion to minimize litigation risk, ceteris paribus.

3. Sample and Industry Specialist Definitions

We begin our sample selection process by including all non-financial domestic companies from Audit Analytics (31,547 firm-year observations) with valid audit fee data for the period 2003 to 2006.[8] We deduct foreign companies, missing auditors' city and state codes and missing SIC codes, thus yielding 26,550 firm-year observations. In order to utilize variables from Compustat Annual, we deduct 5,798 observations without a matching CIK code. Our analysis is focused solely on Big 4 clients, so we deduct 7,346 non-Big 4 client observations. To

[8] We begin our sample period with 2003 since this is the first year of Big 4.

ensure that city expertise is not determined by too few observations in a city-industry-fiscal year combination, we require a minimum of four per city-industry-fiscal year combination[9] by deleting 4,847 observations with three or less, yielding a total sample of 8,559 firm-year observations.

From this sample, we derive five sub-samples used in this study for five types of analysis: abnormal accrual analysis, meeting or beating analysts' earnings forecasts analysis, small earnings increase analysis, going-concern opinion analysis, and internal control weakness opinion analysis. Our abnormal accruals analysis sub-sample has 6,037 firm-year observations, after deducting missing values or those without abnormal accruals (2,378), and after deducting observations with an absolute studentized residual greater than 3 (144). Our meeting or beating analysts' earnings forecasts analysis subsample has 3,513 firm-year observations, after deleting observations without analysts' forecasts (5,044) and those with an absolute deviance residual greater than 3 (2).[10] The small earnings increase analysis sub-sample has 6,533 firm-year observations, after deducting observations with missing values (2,018) and those with an absolute deviance residual greater than 3 (8). Our going-concern opinion analysis sub-sample has 1,607 firm-year observations, after deducting observations with missing values (2,071), those not classified as financially distressed firms[11] (4,880) and those with an absolute deviance residual greater than 3 (1). Our internal control weakness opinion analysis sub-sample has 3,616 firm-year observations after deducting observations prior to implementation of SOX 404 (2,488),

[9] We use a minimum two, three and five and the results are similar.

[10] Analyst forecasts are obtained from the I/B/E/S unadjusted detail file to avoid the problem of lost precision in the EPS decimal places from stock splits (Payne and Thomas [2003]). To avoid using stale dated forecasts, we use the most recent analyst forecasts that are no older than two months before the earnings release date, following Lim and Tan [2008].

[11] We restrict our going-concern opinion analysis to financially distressed firms, following Lim and Tan [2008]. A firm is defined as a financially distressed firm if it reports negative operating cash flows (data308-data124).

those not in the Audit Analytics internal control file (1,973), and those with missing values (482). Table 1 summarizes the sample selection process and results.

[Insert Table 1 here]

Audit fees are a direct measure of industry output, and the identification of the Big 4 expert in each industry is based on each Big 4 firm's share of industry audit fees for each two-digit SIC in the sample (Hogan and Jeter [1999]; Ferguson et al. [2003]).[12] Following prior studies which examined industry expertise as the variable of interest (Balsam et al. [2003]; Krishnan [2003]; Dunn and Mayhew [2004]), we use two definitions for national and city industry expertise. Descriptive statistics of each definition are reported in Table 2. Definition 1 defines a national (city) industry specialist if in a particular year (and in a particular city) the auditor has the largest market share in a two-digit SIC and if its market share is at least five percentage points greater than the second largest in a national (city) audit market. Cities are identified by Audit Analytics from the audit report of the financial statements found in the Form 10-K filing. Definition 1 yields a mean of 22.9 percent national industry specialists, 47.2 percent city industry specialists, 14.0 percent joint national and city industry specialists, 8.9 percent national only industry specialists, and 33.2 percent city only industry specialists. National-level industry expertise is distributed among 538 industry-year Big 4 auditors over the four-year period as follows (Table 2, Panel B): Deloitte Touche (DT) is the national expert in 25 industry years; Ernst & Young (EY) is the national expert in 36 industry years; KPMG (KP) is

[12] The Big 4 National market shares, averaged across all 45 industries and the four years in the sample, are as follows: the top-ranked Big 4 firm per industry has an average market share of 41 per cent of audit fees, while the second-ranked firm has a market share of only 25 per cent. The third-ranked firm has an average market share of 17 per cent, the fourth-ranked firm a market share of 11 per cent. The Big 4 City market shares, averaged across all 45 industries, 68 cities and four years in the sample, are as follows: the top-ranked Big 4 firm has an average city-level industry market share of 68 per cent of audit fees and the second ranked firm has a 25 per cent market share. These results are comparable to those of Francis et al. [2005].

the national expert in 5 industry years; and Pricewaterhousecoopers (PWC) is the national expert in 46 industry years. City-level industry expertise is distributed among 3,132 industry-city-year Big 4 auditors as follows: DT (278), EY (336), KPMG (230), and PWC (337).

Definition 2 defines a national (city) industry specialist if in a particular year (and in a particular city) the auditor has a market share greater than 30 percent in a two-digit SIC.[13] This definition yields a mean of 31.0 percent national industry specialists, 62.0 percent city industry specialists, 24.0 percent joint national and city specialists, 7.1 percent national only industry specialists, and 38.0 percent city only industry specialists. Among the Big 4, national-level industry expertise distribution and city-level industry expertise distribution are similar to those reported for definition 1, and are summarized in Panel B (B-3 and B-4) of Table 2.

[Insert Table 2 here]

4. Abnormal Accruals Tests

Models have been developed to predict the level of a firm's "normal" or expected accounting accruals (Jones [1991]; DeFond and Jiambalvo [1994]; Kothari et al. [2005]). Expected accruals are estimated by regressing total accruals on firm-specific characteristics that control for the economic determinants of accruals due to the change in revenues and accounts receivables from the prior year, the level of property plant and equipment, and operating performance, by industry (two-digit SIC) and year:

$$TA_{ijt}/A_{ijt-1} = \alpha_{jt}[1/A_{ijt-1}] + \beta_{0jt}[(\Delta REV_{ijt} - \Delta REC_{ijt})/A_{ijt-1}] + \beta_{1jt}[PPE_{ijt}/A_{ijt-1}] + \beta_{2jt}[EARN_{ijt-1}/A_{ijt-1}] + e_{ijt} \quad (1)$$[14]

where:

[13] Mayhew and Wilkins [2003] and Dunn and Mayhew [2004] use 20 percent market share as a cutoff when defining industry expertise for Big 6 auditors. Thus, we use a 30 percent market share as the cutoff value for defining Big 4 auditors' industry expertise.

[14] In executing the model, to avoid the impact of the outliers, we truncate the top and bottom 1 percent of the distributions of all variables in each year and mandate at least 20 observations in each industry and fiscal year combinations.

TA_{ijt} = total accruals (net income from continuing operations (data18), minus operating cash flows (data308-data124)) for company i in industry j for year t,
A_{itj-1} = total assets (data 6) for company i in industry j for year t-1,
ΔREV_{ijt} = change in revenue (data12) from prior year, company i in industry j for year t,
ΔREC_{ijt} = change in accounts receivable (data2) from prior year, company i in industry j for year t,
PPE_{ijt} = gross PP&E (data7) for company i in industry j for year t,
$EARN_{ijt-1}$ = earnings before extraordinary items (data18) for company i in industry j for year t-1,
e_{ijt} = error term for company i in industry j for year t.

The error term e_{ijt} in equation (1) represents the amount of company i's *abnormal* or unexpected accruals and is the amount of earnings that have been potentially distorted through managerial discretion and earnings management behavior. Kothari et al. [2005] suggest the need to control for company performance in order to increase the power of the modified Jones model (1991), so the variable EARN (scaled by lagged assets) is included in equation (1) to specifically control for a firm's return on assets. The value of EARN is from the prior period, since the current period includes abnormal accruals.

