The Geographic Proximity Among Firms, Auditor Office and SEC office and Audit Fees

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This paper investigates the geographic distances among the auditors, audit clients, and the regulatory agency Securities & Exchange Commission (SEC) and their impact on audit quality. Consistent with the exacerbated information asymmetry issue caused by distance, we find the audit quality is negatively associated with the distance between the client/auditor and the SEC offices. We further find that auditors charge higher fees when they are closer to the SEC office, irrespective of the client's distance to the SEC. This suggests that the distance between auditor and the SEC has a more prominent influence than the client's location on the audit quality.

Keywords: geography, audit fees, information asymmetry

INTRODUCTION AND MOTIVATION

Since its introduction by Akerlof in 1970, information asymmetry has been extensively examined not only in the economic literature, but also more rigorously in the financial markets in areas such as mispricing (Fama, 1970) and the role of financial reporting and disclosure (Watts & Zimmerman, 1986; Sloan, 1996; Dechow et al., 1996; Lev & Zarowin, 1999). The information asymmetry among economic agents can affect decision-making, market efficiency, and regulatory outcomes. As one of the most crucial regulatory agencies, the Securities & Exchange Commission (SEC) plays an important and unique role in the financial markets.

The literature has documented the effects of SEC regulation and the proximity of SEC to various business practices. Nguyen and Nguyen (2017) find that the greater geographic distance from the SEC offices is associated with increased insider trading schemes. Wang et al. (2022) document that firms with closer geographic proximity to the SEC regional offices use more voluntary disclosure (e.g., earnings management) to mitigate SEC oversight. Defond et al. (2018) provide evidence that non-Big 4 audit firms closer to the SEC regional offices are more conservative in their reports, which lead to over-assessments of

risk and increased going concern reports. These studies build a solid foundation for understanding the role of the geographic location of the SEC in business practices.

In accounting, a unique information disparity resides among the SEC, the audit firms, and the clients. Messier and Plumlee (1987) document how information asymmetry influences auditor-client relationships and the quality of financial reporting. Defond et al. (2018) find that non-big 4 auditors with offices closer to the SEC regional offices are more likely to issue going concern reports to distressed clients. They also provide evidence that similar results hold for Big 4 auditors. In similar settings, Franciset et al. (2021) document that greater geographic distance of audit partners is associated with lower audit quality, providing valuable information for regulators (e.g., SEC) and practicing auditors in understanding how partner-client matching affects audit outcomes. A working paper by Wang et al. (2022) indicates that firms use voluntary management earnings forecasts to mitigate SEC oversights due to geographic proximity.

While the audit industry has always been proactive in adopting new technologies in their practices, the unexpected onset of the pandemic has forced the industry into more rapid digital transformation, raising important questions about whether audit quality is compromised in a remote environment. Alsartawiet et al. (2022) discuss how implementing technologies for data extraction and analysis, fraud detection, and continuous monitoring has significantly impacted the audit industry. While the literature has no inclusive conclusion about the effect of pandemic and the consequent remote audit; there is evidence supporting both positive and negative impacts.

Bremer et al. (2021) find the auditors have incorporated new pre-audit analysis step to mitigate the effect of remote auditing in the context of supplier audits. Diab (2021) provides evident that the new created fraud risks, changes in estimations and risk assessments, and opinions issued are all caused by the effect of Covid-19 on audit and assurance processes and procedures. Eulerich et al. (2022) discuss how auditors prepare to conduct remote audits, highlighting the benefits, challenges, and quality. Goel et al. (2023) document positive evidence that remote work can enhance audit quality and efficiency under the assumption that firms offer sufficient support to the audit teams. On the other hand, Gong et al. (2022), find evidence that remote auditing leads to a decrease in quality for firms with high inventory relative to assets, high R&D expenses relative to assets, and non-Big 4 auditors: emphasizing the importance of auditors' presence with higher discretionary accruals. Mugabe et al. (2022) document evidence from South Africa that electronic evidence is less reliable than gathering audit evidence in-person. Sian (2022) proposes a future hybrid approach to the traditional audit model, which supports overcoming communication challenges and gathering audit evidence.

This paper aims to build a connection among auditors, audit clients, and the regulatory agency SEC by examining the geographic distances among them and the implications of the distances on the audit quality. We use audit fees as a proxy for audit quality and find out that audit fees are negatively associated with the distance between the client and the SEC offices (national or reginal, whichever is closer) and the distance between the auditor and the SEC offices, which is consistent with the notion that geographic distance increases information asymmetry between auditors, their clients, and the SEC offices; therefore, leads to a lower fee for lower quality of service. When using dummy variables to represent the distance between the client and the SEC and between the auditors and the SEC, with 1 indicating the distance greater than 100 km and 0 otherwise, the negative relationships hold significantly. To address the wide range of the actual distance measure, we apply a logarithm transformation to mitigate the impact of outliers and stabilize variances, the negative relationships remain significant.

Four dummy variables are subsequently created to represent the combined distance among auditor engagement office, SEC office, and the client headquarter. We document that when both the distance between client and SEC and between the auditor and SEC are greater than 100 km, the audit fees are lower, confirming a lower quality of audit service. When analyzing combinations where either distance is less than 100 km (but not both are within 100 km), a significant negative relationship between audit fee and greater distances for both is observed. However, this negative relationship is mitigated by the positive relationship between audit fees and the auditor's proximity to the SEC office. This implies that auditors charge higher fees when they are closer to the SEC office, regardless of the client's distance to the SEC. This suggests that the distance between auditor and SEC has a more prominent effect than the client's location. This

proposal is further confirmed by the model where all combinations except distances greater than 100 km are included in the analysis. While all three variables show a significant positive relationship with the audit fees, which indicates that higher fees are charged when either the client or the auditor is located within 100 km with the SEC, the magnitude of the coefficients highlights that the auditor's closer geographic location to the SEC is more influential in the positive audit fee structure.

