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Geographic Proximity between Auditor and Client: How Does It Impact Audit Quality?

SUMMARY: Using a large sample of audit client firms, this paper investigates whether and how the geographic proximity between auditor and client affects audit quality proxied by accrual-based earnings quality. We define an auditor as a local auditor (1) if the auditor's practicing office is located in the same metropolitan statistical area (MSA) as the client's headquarters and (2) if the geographic distance between the two cities where the auditor's practicing office and the client's headquarters are located is within 100 kilometers or they are in the same MSA. As predicted, our empirical results are consistent with local auditors providing higher-quality audit services than non-local auditors. In addition, as predicted, this quality difference is weakened for diversified clients with more operating or geographic segments. The results are robust to a variety of sensitivity checks. Overall, our evidence suggests that informational advantages associated with local audits enable auditors to better constrain management's biased earnings reporting, with greater advantages for less diversified clients.

JEL classification: *M42*

Keywords: Auditor locality, geographic proximity, audit quality, diversification.

INTRODUCTION

Since the Enron debacle and the subsequent collapse of Arthur Andersen, regulators, lawmakers, academic researchers, and the popular press have paid considerable attention to engagement-specific factors determining the auditor–client relationship and their impact on audit quality. The focus of this study is on a new engagement-specific factor that may play an important role in the development of the auditor–client relationship: geographic proximity between auditor and client, or auditor locality. Specifically, we examine whether the geographic distance between auditor and client plays a role in determining audit quality.

This study is motivated by a growing body of literature in accounting and finance that documents the importance of geographic proximity between economic agents (e.g., DeFond et al. 2011; Kedia and Rajgopal 2011; Malloy 2005). This strand of research suggests that geographic proximity lowers the information asymmetry between economic agents by facilitating information flows and monitoring. Building upon the implication from this recent literature, we expect that local auditors possess an informational advantage over non-local auditors because proximity to clients can facilitate the acquisition of more idiosyncratic client information, such as client-specific incentives, means, and opportunities for substandard reporting. We posit that this informational advantage attenuates managerial opportunism in financial reporting because greater client-specific knowledge enables auditors to better identify and reign in aggressive reporting practices (Krishnan 2003; Myers et al. 2003; Reichelt and Wang 2010). We expect, however, that this effect of auditor locality is weakened for diversified clients with more operating divisions or geographic segments, because the audit advantage associated with geographic proximity to client headquarters is likely to be smaller for such clients.

Informational advantages arising from geographic proximity are well documented in the contexts of portfolio decisions and investment performance (Baik et al. 2010; Bodnaruk 2009; Ivkovich and Weisbenner 2005), analysts' forecasting decisions (Malloy 2005), knowledge transfers (Audretsch and Feldman 1996; Audretsch and Stephan 1996), and the monitoring and regulatory effectiveness of the U.S. Securities and Exchange Commission (SEC) (DeFond et al. 2011; Kedia and Rajgopal 2011). If geographic proximity facilitates information transfers and monitoring, then auditors located closer to their clients should be better able to assess the clients' incentives and abilities for opportunistic earnings management. Such client-specific knowledge is vital for auditors to plan audits effectively, to identify relevant audit risks, and to interpret audit evidence properly, which in turn helps them rely less on management's subjective estimates when assessing accrual choices (Knechel et al. 2007).

As in many other studies (e.g., Chung and Kallapur 2003; Frankel et al. 2002), we assert that biased earnings reporting can be used to draw inferences about audit quality, and we use accrual-based earnings quality measures as proxies for audit quality. As our main proxies for audit quality, we use two measures of discretionary accruals, which are estimated by using (1) the Ball–Shivakumar (2006) model, in which the asymmetric timeliness in recognition of gains versus losses is controlled for, and (2) the methodology of Kothari et al. (2005), in which the performance of matching firms is adjusted. To supplement these measures, we also use two additional measures of accrual quality: (3) one developed by Dechow and Dichev (2002) and modified by McNichols (2002) and (4) another developed by Francis, LaFond, Olsson, and Schipper (2005, FLOS hereafter), which focuses on a discretionary component of accrual quality. We expect that local auditors with more client-specific knowledge are better able to deter their clients from engaging in aggressive accrual choices than non-local auditors. We therefore predict that the clients of local auditors will exhibit lower levels of absolute discretionary accruals and higher levels of accrual quality relative to the clients of non-local auditors.

Our empirical results using 12,439 firm–year observations collected over the years 2002–2005 reveal the following. First, after controlling for a comprehensive set of variables known to affect the extent of opportunistic earnings management, we find that the clients of local auditors report a lower level of absolute discretionary accruals and a higher level of accrual quality compared to those of non-local auditors. Second, we find that these associations are relatively weaker or disappear for diversified clients with more operating and/or geographic segments. This evidence is consistent with the view that local audit advantages are greater when information transfers between a firm and its stakeholders, including auditors, occur mostly at the corporate headquarter level and auditors perform their audit work primarily at headquarters. For more diversified firms, a larger part of business operations are performed in multiple locations other than where the firms are headquartered. As a result, an auditor's informational advantage associated with geographic proximity to headquarters is likely to diminish. Finally, our results are robust to controlling for potential self-selection bias associated with local versus non-local auditor choices and to restricting the sample only to the clients of audit offices engaging in both local and non-local audits.

Our study contributes to the existing literature in the following ways. To our knowledge, this is the first study that provides *direct* evidence that auditor–client geographic proximity is an important engagement-specific factor influencing audit quality. While the issue of geographic proximity between economic agents has been investigated in various contexts, no previous study has examined the issue in the context of audit quality, with the exception of DeFond et al. (2011). However, the focus of DeFond et al. (2011) is not on auditor–client geographic proximity but, rather, on the geographic proximity between local audit offices and SEC regional offices. Evidence provided in our study fills this void and helps better understand the role of auditor–client geographic proximity in the development of the auditor–client relationship.

Second, this study helps explain why large audit firms continue to expand their practicing offices to many cities. The results of this study suggest that decentralized local office structures reduce information asymmetries between clients and auditors, thereby allowing office-level auditors to improve client-specific knowledge. Finally, findings in this study will be of interest to regulators. Regulators have been concerned about whether a close relationship or social bonding between auditor and client is detrimental to the auditor's objectivity. While some prior studies find that their cozy relationship impairs audit quality (e.g., Davis et al. 2009; Menon and Williams 2004), the results of this study suggest that proximity to clients, which likely increases social bonding, can be beneficial to audit quality.

The next section reviews the extant literature and develops research hypotheses. The third section discusses variable measurements and empirical models. The fourth section describes our sample and presents descriptive statistics. The fifth section presents our empirical results. The final section concludes the paper.

EXTANT LITERATURE AND HYPOTHESIS DEVELOPMENT

An audit firm typically provides audit services through a practicing office located near its clients. As noted by Francis et al. (1999), it is the local engagement offices, not the national headquarters of the audit firm, that "contract for and oversee the delivery of audits" and "issue audit reports for the clients who are headquartered in the same geographical locale." In a related vein, former SEC commissioner Wallman (1996) emphasizes that auditing research should pay more attention to city-level (or office-level) analyses rather than national-level analyses because local practicing offices make the most of audit decisions with respect to a particular client.

The main focus of prior office-level studies has been on the questions of (1) whether auditor independence is impaired for the audits of large clients by individual audit offices (e.g., Chung and Kallapur 2003; Craswell et al. 2002; Reynolds and Francis 2000), (2) whether auditor industry expertise is firm-wide or office specific (e.g., Ferguson et al. 2003; Francis et al. 2005; Reichelt and Wang 2010), and (3) whether audit quality is associated with the size of the audit engagement offices (e.g., Choi et al. 2010; Francis and Yu 2009, 2011). However, prior literature has devoted little attention to the role of auditor–client geographic proximity in determining audit quality.

Research in financial economics provides evidence suggesting that geographic proximity between economic agents matters in explaining their decision-making behavior and contractual relationships. A growing body of the "home or local bias" literature in finance finds that equity investors overweight domestic (or local) stocks in their portfolio choices, primarily because they are more familiar with domestic (or local) stocks and have advantages in obtaining information (Coval and Moskowitz 1999; Covrig et al. 2006; Ivkovich and Weisbenner 2005). This informational advantage also enables local individual and institutional investors to better monitor firms (Baik et al. 2010; Peterson and Rajan 2002) and to earn superior returns than non-local investors (Bodnaruk 2009; Coval and Moskowitz 2001; Ivkovich and Weisbenner 2005). Furthermore, Malloy (2005) reports that geographically proximate analysts provide more accurate earnings forecasts than other analysts, suggesting that the former have an informational advantage over the latter.

A few recent studies in accounting and auditing also examine issues related to geographic proximity between economic agents. Kedia and Rajgopal (2011) find that firms located closer to SEC regional offices are less likely to restate their prior years' financial statements. The results of this study suggest that management's assessment of *ex ante* misreporting costs is higher for firms located nearer to SEC regional offices because geographic proximity lowers information asymmetry and facilitates monitoring. DeFond et al. (2011) document that non-Big 4 audit offices located farther from SEC regional offices are less likely to issue going concern audit opinions, suggesting that non-Big 4 auditors' incentives to be independent are influenced by their geographic proximity to SEC regional offices. In sum, these studies indicate that geographic proximity mitigates information asymmetries and enhances monitoring effectiveness.

In a similar vein, we argue that geographic proximity or auditor locality is associated with audit quality, because informational advantages arising from the proximity help auditors develop knowledge about client-specific characteristics, such as client incentives, abilities, and opportunities for opportunistic earnings management, and about client business risk that entails audit risks. Local auditors can develop such knowledge through various ways. For example, they can more easily obtain valuable private information about a client firm through informal talks with its executives, employees, suppliers, customers, and competitors.[1] Local auditors can more frequently visit client firms and observe what goes on there directly at a lower cost. They are able to learn more about client-specific news from local media such as newspapers, radios, and TV stations. As local community constituents, they are more familiar with local regulations, business practices, and market conditions. Local auditors have natural opportunities to establish

[1] In terms of communicating with clients and others, we believe that geographic proximity will improve communication and information quality because it facilitates more face-to-face communication. Prior studies in psychology, communication, information systems, and organizational behavior suggest that face-to-face communication is more effective through the support for a higher level of interaction than other electronic forms of communication, such as e-mail and videoconferencing (e.g., Baltes et al. 2002; Doherty-Sneddon et al. 1997; Hambley et al. 2007; Hinds and Morensen 2005). Local auditors have clear advantages in face-to-face communications with their clients and other stakeholders, compared with non-local auditors.

personal ties and social interactions with the executives of client firms. These opportunities are an important mechanism for information exchange (Hong et al. 2004), helping auditors to better evaluate their clients' characteristics and incentives.