To determine if managerial discretion with respect to accruals varies with the industry expertise of a company's auditor, the absolute value of the abnormal accruals generated by equation (1) are regressed on auditor industry expertise variables, plus a set of control variables used in prior studies (e.g. Frankel et al. [2002]; Ashbaugh et al. [2003]; Lim and Tan [2008]) (firm subscripts omitted for brevity):

$$|DACC| = b_0 + b_1 SIZE + b_2 STD\_CFO + b_3 CFO + b_4 LEV + b_5 LOSS + b_6 MB + b_7 LIT + b_8 ALTMAN + b_9 TENURE + b_{10} |LAG\_TACCR| + b_{11} AUDITOR\#1 + b_{12} AUDITOR\#2 + b_{13} AUDITOR\#3 + e \quad (2)$$

where:

|DACC| = Absolute value of abnormal accruals (the residual from equation (1));
SIZE = natural log of market value of equity (data25*data199) at the end of the fiscal year;

STD_CFO	=	standard deviation of operating cash flow (scaled by total assets at the beginning of the fiscal year) from t-4 to t;
CFO	=	operating cash flow scaled by total assets at the beginning of the fiscal year;
LEV	=	total long-term debt (data9) scaled by total assets;
LOSS	=	1 if net income before extraordinary items (data18) < 0, 0 otherwise;
MB	=	market value of equity divided by book value of equity (total assets – total liabilities (data181));
LIT	=	1 if the company operates in a high litigation industry (SIC codes of 2833 – 2836, 3570 – 3577, 3600 – 3674, 5200 – 5961, and 7370 – 7370), 0 otherwise;
ALTMAN	=	Altman's (1968) scores;
TENURE	=	natural log of the number of years that the auditor has audited the firm's financial statements;
|LAG_TACCR|	=	total accruals from prior year, scaled by total assets at beginning of fiscal year;
AUDITOR#1	=	1 if the auditor is an industry specialist at both national and city levels, 0 otherwise;
AUDITOR#2	=	1 if the auditor is a national industry specialist but not a city industry specialist, 0 otherwise;
AUDITOR#3	=	1 if the auditor is a city industry specialist but not a national industry specialist, 0 otherwise; and
e	=	error term assumed to have normal OLS regression properties.

The dependent variable, |DACC|, is the absolute value of abnormal accruals.[15] The test variables of interest are the three auditor indicator variables, defined by two alternative measures of industry specialization, discussed earlier. AUDITOR#1 is coded one if the auditor is the industry expert at both the national and city-specific level; AUDITOR#2 is coded one if the auditor is the national industry expert, but not the city-specific industry expert in the city where the auditor's office is located; and AUDITOR#3 is coded one if the auditor is the city industry expert in the city where the auditor's office is located, but not the national industry expert. The default comparison is Big 4 auditors that are non-experts at either the national or city levels.

[15] To avoid the impact of extreme values, all continuous variables in equations (2) through (6) are winsorized at 1 percent and 99 percent. We also delete observations with |studentized residuals| > 3 in Equation (2), and those with |deviance residuals| > 3 in equations (3) through (6).

Control variables draw on prior studies and control for firm size (SIZE), cash flow volatility to control for non-accruals based income smoothing (STD_CFO), operating cash flow to control for the inverse relation between accruals and cash flow (CFO), debt level to control for debt incentives to manage earnings (LEV), an indicator variable if the firm has a loss (LOSS), market to book ratio to control for growth opportunities, membership in high-litigation industries (LIT), financial distress (ALTMAN), and auditor tenure (TENURE). Higher abnormal accruals are expected for firms with more growth opportunities (MB) (Ashbaugh et al. 2003), membership in high-litigation industries (LIT) (Ashbaugh et al. [2003]; Lim and Tan [2008]), firms with a stronger incentive to report higher earnings (i.e., firms in financial distress (ALTMAN[16]) or with losses (LOSS)) (Ashbaugh et al. [2003]), firms with greater non-accrual earnings volatility (STD_CFO) (Doyle et al. [2007b]) or those with high total accruals in the prior year (|LAG_TACCR|) (Balsam et al. [2003]). Lower abnormal accruals are expected for those firms which are larger in size (SIZE) (Reynolds and Francis [2000]), higher cash flows (CFO) (Dechow et al. [1995]), higher debt levels (LEV) (Balsam et al. [2003]), or higher levels of auditor tenure (TENURE) (Lim and Tan [2008]). Industry indicator variables and year indicator variables are not added since abnormal accruals are estimated by two-digit SIC code and by year from residuals in equation (1). Descriptive statistics of these variables are reported in Table 3, Panel A.

[Insert Table 3 here]

The distributions of the dependent and independent variables are in general consistent with the literature (see, for example, Lim and Tan [2008]). The mean of abnormal accruals is 0.066 and median is 0.046. The mean and the median of the natural log of total market value of

[16] The Altman score measures the likelihood of company survival. Lower (higher) scores measure a greater (lesser) probability of bankruptcy. We expect a negative association between |DACC| and ALTMAN.

equity is 6.419 and 6.423, respectively. Operating cash flow (CFO) has a mean value of 0.044 and the standard deviation of operating cash flow (STD_CFO) has a mean of 0.118. On average, the long-term debt to asset ratio is 17.2 percent and its median is 10.3 percent. Overall, 33.6 percent of firms over the four year period report negative earnings (LOSS).

Results of estimating equation (2) are reported in Table 4 for each of the two auditor industry specialist definitions. Model 1 codes the auditor test variable equal to one if a Big 4 auditor is the national industry expert based on national clienteles, and zero otherwise, and affords a comparison with the national-level measures of industry expertise in Balsam et al. [2003] and Krishnan [2003]. Model 2 codes the auditor test variable equal to one if the auditor is the city-specific industry expert based on city-specific clienteles, and zero otherwise. However, the primary interest is in model 3 which reports the estimation of equation (2) based on the specification of three auditor indicator variables.

All models in Table 4 are significant ($p<.001$), and adjusted r-squares are 16.6 percent. To be statistically conservative, all p-values are reported as two-tail p-values (even though directional predictions are made). Most of the control variables are significant at $p<.10$ in most of the model estimations except for auditor tenure (TENURE). Abnormal accruals are larger for firms with greater non-accrual earnings volatility (STD_CFO), losses (LOSS), greater growth opportunities (MB), higher litigation risk (LIT), and total accruals (in absolute value) in the prior year. Because a lower value of the Altman score indicates greater financial distress, the negative coefficient on ALTMAN shows that abnormal accruals are higher for financially distressed firms, as predicted. In comparison, abnormal accruals are smaller for firms that are larger (SIZE), higher operating cash flows (CFO), and greater leverage (LEV).

[Insert Table 4 Here]

Model 1 analyzes national-level industry expertise alone. There is a negative association between national industry expertise and the magnitude of performance-adjusted abnormal accruals for the two industry specialist definitions (p=0.292 and 0.002). These results are roughly consistent with the national-level analysis in Balsam et al. [2003] and Krishnan [2003] who both used Jones (1991) abnormal accruals. In model 2, which analyzes city-specific expertise alone, there is a negative association between city-specific industry expertise and performance-adjusted accruals from both definitions (p=0.046 and 0.191).

Model 3 reports the estimation of equation (2) and is the primary model of interest. Clients of auditors who are both national and city-specific industry experts have lower performance-adjusted abnormal accruals. The coefficient of Both National and City Specialist is negative under definition 1 (-0.005) and significant (p=0.030) and negative under definition 2 (-0.007) and significant (p=0.003). In contrast, the coefficients of National Specialists Only and City Specialists Only are not statistically significant at p=0.10. These results indicate that earnings quality is higher only when the auditor is a joint national and city-specific industry expert. National expertise alone or city expertise alone is not sufficient for auditors to provide higher audit quality. More specifically, these results suggest that the joint positive externalities of national industry expertise and individual auditor's office industry expertise are the fundamental determinants of higher audit quality.

To illustrate the economic significance of the coefficients for joint city-national industry experts in model 3, the magnitudes of these coefficients for definitions 1(-0.005) and 2 (-0.007) are equivalent to 10.4 percent and 14.5 percent of pretax income, respectively, based on the

median pre-tax income in the sample.[17] Indeed, the dollar impact of smaller abnormal accruals has a material effect on earnings using the five per cent rule-of-thumb, and perhaps an even greater effect given that even one cent of earnings per share can have important consequences on stock prices. We conclude that the impact of joint national and city-level auditor industry expertise on abnormal accruals is both statistically and economically significant.