The remaining of the research article is organized as follows: Section 2 presents literature review and hypothesis, Section 3 describes the methodology and data sample; Section 4 presents the main results, and Section 5 concludes.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

During the past two decades, finance and accounting literature provides the evidence that physical geographic distance among economic agents is associated with information asymmetry and is helpful in explaining their investment and financial decision-making process, their investment opportunity and contractual relationship among them. Economic geography literature argues that local investors have less information asymmetry due to they have greater access to firms' information and future activities. Geographic proximity is considered as a proxy for soft information and information flows in financial markets.

Geographic Proximity on Investor Individual Behavior and Firm Corporate Behavior

Coval and Moskowitz (1999, 2001) show that U.S. investment managers strongly prefer investing in local versus remote firms. They show that investment managers can earn higher returns from their investment in local firms. They attribute their findings to asymmetric information between local and nonlocal investors and local analysts have better monitoring capabilities. Grinbllatt and Heloharju (2001) find that investors in Finland tend to invest in firms that are located close to them. Feng and Seasholes (2004) find similar results among Chinese investors in China. Ivkovich and Weisbenner (2005) document similar local bias in individual investors' portfolios. Pool et al. (2012) shows the familiarity effects in mutual fund manager portfolio chose. They document that fund managers overweigh stock from their home states by 12 percent compared to their peers. Mollay (2005) provides the evidence that geographically proximate analysts possess information advantage over remote analysts. Their forecasts are more accurate, and stock returns surrounding their forecast revisions are more pronounced.

Loughran and Schultz (2005) find that urban firms are more liquid than rural firms on NASDAQ. Urban firms are traded more frequently and have lower trading costs than rural NASDAQ firms. Pirinsky and Wang (2006) examine how firm headquarter locations affect firm stock returns. They document a strong co-movement in stock returns from firms located in the same area. Kang and Kim (2008) study the geographic proximity effects in mergers and acquisitions. They find that block acquirers have a strong preference for geographically proximate targets. Basu and Chevrier (2011) use 134 Canadian mergers to test distance and information asymmetry in mergers. Both studies find closer acquirers have better post-merger operating performance and earn higher returns than remote acquirers.

Kedia and Rajgopal (2009) test the location of the firm impacts the firm's option grant decision. They find there is social interaction with other firms in the geographical neighborhood. John et al. (2011) suggest that remotely located firms face more severe agency problems and incur higher cost of capital. Thus, remotely located firms pay higher dividends to mitigate agency problems. Garcia and Norli (2012) show that the stock returns of truly local firms exceed those of geographic dispersed firms by 70 basis points per month. They attribute the higher returns to the compensation for insufficient diversification among local investors.

Psychology literature documents the decision-making is less effective and satisfactory through computer-based and other electronic based communication than face-to-face communication (Baltes et al., 2002). Barkhi et al. (1999) examine the effectiveness of computer mediated based communication on decision making. They find that the decision outcome from the group using face-to-face communication outperforms the group's computer-mediated communication.

Geographic Proximity Among Firms, Auditors and SEC Offices

Information asymmetry and communication obstacle from geographic distance increase the difficulties for regulation agency, investor and auditor to better monitor the firm.

Jensen et al. (2008) examine the geography of U.S. auditors. Specifically, they study the geographic distance between firms and their auditors. They document a direct link between distance and audit fees, where audit fees are positively related to distance. They suggest that local auditors have informational advantage over remote auditors. Thus, these local auditors have lower monitoring costs, and in turn, charge lower fees. They also find that audit quality is negatively associated with distance. Recent work by Choi et al. (2012) shows the association between geographic proximity and audit quality measured by accrual quality. They argue that local auditors develop information advantage about their clients' business risks, reducing audit risks. They suggest local auditors better monitor their clients and mitigate opportunistic earnings management. They find discretionary component of accrual is lower for firms with auditor engagement office within the same metropolitan statistical area. This indicates local auditors provide higher quality audit service than non-local auditors.

Kedia and Rajgopal (2011) examine whether the SEC is more likely to investigate firms located closer to its office. Their finding is consistent with the "differentially informed criminal" hypothesis that firms closer to the enforcement office are well informed therefore are less likely to committee a violation. They suggest this is because managers closer to the SEC's office have more access to soft information of SEC policies that are not explicitly documented. They find that firms located close to the SEC and in areas with greater SEC enforcement activity are less likely to restate their financial statement. DeFond et al. (2011) investigate the relation between the geography of SEC enforcement and the distance between auditors and the SEC offices. They focus on the auditor reporting for their financially distressed clients. They find that more remote engagement office of non-big 4 auditors are more likely to issue favorable report for their clients and trade for their independence and therefore are less likely to issue a going-concern audit report. They also find that Big-4 and non-Big-4 auditors are more likely to issue going-concern reports for clients located further away from an SEC office. This suggests that firms located further away from the SEC are more likely to misreport. Therefore, auditors for these firms tend to issue going-concern opinion for self-preservation in case of fallout.

Audit Fees and Audit Quality

Palmrose (1986) provides evidence that large auditors earn higher fees partly by providing higher quality of audit service. Lennox (1999) studies the role of audit fees and auditor reputation in the audit service. Bar-Yosef and Sarath (2005) build a model in which audit fees serve as a screening mechanism. Auditors want to avoid low-quality clients by setting up higher audit fees. Recent literature in auditing provides the evidence that auditor quality varies with respect with office size for Big 4 accounting firm. Francis and Yu (2009) use audit fees as the measure for big 4 office size and find larger big 4 offices are more likely to issue going-concern reports and are more accurate in predicting clients' future risk, and their clients are less likely to manage earnings with smaller discretionary accruals. Above evidence shows that different auditor engagement offices significantly vary audit quality across big 4 accounting firms. Francis et al. (2005) provide evidence that big 5 auditors charge significant fee premium when they are national and city- specific industry auditors in the same city where their clients' headquarters are located. This suggests that the location of auditor is associated with the quality of auditor's service. Reichelt and Wang (2010) further extend previous work and find national and city-specific industry auditor's clients have lower discretionary accruals, indicating they provide higher quality of audit. Therefore, audit fees are positively related to audit quality and effort.