Obtaining client-specific knowledge such as internal control structure and opportunities for substandard reporting is vital for auditors to plan audits effectively, to identify relevant audit risks, and to interpret audit evidence properly (Knechel et al. 2007).[2] For example, Bedard and Johnstone (2004) show that auditors adjust their audit planning when auditors perceive that a client has an increased risk of earnings management. Johnson et al. (2002) argue that adequate client-specific knowledge facilitates the detection of material errors and allows auditors to rely less on management estimates. Consistent with this argument, survey evidence of Carcello et al. (1992) suggests that knowledgeable audit teams, frequent communications between auditors and management, and frequent visits by the audit engagement partner and senior manager to an audit site are among the 10 highest rated attributes of audit quality. Moreover, prior studies suggest that auditors who gain client-specific knowledge through their extended tenure with specific clients (Myers et al. 2003) or industry specialization (Reichelt and Wang 2010) are better able to mitigate clients' aggressive accrual choices.

Based on the above arguments, we expect that auditor–client proximity helps auditors develop better knowledge about client-specific incentives, abilities, and opportunities for substandard reporting, leading to local auditors being more effective in

[2] For instance, superior knowledge of a client's suppliers, customers, and employees will help auditors to verify management's subjective attestation of accruals in accounts payable, accounts receivable, and payroll liabilities. Similarly, a better understanding of a client's future strategic plans and the managers' personalities and compensation schemes will help evaluate the risk of earnings management.

monitoring client reporting behavior and constraining biased financial reporting. Thus our first hypothesis (in alternative form) is as follows.[3]

> **H1**: *Audits performed by local auditors are of higher quality than audits performed by non-local auditors, other things being equal.*

We next posit that the positive association between auditor locality and audit quality is weaker for clients with more diversified structure. We use the corporate headquarters location as the client firm location. Corporate headquarters is likely to be the center of information exchange between the firm and its suppliers, service providers, and investors (Coval and Moskowitz 1999); thus auditors perform a substantial amount of audit work there. However, if a client firm has many operating divisions or geographic segments outside its headquarters, the local audit advantages discussed above will be attenuated. It will be difficult for auditors to visit all the divisions or segment offices of diversified firms scattered throughout the U.S. or other countries and to maintain close face-to-face communications with executives and other employees. As a result, we expect the relation between auditor locality and audit quality to be stronger for less diversified client firms because corporate headquarters generate relatively richer information for audits for such firms. To provide empirical evidence of this prediction, we test the following hypothesis (in alternative form).

> **H2**: *The positive relation between auditor locality and audit quality is weaker for diversified clients with more operating divisions or geographic segments, other things being equal.*

[3] In contrast to this view, the works of Gul et al. (2006) and Wang et al. (2008) find that audit quality in China is, in general, lower for local than for non-local audits, because local auditors are subject to greater political influences of local governments, who are often the controlling shareholders of both local client firms and auditors. However, we do not expect such results to be applicable to the U.S. setting, where a high level of auditor independence is required and the ownership of local governments is minimal. Thus we do not formally develop this view as a competing hypothesis.

MEASUREMENT OF VARIABLES AND MODEL SPECIFICATION

Definition of Local Auditors

We use the location of the audit engagement office as the auditor location because it is an office-based engagement partner or audit team, and not the national headquarters, that actually administers individual audit contracts and issues audit opinions (Ferguson et al. 2003; Francis and Yu 2009, 2011). Following prior studies (Coval and Moskowitz 1999; Francis et al. 2005; Pirinsky and Wang 2006), we use the location of corporate headquarters as the client firm location. We differentiate local auditors from non-local auditors in the following two ways. We first define an auditor as a *local auditor* if the audit engagement office is located in the same metropolitan statistical area (MSA) where audit clients are headquartered (*DMSA* = 1), and as a *non-local auditor* otherwise (*DMSA* = 0).

We adopt this MSA-based differentiation because an MSA can be viewed as a reasonable geographic boundary in which most social and economic interactions between community members take place. However, this MSA-level differentiation does not take into account the *actual* geographic distance between auditor and client. Some MSAs are located within a narrow geographic boundary, particularly in the eastern U.S., while several MSAs in some western states are much larger than those in the eastern states. As a result, some client headquarters can be more proximate to audit offices in adjacent MSAs than those in the same MSA. For this reason, we also adopt an alternative approach in which an auditor is defined as a *local auditor* if the audit engagement office is located within 100 kilometers from the client's headquarters or if both the audit office and client headquarters are located in the same MSA (*D100* = 1), and as *a non-local auditor* otherwise (*D100* = 0).[4] We choose 100 kilometers as the cut-off value following Coval and Moskovitz (2001), Kedia and Rajgopal (2011), and Malloy (2005). Similar to these studies, we consider any distance within 100 kilometers to be a reasonable commute to work.[5]

Measurement of Audit Quality

Prior studies often use either accruals or audit opinions to proxy for audit quality. This study uses accruals rather than audit opinions to proxy for audit quality for the following reasons: Audit opinion is an extreme measure of audit quality because modified opinions comprise only a small proportion of audit opinions, and thus, unlike accrual-based measures, audit opinions do not address audit quality differentiation for a broad cross section of firms (Myers et al. 2003).[6] As a result, there is little cross-sectional variation in audit opinions, which can lead to a lack of statistical power in empirical tests.

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[4] We use the indicator variables (*DMSA* and *D100*) rather than a continuous variable to capture the distance between the audit office and the client's headquarters for two reasons: First, since we compute the distance between the *centers of the two cities* where the auditor office and client headquarters are located, due to data limitations (see footnote 14 for more details), analyses with a continuous variable will introduce more noise into our tests, particularly when the auditor office and client headquarters are located in the same city. Second, the effect of geographic proximity may not differ significantly within a distance short enough to commute regularly. Consistent with our expectations, our untabulated results show that the continuous variable of distance is significant only when the distance is over and beyond a certain threshold. In addition, the models using the indicator variable demonstrate higher explanatory power in our empirical analyses than those using the continuous variable of distance.

[5] The validity of the *D100* measure can be harmed by variations in population density, traffic conditions, availability of public transportation, and its definition of combined factors. We performed several sensitivity checks to mitigate the concern. First, we used 150, 200, and 250 kilometers to determine a combined variable for MSA-based and distance-based measures. Second, we used pure distance-based indicator variables. Third, we used state-based differentiation, as in Baik et al. (2010). The results of these sensitivity analyses are qualitatively similar to the tabulated results with respect to the variable of interests in most cases. Thus, the inferences remain unchanged. Footnote 23 explains exceptional cases when the results of the alternative proxies are different from the tabulated results where appropriate. In general, we find that the use of an MSA-based measure yields more significant results than the use of distance-based measures, which implies that an MSA represents a more reasonable economic boundary that permits variations in locality characteristics.

[6] In addition, auditors are less likely to compromise their audit opinions due to their concerns over legal liability, while they are more likely to tolerate biased reporting of earnings because failures to detect biased accruals have less of an impact on an auditor's legal liability compared with failures to issue appropriate audit opinions (DeFond et al. 2002). This may be a reason why DeFond et al. (2011) fail to find any significant relation between auditor–client distance and the auditor's propensity to issue a going concern audit opinion in their untabulated analyses. We tried to replicate this test and found the same result.

As in many other studies, we view absolute discretionary (abnormal) accruals (*DA*) as an outcome of opportunistic earnings management. It is well known that the traditional *DA* measure using the Jones (1991) model is noisy (Dechow et al. 1995). To alleviate this concern, we use two alternative measures of *DA*: One is obtained from the augmented Jones model of Ball and Shivakumar (2006), which takes into account the asymmetric timeliness in gain versus loss recognition, and the other is estimated by the performance-matched modified Jones model (Kothari et al. 2005). We denote these two measures as *DA1* and *DA2*, respectively.

The augmented Jones model of Ball and Shivakumar (2006) in Eq. (1) explains the computation of our first measure, *DA1*:

$$\begin{aligned} ACCR_{jt} / A_{jt-1} = {} & \beta_1 [1 / A_{jt-1}] + \beta_2 [\Delta REV_{jt} / A_{jt-1}] + \beta_3 [PPE_{jt} / A_{jt-1}] \\ & + \beta_4 [CFO_{jt} / A_{jt-1}] + \beta_5 DCFO_{jt} + \beta_6 [(CFO_{jt} / A_{jt-1})^{*} DCFO_{jt}] + \varepsilon_{jt} \end{aligned} \quad (1)$$

where, for firm *j* and year *t* (or *t* - 1), *ACCR* denotes total accruals (income before extraordinary items minus cash flow from operations); *A, ΔREV,* and *PPE* represent total assets, changes in net sales, and gross property, plant, and equipment, respectively; *CFO* represents cash flows from operations; *DCFO* is an indicator variable that equals one if *CFO* is negative, and zero otherwise; and ε is the error term. We estimate Eq. (1) for each two-digit Standard Industrial Classification (SIC) industry and year with at least 10 observations. Our first measure of abnormal accruals, *DA1*, is the difference between actual total accruals deflated by lagged total assets and the fitted values of Eq. (1).

Our second measure of abnormal accruals, *DA2*, is computed as follows. For each two-digit SIC industry and year with at least 10 observations, we estimate the cross-sectional version of the modified Jones model as

$$ACCR_{jt} / A_{jt-1} = \alpha_1 [1 / A_{jt-1}] + \alpha_2 [(\Delta REV_{jt} - \Delta REC_{jt}) / A_{jt-1}] + \alpha_3 [PPE_{jt} / A_{jt-1}] + \varepsilon_{jt} \quad (2)$$

where the residuals are *DA* before adjusting for firm performance. Following the procedures proposed by Kothari et al. (2005), we match each firm–year observation with another from the same two-digit SIC industry with the closest return on assets (ROA) in each year. We then compute performance-matched abnormal accruals, *DA2*, by taking the difference between the unadjusted *DA* and the ROA-matched firm's *DA*.

To supplement two discretionary accrual measures, we also employ the accrual quality measure developed by Dechow and Dichev (2002) and modified by McNichols (2002). Dechow and Dichev (2002) view that accruals are of high quality if they map into past, current, and future cash flows effectively. McNichols (2002) suggests that including the original Jones model variables (i.e., ΔREV and *PPE*) in the Dechow–Dichev model improves the performance of estimation. Thus, we obtain this accrual quality measure by calculating the time series standard deviation of residuals from a cross-sectional regression estimated from the following equation

$$\Delta WCA_{jt} = \alpha_1 + \alpha_2 CFO_{jt-1} + \alpha_3 CFO_{jt} + \alpha_3 CFO_{jt+1} + \alpha_4 \Delta REV_{jt} + \alpha_5 PPE_{jt} + \upsilon_{jt} \qquad (3)$$

where, for firm j and year t (or t - 1), ΔWCA represents change in working capital.[7] All the variables above are deflated by average total assets. Equation (3) is estimated for each two-digit SIC code industry with at least 10 observations in a given year. Then we calculate the standard deviation of residuals υ_{jt}, termed *AQ1* for each firm over the years t - 4 to t. The larger the standard deviation of residuals, the greater the noise in earnings and the lower the quality of earnings. Hence *AQ1* is considered an inverse measure of audit quality.