5. Tests of Meeting or Beating Analysts' Earnings Forecasts

If industry audit experts are less tolerant of aggressive earnings management, then we should expect that clients of such auditors are less likely to meet or beat analyst forecasts within one penny of earnings per share. To test this hypothesis, we estimate the following logit model to examine the relation between auditor expertise and the propensity for meeting or beating analysts' earnings forecasts by one penny per share (firm subscripts omitted for brevity):

$$\begin{aligned} MEET = {} & b_0 + b_1SIZE + b_2STD\_EARN + b_3LEV + b_4LOSS + b_5MB + b_6LIT + b_7ALTMAN \\ & + b_8TENURE + b_9ROA + b_{10}TACCR + b_{11}STD\_FORECAST + b_{12}LOG(NUMEST) \\ & + b_{13}AUDITOR\#1 + b_{14}AUDITOR\#2 + b_{15}AUDITOR\#3 \\ & + \text{Industry and Year fixed effects}[18] + e \end{aligned} \quad (3)$$

where:

MEET = 1 if earnings exactly meet or beat consensus analysts' forecast by one cent per share, 0 otherwise; [19]

[17] The magnitudes are computed as follows for the median firm in the sample. The coefficients on the auditor indicator variables represent the average change (due to the auditor variable) in the dependent variable which is the absolute value of abnormal accruals scaled by lagged assets. For each coefficient on the auditor indicator variables, the coefficient is divided by the median per-tax earnings in the sample, also scaled by lagged assets, to derive the percentage effect on pre-tax earnings of the median firm in sample.

[18] Industry fixed effects are controlled using dummy variables based on the one-digit SIC, since the model cannot be executed when industry fixed effect controls are based on the two-digit SIC. Year fixed effects are controlled using dummies based on fiscal years.

[19] The consensus analyst forecast is the median EPS forecast computed over the set of analysts providing forecasts for the firm obtained from the I/B/E/S unadjusted detail file. To avoid the problem of lost precision of EPS decimal places from stock splits, the unadjusted detail file is used (Payne and Thomas [2003]). To ensure that forecasts are not stale dated, we use those that are no older than two months before the earnings announcement date (Lim and Tan [2008]). For consistency, actual earnings are from I/B/E/S.

STD_EARN	=	standard deviation of income before extraordinary items (scaled by total
	=	assets at the beginning of the fiscal year) in the past four years (t-4 to t-1);
ROA	=	return of assets;
STD_FOR	=	Standard deviation of analysts' forecasts;
LOG(NUMEST)	=	natural log of number of analysts following the company;
TACCR	=	total accruals from continuing operations scaled by total assets at the beginning of the fiscal year.

All other variables are as defined in equation (2). The dependent variable is the probability of meeting or beating analysts' earnings forecasts by one cent per share. As shown in Panel B of Table 3, about 21 percent of firms exactly meet or beat consensus analysts' forecasts by one penny of EPS. Our control variables are similar to those in equation (2) controlling for client risk characteristics with the addition of earnings volatility, profitability, total accruals, and analyst characteristics. We control for earnings volatility (STD_EARN) since firms with higher earnings volatility are more difficult to forecast (a mean of 0.145). We add profitability (ROA) (Lim and Tan 2008) to control for performance[20] and total level of accruals (TACCR) to control for accrual attributes; the means are 0.007 and -0.067, respectively. Finally, we control for analyst characteristics: forecast dispersion (STD_FOR) which has a mean of 0.039 and the natural log of the number of analysts following the company (LOG(NUMEST)) which has a mean of 0.931. The distributions of other variables are similar to those reported in Panel A of Table 3.

We expect that firms are more likely to meet or beat analysts' earnings forecasts within one penny when they are larger, have more growth opportunities, are in high litigation industries, have higher accruals, and are followed by more analysts. We predict that firms are less likely when they have more volatile earnings (STD_EARN), are more levered (LEV), incur a loss (LOSS), and have greater analyst forecast dispersion (STD_FORECAST).

[20] In equation (2) firm performance is adjusted in the dependent variable from the residual of equation (1).

The estimation of the logit regression based equation (3) is presented in Table 5. Firms with a greater market to book ratio (MB), and greater analyst following (LOG(NUMEST)) are more likely to meet or beat analysts' forecasts by one penny. In comparison, firms with higher leverage (LEV), greater forecast dispersion (STD_FORECAST) and those reporting a loss (LOSS) are less likely to meet or beat analysts' forecasts by one penny.[21]

In model 1, clients audited by national industry experts are less likely to exactly meet or beat analysts' forecasts by one penny, significant at 0.10 (one-tailed) under both definitions. In model 2, clients audited by city-specific industry experts are less likely to exactly meet or beat analysts' forecasts by one penny, significant at 0.10 under both definitions.

Model 3 reports the estimation of equation (3) and is the primary model of interest. Clients of auditors that are both national and city-specific industry experts are less likely to meet or beat analysts' forecasts by one penny, since the coefficient of Both National and City Specialist is negative (-0.302) and significant (p=0.033) under definition 1 and negative (-0.385) and significant (p=0.003) under definition 2. Clients of auditors that are city-only industry experts (not national industry experts) are less likely to meet or beat analysts' forecasts by one penny, since the coefficient of City Specialist Only is negative (-0.193) and significant (p=0.059) under definition 1 and negative (-0.184) and significant (p=0.095) under definition 2**.** The coefficients of Both National and City Specialist are greater than those of City Specialist Only for both definitions 1 and 2. However, the difference is only significant at the conventional level under definition 2. The coefficient of National Specialist Only is not significant by either definition 1 or 2. Together these results indicate that the joint national and city industry expertise plays an important role for auditors to provide higher audit quality. In addition, auditors' city

[21] Ashbaugh et al. [2003] find the same coefficient signs for MB and LEV, and Lim and Tan [2008] find the same coefficient signs for MB and LOSS.

industry expertise is an important factor in providing higher audit quality. In fact, it seems that auditors' city industry expertise is a more important factor than national industry expertise for auditors to deliver higher audit quality because the coefficients of City Specialist Only are significant while those of National Specialist Only are not.[22]

In order to gauge the economic magnitude of the results in Table 5, we estimate the marginal probabilities of the likelihood of meeting or beating analysts' forecasts when companies are audited by industry experts, and when the control variables are set to median sample values. Under definition 1 (definition 2) of auditor industry expertise, the mean likelihood of meeting or beating analysts' forecasts by one penny when the auditor is a non-expert is 24.6 percent (25.7 percent), which drops to 21.2 percent (22.4 percent) when the auditor is a city expert alone, a reduction of 3.4 percent, (3.3 percent) and which drops even further to 19.4 percent (19.1 percent) when the auditor is a joint national and city-specific industry expert, a reduction of 5.2 percent (6.6 percent). Thus joint national and city-level industry expertise, and to a lesser extent city expertise alone, are not only statistically significant they are also economically significant, contributing to higher audit quality.