Previous studies focus on the bilateral geographic relation between client firm and auditor, auditor and SEC or between client firm and SEC. Among client firm, auditor and SEC office, it is an empirical question which distance is predominantly important or they are equally important. We can't observe auditor effort in delivering audit service in monitoring clients. Then we use audit fees to proxy audit risk and effort. If we assume auditor's effort and monitoring behavior are similar across clients regardless of their distance to SEC or their clients distance to SEC, we should expect audit fees to be an increasing function of the distance

among them. Then there will be a positive relation between audit fees and geographic location as suggested in Jensen et al. (2008). Contrary to this prediction, if information advantage and effective communication possessed by auditors close to the SEC office facilitates the higher quality service and better monitoring outcome, then we should expect monitoring effort decreases as the distance increases due to information asymmetry and communication obstacle. It leads to the following hypothesis:

H1: *Auditors charge significantly different audit fees to client firms that are located close to the SEC offices than those are located further away.*

Defond et al. (2011) extend Kedia and Rajgopal (2011) and conclude that auditors in the nearby offices of SEC are likely to be both better informed about SEC enforcement, and more aware of the consequences of compromising their independence, relative to auditors further from SEC offices. Auditors near SEC offices tend to be more independent and take actions to protect themselves in the event of future SEC investigation. Therefore, we predict the following hypothesis:

H2: *Auditor fees are significantly different if auditors are located closer to the SEC offices than further away.*

METHODOLOGIES

Distance Measures

Our initial sample was collected from Audit Analytics database for nineteen-year period from 2000-2018. We use firm headquarters' street-level addresses (including zip code) as the client firm location provided from Audit Opinion File of Audit Analytics. We use the city-state level location of audit engagement offices from Audit Opinion File as the auditor location. We then assign the longitude and latitude information for client firms and their auditor engagement offices by merging the U.S. Census Bureau's Census 2018 Gazetteer Place File[1] and Opinion File. We manually examine the address information and input the coordinates for observation with missing coordinates. We also examine and compare the file if it was merged with SAS Zip Code dataset[2] available from SAS Map Online. We did observe input error and inaccurate information in Audit Analytics. For example, Ernst & Young New Jersey Metropark Office is in "Iselin" instead of "Metropark". Audit Analytics labeled New Orleans as State of Indiana instead of "Louisiana". We use SAS 9.3 new function GEODIST to calculate the distance. GEODIST function is based on Vincenty formula instead of Haversine formula, which was commonly used in prior literature. The new Vincenty based formula is considered more accurate within 0.5mm.[3]

Our initial sample is then used in the next step to compute the nearest distance from either SEC regional or national office. We use the SEC website to identify the street addresses of the regional and national offices. Following Kedia and Rajgopal (2011), SEC national office is in Washington DC and regional offices[4] are in Atlanta, GA; Boston, MA; Chicago, IL; Denver, CO; Fort Worth, TX; Los Angeles, LA; Miami, FL; New York, NY; Philadelphia, PA; Salt Lake City, UT and San Francisco, CA. Then we take the smaller distance to the SEC national office and to the regional SEC office from client firms and their auditors. Besides distance variable that measures the distance within or beyond 100 kilometers radius, we also use the dummy variable, and the log transformation of physical distance computed based on coordinate between client firms, their auditors and their nearest SEC office.

Following Coval and Moskowitz (2001), Malloy (2005) and Kedia and Rajgopal (2011), the variables D100_SEC_AU and D100_SEC are dummy variables. D100_SEC takes value 1 if client firm headquarters are more than 100 kilometers from the nearest SEC office, and 0 otherwise. D100_SEC_AU takes value 1 if audit engagement offices are more than 100 kilometers from the nearest SEC office, and 0 otherwise. DIS_SEC is the actual distance between client headquarters and the SEC regional/national office. DIS_SEC_AU is the actual distance between audit engagement office and SEC regional/national office. LNDIS_SEC is the log transformation of DIS_SEC. LNDIS_SEC_AU is the log transformation of DIS_SEC_AU.

Audit Fee Model

The determinants of audit fees were first modeled by Simunic (1980). Further extensions were done by Whisenant et al. (2003), Francis et al. (2005) and Ghosh and Pawlewicz (2009). Audit effort, agency costs, operation complexity, size, performance, risk and the characteristics of auditor jointly determine the audit fees. In our analysis, we adopt the audit fee model modified in Callaghan et al. (2008). Their study applies the audit fee model to test the Multi-Jurisdiction Disclosure System between Canada and the U.S. reduces audit fees paid by U.S. cross-listed Canadian companies. We posit the following regression to link auditor monitoring cost with auditor proximity with clients, and other control variables for clients' operation complexity, firm size, risk, performance, and other firm and auditor characteristics.

$$LNAUDIT_{it} = \alpha_0 + \alpha_1 LNNAF_{it} + \alpha_2 LNTA_{it} + \sum_{M=1}^{4} \alpha_3 DistanceMeasures_{it} + \alpha_4 BIG4_{it} + \alpha_5 ROA_{it} + \alpha_6 RETURN_{it} + \alpha_7 VOLATILITY_{it} + \alpha_8 LEV_{it} + \alpha_9 INVREC_{it} + \alpha_{10} INSTIT\_PCT_{it} + \alpha_{11} SPECIAL_{it} + \alpha_{12} BM_{it} + \alpha_{13} SQSEGS_{it} + \alpha_{14} FOROPS_{it} + \alpha_{15} EMPPLAN_{it} + \alpha_{16} LAG_{it} + \alpha_{17} INITIAL_{it} + \sum_{yr=2001}^{2013} \alpha_{yr} YEAR\_DUMMIES + \sum_{INDUSTRY=1}^{16} \alpha_{INDUSTRY} INDUSTRY\_DUMMIES + \varepsilon_{it} \quad (1)$$