[7] Here ΔWCA is defined as -(ΔAR + ΔINV + ΔAP + ΔTAX + ΔOTH), where ΔAR is change in receivables, ΔINV is change in inventory, ΔAP is change in payables, ΔTAX is change in tax payable, and ΔOTH is change in other assets.

It is suggested by FLOS that poor accrual quality can be due to innate features of a firm's business model, such as its operating environment and complexity of transactions, or it could be due to discretionary factors such as managerial accounting choices and accrual manipulation. Since the innate factors of *AQ1* are mainly driven by a client firm's operating environment, audit quality could be better proxied by the discretionary factors of *AQ1*. For this reason, we decompose *AQ1* into innate and discretionary components based on the approach outlined in FLOS[8] and use the discretionary component, termed *AQ2*, as an alternative proxy for audit quality.

Empirical Model for Testing the Effect of Auditor Locality on Audit Quality

To test our hypotheses, we estimate the following regression model that links the magnitude of absolute abnormal accruals with our variable of interest, that is, auditor locality, and other control variables known to affect the extent of earnings management:

$$\begin{aligned} |DA|_{jt} = {} & \alpha_0 + \alpha_1 DLOCAL_{jt} + \alpha_2 LNBGS_{jt} + \alpha_3 DLOCAL_{jt} * LNBGS_{jt} + \alpha_4 LNTA_{jt} \\ & + \alpha_5 BIG4_{jt} + \alpha_6 TENURE_{jt} + \alpha_7 NAS_{jt} + \alpha_8 INDSPEC_{jt} + \alpha_9 CHGSALE_{jt} \\ & + \alpha_{10} BTM_{jt} + \alpha_{11} LOSS_{jt} + \alpha_{12} LEV_{jt} + \alpha_{13} ZMIJ_{jt} + \alpha_{14} ISSUE_{jt} + \alpha_{15} CFO_{jt} \\ & + \alpha_{16} LAGACCR_{jt} + \alpha_{17} CONCENT_{jt} + (Industry \,\&\, Year \quad Indicators) + \varepsilon_{jt} \end{aligned} \qquad (4)$$

where, for firm *j* in year *t*, all variables are as defined in Table 1. Absolute abnormal accruals, denoted by |*DA*|, are our proxy for the extent of opportunistic earnings management. Here *DLOCAL* proxies for auditor locality or auditor–client geographic proximity, and this variable is either *DMSA* or *D100*. The variable *LNBGS* represents the natural log of the sum of the number of business and geographic segments minus one. If business or geographic segment data for a given observation are missing from Compustat, we assign it a value of one, following Francis and Yu (2009). Thus, the minimum *LNBGS* is zero (i.e., log(2 - 1) = 0). Since the α_1 coefficient measures only the partial effect of

[8] Specifically, we regress the firm-specific standard deviation of residuals υ_{jt} from Eq. (3) over the years *t* - 4 to *t* (*AQ1*) on firm size (market capitalization), cash flow volatility, sales volatility, operating cycle, and loss proportion following Eq. (8) of FLOS. The predicted values from this estimation capture the innate component while unexplained portions (the residuals) capture the discretionary component.

DLOCAL on |*DA*| when *LNBGS* is equal to zero, we also estimate Eq. (4) after excluding *DLOCAL**LNBGS* from the model. A negative coefficient on *DLOCAL* in such estimation indicates that clients of local auditors, on average, report a lower level of absolute discretionary accruals than those of non-local auditors, consistent with our first hypothesis. For further evidence, we also test the coefficient of *DLOCAL* at each quartile value of *LNBGS*. Our second hypothesis predicts a positive coefficient on the interaction between *DLOCAL* and *LNBGS* in Eq. (4), consistent with the local audit advantages being weaker for more operationally or geographically diversified clients.

[INSERT TABLE 1 ABOUT HERE!]

Equation (4) includes many control variables that are known to affect the magnitude of earnings management. We include *LNTA* to control for the client size effect (e.g., Dechow and Dichev 2002). Several studies show that Big 4 auditors and industry specialists are more effective than non-Big 4 auditors and non-specialists, respectively, in constraining opportunistic earnings management (Becker et al. 1998; Krishnan 2003).[9] We include *BIG4* and *INDSPEC* to control for the effect of auditor brand name at the national level and industry expertise at the MSA level, respectively. We include *TENURE* because Johnson et al. (2002) and Myers et al. (2003) provide evidence that clients of longer-tenure auditors report lower abnormal accruals. We include *NAS* to control for the effect of non-audit fees on audit quality (Ashbaugh et al. 2003; Chung and Kallapur 2003; Frankel et al. 2002). The variables *BTM* and *CHGSALE* are included to control for firm growth, while *LOSS* is included to control for potential differences in earnings management

[9] In contrast, Louis (2005) suggests that non-Big 4 auditors may provide better-quality audit service to small clients. We also add an indicator variable for the middle four second-tier auditors in both Eqs. (4) and (5). Prior studies by Hogan and Martin (2009) and Boone et al. (2010) suggest that second-tier auditors behave differently from top-tier auditors and other small auditors. Because we obtain qualitatively similar results after including this indicator variable, we do not tabulate them for simplicity. Based on $p \leq 10\%$ (two tailed) as a cut-off for the significance level, this paper defines "qualitatively similar" to mean that in Eqs. (4) and (5), (1) the coefficient on *DLOCAL* is negative and significant and (2) the coefficient of *DLOCAL*LNBGS* is positive and significant.

between loss and profit firms. We also include *ZMIJ* and *ISSUE* to control for the effects of financial distress (Reynolds and Francis 2000) and financing transactions (Teoh et al. 1998) on earnings management, respectively. The variable *LEV* is included because highly levered firms may have greater incentives for earnings management due to their concerns of debt covenant violations (Becker et al. 1998; DeFond and Jiambalvo 1994). We include *CFO* to control for the potential correlation between accruals and cash flows (Kothari et al. 2005). As in Ashbaugh et al. (2003) and Kim et al. (2003), we include *LAGACCR* to control for the reversal of accruals over time. The variable *CONCENT* is included to control for the effect of auditor concentration on our results (Kedia and Rajgopal 2011; Kallapur et al. 2010).[10] Finally, we include industry and year indicators to control for possible variations in accounting standards and regulations across industries and over years. Each industry is defined based on two-digit SIC codes.

Next, when *AQ* is used as the proxy for audit quality, we estimate the following regression model:

$$\begin{aligned} AQ_{jt} = {} & \beta_0 + \beta_1 DLOCAL_{jt} + \beta_2 LNBGS_{jt} + \beta_3 DLOCAL_{jt} * LNBGS_{jt} + \beta_4 LNTA_{jt} \\ & + \beta_5 BIG4_{jt} + \beta_6 OPCYCLE_{jt} + \beta_7 STD\_CFO_{jt} + \beta_8 STD\_SALE_{jt} + \beta_9 NAS_{jt} \\ & + \beta_{10} INDSPEC_{jt} + \beta_{11} ZMIJ_{jt} + \beta_{12} CFO_{jt} + (Industry \,\&\, Year \quad Indicators) + \varepsilon_{jt} \end{aligned} \tag{5}$$

where, for firm *j* in year *t*, all variables are as defined in Table 1. We add *OPCYCLE*, *STD_CFO*, and *STD_SALE* to Eq. (5) because Dechow and Dichev (2002) argue that a longer operating cycle and greater operating volatility are associated with higher accrual estimation errors. We also add in Eq. (5) several other control variables (*NAS*, *INDSPEC*, *ZMIJ*, and *CFO*) included in Eq. (4) that are deemed to be associated with accrual

[10] When we measure *CONCENT* using audit fees rather than the number of clients, we obtain qualitatively similar results.

quality.[11] Our variables of interest, *DLOCAL* and *DLOCAL*LNBGS*, are the same as in Eq. (4).

SAMPLE AND DESCRIPTIVE STATISTICS

Sample

The initial list of our sample consists of all firms included in the Audit Analytics database for the four-year period 2002–2005. We extract data on the state/city locations of auditors' practicing offices and client firms' headquarters from the Audit Analytics database.[12] Since an MSA consists of one or more counties, we match their city-level locations to the county codes of Federal Information Processing Standards using the U.S. Census Bureau's 2000 Places file and identify whether or not the practicing office of the auditor and the client's headquarters are located in the same MSA. Following Francis et al. (2005), we delete observations if auditors or clients are not located in one of the 280 MSAs defined in the U.S. census of 2000.[13] Next, we obtain the latitude and longitude data for the cities of the practicing offices of auditors and the headquarters of client firms using the U.S. Census Bureau's Gazetteer 2001 City–State file. With these data, we compute the actual geographic distances between the (centers of) two cities where auditor offices and client headquarters are located.[14]

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[11] Alternatively, we repeat the tests after including in Eq. (5) all the control variables used in Eq. (4). Untabulated results for the variables of interest are qualitatively identical to those tabulated in this study and all statistical inferences remain unchanged.

[12] While Compustat reports only the *current* state/county codes of firms' headquarters, Audit Analytics updates the information on the state/city locations of client headquarters on an annual basis. Thus, we use the Audit Analytics database to identify client firm locations.

[13] In our initial sample, we find 485 observations for which auditor or client headquarters are not located in any of the MSAs. Applying this selection criterion, we remove all firms that are located in a remote area in which local auditors hardly exist. As a sensitivity check, we repeat our analyses after including these observations and treating them as (1) *DMSA* = 1, (2) *DMSA* = 0, or (3) *DMSA* =1 or 0, following the definition of *D100*. We find, however, that the inclusion of these observations in our sample does not alter our statistical inferences for any of the three cases.

[14] When the auditor's practicing office and the client's headquarters are in the same city, the distance is calculated as zero. It is possible that the effect of auditor locality is stronger when the two offices are located

We also obtain non-audit fees data from the Audit Analytics database. We retrieve all other financial data from the Compustat Industrial annual file. We exclude financial institutions and utility firms with SIC codes in the ranges 6000–6999 and 4900–4999, respectively. After applying the above selection procedures and data requirements, we obtain 12,439 firm–year observations located in 192 MSAs. These observations are audited by auditors from 767 unique audit practice offices located in 110 MSAs. The sample size for the tests using Eq. (5) decreases by almost a half, to 6,640, due to further data requirements.

The Appendix provides information on the locations of clients and auditors in our full sample. Column (1) of Panel A of the Appendix reports the number of clients (firm–year observations) in each MSA where more than 100 clients are located. Column (2) reports the number of local audits performed by audit offices located in the same MSA as their clients. Column (3) shows the average percentage of local audits in each MSA. The percentage varies across MSAs, suggesting that the choice of non-local auditors is not concentrated in certain MSAs. We find that about 80% of audits are carried out by auditors located in the same MSA, and about 83% are by auditors located within 100 kilometers. Accordingly, only about 3% of firms are audited by auditors located within 100 kilometers but not in the same MSA. There are not many cases (only 62 observations, reported in the bottom row of Panel A of the Appendix) where auditors are located in the same MSA as their clients but farther than 100 kilometers away from the clients' headquarters. Panel B reports the number of observations by the distance between the audit office and client headquarters when they are not located in the same MSA. It is clear

within a shorter distance within the city, but data unavailability limits such analyses (i.e., no street-level addresses for auditors' office are available in the Audit Analytics database). For more details on distance computation, see Coval and Moskowitz (1999).

from Panel B that some auditors are located nearby even though they are not in the same MSA as their client firms.