6. Small Earnings Increase Tests

If industry audit experts are less tolerant of aggressive earnings management, then we should expect that clients of such auditors are less likely to report small earnings increases. To test this hypothesis, we estimate the following logistic regression model in equation (4) (firm subscripts are removed for brevity):

$$SMALL\_GROW = b_0 + b_1SIZE + b_2STD\_EARN + b_3LEV + b_4LOSS + b_5MB + b_6LIT$$

[22] We do find evidence that auditors' national industry expertise enhances their city-level industry expertise for them to provide higher quality audit service. This is because the coefficient of Both National and City Specialist is significantly higher than that of City Specialist Only under definition 2 in Table 5.

$$+ b_7\text{ALTMAN} + b_8\text{TENURE} + b_9\text{ROA} + b_{10}\text{TACCR}$$
$$+ b_{11}\text{AUDITOR\#1} + b_{12}\text{AUDITOR\#2} + b_{13}\text{AUDITOR\#3}$$
$$+ \text{Industry and Year fixed effects}^{23} + e \qquad (4)$$

where:

SMALL_GROW = 1 if $0 \leq [(EARN_t - EARN_{t-1})/MKV_{t-1}] < 0.02$, and 0 otherwise. EARN is earnings before extraordinary items, MKV is market value of equity, and t is the fiscal year;

All other variables are as previously defined. The dependent variable SMALL_GROW measures small earnings increases following Frankel et al. [2002] and Ashbaugh et al. [2003]. If an earnings increase, scaled by market value, is between zero and less than 0.02, then SMALL_GROW is coded one, otherwise it is coded zero. Firms coded one are those which are over-represented in the distribution of earnings increases and which are most likely to have engaged in earnings management (Degeorge et al. [1999]). The other variables in equation (4) are the same as in equation (3) controlling for client risk characteristics, except that we omit analyst forecast specific variables: STD_FORECAST and LOG_NUMEST. We expect that firms are more likely to report a small earnings increase if they are larger in size, have more growth opportunities, are in high-litigation industries, or have higher accruals. We expect firm are less likely if they have more volatile earnings, greater leverage, losses, or are more financially distressed. Descriptive statistics for the variables in equation (2) are reported in Table 3, Panel A, while those for TACCR are reported in Panel B. Panel C reports that just below 30 percent of the firms from our sample report small earnings increases (SMALL_GROW).

All models in Table 6 are significant at $p<.001$, and pseudo r-squares are 19 percent. Firms with greater earnings volatility, greater leverage, more financial distress (lower Altman

[23] Industry fixed effects are controlled using dummy variables based on the two-digit SIC. Year fixed effects are controlled using dummy variables based on fiscal years.

scores), and those reporting a loss are less likely to report a small earnings increase. In contrast, larger firms and firms with more growth opportunities are more likely to report small earnings increases.

[Insert Table 6 Here]

In model 1, clients of auditors that are national industry experts are less likely to report small earnings increases, significant at 0.10 (one-tailed) under both definitions. In model 2, clients of auditors that are city-specific industry experts are less likely to report small earnings increases, but insignificant at conventional levels.

Model 3 reports the estimation of equation (4) and is the primary model of interest. Clients of auditors that are both national and city-specific industry experts are less likely to report small earnings increases, since the coefficient of Both National and City Specialist is negative (-0.278) and significant (p=0.010) under definition 1 and negative (-0.187) and significant (p=0.054) under definition 2. National industry expertise alone and city industry expertise alone coefficients are not significant. Together these results indicate that joint national and city level industry expertise is an important determinant of higher audit quality.

In order to gauge the economic magnitude of the results in Table 6, we compute the marginal probabilities of the likelihood of reporting small earnings increases when clients are audited by industry experts, and when the control variables are set to median sample values. Under definition 1 (definition 2), the mean likelihood of reporting small earnings increases is 34.9 percent (35.7 percent) when the auditor is a non-expert, which drops to 28.9 percent (31.5 percent) when the auditor is a joint national and city-specific industry expert, a reduction in magnitude of 6.0 percent (4.2 percent), and a relative reduction of 17.2 percent (11.7 percent).[24]

[24] Relative reductions are computed as follows: (6.0/34.9)=17.2 percent and (4.2/35.7)=11.7 percent.

Thus joint national and city-level industry expertise is not only statistically significant, it is also economically significant, thus contributing to higher audit quality.

7. Going-concern Opinion Tests

If industry audit experts are stricter with their clients, then we expect the clients of such auditors are more likely to receive a going-concern audit opinion**.** To test this hypothesis, we estimate the following logistic model in equation (5) (firm subscripts are removed for brevity):

$$\begin{aligned} GOING\_CON = {} & b_0 + b_1 SIZE + b_2 STD\_EARN + b_3 LEV + b_4 LOSS + b_5 MB + b_6 LIT \\ & + b_7 ALTMAN + b_8 TENURE + b_9 ROA + b_{10} TACCR \\ & + b_{11} AUDITOR\#1 + b_{12} AUDITOR\#2 + b_{13} AUDITOR\#3 \\ & + \text{Industry and Year fixed effects}^{25} + e \end{aligned} \quad (5)$$

where:

GOING_CON = 1 if the auditor issues a going-concern opinion, 0 otherwise;

All other variables are as previously defined. The dependent variable GOING_CON is obtained from Audit Analytics. If the auditor qualified their opinion with a going-concern assumption, then GOING_CON is coded one, and zero otherwise. The other variables in the model are the same as those in equation (4) controlling for client risk. We expect that auditors are more likely to issue a going concern opinion to clients who have more volatile earnings, are financially distressed, incur a loss, are in high-litigation industries, or have higher accruals. We expect auditors are less likely if the client is larger in size, more levered, higher growth, or more profitable. Descriptive statistics for variables included in equation (2) are reported in Table 3, Panel A, except for the variable GOING_CON which is reported in Panel D.

[25] Industry fixed effects are controlled using dummy variables based on the one-digit SIC. The model cannot be executed when industry fixed effect controls are based on the two-digit SIC. Year fixed effects are controlled using dummy variables based on fiscal years.

The estimation of equation (5) is reported in Table 7. All models are significant at p<.001, and pseudo r-squares are around 30 percent. Two control variables are significant at p <0.10: more profitable (ROA) or larger firms (SIZE) are less likely to receive a going-concern audit opinion. Firms with lower Altman scores (more financially distressed) are more likely to receive a going-concern opinion but at marginal significance (p-values range between 0.113 and 0.133).

[Insert Table 7 Here]

In model 1, clients of auditors that are national industry experts are more likely to be issued a going-concern audit opinion under definition 2 since the coefficient of National Specialist is positive and significant, but under definition 1 the coefficient is not significant. In model 2, clients of auditors that are city industry experts are more likely to be issued a going-concern audit opinion since the coefficient of City Specialist is positive and significant.

Model 3 reports the estimation of equation (5) and is the primary model of interest. Clients of auditors that are both national and city-specific experts are more likely to receive a going-concern audit opinion, since the coefficient of Both National and City Specialist is positive under definition 1 (0.767) and significant (p=0.029) and is positive (0.890) and significant (p=0.006) under definition 2. There is weaker evidence that clients of auditors that are city-only industry experts (not national industry experts) are more likely to receive a going-concern audit opinion, since the coefficient of City Specialist Only is positive (0.570) and significant (p=0.035) under definition 1 but insignificant under definition 2. The coefficient of National Specialist Only is not significant under either definition. Together these results indicate

that joint national and city level industry expertise is an important determinant of higher audit quality.[26]

As with Tables 5 and 6, the economic magnitude of the results in Table 7 is calculated when the control variables are set to their median sample values. Under definition 1 (definition 2) of auditors' industry expertise, the mean likelihood of receiving a going-concern audit opinion is 1.4 percent (1.4 percent) when the auditor is a non-expert, but increases to 3.0 percent (3.3 percent) when the auditor is a joint national and city-specific industry expert, an increase of 1.6 percent (1.9 percent), more than double the probability of issuing a going-concern opinion by a non-expert. When all control variables are set to their 10^{th} percentile, the likelihood of receiving a going-concern opinion is higher than when all control variables are set to their median value. The probability of receiving a going-concern opinion is 8.4 percent (8.2 percent) under definition 1 (definition 2) when the auditor is a non expert and 16.3 percent (17.9 percent) when the auditor is a joint national and city industry expert, an increase of 7.9 percent (9.7 percent). Indeed, the probability of issuing a going-concern opinion is greater for a joint national and city-specific industry expert than for a non-expert, and the marginal probability is economically significant.