Our distance measures in the model include the following several possibilities. DIS_SEC_AU, DIS_SEC, D100_SEC_AU, LNDIS_SEC_AU, D100_SEC and LNDIS_SEC are defined in the previous Section. We also include V1, V2, V3 and V4, which are dummy variables by combining the distance among auditor engagement office, SEC office, and client headquarters. V1 is the dummy variable that equals to 1 if the distance between the firm headquarters and SEC office is greater than or equal to 100 kilometers and the distance between auditor engagement office and SEC office is greater than or equal to 100 kilometer as well; and 0 otherwise. V2 is the dummy variable that equals to 1 if the distance between the firm headquarters and SEC office is less than 100 kilometers and between the auditor engagement office and SEC is greater than or equal to 100 kilometers; and 0 otherwise. V3 is the dummy variable that equals to 1 if the distance between client headquarters and SEC is greater than or equal to 100 kilometers and between auditor engagement office and SEC is less than 100 kilometers; and 0 otherwise. V4 is the dummy variable that equals to 1 if the distance between the client headquarter and SEC is less than 100 kilometers and the distance between the auditor engagement office and SEC is less than 100 kilometers; and 0 otherwise.

Distance measures in the model are our main variables of interest. If we observe a significant negative coefficient on distance measures defined aforementioned, then it consists with the story that geographic distance will increase information asymmetry between auditors, their clients and SEC offices, thus it leads to lower fee for auditor's lower quality of service. We control non-audit fees (LNNAF) as documented in Whisenant et al. (2003) that audit and non-audit fees are not simultaneously determined. We include LNTA to control firm size. INVREC, SQSEGS, FOROPS and EMPPLAN are included to control client complexity in business operation. We include ROA, RETURN, VOLATILITY, LEV and BM to control client performance and risk, following Whisenant et al. (2003). Reporting lags (LAG) as documented in Gul (1999) is positively associated with audit fees. DeAngelo (1981) suggests that Big 4 auditors provide higher quality audits than non-Big 4 audits and charge a higher fee premium (Francis et al., 2005). We include BIG4 controlling for auditor reputation. DeAngelo (1981) also documents that auditors typically charge less and discount audit fees because of low bailing at the time of initial engagement of auditors, therefore we include INITIAL to control for this effect. Following Whisenant et al. (2003), we include INSTIT_PCT and SPECIAL for institutional ownership and special item. The model also includes year dummy and Fama-French (1997) 17 industry classifications as control variables. The definition of all variables is tabulated in Table 1.

TABLE 1
VARIABLE DEFINITION

DIS_SEC_AU, D100_SEC_AU and LNDIS_SEC_AU	DISTANCE_SEC_AU is the distance (kilometer) measured based on the longitude and latitude between auditor engagement office and SEC national/regional office (whichever is closer). D100_SEC_AU is 1 if the distance between the audit office and SEC national office or regional office is further than 100 kilometers; 0 otherwise; We calculate the log transformation of distance between client's headquarter and SEC regional office or national office and take the smaller value (LNDIS_SEC_AU).
DIS_SEC, D100_SEC and LNDIS_SEC	DISTANCE_SEC is the distance (kilometer) calculated based on the longitude and latitude between SEC national/regional office and the client's headquarter (whichever is closer); D100_SEC is 1 if the distance between either SEC national office or regional office and the client's headquarter is further than 100 kilometers; 0 otherwise; We calculate the log transformation of distance between client's headquarter and SEC regional/national office and take the smaller value (LNDIS_SEC).
V1	The dummy variable is equal to 1 if the distance between firm and SEC is greater than or equal to100km and distance between auditor and SEC is greater than or equal to 100 km as well; and 0 otherwise.
V2	The dummy variable is equal to 1 if the distance between firm and SEC is less than100km and distance between auditor and SEC is greater than or equal to100 km; and 0 otherwise.
V3	The dummy variable is equal to 1 if the distance between firm and SEC is greater than or equal to 100 km and distance between auditor and SEC is less than100km; and 0 otherwise.
V4	The dummy variable is equal to 1 if the distance between firm and SEC is less than100km and distance between auditor and SEC is less than100 km; and 0 otherwise.
LNAUDIT	The log transformation of the audit fees;
LNNAF	The log transformation of the nonaudit fees;
LNFEES	The log transformation of the total audit fees;
LNTA	The log transformation of total assets (TA);
BIG4	An indicator variable equal to one when an auditor is a member of the Big 4, zero otherwise;
ROA	Operating income after depreciation divided by total assets;
RETURN	The firm's raw stock return over the fiscal year including dividend;
VOLATILITY	The variance of monthly stock returns over the current fiscal year;
LEV	Total debt divided by total assets;
INVREC	Inventory plus accounts receivables divided by total assets;
INSTIT_PCT	The percentage of institutional holdings;
SPECIAL	An indicator variable equal to the absolute value of negative special items divided by total assets, zero otherwise;
BM	The book-to market ratio;
SQSEGS	The square root of number of segments;
FOROPS	An indicator variable equal to one if the firm recorded a foreign sales amount or foreign income tax amount, zero otherwise;
EMPPLAN	An indicator variable equal to one if the firm has a pension or post retirement plan, zero otherwise;
LAG	The number of days between fiscal year end and earnings announcement date;
INITIAL	An indicator variable equal to one if the audit engagement is the initial two years, zero otherwise.

Sample

We examine if auditor engagement office from the nearest SEC office and/or client headquarters from the nearest SEC office affects the audit fees. Our sample selection process starts with the Audit Analytics databases Audit Opinion File for 2000 through 2018. Audit Analytics database is the starting point because it contains the street-level addresses (including zip code) for audit engagement offices and client headquarters required to compute the distance from the closest SEC regional of national office. The year coverage starts from the year 2000 because the Audit Analytics database has relatively limited data before that year.