Panel C of the Appendix provides more detailed auditor location information for 1,691 clients located in the New York–Northern New Jersey–Long Island MSA.[15] It shows that about 15% of the clients in the MSA hire auditors from other MSAs, and about 13% of the clients hire auditors located farther than 100 kilometers from their headquarters. It is noteworthy that some clients in the New York–Northern New Jersey–Long Island MSA hire auditors located far away, such as from the San Francisco–Oakland–San Jose MSA (4,120 kilometers away on average), the Los Angeles–Riverside–Orange County MSA (3,949 kilometers away), and the Denver–Boulder–Greeley MSA (2,644 kilometers away).[16] In contrast, some auditors come from nearby MSAs, such as the Hartford MSA (69 kilometers away) and the Philadelphia-Wilmington-Atlantic City MSA (73 kilometers away). These auditors are likely to share the characteristics of the local auditors to the client firms even though they are not located in the same MSA. This is why we define *D100* as a combined variable of the distance-based and MSA-based measures and use it (in addition to *DMSA*, which is an MSA-based measure) to proxy for local audits.

Descriptive Statistics and Univariate Tests

Panel A of Table 2 presents the descriptive statistics for our two discretionary accrual measures, |*DA1*| and |*DA2*|, and two accrual quality measures, *AQ1* and *AQ2*,

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[15] We choose the New York–Northern New Jersey–Long Island MSA, for example, because the number of client firms located in this MSA is the largest of our sample.

[16] To check if there exist any special reasons to hire long-distance, non-local auditors, we choose the state of California (where the state-by-state sample size is the largest) and identify clients that hire auditors located at least 300 miles away from client headquarters. We find that 50 client firms (101 observations) belong to this category. For these firms, we search for 10-Ks from the EDGAR database to see if these firms have special connections with the states in which their auditors are located. We find that, out of 50 client firms, 16 have other major offices or plants (except for headquarters) in the states where their auditors are located and four moved their headquarters to California from different states but continued to hire their previous auditors. However, we have been unable to find any compelling evidence that the remaining 30 clients have any special connections to the states in which their auditors are located.

separately, for the local auditor sample (*DMSA* = 1 or *D100* = 1) and the non-local auditor sample (*DMSA* = 0 or *D100* = 0), along with univariate test results for differences in the mean and median between the two samples. As shown in Panel A of Table 2, both |*DA1*| and |*DA2*| are significantly lower for the clients of local auditors than for those of non-local auditors. For example, the mean (median) value of |*DA1*| is 0.0846 (0.0473) for the clients of local auditors located in the same MSA, and 0.1046 (0.0570) for those of non-local auditors located in a different MSA. The differences are significant at the 1% level (t = -7.90). We also find similar differences for the accrual quality measures.

[INSERT TABLE 2 HERE!]

Panel B of Table 2 reports the descriptive statistics for all other variables included in our main regressions. The sample firms have 3.5 business or geographic segments on average (*LNBGS* = 0.9170). The average client size (*LNTA*) is 12.2340, which is equivalent to about $200 million of total assets. About 77% of clients are audited by one of the Big 4 auditors (*BIG4*), and the average logged auditor tenure (*TENURE*) is 1.8410, which is interpreted as about six years of auditor tenure. On average, non-audit service fees (*NAS*) are about 67% of total fees, and about 44% of clients hire industry specialists (*INDSPEC*). The distributions of the other variables are also shown in Panel B of Table 2. When the descriptive statistics in Panel B are compared with other studies on audit office-level analyses, we find that ours are quite comparable to those of Choi et al. (2010) and Francis and Yu (2009).

Panel A of Table 3 presents the Pearson correlation matrix for all the variables included in Eq. (4). The two abnormal accrual measures, |*DA1*| and |*DA2*|, are highly correlated with the correlation coefficient of 0.445 (p < 0.01). The auditor locality indicator, *DMSA* and *D100*, is negatively correlated with |*DA1*| and |*DA2*| (p < 0.01 for both). Both |*DA1*| and |*DA2*| are significantly correlated with many control variables, supporting their inclusion as control variables. Finally, we note that the correlations between the control variables are mostly not very high except for those between *BIG4* and *LNTA* (0.547) and between *NAS* and *LNTA* (0.436). This finding suggests that multicollinearity is unlikely to be a serious problem.

[INSERT TABLE 3 HERE!]

Panel B of Table 3 presents the Pearson correlations among the variables included in Eq. (5), which can be summarized as follows: First, as expected, the two accrual quality metrics, *AQ1* and *AQ2,* are highly correlated with each other. Second, both accrual quality metrics are negatively correlated with our measures of auditor locality, *DMSA* and *D100,* which is consistent with the results of univariate tests (as reported in Panel A of Table 2). Third, control variables are highly correlated with our accrual quality measures. Finally, consistent with the findings in Panel A of Table 3, the correlations between our control variables are mostly not very high except for those between *BIG4* and *LNTA* (0.520) and between *NAS* and *LNTA* (0.436).

EMPIRICAL RESULTS

Main Results Using Discretionary Accrual Measures

Table 4 reports the results of the regression in Eq. (4): In section A (B), |*DA1*| *(*|*DA2*|) is used as the dependent variable. All reported *t*-statistics are on an adjusted basis, using standard errors corrected for clustering at the firm level and heteroskedasticity. As shown in columns (1a) and (3a), we first estimate Eq. (4) after excluding *DLOCAL*LNBGS* from the model. The coefficients on *DMSA* and *D100* are both negative and significant (-0.0046 with *t* = -1.77 and -0.0050 with *t* = -1.73) at the 10% level in two-tailed tests.[17] These results are consistent with H1, that local auditors are, on average, more effective than non-local auditors in deterring opportunistic earnings management or biased financial reporting. These results should be interpreted cautiously, however, because the omission of *DLOCAL* LNB*GS can create a potential problem of correlated omitted variables. In what follows, we test our H1 and H2 using the results of estimating the full model in Eq. (4).

When we include *DLOCAL*LNBGS* in the model, the coefficients on both *DMSA* and *D100* remain all significantly negative, as shown in columns (2a), (4a), (1b), and (2b). Furthermore, the interaction term between *DLOCAL* and *LNBGS* is positive and significant across all columns in both sections A and B of Table 4; for example, in column (2a), the coefficient on the interaction term is positive and significant at the 5% level (0.0086 with t = 2.45). These results support H2, implying that the effect of local audits on audit quality is weaker for more diversified client firms.[18]

[INSERT TABLE 4 HERE!]

To further examine the validity of H1, we investigate whether the clients of local auditors report a lower level of discretionary accruals at different levels of firm diversification. When we set the value of *LNBGS* at the 25th percentile (*LNBGS* = 0 from Panel B of Table 2), the coefficient on *DMSA* and *DMSA*LNBGS* in column (2a) of

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[17] When |*DA2*| is used as the dependent variable in the model excluding *DLOCAL*LNBGS*, the coefficients on *DMSA* and *D100* are -0.0037 (t = -1.49) and -0.0028 (t = -1.15). While the coefficient on *DMSA* is significant with p = 0.0685 in a one-tailed test, the coefficient on *D100* is insignificant.

[18] To examine whether local audits constrain either or both income-increasing and income-decreasing accruals, we split the full sample into two subsamples, with income-increasing (positive) and income-decreasing (negative) accruals (i.e., *DA1* > 0 and *DA1* < 0), and then estimate Eq. (4) separately. Untabulated results suggest that the coefficients on *DLOCAL* and *DLOCAL*LNBGS* are significant with predicted signs when we use the subsample of income-increasing accruals. However, when we use the subsample of income-decreasing accruals, both coefficients are insignificant, although they have the expected signs. These results suggest that informational advantages associated with local audits are related to more accurate accruals in general, but the effect is stronger for reducing income-increasing accruals. This finding is not very surprising, because auditors tend to be more concerned about their clients' income-increasing accruals (Kim et al. 2003).

Table 4 is translated into -0.0119 (-0.0119 + [0.0086 * 0] = -0.0119). This implies that discretionary accruals of clients of local auditors are lower than those of clients of non-local auditors by 0.0119, when the value of *LNBGS* is equal to its 25th percentile value. However, when we set the value of *LNBGS* at the 50th (*LNBGS* = 1.0986), 75th (*LNBGS* = 1.6094), or 99th (*LNBGS* = 2.4849) percentile value, we fail to find significant differences in the level of discretionary accruals between local and non-local auditors. As reported in the bottom three rows of Table 4, the F-test result for the sum of the coefficients on *DLOCAL* and *DLOCAL*LNBGS* times the 50th, 75th, or 99th percentile value of *LNBGS* is not significant at the 10% level. The results using the estimated coefficients in other columns are qualitatively identical. These results suggest that local auditors perform higher-quality audit services than non-local auditors, but only for relatively less diversified clients.[19]

To examine the economic significance of our results, we translate the estimated coefficients of the variables of interest into the magnitude of absolute discretionary accruals as a percentage of lagged total assets and calculate the percentage difference between local and non-local audits, using the estimated coefficients reported in column (2a) of Table 4. The estimated coefficient on *DMSA*, -0.0119, and that on *DMSA*LNBGS*, 0.0086, mean that, on average, the clients of local auditors exhibit an approximately 4% lower level of absolute discretionary accruals than those of non-local auditors when we set

[19] To further explore this issue, we form four subsamples based on the number of segments (i.e., firms with two segments (one business segment and one geographic segment), three segments, four or five segments, and six or more segments). We then estimate Eq. (4), after excluding *LNBGS* and *DLOCAL*LNBGS*, for each of four subsamples. When *DMSA* is used as *DLOCAL* and the dependent variable is |*DA1*|, the coefficient on *DMSA* is equal to -0.0123 (*t* = -2.56) for the subsample of firms with two segments (4,272 observations). However, the coefficient is not significant for all other subsamples. For example, the coefficient is -0.0004 (*t* = -0.10) for the subsample of firms with six or more segments (3,321 observations). When we perform additional analyses for firms with seven or more segments, eight or more segments, and nine or more segments, the results show that the coefficient on *DMSA* is insignificant, with a negative sign for each of these subsamples.

all the other variables to their respective mean values.[20] For relatively more diversified firms (*LNBGS* = 1.6094, which is the 75th percentile value of the variable), local audits yield a lower level of absolute discretionary accruals by about 3%, whereas for less diversified firms (*LNBGS* = 0, which is the 25th percentile value), local audits yield a lower absolute discretionary accruals by about 12% compared with those of non-local audits. The 9% difference between the 25th and 75th percentiles suggests that the effect of local audits varies substantially with the level of firm diversification.