8. Internal Control Weakness Opinion Tests

If industry audit experts are stricter with their clients, then we expect they are more likely to opine that the client's internal controls over financial reporting are not effective. To test this hypothesis, we estimate the following logistic model in equation (6) (firm subscripts are removed for brevity):

$$ICW = b_0 + b_1SIZE + b_2STD\_EARN + b_3LEV + b_4LOSS + b_5MB + b_6LIT + b_7ALTMAN$$

[26] The significant coefficient of City Specialist Only under definition 1 indicates that auditor's city-specific industry expertise dominates national industry expertise in providing higher audit quality, but we fail to find the same result under definition 2. We conclude that national and city level industry expertise jointly determines audit quality since city-specific industry expertise does not conclusively dominate national industry expertise.

$$+ b_8TENURE + b_9ROA + b_{10}TACCR + b_{11}AUDITOR\#1 + b_{12}AUDITOR\#2$$
$$+ b_{13}AUDITOR\#3 + \text{Industry and Year fixed effects}^{27} + e \quad (6)$$

where:

ICW = 1 if the auditor did not find the internal controls over financial reporting to be effective, 0 otherwise.

All other variables are as defined previously. The dependent variable ICW, from Audit Analytics, indicates whether the internal controls over financial reporting are not effective. If the auditor concludes that the internal controls over financial reporting are not effective, then ICW is coded one, and zero otherwise. Hereafter, we refer to ICW =1 as an internal control weakness opinion. The other variables in the model control are the same as those in equations (4) and (5) controlling for client risk. We expect that an internal control weakness opinion is more likely to be issued if clients have more volatile earnings, incur a loss, are more financially distressed, have more growth opportunities, and have higher accruals**.** We expect less likelihood if clients are larger in size, more levered, are in high-litigation industries,[28] and are more profitable. Descriptive statistics for the variables in equation (2) are reported in Table 2, Panel D.

All models in Table 8 are significant at p<.001, pseudo r-squares are around 10 percent. Consistent with our predictions, large firms (SIZE) and firms in high-litigation industries are less likely to receive an internal control weakness opinion. Loss firms, and firms with more financial distress (lower Altman scores) are more likely to receive an internal control weakness opinion. However, contrary to our predictions, more profitable firms (ROA) are more likely and firms with higher total accruals are less likely to receive an internal control weakness opinion. We

[27] Industry fixed effects are controlled using dummy variables based on one-digit SIC. The model cannot be executed when industry fixed effect controls are based on two-digit SIC. Year fixed effects are controlled using dummies based on fiscal years.

[28] Ashbaugh-Skaife et al. [2007] find that disclosure of internal control deficiencies under SOX 302 are negatively but insignificantly associated with high litigation industry membership.

don't have an explanation for the sign of these coefficients. When we drop the two variables there is no material impact on the coefficients of the test variables.

[Insert Table 8 Here]

The results in Table 8 are as follows with respect to the tests of auditor industry expertise. In model 1, clients of auditors that are national industry experts are more likely to be issued an internal control weakness opinion, since the coefficient of National Specialist is positive and significant at 0.10 (one-tailed) under both definitions. In model 2, clients of auditors that are city industry experts are more likely to be issued an internal control weakness opinion, since the coefficient of City Specialist is positive and significant under both definitions.

Model 3 reports the estimation of equation (6) and is the primary model of interest. Clients of auditors that are both national and city-specific industry experts are more likely to be issued an internal control weakness opinion since the coefficient of Both National and City Specialist is positive (0.393) and significant (p= 0.033) under definition 1 and is positive (0.362) and significant (p=0.038) under definition 2. Clients of city-only level industry experts (and not national level industry experts) or national-only industry experts (not city level industry experts) are indistinguishable from clients of Big 4 auditors that are non-experts, since the coefficients are not significantly different from zero. Together these results indicate that joint national and city level industry expertise is an important determinant of higher audit quality.

Next, we calculate the marginal probabilities of the likelihood of receiving an internal control weakness opinion when companies are audited by industry experts, and when the control variables are set to median sample values. Under definition 1 (definition 2) of auditor industry expertise, the mean likelihood of receiving an internal control weakness opinion is 10.6 percent (9.6 percent) when the auditor is a non-expert, which increases to 15.1 percent (13.2 percent)

when the auditor is a joint national and city-specific industry expert, an increase of 4.5 percent (3.6 percent) in magnitude and a relative increase of 42 percent (37.5 percent). Indeed, the probability of issuing an internal control weakness opinion is greater for joint national and city-specific industry experts than for non-experts, and the marginal probability is economically significant.

9. Summary and Conclusion

Our tests indicate that audit quality is systematically associated with joint national and city level auditor industry expertise. We find that clients of auditors that are both national and city-specific industry experts have consistently smaller abnormal accruals, and the dollar magnitude is material, averaging from 10 to 15 percent of pre-tax earnings. In other earnings management tests we find that clients of auditors that are both national and city-specific industry experts are less likely to meet or beat analysts' forecasts by one penny and are less likely to report a small earnings increase. However, clients of auditors that are national experts alone (without being a city-specific industry expert) are indistinguishable from clients of non-experts. As well, clients of auditors that are city industry experts alone (without being a national-industry expert) are indistinguishable from clients of non-experts in reporting abnormal accruals and reporting small earnings increases.

Results from going-concern audit opinion and internal control weakness opinion tests are consistent with those of the earnings management tests. Auditors who are joint national and city-specific industry experts are more likely to opine a going-concern audit opinion or a SOX 404 internal control weakness opinion. Auditors that are national experts alone are indistinguishable

from non-experts. As well, auditors who are city industry experts alone are indistinguishable from non-experts for internal control weakness opinions.

We also find some evidence that auditors' city level industry expertise plays a more important role in providing higher audit quality by reducing the likelihood of their clients meeting or beating analysts' earnings forecasts by one penny. While these results are interesting, we do not conclude the same for all other measures of audit quality we examined

Overall, these tests provide compelling evidence that differential auditor industry expertise is primarily the result of joint national and city-specific industry expertise based on joint office-level clienteles and national clienteles of Big 4 accounting firms. In other words, the evidence is that differential Big 4 industry expertise is primarily the joint result of the expertise of national and office-based professionals, captured and distributed more broadly throughout the firm and within the offices.

This study is important in advancing our understanding of the role that auditing plays in the production of credible accounting reports, whether audits by industry specialists (experts) improve the quality of corporate earnings, whether industry experts are more conservative in their audit opinions, and whether auditor industry expertise is best understood as a firm-wide or office-specific phenomenon. The evidence is that industry experts do improve earnings quality, are more conservative in their audit opinions, and that differential industry expertise among Big 4 auditors is better understood as a joint national and office-specific phenomenon. If the auditor's industry expertise does improve the quality of earnings, then accounting firms have economic incentives to develop and market their industry expertise at the national and city-specific office levels. In addition, investors may have incentives to invest in such companies because their earnings and their auditor's reports may be more credible. Industry auditor experts

have incentives to protect their reputation against potentially harmful litigation by expressing more conservative audit opinions. They do so by stricter tolerance of their client's accruals management, by opining more frequently about the client continuing as a going-concern and opining more frequently about ineffectiveness of the clients internal controls over financial reporting.