We merge the initial file with the distance calculation with Audit Fee File from Audit Analytics to obtain non-missing and non-zero audit fee information. We obtain financial statement variables including segment data from Compustat, institutional holding from Thomson Reuters Institutional Holdings File, and stock return and price data from CRSP database. We delete the observations with missing data and outliers with respect to ROA and BM in the extreme 1 percentile of their respective distributions. We also delete the observations with the distance between auditor engagement office and SEC office and the distance between client headquarters and SEC office in the extreme 1 percentile of their respective distributions. This step eliminates those clients or auditors located outside the continental United States (Hawaii and Alaska). After the data selection procedure, the final sample yields 22,886 firm year observations. The final sample consists of 1,969 U.S. firms in 45 continental states of United States from fiscal year 2000 to 2018.

Sample Distribution by Industry and Year

Table 2 Panel A presents the distribution of our data classified by the distance measure between auditors and SEC and between client headquarters and SEC. Table 2 Panel B presents the sample distribution by fiscal year. As reported in Panel A of Table 2, four industries have higher firm-year observations than other industries. Those are Drug, Soap, Perfume &Tabacco, Machinery and Business Equipment, Financial Services, and other industry. It also indicates that our sample firms cover a broad range of industries. Four industries (Oil and Petroleum Products; Machinery and Business Equipment; Transportation, and Financial Services) have the majority of firms with a distance between auditors and SEC and between firm headquarters and SEC are further away than 100 kilometers. Two industries (Machinery and Business Equipment and Financial Service) have the majority of firms with the distance between auditors and SEC and between firm headquarters and SEC are less than 100 kilometers. Panel B shows an increasing trend on the firm year observations in each year of our sample, except the year of 2018 because of limited data availability after June of 2018.

TABLE 2
SAMPLE DISTRIBUTION OF LOCAL AND NON-LOCAL AUDITOR FIRM YEAR OBSERVATIONS AND FIRMS' DISTANCE TO SEC OFFICE CLASSIFICATION BY FAMA-FRENCH (1997) 17 INDUSTRY CLASSIFICATION AND FISCAL YEAR

Panel A Fama-French 17 Industry Classification

Fama-French Industry Classification	D100_SEC_AU=0	D100_SEC_AU=1	D100_SEC=0	D100_SEC=1
Food	212	313	264	261
Mining and Minerals	93	121	87	127
Oil and Petroleum Products	226	751	220	757
Textiles, Apparel & Footwear	102	116	70	148
Consumer Durables	130	205	123	212
Chemicals	194	361	228	327
Drugs, Soap, Perfumes & Tobacco	1,185	702	1,334	553
Construction and Construction Materials	207	461	232	436
Steel	74	218	76	216
Fabricated Products	125	231	147	209
Machinery and Business Equipment	1,648	1,998	1,849	1,797
Auto	69	91	78	82
Transportation	364	937	373	928
Utilities	322	553	327	548
Retail Stores	317	274	312	279
Financial Services	2,434	1,743	2,746	1,431
Other	3,281	2,828	3,870	2,239
Total	10,983	11,903	12,336	10,550

Panel B Yearly Distribution

Fiscal Year	D100_SEC_AU=0	D100_SEC_AU=1	D100_SEC=0	D100_SEC=1
2000	348	423	401	370
2001	438	529	508	459
2002	476	554	542	488
2003	494	583	563	514
2004	515	569	573	511
2005	546	612	607	551
2006	557	610	618	549
2007	563	616	628	551
2008	602	684	675	611
2009	601	667	678	590
2010	619	681	697	603
2011	680	718	762	636
2012	679	722	766	635
2013	720	752	811	661
2014	770	817	873	714
2015	773	784	868	689
2016	798	792	883	707
2017	783	769	859	693
2018	21	21	24	18
Total	10,983	11,903	12,336	10,550

RESULTS

Descriptive Statistics and Univariate Test

Panel A of Table 3 presents the descriptive statistics for our fees measures, LNAUDIT, LNNAF, LNFEES, Audit fees, Non-audit fees, Total fees, separately, along with univariate tests for differences in the mean and median between two samples. Panel A includes two sections. The first section is based on the distance between auditors and SEC (D100_SEC_AU=0 or 1, less than or further away than 100 kilometers). As shown in this section, both audit fees and total fees (the log transformation and without the log transformation) are significantly lower for firms whose auditors are further away from the nearest SEC office. For example, the mean (median) value of LNAUDIT when D100_SEC_AU is equal to 1 is 13.527 (13.592); and the mean (median) value of LNAUDIT when D100_SEC_AU is equal to 0 is 13.648 (13.763).

The differences are significant at the 1 percent level (p-value<0.01) for both mean and median. We also find similar differences in the median value of LNAUDIT and in the mean value of LNFEES when classified based on the distance between client headquarters and SEC (D100_SEC=0 or 1) from the second section of Panel A.

Panel B of Table 3 reports the descriptive statistics for all other variables included in our main regressions. Panel B includes two sections by different distance measures. The first section is based on the distance between auditors and SEC (D100_SEC_AU=0 or 1). As shown in this section, if auditors are further away from SEC office (D100_SEC_AU=1), firms are more likely to have higher return on asset (ROA=0.048), leverage (LEV=0.518), inventory and receivable (INVREC=0.257), book-to-market ratio (BM=0.604) and business segment (SQSEGS=1.638), which are significantly different than the value reported for the firms if their auditors are less than 100 kilometers away from SEC office (D100_SEC_AU=0) at the 1 percent level (p-value<0.01). Such significance of difference is found for both mean and median value. When auditor is located within 100 kilometers from SEC, the firms have significantly higher total assets (TA=$11,186) and longer reporting lag (LAG=51.516) at the 1 percent level (p-value<0.01).