The coefficients on the control variables are, overall, in line with the evidence reported in prior earnings management research. The coefficient on *LNBGS* is negative and significant, suggesting that diversified firms with relatively stable operations have higher earnings quality. The coefficient on *LNTA* is highly significant, with a negative sign across all four columns, suggesting that large client firms tend to engage in earnings management to a lesser extent than small client firms (Dechow and Dichev 2002). The coefficient on *BIG4* is significantly negative in all specifications, suggesting that Big 4 auditors are more effective than non-Big 4 auditors in constraining aggressive earnings management. The coefficient on *BTM* (*CHGSALE*) is significantly negative (positive), which suggests that high-growth firms manage earnings more aggressively. The coefficients on *LOSS* and *ZMIJ* are significant with an expected positive sign in most cases, suggesting that client firms in financial distress are more likely to engage in earnings management. Consistent with evidence reported in previous research (e.g., Ashbaugh et al. 2003; Kim et al. 2003), the coefficients on *CFO* and *LAGACCR* have a negative sign. Finally, consistent with the findings in Kallapur et al. (2010), the auditor

[20] The average magnitude of absolute discretionary accruals as a percentage of lagged total assets estimated from the coefficients reported in column (2a) is 0.1039 for the clients of non-local auditors and 0.0999 for the clients of local auditors when we set all the other variables at their respective mean values.

concentration measure is negatively associated with the magnitude of absolute discretionary accruals.

As robustness checks, we re-estimate Eq. (4), using the performance-unadjusted abnormal accruals as the dependent variable—that is, using the modified Jones model in Eq. (2), as specified in Dechow et al. (1995). We also run the median regression and year-by-year regressions after excluding year indicators. We also repeat the tests using various subsamples. Though not tabulated, the results from these robustness checks are, overall, qualitatively similar to those reported in Table 4.[21]

Main Results Using Accrual Quality Measures

We further examine whether local audits are related to the accrual quality of client firms. As explained earlier, we use both the accrual quality measure (*AQ1*) developed by Dechow and Dichev (2002) and modified by McNichols (2002) and its discretionary component (*AQ2*) estimated based on the approach outlined in FLOS as proxies for audit quality. We then estimate the regression model in Eq. (5). Table 5 reports the regression results using the reduced sample of 6,640 firm–year observations.

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[21] For example, for the regressions using the performance-unadjusted abnormal accruals and the median regression, the coefficients on *DMSA* for the regression in column (2a) of Table 4 are -0.0188 (t = -3.65) and -0.0091 (t = -4.80), respectively, and those on *DMSA*LNBGS* are 0.0127 (t = 3.31) and 0.0072 (t = 4.41), respectively. In year-by-year regressions, all four yearly regressions yield negative (positive) coefficients on *DMSA* (*DMSA*LNBGS*) and two (three) of them are significant at least at the 10% level. The average of the yearly coefficients on *DMSA* (*DMSA*LNBGS*) is -0.0123 (0.0087) and the corresponding Fama–MacBeth-style t-statistic is 2.79 (2.46). We also perform several additional tests using various subsamples. First, we restrict our sample to the largest 100 MSAs in terms of population. Second, we use the median size of MSAs to classify large and small MSAs and repeat the analyses with both subsamples. Third, we divide the full sample into observations from the six largest MSAs and from the other MSAs and repeat the analyses with both subsamples. Fourth, we delete observations with auditors coming from cities located farther than 500 (1,000) kilometers away and repeat the analyses. In sum, we find evidence consistent with the predictions of both H1 and H2 in all of these analyses. The coefficients on both *DLOCAL* and *DLOCAL*LNBGS* remain significant across almost all cases; the only exception is that we fail to find a significant coefficient on *DLOCAL* when we use observations from the six largest MSAs and *DLOCAL* is proxied by *DMSA*.

In Table 5, the coefficient on *DLOCAL* is negative and significant across all four columns.[22] It also shows that the coefficients on *DLOCAL*LNBGS* are positive and significant in all columns. These results suggest that while auditor locality is associated with less noise in client accruals (i.e., greater accrual quality) in general, the association is weaker for clients with a more diversified business structure. These findings lend further support to the results reported in Table 4. The estimated coefficients of the control variables in Table 5 are generally consistent with those reported in Table 4, with the notable exception that the coefficient on *CFO* is positively (negatively) significant in Table 5 (Table 4).

In addition, we use the absolute values of residuals from Eq. (5) to proxy for accrual quality, as suggested by Dechow and Dichev (2002) and used by Srinidhi and Gul (2007), in untabulated analyses. Similar to the tabulated results, we find that the variables of interest are all significant. Overall, the results using our accrual quality measures, *AQ1* and *AQ2*, also support our hypotheses H1 and H2. Although not separately tabulated, we conduct a variety of sensitivity analyses and find that our results are robust to different regression methods and alternative measures of our test variables.[23]

[INSERT TABLE 5 HERE!]

[22] When *AQ1* [*AQ2*] is used as the dependent variable in the model excluding *DLOCAL*LNBGS*, the coefficients on *DMSA* and *D100* are -0.0011 (t = -1.37) and -0.0013 (t = -1.44) [-0.0016 (t = -1.98) and -0.0016 (t = -1.73)]. These coefficients are all significant at least at the 10% level in one-tailed tests.

[23] For example, the coefficient on *DMSA* for the regression in column (1a) of Table 5 is -0.0028 (t = -1.82) and that on *DMSA*LNBGS* is 0.0021 (t = 1.69) for the median regression. In year-by-year regressions, all four yearly regressions yield negative (positive) coefficients on *DMSA* (*DMSA*LNBGS*) and two of them are significant at least at the 10% level. The average of the yearly coefficient on *DMSA* (*DMSA*LNBGS*) is -0.0026 (0.0014) and the corresponding Fama–MacBeth-style t-statistics is 1.65 (1.90). We also perform several additional tests using various subsamples similar to those described in footnote 21. Most of these analyses reveal evidence consistent with the predictions of both H1 and H2. The only exceptions are that (1) the coefficients on *DMSA* and *DMSA*LNBGS* become insignificant when we use observations from the six largest MSAs, and (2) the coefficient on *DLOCAL*LNBGS* becomes insignificant when we use 150, 200, or 250 kilometers instead of 100 kilometers as cut-off values for the distance-based measure or the combined measure of both distance-based and MSA-based measures.

Further Analyses

Our results so far are based on the full sample of 12,439 or 6,640 observations, depending on the dependent variables used. While this full sample consists of pooled client firms audited by all the audit offices in our dataset, it includes one group of auditors having both local and non-local clients and the other group having only local clients. One cannot therefore rule out the possibility that a systematic difference in audit quality exists between these two groups of auditors. In this case, our reported results may suffer from unknown confounding effects. To alleviate this concern, we obtain a more homogeneous sample of audit clients by restricting our sample to the clients of audit offices that engage in both local and non-local audits. We then re-estimate our regression models to see if the same audit office (which audits both local and non-local client firms) exhibits differential audit quality depending on its clients' geographic location.

We find that the empirical results for this subsample analysis are qualitatively similar to the tabulated results. For example, when we repeat the test equivalent to that reported in the column (2a) of Table 4 (n = 9,367 from 359 distinct audit offices of 95 audit firms), the coefficients on *DMSA* and *DMSA*LNBGS* are -0.0078 (t = -1.66) and 0.0066 (t = 1.88), respectively. When we repeat the test reported in column (1a) of Table 5 (n = 5,045 from 319 distinct audit offices of 75 audit firms), the coefficients on *DMSA* and *DMSA*LNBGS* are -0.0020 (t = -1.47) and 0.0013 (t = 1.37), respectively. These results are significant at least at the 10% level in one-tailed tests. In sum, our results from the reduced sample reveal that, when auditors have both local and non-local clients, audit quality tends to be higher for local clients than for non-local clients, and this tendency is significantly weakened for more diversified clients.

Controlling for Potential Self-Selection Bias

To address potential self-selection bias associated with local versus non-local auditor choices, we re-estimate our main regression models in Eqs. (4) and (5) by applying the Heckman-type (1979) two-stage treatment effect approach. Given that previous research has paid little attention to the issue of auditor locality, little is known about the factors that determine a client firm's decision to appoint a local or non-local auditor. In an attempt to identify an initial list of potential determinants, we searched proxy statements, held discussions with auditors, and conducted an extensive review of the extant auditing literature. As a result, we first identified 13 variables (*LNTA*, *LNBGS*, *LEV*, *LOSS*, *GCM*, *CAIN*, *ISSUE*, *INST*, *ANA*, *BIG4*, *NAS*, *NBIG*, and *WAGE*) that are likely to influence local versus non-local auditor choices, for the first-stage probit auditor choice model.

We expect a positive coefficient on *LNTA*, because large firms can easily hire local auditors, since auditors are less likely to turn away large clients in the same locale. We expect a negative coefficient on *LNBGS* because diversified firms are more likely to hire auditors from another MSA, since their plants, offices, or branches are more spread out to other regions. It would be more difficult for financially unhealthy clients to hire local auditors because local auditors, who are familiar with the financial problems of potential local clients, may be reluctant to audit them. In such a case, one would observe negative coefficients on leverage (*LEV*), the loss indicator (*LOSS*), and the going concern opinion indicator (*GCM*). If a client firm holds substantial long-term operating assets, more audit work would be required in the region where its factory/plant/warehouse is located rather than at its headquarters. Such a client is therefore less likely to appoint auditors near its headquarters. We therefore expect a negative coefficient on our capital intensity measure (*CAIN*). Firms that issue a significant amount of new equity or debt (*ISSUE*) have stronger incentives to manage earnings (Teoh et al. 1998). Such firms may be more likely to hire non-local auditors for more aggressive earnings management. Since institutional investors demand higher-quality audits to enhance corporate monitoring (Han et al. 2008), client firms with higher institutional ownership (*INST*) may be more likely to appoint local auditors. Similarly, since analysts' earnings forecast performance is related to audit quality (Behn et al. 2008), client firms with more analysts following (*ANA*) may feel more pressure to appoint local auditors. Therefore, we expect the coefficient on *ISSUE* to be negative and the coefficients on *INST* and *ANA* to be positive.