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Table 1 Sample Selection

Panel A. Sample for auditor expertise	
Non-financial domestic companies from Audit Analytics with positive audit fees for 2003-2006	31,547
Delete: foreign companies, missing auditors' city and state codes, SIC codes	(4,997)
# of observations used to compute auditors' national and city market share	26,550
Delete: # of observations not in Compustat (without CIK code in Compustat)	(5,798)
Delete: non-Big 4 clients	(7,346)
Delete: city-industry-fiscal year combinations less than 4 observations	(4,847)
# of observations for further analysis	8,559
Panel B: Abnormal Accruals Analysis	
# of observations from Panel A	8,559
Delete: # of observations with missing values or without abnormal accruals	(2,378)
Delete: |studentized residuals| greater than 3	(144)
Final sample in abnormal accruals analysis	6,037
Panel C: Analysis of Meeting or Beating Analysts' Forecasts	
# of observations from Panel A	8,559
Delete: # of observations with missing values or without analysts' forecast data	(5,044)
Delete: # of observations with |deviance residuals|>3	(2)
Final sample in the analysis of meeting or beating analysts' forecasts	3,513
Panel D: Analysis of Small Earnings Increase	
# of observations from Panel A	8,559
Delete: # of observations with missing values	(2,018)
Delete: # of observations with | deviance residuals|>3	(8)
Final sample in the analysis of meeting or beating analysts' forecasts	6,533
Panel E: Analysis of Going-concern Opinion	
# of observations from Panel A	8,559
Delete: # of observations with missing values	(2,071)
Delete: non financially distressed firm-year observations	(4,880)
Delete: # of observations with | deviance residuals|>3	(1)
Final sample in the analysis of going-concern opinion	1,607

Table 1 (cont'd)

Panel F: Analysis of Internal Control Weakness Opinion	
# of observations from Panel A	8,559
Delete: # of observations before 2004	(2,488)
Delete: # of observations not in the Audit Analysis Internal Control File	(1,973)
Delete: # of observations with missing values	(482)
Delete: # of observations with | deviance residuals|>3	(0)
Final sample in the analysis of internal control weakness opinion	3,616

Table 2
Descriptive Statistics of Auditor Industry Expertise

Panel A: Definition and Descriptive Statistics of Auditor Industry Specialist (N = 6,037)

Variables	Mean	Std Dev	P25	Median	P75
Auditor industry specialist definition 1: An auditor is defined as a national (city) industry specialist if it has the largest annual market share in an industry, based on the two-digit SIC, and if its annual market share is at least 5 percentage points greater than its closest competitor in a national (city) audit market.					
National Specialist	0.229	0.420	0	0	0
City Specialist	0.472	0.499	0	0	1
Both National and City Specialist	0.140	0.347	0	0	0
National Specialist Only	0.089	0.284	0	0	0
City Specialist Only	0.332	0.471	0	0	1
Auditor industry specialist definition 2: An auditor is defined as a national (city) industry specialist if it has an annual market share greater than 30 percent in an industry, based on the two-digit SIC in the national (city) audit market.					
National Specialist	0.310	0.463	0	0	1
City Specialist	0.620	0.486	0	1	1
Both National and City Specialist	0.240	0.427	0	0	0
National Specialist Only	0.071	0.256	0	0	0
City Specialist Only	0.380	0.485	0	0	1

Variable Definitions

National Specialist = 1 if a company is audited by a national industry specialist based on one of the two above definitions, and 0 otherwise.

City Specialist = 1 if a company is audited by a city industry specialist based on one of the two above definitions, 0 otherwise.

Both National and City Specialist = 1 if a company is audited by an auditor that is defined as both a national industry specialist and a city industry specialist (i.e. National Specialist = 1 and City Specialist = 1), 0 otherwise.

National Only Specialist = 1 if a company is audited by an auditor that is defined as a national industry specialist but not a city industry specialist (i.e. National Specialist = 1 and City Specialist = 0), 0 otherwise.

City Only Specialist = 1 if a company is audited by an auditor that is not defined as a national industry specialist but is defined as a city industry specialist (i.e. National Specialist = 0 and City Specialist = 1), 0 otherwise.

Table 2 (cont'd)

Panel B: Industry Specialists by Auditor and Year

B-1: National Industry Specialists by Auditor and Year – Definition 1

Auditors\Fiscal Years	2003	2004	2005	2006	Total
PWC	11	12	13	10	46
EY	10	6	10	10	36
DT	8	6	7	4	25
KPMG	2	2	0	1	5
Total # of National Industry Specialists	31	26	30	25	112
Total Year-Industry-Auditor Combinations	141	129	132	136	538

B-2: City Industry Specialists by Auditor and Year – Definition 1

Auditors/Fiscal Years	2003	2004	2005	2006	Total
PWC	93	91	86	67	337
EY	88	85	84	79	336
DT	65	69	73	71	278
KPMG	65	62	50	53	230
Total # of City Industry Specialists	311	307	293	270	1,181
Total City-Year-Industry-Auditor Combinations	854	808	772	698	3,132

B-3: National Industry Specialists by Auditor and Year – Definition 2

Auditors\Fiscal Years	2003	2004	2005	2006	Total
PWC	14	17	15	14	60
EY	14	9	12	12	47
DT	11	9	9	5	34
KPMG	4	4	1	2	11
Total # of National Industry Specialists	43	39	37	33	152
Total Year-Industry-Auditor Combinations	141	129	132	136	538

B-4: City Industry Specialists by Auditor and Year – Definition 2

Auditors/Fiscal Years	2003	2004	2005	2006	Total
PWC	125	120	113	94	452
EY	119	116	116	114	465
DT	95	94	92	94	375
KPMG	91	84	79	68	322
Total # of City Industry Specialists	430	414	400	370	1,614
Total City-Year-Industry-Auditor Combinations	854	808	772	698	3,132

Table 3
Descriptive Statistics of Variables in Multivariate Analysis

Panel A: Abnormal Accrual Analysis (N = 6,037)

Variables	Mean	Std Dev	P25	Median	P75
|DACC|	0.066	0.066	0.020	0.046	0.090
SIZE	6.419	1.888	5.145	6.423	7.660
STD_CFO	0.118	0.217	0.034	0.062	0.115
CFO	0.044	0.195	0.006	0.079	0.144
LEV	0.172	0.210	0	0.103	0.276
LOSS	0.336	0.473	0	0	1
MB	3.269	4.470	1.550	2.371	3.962
LIT	0.305	0.461	0	0	1
ALTMAN	4.31	7.176	1.497	3.219	5.845
TENURE	2.127	0.854	1.609	2.197	2.773
|LAG_TACCR|	0.095	0.118	0.032	0.062	0.109

Panel B: Analysis of Meeting or Beating Analysts' Forecasts (N = 3,513)

Variables	Mean	Std Dev	P25	Median	P75
MEET	0.209	0.406	0	0	0
STD_EARN	0.145	0.339	0.024	0.054	0.133
ROA	0.007	0.163	-0.001	0.043	0.085
TACCR	-0.067	0.089	-0.098	-0.055	-0.024
STD_FOR	0.039	0.086	0	0.01	0.035
LOG(NUMEST)	0.931	0.881	0	0.693	1.609

Panel C: Analysis of Small Earnings Increase (N = 6,533)

Variables	Mean	Std Dev	P25	Median	P75
SMALL_GROW	0.298	0.457	0	0	1

Panel D: Analysis of Going-Concern Opinion (N = 1,607)

Variables	Mean	Std Dev	P25	Median	P75
GOING_CON	0.096	0.294	0	0	0

Panel E: Analysis of Internal Control Weakness Opinion (N = 3,616)

Variables	Mean	Std Dev	P25	Median	P75
ICW	0.114	0.318	0	0	0

Variable Definitions

|DACC| = absolute value of abnormal accruals (residuals from equation (1));
SIZE = natural log of market value of equity (data25*data199) at the end of the fiscal year;

Table 3 (cont'd)
Variable Definition (cont'd)

STD_CFO	=	standard deviation of operating cash flow (scaled by total assets at the beginning of the fiscal year) in the past four years (t-4 to t-1);
CFO	=	operating cash flow scaled by total assets at the beginning of the fiscal year;
LEV	=	total long-term debt (data 9) scaled by total assets;
LOSS	=	1 if net income before extraordinary items (data18) < 0, 0 otherwise;
MB	=	Market value of equity divided by book value of equity (total assets – total liabilities (data 181));
LIT	=	1 if the company operates in a high litigation industry (SIC codes of 2833 – 2836, 3570 – 3577, 3600 – 3674, 5200 – 5961, and 7370 – 7370), 0 otherwise;
ALTMAN	=	Altman's (1968) scores;
TENURE	=	natural log of the number of years that the auditor has audited the firm's financial statements;
|LAG_TACCR|	=	absolute value of total accruals in year t-1 scaled by total assets at the end of t-1;
MEET	=	1 if earnings exactly meet or beat analysts' consensus forecast by one cent per share, 0 otherwise;
STD_EARN	=	standard deviation of income before extraordinary items (scaled by total assets at the beginning of the fiscal year) in the past four years (t-4 to t-1);
ROA	=	return of assets;
STD_FOR	=	Standard deviation of analysts' forecasts;
LOG(NUMEST)	=	natural log of number of analysts following the company;
TACCR	=	total accruals from continuing operations scaled by total assets at the beginning of the fiscal year;
SMALL_GROW	=	1 if $0 \leq [(EARN_t - EARN_{t-1})/MKV_{t-1}] < 0.02$, and 0 otherwise. EARN is earnings before extraordinary items, MKV is market value of equity, and t is the fiscal year;
GOING_CON	=	1 if the auditor issues a going-concern opinion, 0 otherwise; and
ICW	=	1 if the auditor found that internal controls over financial reporting were not effective, 0 otherwise.