For firms with D100_SEC_AU is equal to 1, there are about 74.897% of them are audited by the Big 4 auditors and 37.654% of them having employee pension plans. For firms with D100_SEC_AU is equal to 0, there are about 51.917% of them having foreign operations, 2.181% of them having negative special item, 15.060% of them having their audit engagement service at the initial two years. We also find the similar differences for all variables when firms are classified based on the distance between client headquarter and SEC (D100_SEC).

TABLE 3
DESCRIPTIVE STATISTICS

Panel A Descriptive Statistics for Audit Fees

	D100_SEC_AU=0 (N=10,983)			D100_SEC_AU=1 (N=11,903)			Test for Differences p-value	
Variables	Mean	Median	Std	Mean	Median	Std	Mean	Median
LNAUDIT	13.648	13.763	1.783	13.527	13.592	1.568	0.00***	0.00***
LNNAF	10.829	11.796	3.870	10.741	11.720	3.847	0.09*	0.00***
LNFEES	13.969	13.978	1.464	13.818	13.820	1.377	0.00***	0.00***
Audit fees	$2,573,433	$949,090	6,080,633	$2,009,243	$800,000	4,444,878	0.00***	0.00***
Non-audit fees	$930,414	$132,739	3,643,191	$645,971	$123,043	2,300,143	0.00***	0.00***
Total fees	$3,503,846	$1,176,870	8,751,661	$2,655,214	$1,004,590	6,155,986	0.00***	0.00***

	D100_SEC=0 (N=12,336)			D100_SEC=1 (N=10,550)			Test for Differences p-value	
Variables	Mean	Median	Std	Mean	Median	Std	Mean	Median
LNAUDIT	13.620	13.719	1.789	13.545	13.619	1.532	0.00***	0.00***
LNNAF	10.824	11.787	3.959	10.736	11.712	3.844	0.09*	0.00***
LNFEES	13.942	13.941	1.474	13.830	13.847	1.356	0.00***	0.00***
Audit fees	$2,607,557	$907,875	6,479,604	$1,896,987	$821,714	3,404,304	0.00***	0.00***
Non-audit fees	$929,036	$131,508	3,673,196	$611,102	$122,026	1,999,873	0.00***	0.00***
Total fees	$3,536,594	$1,134,200	9,201,697	$2,508,089	$1,032,160	4,827,555	0.00***	0.00***

***, **, * represents significance at the 1%, 5% and 10% level respectively, using two-tailed tests.
Two-sample t-test p-value reported is by using Satterthwaite method that allows unequal variance.
Two-sample median test p-value reported is by using Wilcoxon test (two-sided).

Panel B Descriptive Statistics for Other Control Variables

	D100_SEC_AU=0 (N=10,983)			D100_SEC_AU=1 (N=11,903)			Test for Differences p-value	
Variables	Mean	Median	Std	Mean	Median	Std	Mean	Median
TA ($000)	$11,186	$669	79,798	$6301	$758	30,429	0.00***	0.18
LNTA	6.597	6.506	2.239	6.608	6.631	2.119	0.71	0.18
ROA	0.041	0.061	0.180	0.048	0.070	0.175	0.00***	0.00***
RETURN	0.182	0.056	0.980	0.180	0.058	0.966	0.87	0.91
VOLATILITY	0.120	0.098	0.088	0.119	0.097	0.093	0.67	0.53
LEV	0.502	0.494	0.292	0.518	0.524	0.267	0.00***	0.00***
INVREC	0.230	0.181	0.204	0.257	0.220	0.205	0.00***	0.00***
INSTIT_PCT	0.520	0.582	0.362	0.523	0.589	0.353	0.60	0.78
BM	0.573	0.434	0.606	0.604	0.480	0.612	0.00**	0.00***
SQSEGS	1.572	1.414	0.656	1.638	1.732	0.679	0.00***	0.00***
LAG	51.516	49.000	27.726	50.458	48.000	24.750	0.00***	0.03**
BIG4	72.913%			74.897%			0.00***	0.00***
FOROPS	51.917%			48.618%			0.00***	0.00***
EMPPLAN	31.203%			37.654%			0.00***	0.00***

SPECIAL	2.181%			1.890%			0.10*	0.00***
INITIAL	15.060%			14.106%			0.04**	0.05**

	D100_SEC=0 (N=12,336)			D100_SEC=1 (N=10,550)			Test for Differences p-value	
Variables	Mean	Median	Std	Mean	Median	Std	Mean	Median
TA ($000)	$11,553	$628	79,645	$5,245	$820	15,750	0.00***	0.00***
LNTA	6.557	6.442	2.245	6.658	6.709	2.095	0.00***	0.00***
ROA	0.037	0.060	0.187	0.054	0.072	0.166	0.00***	0.00***
RETURN	0.185	0.056	1.391	0.175	0.057	0.889	0.41	0.44
VOLATILITY	0.122	0.099	0.095	0.117	0.096	0.085	0.00***	0.00***
LEV	0.503	0.494	0.289	0.519	0.527	0.267	0.00***	0.00***
INVREC	0.230	0.181	0.204	0.261	0.225	0.205	0.00***	0.00***
INSTIT_PCT	0.509	0.562	0.364	0.536	0.609	0.348	0.00***	0.00***
BM	0.578	0.433	0.617	0.602	0.483	0.599	0.00***	0.00***
SQSEGS	1.557	1.414	0.662	1.664	1.732	0.672	0.00***	0.00***
LAG	52.391	50.000	28.514	49.298	47.000	23.155	0.00***	0.00***
BIG4	72.216%			75.915%			0.00***	0.00***
FOROPS	51.297%			48.900%			0.00***	0.00***
EMPPLAN	30.464%			39.346%			0.00***	0.00***
SPECIAL	2.312%			1.698%			0.00***	0.00***
INITIAL	15.459%			13.517%			0.00***	0.00***

***, **, * represents significance at the 1%, 5% and 10% level respectively, using two-tailed tests.
Two-sample t-test p-value reported is by using Satterthwaite method that allows unequal variance.
Two-sample median test p-value reported is by using Wilcoxon test (two-sided).