Because Big 4 auditors have offices in many different MSAs, it is possible that the clients of Big 4 auditors will hire a Big 4 office in their own MSA rather than the same audit firm's office in a different MSA. Thus, we expect a positive sign for *BIG4*. Because local auditors may be less likely to turn away clients that have a greater chance of procuring non-audit services, we expect a positive coefficient on *NAS*. If a client firm prefers a particular Big 4 audit firm, the likelihood of appointing a local Big 4 auditor will be greater when more Big 4 auditors are available in the MSA. We therefore expect a positive coefficient on *NBIG* (the number of Big 4 offices in the MSA). We include the mean hourly rate of auditor wages in each MSA (*WAGE*) to control for the effect of wage levels in an MSA in the likelihood of appointing local auditors.[24]

With the determinants mentioned above, we estimate the following probit auditor choice model in Eq. (6) using two different dependent variables, namely, *DMSA* and *D100*. We find, however, that the estimated results using *DMSA* are qualitatively identical with

[24] On the one hand, if the audit fee level is high in an MSA, cost-conscious clients are less likely to appoint local auditors (Jensen and Payne 2005). On the other hand, quality-conscious clients are still likely to appoint local auditors to the extent that the higher fee level is accompanied by higher-quality audit services. We therefore do not predict a sign for the coefficient on *WAGE*.

those using *D100*. For brevity, we therefore report only the results of our probit estimation with *DMSA* as the dependent variable[25]:

$$
\begin{aligned}
DMSA_{jt}^{*} = & -2.3394 + 0.0040\, LNTA_{jt} + 0.022\, LNBGS_{jt} - 0.0015\, LEV_{jt} \\
& \quad (13.53^{***}) \quad (0.32) \quad (0.76) \quad (-0.05) \\
& - 0.0924\, LOSS_{jt} - 0.1921\, GCM_{jt} - 0.1823\, CAIN_{jt} - 0.0773\, ISSUE_{jt} \\
& \quad (-2.87^{***}) \quad (-3.33^{***}) \quad (-2.60^{***}) \quad (-2.64^{***}) \\
& + 0.3807\, INST_{jt} + 0.0471\, ANA_{jt} + 0.2867\, BIG4_{jt} \qquad (6) \\
& \quad (4.50^{***}) \quad (2.01^{**}) \quad (7.31^{***}) \\
& + 0.1630\, NAS_{jt} + 0.5906\, NBIG_{mt} + 0.0244\, WAGE_{mt} + \textit{Industry Indicators} \\
& \quad (2.85^{***}) \quad (30.59^{***}) \quad (5.07^{***})
\end{aligned}
$$

where the subscripts, *j m*, and *t* denote an individual client firm, an MSA, and time, respectively, and the numbers in parentheses denote *z*-statistics. The superscript *** (**) denotes a *p*-value of less than 1% (5%) in two-tailed tests, respectively. The variable $DMSA^*$ represents the likelihood that a client chooses a local auditor, and is *ex post* set to equal one if the local audit office is located in the same MSA where the client firm is headquartered, and zero otherwise. The exact definitions of all variables are provided in Table 1.

The results of the above probit estimation show that all the coefficients on significant variables have expected signs. The explanatory power of the model, measured by pseudo-R^2, is 17.46%, suggesting that the model explains the choice between local versus non-local auditors reasonably well. In the second stage, we estimate Eqs. (4) and (5) after adding the inverse Mills ratio (*LAMBDA*), obtained from the first-stage probit estimation as an additional control variable. Untabulated results from the second-stage regressions show that the coefficients of the variables of interest remain qualitatively

[25] Because of the concern over the efficacy of the first-stage selection model (Francis and Lennox 2008), we include various variables in the first-stage model that are not in the second stage. Furthermore, when we check the variance inflation factor (VIF) in the second-stage regressions, as Francis and Lennox (2008) recommend, we find that the VIF values are mostly very small. We also considered a number of additional variables that are not included in our final model, but we find that the coefficients of these variables are insignificant and that adding these variables does not improve the model's explanatory power.

identical with those reported in Tables 4 and 5. All statistical inferences remain unchanged with this two-stage treatment effect approach.[26] In short, the above results suggest that our reported results are robust to the potential self-selection bias associated with local versus non-local auditor choices.

CONCLUSION

While many studies have already examined the effect of geographic proximity in the contexts of domestic and international portfolio decisions, analysts' forecast accuracy, and other areas of finance and accounting research, little attention has been paid to the issue in the context of the auditor–client relationship. Our results show that auditor–client geographic proximity or auditor locality has a positive impact on audit quality by constraining opportunistic earnings management or improving accrual quality. We also find that this impact is relatively weaker or absent for diversified firms with more operating or geographic segments.

These results help us better understand why local audits are so prevalent and Big 4 audit firms have continuously expanded their practicing offices to cities in which their clients are headquartered. Furthermore, this study will be of interest to regulators, since it demonstrates that the proximity of auditors to clients can be beneficial to audit quality.

As in many other studies, we measure audit quality using accrual-based proxies. We admit, however, that the accrual-based proxies are not the only valid empirical measures of audit quality and that these measures are often criticized for inherent

[26] For example, when we perform a two-stage analysis for the regression in column (2a) of Table 4, the coefficient on *DMSA* is -0.0112 (t = -2.44) and that on *DMSA*LNBGS* is 0.0086 (t = 2.46). When we perform a two-stage analysis for the regression in column (1a) of Table 5, the coefficient on *DMSA* is -0.0024 (t = -1.65) and that on *DMSA*LNBGS* is 0.0014 (t = 1.71). While the F-tests using the 50th, 75th, or 99th percentile value of *LNBGS* (similar to those reported in the bottom three rows of Tables 4 and 5) yield all insignificant results, the F-tests using the 25th percentile value of *LNBGS* yield significant results.

measurement errors, although we use several advanced approaches to alleviate this concern. We therefore recommend continued research using alternative measures of audit quality to further validate our findings and better understand the role of auditor locality in shaping the auditor–client relationship.

[INSERT APPENDIX HERE!]

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APPENDIX

In Panel A, column (1) reports the number of clients (firm–year observations) in each MSA where more than 100 clients are located. Column (2) reports the number of local audits performed by the audit offices located in each MSA for the clients located in the same MSA. Column (3) reports the percentage of local audits out of the total number of clients in each MSA. Panel B reports the number of observations by the distance between auditor and client when they are not located in the same MSA. Panel C provides a more detailed breakdown of clients located in the New York–Northern New Jersey–Long Island MSA. Column (1) shows the number of clients that hire auditors from different MSAs. Column (2) shows the average distance of the clients and their respective auditors.

Panel A: Number of observations by the location of clients

MSA	(1) Number of clients	(2) Number of local audits	(3) Percentage [(2)/(1)]
New York–Northern New Jersey–Long Island	1,691	1,434	85
San Francisco–Oakland–San Jose	1,282	1,203	94
Los Angeles–Riverside–Orange County	786	705	87
Boston–Worcester–Lawrence	751	698	93
Chicago–Gary–Kenosha	491	459	93
Houston–Galveston–Brazoria	499	426	85
Dallas–Fort Worth	443	385	87
Washington–Baltimore	410	355	87
Minneapolis–St. Paul	402	379	94
Philadelphia–Wilmington–Atlantic City	376	288	77
Atlanta	331	275	83
San Diego	322	223	69
Denver–Boulder–Greeley	297	266	90
Miami–Fort Lauderdale	191	144	75
Seattle–Tacoma–Bremerton	191	172	90
Cleveland–Akron	168	156	93
St. Louis	165	142	86
Phoenix–Mesa	159	128	81
Detroit–Ann Arbor–Flint	147	121	82
Portland–Salem	132	119	90
Pittsburgh	131	104	79
Milwaukee–Racine	122	99	81
Others (all combined)	2,952	1,715	58
Number of clients audited by auditors in the same MSA		9,996 (80%)	
Number of clients audited by auditors from different MSAs		2,443 (20%)	
Number of clients audited by auditors within 100 kilometers		10,366 (83%)	
Number of clients audited by auditors farther than 100 kilometers		2,073 (17%)	
Number of clients audited by auditors within 100 kilometers but not in the same MSA		432 (3%)	
Number of clients audited by auditors not within 100 kilometers but in the same MSA		62 (0.5%)	

Appendix (continued)

Panel B: Distance between auditor and client when they are not located in the same MSA

Distance	0–100 km	100–250 km	250–500 km	500–1,000 km	1,000–2,000 km	2,000 km or more	Total
Number of Observations	432	662	324	275	380	370	2,443

Panel C: Locations of auditors for clients in the New York–Northern New Jersey–Long Island MSA

MSA where auditors are located	**(1) Number of observations**	**(2) Average Distance (kilometers)**
New York–Northern New Jersey–Long Island	1,434	24
Hartford	55	69
Boston–Worcester–Lawrence	38	275
Philadelphia–Wilmington–Atlantic City	18	73
San Francisco–Oakland–San Jose	12	4,120
Los Angeles–Riverside–Orange County	11	3,949
Minneapolis–St. Paul	11	1,640
Miami–Fort Lauderdale	9	1,708
Indianapolis	8	1,055
Washington–Baltimore	7	287
Denver–Boulder–Greeley	6	2,644
Oklahoma City	6	2,131
Providence–Fall River–Warwick	6	137
Albany–Schenectady–Troy	5	179
Birmingham	5	1,379
Charlotte–Gastonia–Rock Hill	5	840
Cleveland–Akron	5	653
San Diego	5	3,917
West Palm Beach–Boca Raton	5	1,662
Other MSAs (16 MSAs combined)	40	-
Number of clients audited by auditors in the same MSA		1,434 (85%)
Number of clients audited by auditors from different MSAs		257 (15%)
Number of clients audited by auditors within 100 kilometers		1,479 (87%)
Number of clients audited by auditors farther than 100 kilometers		212 (13%)

Table 1 Variable Definition and Measurement

|DA|	=	Absolute value of discretionary (abnormal) accruals. The current study uses two proxies: *DA1* and *DA2*, where *DA1* is abnormal accruals as measured by Ball and Shivakumar's (2006) method; *DA2* is performance-matched abnormal accruals as measured by Kothari et al.'s (2005) method.
AQ	=	Accrual quality, where *AQ1* is the accrual quality as measured by Dechow and Dichev's (2002) method; *AQ2* comprises discretionary components of accrual quality as measured by Francis et al.'s (2005) method.
DLOCAL	=	Indicator variable for auditor location. We use two proxies, *DMSA* and *D100*, where *DMSA* is one if the audit office and client firm's headquarters are located in the same MSA, and zero otherwise; *D100* is one if the distance between the audit office and the client firm's headquarters is less than 100 kilometers from the client firm's headquarter or if the audit office and the client firms' headquarters are located in the same MSA, and zero otherwise.
LNBGS	=	Natural log of the sum of the number of business and geographic segments minus one. If business or geographic segment data are missing for a given observation from Compustat, we assign it a value of one. Thus, the minimum value of *LNBGS* is zero (i.e., log(2 - 1) = 0).
LNTA	=	Natural log of total assets in thousands of dollars.
BIG4	=	One if the auditor is one of the Big 4 firms, and zero otherwise.
TENURE	=	Auditor tenure, measured as the natural log of the number of years the incumbent auditor has served the client firm.
NAS	=	Relative importance of non-audit services, measured as the ratio of the natural log of non-audit fees over the natural log of total fees.
INDSPEC	=	An indicator variable for auditor industry expertise that equals one if the audit firm is the industry leader for the audit year in the audit market of the MSA where the auditor is located, and zero otherwise. We calculate each audit firm's industry market share of audit fees for an MSA as the proportion of audit fees earned by each firm in the total audit fees earned by all audit firms in the MSA that serve the same industry. Each industry is defined based on two-digit SIC codes.
CHGSALE	=	Change in sales deflated by lagged total assets.
BTM	=	Book-to-market ratio, winsorized at zero and four.
LOSS	=	One if the firm reports a loss for the year, and zero otherwise.
LEV	=	Leverage, measured as total liabilities divided by total assets.