Table 4
Multivariate Analysis of Abnormal Accruals and Auditor Industry Specialization

Dependent variable is the absolute value of abnormal accruals (|DACC|, N = 6,037)

	Auditor Industry Specialist Definition 1						Auditor Industry Specialist Definition 2					
	Model 1		Model 2		Model 3		Model 1		Model 2		Model 3	
	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value
Intercept	0.064	<0.001	0.064	<0.001	0.064	<0.001	0.065	<0.001	0.065	<0.001	0.065	<0.001
SIZE	-0.003	<0.001	-0.003	<0.001	-0.003	<0.001	-0.003	<0.001	-0.003	<0.001	-0.003	<0.001
STD_CFO	0.028	<0.001	0.029	<0.001	0.029	<0.001	0.028	<0.001	0.029	<0.001	0.028	<0.001
CFO	-0.023	0.012	-0.023	0.012	-0.023	0.011	-0.023	0.012	-0.023	0.013	-0.023	0.012
LEV	-0.017	0.001	-0.016	0.001	-0.017	0.001	-0.016	0.001	-0.017	0.001	-0.016	0.001
LOSS	0.016	<0.001	0.016	<0.001	0.016	<0.001	0.015	<0.001	0.016	<0.001	0.015	<0.001
MB	0.001	<0.001	0.001	<0.001	0.001	<0.001	0.001	<0.001	0.001	<0.001	0.001	<0.001
LIT	0.006	0.002	0.006	0.002	0.006	0.002	0.006	0.002	0.006	0.001	0.006	0.002
ALTMAN	-0.0004	0.041	-0.0004	0.041	-0.0004	0.039	-0.0004	0.039	-0.0004	0.041	-0.0004	0.037
TENURE	0.000	0.882	0.000	0.854	0.000	0.833	0.000	0.792	0.000	0.868	0.000	0.780
|LAG_TACC|	0.107	<0.001	0.107	<0.001	0.107	<0.001	0.107	<0.001	0.107	<0.001	0.107	<0.001
National Specialist	-0.002	0.292					-0.005	0.002				
City Specialist			-0.003	0.046					-0.002	0.191		
Both National and City Specialist					-0.005	0.030					-0.007	0.003
National Specialist Only					-0.000	0.974					-0.004	0.322
City Specialist Only					-0.003	0.170					-0.001	0.706
F-value	109.81	<0.001	110.18	<0.001	93.19	<0.001	110.83	<0.001	109.9	<0.001	93.84	<0.001
Adj. R^2	0.166		0.166		0.166		0.167		0.166		0.167	

Note: Coefficient p-values are two-tail and based on asymptotic t-statistics robust to heteroscedasticity and time-series correlation based on the methodology in Rogers [1993].

Table 4 (cont'd)

Industry specialist definition 1: An auditor is defined as a national (city) industry specialist if in a particular year (and in a particular city) it has the largest market share in an industry based on the two-digit SIC and if its market share is at least **five** percentage points greater than its closest competitor in a national (city) audit market.

Industry specialist definition 2: An auditor is defined as a national (city) industry specialist if in a particular year (and in a particular city) it has a market share greater than 30 percent (30 percent) in an industry based on the two-digit SIC in the national (city) audit market.

National Specialist	=	1 if a company is audited by a national industry specialist based on one of the two definitions, 0 otherwise.
City Specialist	=	1 if a company is audited by a city industry specialist based on one of the two definitions, 0 otherwise.
Both National and City Specialist	=	1 if a company is audited by an auditor that is defined as both a national industry specialist and a city industry specialist (i.e. National Specialist = 1 and City Specialist = 1), 0 otherwise.
National Specialist Only	=	1 if a company is audited by a national industry specialist but not a city industry specialist (i.e. National Specialist = 1 and City Specialist = 0), 0 otherwise.
City Specialist Only	=	1 if a company is audited by a city industry specialist but not a national industry specialist (i.e. National Specialist = 0 and City Specialist = 1), 0 otherwise.

See Table 3 for all other variable definitions.

Table 5
Logit Regressions of Meeting or Beating Analysts' Forecasts and Auditor Industry Specialization

Dependant Variable is Probability of Meeting or Beating Analysts' Forecasts [prob(MEET = 1), N = 3,513]

	Auditor Industry Specialist Definition 1						Auditor Industry Specialist Definition 2					
	Model 1		Model 2		Model 3		Model 1		Model 2		Model 3	
	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value
Intercept	-1.461	<0.001	-1.436	<0.001	-1.428	<0.001	-1.422	<0.001	-1.400	<0.001	-1.402	<0.001
SIZE	0.017	0.633	0.026	0.465	0.027	0.450	0.017	0.627	0.028	0.435	0.03	0.396
STD_EARN	-0.063	0.647	-0.049	0.721	-0.051	0.714	-0.060	0.664	-0.043	0.755	-0.046	0.745
LEV	-0.858	0.003	-0.824	0.005	-0.828	0.005	-0.845	0.004	-0.824	0.005	-0.819	0.005
LOSS	-0.292	0.075	-0.288	0.079	-0.290	0.071	-0.292	0.069	-0.29	0.073	-0.288	0.074
MB	0.021	0.054	0.021	0.054	0.021	0.050	0.021	0.059	0.021	0.055	0.021	0.057
LIT	0.043	0.707	0.058	0.606	0.050	0.659	0.056	0.616	0.070	0.535	0.064	0.570
ALTMAN	0.007	0.415	0.006	0.442	0.006	0.451	0.006	0.447	0.006	0.455	0.006	0.487
TENURE	0.039	0.479	0.037	0.5	0.038	0.489	0.041	0.454	0.039	0.477	0.042	0.44
ROA	-0.228	0.611	-0.226	0.615	-0.202	0.576	-0.186	0.603	-0.189	0.601	-0.182	0.611
TACCR	0.026	0.963	0.006	0.991	0.022	0.967	0.006	0.991	0.008	0.988	0.008	0.989
STD_FORECAST	-25.514	<0.001	-25.491	<0.001	-25.532	<0.001	-25.463	<0.001	-25.404	<0.001	-25.4	<0.001
LOG(NUMEST)	0.492	<0.001	0.490	<0.001	0.491	<0.001	0.491	<0.001	0.488	<0.001	0.488	<0.001
National Specialist	-0.170	0.113					-0.214	0.030				
City Specialist			-0.193	0.034					-0.232	0.014		
Both National and City Specialist					-0.302	0.033					-0.385	0.003
National Specialist Only					-0.190	0.231					-0.121	0.488
City Specialist Only					-0.193	0.059					-0.184	0.095
Likelihood Ratio	348.43	<0.001	350.39	<0.001	352.34	<0.001	350.62	<0.001	351.78	<0.001	355.21	<0.001
Pseudo - R^2	0.097		0.097		0.098		0.097		0.098		0.099	

Note: Coefficient p-values are two-tail and based on Wald Chi-squares robust to heteroscedasticity and time-series correlation based on the methodology in Rogers [1993]. Estimates on fiscal year dummies and industry dummies are not reported for brevity. See Tables 3 and 4 for all other variable definitions.