Pearson Correlation

Table 4 presents Pearson correlation matrix for all variables included in our test. Two distance variables DIS_SEC_AU and DIS_SEC, are positively correlated with the correlation coefficient of 0.390 (p-value<0.01). The fee variables LNAUDIT and LNFEES negatively correlate with DIS_SEC_AU and DIS_SEC (p-value<0.01 for both). Both fee variables LNAUDIT and LNFEES are significantly correlated with many control variables, supporting their inclusion as control variables. For example, both LNAUDIT and LNFEES are positively correlated with ROA, LEV, INSTIT_PCT and SQSEGS; negatively correlated with RETURN, VOLATILITY, INVREC, BM and LAG. We also note that the correlations between the control variables are mostly not very high (below 0.50). This suggests that multicollinearity is unlikely to be a serious problem.

TABLE 4
PEARSON CORRELATION

	LNAUDIT	LNNAF	LNFEES	LNTA	DIS_SEC_AU	DIS_SEC	ROA	RETURN	VOLATILITY	LEV	INVREC	INSTIT_PCT	BM	SQSEGS	LAG
LNAUDIT	1.000	0.385	0.893	0.708	-0.052	-0.023	0.137	-0.032	-0.219	0.273	-0.064	0.381	-0.120	0.340	-0.277
		<0.0001	<0.0001	<0.0001	<0.0001	<0.0004	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
LNNAF		1	0.558	0.484	-0.027	-0.025	0.129	-0.011	-0.117	0.185	-0.043	0.249	-0.081	0.255	-0.251
			<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	0.1106	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
LNFEES			1.000	0.840	-0.060	-0.044	0.179	-0.042	-0.251	0.319	-0.082	0.437	-0.133	0.407	-0.334
				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
LNTA				1.000	-0.049	0.013	0.259	-0.058	-0.346	0.354	-0.167	0.446	-0.047	0.405	-0.411
					<0.0001	0.0429	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
DIS_SEC_AU					1.000	0.390	-0.028	0.006	0.040	0.009	0.008	-0.055	0.034	0.011	0.032
						<0.0001	<0.0001	0.3694	<0.0001	0.1708	0.2428	<0.0001	<0.0001	0.1070	<0.0001
DIS_SEC						1	0.044	-0.003	-0.023	0.006	0.043	0.038	0.014	0.063	-0.058
							<0.0001	0.6123	0.0007	0.3457	<0.0001	<0.0001	0.0315	<0.0001	<0.0001
ROA							1.000	0.020	-0.334	-0.047	0.176	0.227	-0.076	0.128	-0.207
								0.0020	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
RETURN								1.000	0.226	0.002	0.011	-0.042	-0.120	-0.028	0.010
									<0.0001	0.7803	0.1081	<0.0001	<0.0001	<0.0001	0.1128
VOLATILITY									1.000	-0.019	0.041	-0.218	0.078	-0.148	0.169
										0.0037	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
LEV										1.000	-0.008	0.054	-0.079	0175	-0.015
											0.2396	<0.0001	<0.0001	<0.0001	0.0251
INVREC											1.000	-0.054	0.109	0.036	0.066
												<0.0001	<0.0001	<0.0001	<0.0001
INSTIT_PCT												1.000	-0.154	0.141	-0.313
													<0.0001	<0.0001	<0.0001
BM													1.000	0.050	0.149
														<0.0001	<0.0001
SQSEGS														1.000	-0.123
															<0.0001
LAG															1.000

Main Regression Results

Table 5 presents the results of estimating Eq (1) by using ordinary least squares (OLS) regressions with pooled data. To mitigate the potential effect from industry fixed effects and year fixed effect, we include year dummies to capture the year effect and 17 dummy variables to represent 17 industry classifications based on Fama-French (1997). Panel A reports the regression results by including the distance measured in kilometers: DIS_SEC and DIS_SEC_AU. When DIS_SEC is included only, the coefficient on DIS_SEC is negative and significant (-0.000, t-statistics=-8.82) at the 1 percent level in two-tailed tests. These results are consistent with H1, that on average, auditors charge significantly lower fees when their clients' headquarters are located further from the nearest SEC national or regional office. We also find that the coefficients on LNNAF, LNTA, BIG4, ROA, VOLATILITY, LEV, INVREC, SPECIAL, BM, SGSEGS, FOROPS, EMPPLAN, LAG and INITIAL are statistically significant different than zero. Consistent with the evidence in prior research that audit and non-audit fess are not simultaneously determined (Whisenantet et al., 2003; Simunic, 1984), we find the significantly positive coefficient on LNNAF (p-value<0.05). The significant and positive coefficient on firm size indicates that higher audit fees are charged for large firms. INVREC, SQSEGS, FOROPS and EMPLLAN are found to have significantly positive coefficients (p-value<0.01). This indicates that the higher complexity in operation of the clients, the higher the audit fees would be charged. The coefficient on ROA is significantly negative (-0.533, t-statistics=-11.26) at the 1 percent level. This indicates that auditors charge significantly lower fees for clients with higher financial performance. For the risk measure, consistent with our predictions, we found statistically significant positive coefficient on VOLATILITY (0.180, t-statistics=1.92) and on LEV (0.157, t-statistics=5.44), and a negative coefficient on BM (-0.157, t-statistics=-12.46). This indicates that auditors charge higher fees for clients with higher risk. We find statistically insignificant coefficient on RETURN and INSTIT_PCT. Consistent with the implication in prior findings (DeAngelo, 1981; Francis et al., 2005), we find auditor reputation variable BIG4 has statistically significant coefficient (0.513, t-statistics=26.17) at the 1 percent level. The coefficient on reporting lag (LAG) is positive (0.002, t-statistics=7.56) and statistically significant at the 1 percent level. This confirms with the evidence in Gul (1999) that reporting lag is positively associated with audit fees. We also find the supporting evidence that auditors charge less and discount audit fees at the time of initial engagement of auditors (DeAngelo, 1981); the coefficient on INITIAL is negative and statistically significant at the 1 percent level. The coefficients on SGSEGS (0.134, t-statistics=11.20), FOROPS (0.399, t-statistics=23.86), EMPPLAN (0.128, t-statistics=6.90) and SPECIAL (0.274, t-statistics=5.01) are positive and statistically significant at the 1 percent level.