(continued on next page)

ZMIJ	=	Zmijewski's (1984) financial distress score, winsorized at five and minus five.
ISSUE	=	One if the sum of debt or equity issued during the past three years is more than 5% of the total assets, and zero otherwise.
CFO	=	Operating cash flows, taken from the cash flow statement, deflated by lagged total assets.
LAGACCR	=	One-year lagged total accruals. Accruals are defined as income before extraordinary items minus operating cash flows from the statement of cash flow deflated by lagged total assets.
CONCENT	=	A measure of auditor concentration by each MSA, measured by the Herfindahl index of the number of clients for each audit office.
OPCYCLE	=	Length of the operating cycle, the log of the sum of a firm's days accounts receivable and days inventory.
STD_CFO	=	Cash flow variability, the standard deviation of a firm's rolling five-year cash flows from operations, scaled by averaged total assets.
STD_SALES	=	Sales variability, the standard deviation of a firm's rolling five-year sales revenues, scaled by averaged total assets.
LNSALES	=	Natural log of sales.
NEGEAR	=	Inventory and receivables divided by total assets.
GCM	=	One if the firm receives a going concern audit opinion in the current year, and zero otherwise.
CAIN	=	Capital intensity measured by long-term assets divided by total assets.
NBIG	=	Number of Big 4 audit offices in the MSA.
WAGE	=	Mean hourly auditor wage in the client firm's MSA, from *Occupational Employment Statistics,* Bureau of Labor Statistics, U.S. Department of Labor.
ANA	=	Natural log of one plus the number of analysts following the firm.
INST	=	Natural log of one plus the percentage of institutional shareholdings.

Table 2 Descriptive Statistics

Panel A: Descriptive Statistics and Results of Univariate Tests

Variable	*DMSA* = 1[a]			*DMSA* = 0[b]			Test for Equality (*t*-value)
	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	
|*DA 1*|	0.0846	0.0473	0.1062	0.1046	0.0570	0.1333	-7.90***
|*DA 2*|	0.1105	0.0737	0.1077	0.1262	0.0847	0.1209	-6.29***
AQ1	0.0446	0.0351	0.0330	0.0493	0.0385	0.0356	-4.42***
AQ2	-0.0004	-0.0039	0.0257	0.0016	-0.0029	0.0278	-2.46**

Variable	*D100* = 1[c]			*D100* = 0[d]			Test for Equality (*t*-value)
	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	
|*DA 1*|	0.0848	0.0476	0.1068	0.1078	0.0590	0.1360	-8.44***
|*DA 2*|	0.1108	0.0739	0.1080	0.1277	0.0855	0.1225	-6.26***
AQ1	0.0448	0.0351	0.0334	0.0495	0.0395	0.0344	-4.03***
AQ2	-0.0003	-0.0040	0.0261	0.0018	-0.0026	0.0262	-2.28**

Panel B: Descriptive Statistics for Variables[e]

Variable	Mean	Std. Dev.	1%	25%	Median	75%	99%
|*DA 1*|	0.0885	0.1123	0.0001	0.0198	0.0490	0.1122	0.5444
|*DA 2*|	0.1136	0.1106	0.0010	0.0328	0.0761	0.1588	0.4748
AQ1	0.0454	0.0335	0.0066	0.0224	0.0357	0.0587	0.1745
AQ2	0	0.0261	-0.0498	-0.0149	-0.0037	0.0099	0.0968
LNBGS	0.9170	0.7692	0	0	1.0986	1.6094	2.4849
LNTA	12.2340	2.1814	7.4972	10.7087	12.2428	13.6899	17.3259
BIG4	0.7686	0.4217	0	1	1	1	1
TENURE	1.8410	0.9115	0	1.3863	1.9459	2.4849	3.4965
NAS	0.6698	0.2649	0	0.5895	0.7543	0.8523	0.9355
INDSPEC	0.4405	0.4965	0	0	0	1	1
CHGSALE	0.1035	0.4827	-0.8534	-0.0176	0.0613	0.1937	1.4570
BTM	0.5736	0.6060	0	0.2245	0.4249	0.7220	3.6553
LOSS	0.4044	0.4908	0	0	0	1	1
LEV	0.5273	0.4565	0.0481	0.2704	0.4612	0.6519	2.2089
ZMIJ	-1.2567	2.0870	-4.5345	-2.7215	-1.5831	-0.3322	5.0000
ISSUE	0.4948	0.4943	0	0	0	1	1
CFO	0.0300	0.2427	-0.8780	-0.0140	0.0722	0.1399	0.4369
LAGACCR	-0.0976	0.2977	-0.8618	-0.1315	-0.0698	-0.0248	0.3348
CONCENT	0.1738	0.0964	0.0702	0.1138	0.1563	0.2240	0.5000
OPCYCLE	4.7492	0.6902	2.3195	4.4296	4.8192	5.1642	6.1768
STD_CFO	0.0734	0.0692	0.0080	0.0323	0.0554	0.0899	0.3412
STD_SALE	0.2015	0.1985	0.0166	0.0853	0.1485	0.2550	0.9261

Here ***, **, and * denote *p*-values of less than 1%, 5%, and 10%, with two-tailed tests, respectively.

[a] The sample size is 9,996 for |*DA 1*| and |*DA 2*| and 5,408 firm–year observations for *AQ1* and *AQ2*.

[b] The sample size is 2,443 for |*DA 1*| and |*DA 2*| and 1,232 firm–year observations for *AQ1* and *AQ2*.

[c] The sample size is 10,428 for |*DA 1*| and |*DA 2*| and 5,687 firm–year observations for *AQ1* and *AQ2*.

[d] The sample size is 2,011 for |*DA 1*| and |*DA 2*| and 953 firm–year observations for *AQ1* and *AQ2*.

[e] The sample size is 12,439 for |*DA 1*|, |*DA 2*|, and 15 variables from *LNBGS* to *CONCENT*, and 6,640 firm–year observations for *AQ1, AQ2,* and the other three variables from *OPCYCLE* to *STD_SALE*.

Table 3 Correlation Matrix

Panel A: Pearson Correlations between Discretionary Accruals, Auditor Locality, and Control Variables

	│DA1│	*│DA2│*	*DMSA*	*D100*	*LN-BGS*	*LNTA*	*BIG4*	*TEN-URE*	*NAS*	*IND-SPEC*	*CHG-SALE*	*BTM*	*LOSS*	*LEV*	*ZMIJ*	*ISSUE*	*CFO*	*LAG-ACCR*
│DA2│	0.445 (<0.01)																	
DMSA	-0.071 (<0.01)	-0.056 (<0.01)																
D100	-0.076 (<0.01)	-0.056 (<0.01)	0.888 (<0.01)															
LN-BGS	-0.141 (<0.01)	-0.131 (<0.01)	0.061 (<0.01)	0.068 (<0.01)														
LNTA	-0.319 (<0.01)	-0.305 (<0.01)	0.127 (<0.01)	0.122 (<0.01)	0.362 (<0.01)													
BIG4	-0.212 (<0.01)	-0.195 (<0.01)	0.163 (<0.01)	0.173 (<0.01)	0.197 (<0.01)	0.547 (<0.01)												
TEN-URE	-0.098 (<0.01)	-0.077 (<0.01)	0.045 (<0.01)	0.042 (<0.01)	0.116 (<0.01)	0.253 (<0.01)	0.287 (<0.01)											
NAS	-0.144 (<0.01)	-0.148 (<0.01)	0.097 (<0.01)	0.099 (<0.01)	0.222 (<0.01)	0.436 (<0.01)	0.357 (<0.01)	0.224 (<0.01)										
INDS-PEC	-0.118 (<0.01)	-0.106 (<0.01)	-0.020 (0.02)	-0.002 (0.798)	0.092 (<0.01)	0.318 (<0.01)	0.304 (<0.01)	0.132 (<0.01)	0.157 (<0.01)									
CHG-SALE	0.028 (<0.01)	0.002 (0.870)	0.017 (0.06)	0.013 (0.162)	0.001 (0.992)	0.064 (<0.01)	0.012 (0.19)	0.010 (0.27)	0.026 (<0.01)	0.018 (0.05)								
BTM	-0.083 (<0.01)	0.138 (<0.01)	-0.035 (<0.01)	-0.018 (0.042)	-0.009 (0.295)	-0.065 (<0.01)	-0.042 (<0.01)	-0.034 (<0.01)	-0.021 (0.02)	-0.012 (0.19)	-0.124 (<0.01)							
LOSS	0.256 (<0.01)	0.198 (<0.01)	-0.063 (<0.01)	-0.069 (<0.01)	-0.135 (<0.01)	-0.360 (<0.01)	-0.171 (<0.01)	-0.127 (<0.01)	-0.168 (<0.01)	-0.134 (<0.01)	-0.178 (<0.01)	0.086 (<0.01)						
LEV	0.151 (<0.01)	0.079 (<0.01)	-0.071 (<0.01)	-0.083 (<0.01)	-0.024 (<0.01)	-0.068 (<0.01)	-0.131 (<0.01)	-0.038 (<0.01)	-0.061 (<0.01)	0.012 (0.19)	-0.085 (<0.01)	-0.187 (<0.01)	0.153 (<0.01)					

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ZMIJ	0.238	-0.138	-0.090	-0.104	-0.076	-0.142	-0.147	-0.078	-0.098	-0.013	-0.128	-0.181	0.433	0.761				
	<(0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(0.16)	(<0.01)	(<0.01)	(<0.01)	(<0.01)				
ISSUE	0.081	0.053	-0.049	-0.053	-0.056	-0.015	-0.033	-0.030	-0.031	0.003	0.093	-0.134	0.099	0.151	0.244			
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(0.09)	(<0.01)	(<0.01)	(<0.01)	(0.73)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)			
CFO	-0.273	-0.072	0.061	0.068	0.163	0.369	0.179	0.083	0.191	0.113	0.124	0.043	-0.502	-0.119	-0.421	-0.189		
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)		
LAG-ACCR	-0.122	-0.216	0.034	0.035	0.053	0.101	0.070	0.043	0.062	0.041	0.035	0.051	-0.139	-0.163	-0.078	-0.078	0.175	
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	
CON-SERV	-0.054	-0.082	-0.031	-0.014	0.026	0.046	0.078	0.040	0.085	0.243	-0.012	0.041	-0.049	-0.041	-0.049	-0.021	0.029	0.015
	(<0.01)	(<0.01)	(<0.01)	(0.117)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(0.170)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(0.020)	(0.001)	(0.087)