Table 6
Logit Regressions of Small Earnings-increase and Auditor Industry Specialization

Dependant variable is Probability of Small Earnings Growth [prob(SMALL = 1), N = 6,533]

	Auditor Industry Specialist Definition 1						Auditor Industry Specialist Definition 2					
	Model 1		Model 2		Model 3		Model 1		Model 2		Model 3	
	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value
Intercept	-2.286	<0.001	-2.254	<0.001	-2.305	<0.001	-2.271	<0.001	-2.246	<0.001	-2.273	<0.001
SIZE	0.257	<0.001	0.256	<0.001	0.260	<0.001	0.255	<0.001	0.259	<0.001	0.260	<0.001
STD_EARN	-2.164	<0.001	-2.151	<0.001	-2.160	<0.001	-2.158	<0.001	-2.147	<0.001	-2.147	<0.001
LEV	-0.778	0.002	-0.761	0.002	-0.779	0.001	-0.769	0.002	-0.758	0.002	-0.762	0.002
LOSS	-1.426	<0.001	-1.425	<0.001	-1.423	<0.001	-1.428	<0.001	-1.426	<0.001	-1.428	<0.001
MB	0.028	0.003	0.028	0.003	0.028	0.003	0.028	0.003	0.027	0.003	0.028	0.003
LIT	-0.104	0.355	-0.102	0.363	-0.102	0.360	-0.105	0.346	-0.101	0.364	-0.102	0.358
ALTMAN	0.044	<0.001	0.044	<0.001	0.044	<0.001	0.044	<0.001	0.044	<0.001	0.044	<0.001
TENURE	0.022	0.610	0.019	0.648	0.022	0.598	0.021	0.615	0.020	0.645	0.022	0.608
ROA	-0.127	0.683	-0.125	0.689	-0.125	0.688	-0.125	0.689	-0.126	0.685	-0.125	0.687
TACCR	-0.238	0.535	-0.267	0.482	-0.233	0.542	-0.266	0.486	-0.271	0.476	-0.268	0.482
National Specialist	-0.217	0.009					-0.120	0.118				
City Specialist			-0.063	0.357					-0.100	0.159		
Both National and City Specialist					-0.278	0.010					-0.187	0.054
National Specialist Only					-0.124	0.293					-0.059	0.669
City Specialist Only					-0.005	0.947					-0.067	0.406
Likelihood Ratio	1543.87	<0.001	1536.6	<0.001	1545.19	<0.001	1538.47	<0.001	1537.93	<0.001	1540.1	<0.001
Pseudo - R^2	0.194		0.193		0.194		0.193		0.193		0.194	

Note: Coefficient p-values are two-tail and based on Wald Chi-squares robust to heteroscedasticity and time-series correlation based on the methodology in Rogers [1993]. Estimates on fiscal year dummies and industry dummies are not reported for brevity. See Tables 3 and 4 for all other variable definitions.

Table 7
Logit Regressions of Going-concern Opinion and Auditor Industry Specialization

Dependant variable is Probability of Issuing Going-concern Opinion [prob(GOING_CON=1, N = 1,607)]

	Auditor Industry Specialist Definition 1						Auditor Industry Specialist Definition 2					
	Model 1		Model 2		Model 3		Model 1		Model 2		Model 3	
	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value
Intercept	-1.166	0.320	-1.177	0.317	-1.195	0.308	-1.251	0.284	-1.162	0.323	-1.184	0.311
SIZE	-0.743	<0.001	-0.771	<0.001	-0.764	<0.001	-0.742	<0.001	-0.777	<0.001	-0.767	<0.001
STD_EARN	0.079	0.580	0.081	0.571	0.073	0.610	0.078	0.588	0.089	0.536	0.085	0.563
LEV	0.277	0.502	0.245	0.551	0.244	0.549	0.288	0.486	0.247	0.542	0.259	0.520
LOSS	0.485	0.261	0.417	0.331	0.427	0.320	0.516	0.238	0.423	0.325	0.440	0.317
MB	-0.002	0.835	-0.002	0.837	-0.003	0.808	-0.003	0.807	-0.002	0.819	-0.003	0.771
LIT	0.028	0.942	0.037	0.923	0.049	0.899	0.008	0.984	-0.005	0.990	0.025	0.950
ALTMAN	-0.018	0.127	-0.017	0.113	-0.017	0.115	-0.018	0.119	-0.017	0.144	-0.017	0.133
TENURE	0.097	0.567	0.069	0.683	0.069	0.685	0.088	0.607	0.063	0.713	0.070	0.681
ROA	-1.071	0.002	-1.135	0.001	-1.143	0.001	-1.086	0.002	-1.142	0.001	-1.126	0.001
TACCR	-0.147	0.798	-0.040	0.943	-0.068	0.903	-0.113	0.844	-0.010	0.985	-0.040	0.943
National Specialist	0.365	0.223					0.537	0.033				
City Specialist			0.589	0.010					0.575	0.026		
Both National and City Specialist					0.767	0.029					0.890	0.006
National Specialist Only					0.280	0.550					-0.054	0.921
City Specialist Only					0.570	0.035					0.329	0.272
Likelihood Ratio	299.99	<0.001	306.01	<0.001	306.86	<0.001	303.72	<0.001	305.34	<0.001	309.86	<0.001
Pseudo - R^2	0.296		0.301		0.302		0.299		0.301		0.305	

Note: Coefficient p-values are two-tail and based on Wald Chi-squares robust to heteroscedasticity and time-series correlation based on the methodology in Rogers [1993]. Estimates on fiscal year dummies and industry dummies are not reported for brevity. See Tables 3 and 4 for all other variable definitions.

Table 8
Logit Regressions of Internal Control Weakness Opinion and Auditor Industry Specialization

Dependant variable is Probability of Issuing Internal Control Weakness Opinion [prob(ICW = 1), N = 3,616]

	Auditor Industry Specialist Definition 1						Auditor Industry Specialist Definition 2					
	Model 1		Model 2		Model 3		Model 1		Model 2		Model 3	
	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value
Intercept	-0.398	0.549	-0.356	0.598	-0.173	0.797	-0.412	0.537	-0.426	0.528	-0.291	0.671
SIZE	-0.269	<0.001	-0.272	<0.001	-0.281	<0.001	-0.269	<0.001	-0.276	<0.001	-0.281	<0.001
STD_EARN	0.202	0.440	0.205	0.429	0.186	0.481	0.206	0.426	0.197	0.444	0.187	0.473
LEV	0.381	0.167	0.373	0.176	0.374	0.173	0.370	0.179	0.369	0.179	0.358	0.192
LOSS	0.835	<0.001	0.828	<0.001	0.826	<0.001	0.838	<0.001	0.827	<0.001	0.837	<0.001
MB	-0.004	0.730	-0.004	0.726	-0.005	0.689	-0.004	0.727	-0.004	0.741	-0.004	0.722
LIT	-0.448	0.009	-0.455	0.008	-0.426	0.014	-0.447	0.010	-0.458	0.008	-0.436	0.012
ALTMAN	-0.042	0.004	-0.041	0.005	-0.043	0.004	-0.042	0.005	-0.041	0.005	-0.041	0.005
TENURE	-0.089	0.292	-0.087	0.304	-0.094	0.269	-0.088	0.300	-0.092	0.279	-0.094	0.265
ROA	1.526	<0.001	1.518	<0.001	1.569	<0.001	1.519	<0.001	1.511	<0.001	1.531	<0.001
TACCR	-1.518	0.021	-1.474	0.025	-1.518	0.021	-1.495	0.022	-1.452	0.027	-1.477	0.024
National Specialist	0.194	0.187					0.178	0.191				
City Specialist			0.144	0.240					0.237	0.067		
Both National and City Specialist					0.393	0.033					0.362	0.038
National Specialist Only					-0.200	0.391					-0.155	0.571
City Specialist Only					0.007	0.959					0.143	0.329
Likelihood Ratio	263.69	<0.001	263.28	<0.001	269.21	<0.001	263.55	<0.001	265.64	<0.001	268.25	<0.001
Pseudo - R^2	0.103		0.102		0.105		0.103		0.103		0.104	

Note: Coefficient p-values are two-tail and based on Wald Chi-squares robust to heteroscedasticity and time-series correlation based on the methodology in Rogers [1993]. Estimates on fiscal year dummies and industry dummies are not reported for brevity. See Tables 3 and 4 for all other variable definitions.