Panel B: Pearson Correlations between Accrual Quality, Auditor Locality, and Control Variables

	AQ1	*AQ2*	*DMSA*	*D100*	*LNBGS*	*LNTA*	*BIG4*	*OPCYCLE*	*STD_CFO*	*STD_SALE*	*NAS*	*INDSPEC*	*ZMIJ*
AQ2	0.779												
	(<0.01)												
DMSA	-0.054	-0.030											
	(<0.01)	(0.014)											
D100	-0.049	-0.028	0.858										
	(<0.01)	(0.023)	(<0.01)										
LNBGS	-0.131	0.020	0.033	0.046									
	(<0.01)	(0.099)	(<0.01)	(<0.01)									
LNTA	-0.452	-0.020	0.099	0.079	0.347								
	(<0.01)	(0.104)	(<0.01)	(<0.01)	(<0.01)								
BIG4	-0.240	-0.035	0.118	0.132	0.210	0.520							
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)							
OPCYCLE	0.156	-0.000	-0.002	0.011	0.161	-0.140	-0.062						
	(<0.01)	(1.000)	(0.861)	(0.359)	(<0.01)	(<0.01)	(<0.01)						

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STD_CFO	0.542	0.000	-0.026	-0.020	-0.186	-0.411	0.184	0.101					
	(<0.01)	(1.000)	(0.033)	(0.108)	(<0.01)	(<0.01)	(<0.01)	(<0.01)					
STD_ SALE	0.317	0.000	-0.024	-0.037	-0.112	-0.225	-0.134	-0.128	0.344				
	(<0.01)	(1.000)	(0.054)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)				
NAS	-0.169	0.022	0.048	0.044	0.189	0.436	0.341	0.001	-0.166	-0.089			
	(<0.01)	(0.070)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(0.934)	(<0.01)	(<0.01)			
INDSPEC	-0.202	-0.047	-0.041	-0.017	0.112	0.334	0.308	-0.105	-0.149	-0.081	0.190		
	(<0.01)	(<0.01)	(<0.01)	(0.159)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)		
ZMIJ	0.114	0.077	-0.064	-0.081	0.009	0.034	-0.031	-0.130	0.087	0.074	-0.002	0.046	
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(0.486)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(0.856)	(<0.01)	
CFO	-0.251	0.052	0.040	0.047	0.078	0.312	0.168	-0.192	-0.359	-0.063	0.181	0.124	-0.411
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)

Two-tailed *p*-values are presented in parentheses.

Table 4 Association between Auditor Locality and Clients' Discretionary Accruals

		Section A Using |*DA1*| as the Dependent Variable				**Section B Using |*DA2*| as the Dependent Variable**	
	Expected Sign	**(1a) *DLOCAL* = *DMSA***	**(2a) *DLOCAL* = *DMSA***	**(3a) *DLOCAL* = *D100***	**(4a) *DLOCAL* = *D100***	**(1b) *DLOCAL* = *DMSA***	**(2b) *DLOCAL* = *D100***
DLOCAL	**-**	-0.0046 (-1.77*)	-0.0119 (-2.75***)	-0.0050 (-1.73*)	-0.0121 (-2.58***)	-0.0090 (-2.26**)	-0.0083 (-1.97**)
LNBGS	?	-0.0053 (-3.68***)	-0.0121 (-3.72***)	-0.0053 (-3.67***)	-0.0124 (-3.42***)	-0.0096 (-2.98***)	-0.0102 (-2.97***)
*DLOCAL*LNBGS*	+	-	0.0086 (2.45**)	-	0.0086 (2.24**)	0.0062 (1.78*)	0.0066 (1.82*)
LNTA	**-**	-0.0106 (-14.44***)	-0.0106 (-14.48***)	-0.0106 (-14.46***)	-0.0106 (-14.49***)	-0.0107 (-15.08***)	-0.0107 (-15.11***)
BIG4	**-**	-0.0131 (-3.96***)	-0.0129 (-3.90***)	-0.0130 (-3.94***)	-0.0128 (-3.88***)	-0.0120 (-3.78***)	-0.0121 (-3.80***)
TENURE	**-**	0.0003 (0.29)	0.0002 (0.16)	0.0003 (0.27)	0.0002 (0.14)	0.0015 (1.26)	0.0015 (1.25)
NAS	?	0.0064 (1.27)	0.0069 (1.38)	0.0064 (1.27)	0.0068 (1.35)	-0.0017 (-0.36)	-0.0018 (-0.39)
INDSPEC	**-**	0.0008 (0.38)	0.0008 (0.36)	0.0009 (0.41)	0.0008 (0.36)	0.0027 (1.24)	0.0028 (1.27)
CHGSALE	+	0.0200 (4.11***)	0.0201 (4.13***)	0.0200 (4.10***)	0.0200 (4.10***)	0.0085 (2.60***)	0.0085 (2.58***)
BTM	**-**	-0.0112 (-5.32***)	-0.0112 (-5.33***)	-0.0111 (-5.30***)	-0.0111 (-5.31***)	-0.0117 (-5.90***)	-0.0117 (-5.87***)

LOSS	+	0.0155 (5.59***)	0.0156 (5.62***)	0.0155 (5.58***)	0.0155 (5.61***)	0.0121 (4.70***)	0.0120 (4.68***)
LEV	+	0.0068 (0.87)	0.0067 (0.86)	0.0068 (0.87)	0.0067 (0.86)	0.0063 (1.31)	0.0063 (1.31)
ZMIJ	+	0.0050 (3.04***)	0.0051 (3.05***)	0.0050 (3.04***)	0.0051 (3.05***)	0.0007 (0.59)	0.0007 (0.60)
ISSUE	+	0.0002 (0.08)	0.0001 (0.06)	0.0001 (0.02)	0.0001 (0.07)	0.0008 (0.39)	0.0008 (0.41)
CFO	-	-0.0420 (-3.41***)	-0.0417 (-3.39***)	-0.0419 (-3.41***)	-0.0417 (-3.39***)	-0.0302 (-3.64***)	-0.0301 (-3.64***)
LAGACCR	-	-0.0162 (-2.53**)	-0.0162 (-2.53**)	-0.0162 (-2.53**)	-0.0162 (-2.53**)	-0.0077 (-1.87*)	-0.0078 (-1.88*)
CONCENT	-	-0.0247 (-2.55**)	-0.0242 (-2.52**)	-0.0245 (-2.53**)	-0.0238 (-2.47**)	-0.0195 (-2.02**)	-0.0190 (-1.98**)
Intercept	?	0.2482 (21.61***)	0.2540 (20.90***)	0.2488 (21.55***)	0.2545 (20.72***)	0.2745 (26.69***)	0.2745 (26.39***)
Ind. & Year Indicators		Included	Included	Included	Included	Included	Included
N		12,439	12,439	12,439	12,439	12,439	12,439
R^2		0.1886	0.1891	0.1886	0.1891	0.1371	0.1371
Test for $[\alpha_1 + (\alpha_3 * 1.0986)] = 0$		-	F = 0.88	-	F = 0.80	F = 0.66	F = 0.13
Test for $[\alpha_1 + (\alpha_3 * 1.6094)] = 0$		-	F = 0.34	-	F = 0.23	F = 0.08	F = 0.42
Test for $[\alpha_1 + (\alpha_3 * 2.4849)] = 0$		-	F = 2.77	-	F = 2.25	F = 1.18	F = 1.77

This table reports the results of the regression in Eq. (4). All variables are as defined in Table 1. All reported *t*-statistics in parentheses are on an adjusted basis, using standard errors corrected for clustering at the firm level and heteroskedasticity. Here ***, **, and * denote *p*-values of less than 1%, 5%, and 10%, respectively, with F-tests and two-tailed *t*-tests.

Table 5 Association between Auditor Locality and Client Accrual Quality

		Section A Using *AQ1* as the Dependent Variable		Section B Using *AQ2* as the Dependent Variable	
	Expected Sign	**(1a) *DLOCAL* = *DMSA***	**(2a) *DLOCAL* = *D100***	**(1b) *DLOCAL* = *DMSA***	**(2b) *DLOCAL* = *D100***
DLOCAL	-	-0.0027 (-1.94*)	-0.0029 (-1.93*)	-0.0031 (-2.27**)	-0.0030 (-2.05**)
LNBGS	?	-0.0011 (-1.64*)	-0.0020 (-1.67*)	-0.0010 (-1.59)	-0.0010 (-1.63)
DLOCAL LNBGS*	+	0.0018 (1.76*)	0.0026 (1.92*)	0.0016 (1.71*)	0.0017 (1.84*)
LNTA	-	-0.0041 (-17.44***)	-0.0041 (-17.47***)	-0.0006 (-2.54**)	-0.0006 (-2.60***)
BIG4	-	-0.0009 (-0.83)	-0.0009 (-0.80)	-0.0018 (-1.61)	-0.0017 (-1.60)
OPCYCLE	+	0.0047 (7.90***)	0.0047 (7.90***)	0.0004 (0.64)	0.0004 (0.63)
STD_CFO	+	0.1745 (15.78***)	0.1747 (15.81***)	0.0004 (0.04)	0.0005 (0.05)
STD_SALE	+	0.0227 (8.20***)	0.0226 (8.19***)	-0.0026 (-0.98)	-0.0027 (-1.00)
NAS	?	0.0023 (1.34)	0.0023 (1.33)	0.0030 (1.77*)	0.0030 (1.76*)
INDSPEC	-	-0.0025 (-3.78***)	-0.0025 (-3.78***)	-0.0022 (-3.27***)	-0.0021 (-3.23***)
ZMIJ	+	0.0024 (8.98***)	0.0024 (8.94***)	0.0022 (8.18***)	0.0021 (8.15***)
CFO	-	0.0112 (3.01***)	0.0112 (3.02***)	0.0222 (6.51***)	0.0223 (6.52***)
Intercept	?	0.0719 (16.32***)	0.0722 (16.49***)	0.0197 (4.09***)	0.0176 (4.10***)
Ind. & Year Indicators		Included	Included	Included	Included
N		6,640	6,640	6,640	6,640
R^2		0.4146	0.4146	0.0430	0.0428
Test for $[\alpha_1 + (\alpha_3 * 1.0986)] = 0$		F = 1.53	F = 1.76	F = 3.30*	F = 2.58
Test for $[\alpha_1 + (\alpha_3 * 1.6094)] = 0$		F = 0.10	F = 0.17	F = 0.73	F = 0.50
Test for $[\alpha_1 + (\alpha_3 * 2.4849)] = 0$		F = 0.36	F = 0.29	F = 0.06	F = 0.09

This table reports the results of the regression in Eq. (5). All variables are as defined in Table 1. All reported *t*-statistics in parentheses are on an adjusted basis, using standard errors corrected for clustering at the firm level and heteroskedasticity. Here ***, **, and * denote *p*-values less than 1%, 5%, and 10%, respectively, with F-tests and two-tailed *t*-tests.