When DIS_SEC_AU is included only, the coefficient on DIS_SEC_AU is negative and significant (-0.000, t-statistics=-3.19) at the 1 percent level in two-tailed tests. These results are consistent with H2, that on average, auditors charge significantly lower fee when their offices are located further from the nearest SEC national or regional office. To further examine the validity of H1 and H2, we include both DIS_SEC_AU and DIS_SEC into the regression. We find coefficients on DIS_SEC remain negative and statistically significant (DIS_SEC=-0.000, t-statistics=-8.23) at the 1 percent level; however DIS_SEC_AU becomes positive and insignificantly (DIS_SEC_AU=0.000, t-statistics=0.22) at the 1 percent level. All other control variables have consistent signs and remain statistically significance. The tests of overall models fit result in F-statistics ranging from 752 to 769, all statistically significant (p-value<0.01). We find adjusted R square ranging from 60.56% to 60.68%, indicating that the variations in the audit fess are well explained by the set of independent variables chosen in the model.

The distribution of the residuals in the residual versus fitted plot did not seem overly heteroscedastic (White, 1980). Therefore, we report standard t-statistics. To test the possibility of multicollinearity, we compute the variance inflation factor (VIF) for each variable included in the regression. The highest VIF is less than 3.5.[6] This is consistent with our interpretation based on Pearson correlation that multicollinearity does not appear to be a problem in our analysis.

TABLE 5
ASSOCIATION BETWEEN AUDIT FEE AND DISTANCE MEASURE AMONG FIMRS, AUDITR AND SEC

Panel A: The Relation between Audit Fees and Geographic Proximity between Client Firms and SEC Office and between Auditor Engagement Office and SEC Office, Actual Distance Measured in Kilometers

LNAUDIT	Predicted sign	OLS estimate	t-stat	OLS estimate	t-stat	OLS estimate	t-stat
INTERCEPT	?	9.727	211.11***	9.679	211.22***	9.276	210.89***
LNNAF	?	0.006	2.73***	0.007	3.06***	0.006	2.73***
LNTA	+	0.468	85.20***	0.470	85.39***	0.468	85.20***
DIS_SEC	-	-0.000	-8.82***			-0.000	-8.23***
DIS_SEC_AU	-			-0.000	-3.19***	0.000	0.22
BIG4	+	0.513	26.17***	0.508	25.90***	0.513	26.17***
ROA	?	-0.533	-11.26***	-0.537	-11.34***	-0.533	-11.26***
RETURN	-	0.007	0.86	0.007	0.87	0.007	0.86
VOLATILITY	+	0.180	1.92**	0.193	2.05**	0.179	1.92*
LEV	+	0.157	5.44***	0.155	5.36***	0.157	5.43***
INVREC	+	0.290	7.38***	0.280	7.12***	0.290	7.39***
INSTIT_PCT	+	0.034	1.44	0.027	1.13	0.034	1.44
SPECIAL	+	0.274	5.01***	0.281	5.13***	0.274	5.01***
BM	-	-0.157	-12.46***	-0.157	-12.48***	-0.157	-12.46***
SGSEGS	+	0.134	11.20***	0.130	10.88***	0.134	11.20***
FOROPS	+	0.399	23.86***	0.404	24.13***	0.399	23.86***
EMPPLAN	+	0.128	6.90***	0.128	6.89***	0.128	6.90***
LAG	+	0.002	7.56***	0.002	8.05***	0.002	7.56***
INITIAL	-	-0.229	-10.90***	-0.224	-10.63***	-0.229	-10.91***
INDUSTRY	?	YES		YES		YES	
YEAR	?	YES		YES		YES	
N		22,886		22,886		22,886	
F-stat		768.67		764.94		752.29	
Adj R square		60.68%		60.56%		60.68%	

***, **, * represents significance at the 1%, 5% and 10% level respectively, using two-tailed tests

Panel B reports the alternative measure distance dummies included in the regression analysis. When D100_SEC is included only, the coefficient on D100_SEC is negative and significant (-0.148, t-statistics=-10.13) at the 1 percent level in two-tailed tests. When D100_SEC_AU is included only, the coefficient on D100_SEC_AU is negative and significant (-0.137, t-statistics=-9.57) at the 1 percent level in two-tailed tests. When both D100_SEC_AU and D100_SEC are included into the regression, we find both coefficients on the distance dummies remain negative and statistically significant (D100_SEC =-0.098, t-statistics=-4.48 and D100_SEC_AU=-0.065, t-statistics=-3.03) at the 1 percent level. These results confirm with the finding in Panel A and support the H1 and H2's predictions. All other control variables have consistent signs and remain statistically significance. The tests of overall models fit result in F-statistics ranging from 769 to 770, all statistically significant (p-value<0.01). We find adjusted R square ranging from 60.70% to 60.73%.

Panel B: The Relation between Audit Fees and Geographic Proximity between Client Firms and SEC Office and between Auditor Engagement Office and SEC Office, Distance Measured by Dummy Variables

LNAUDIT	Predicted sign	OLS estimate	t-stat	OLS estimat	t-stat	OLS estimate	t-stat
INTERCEPT	?	9.735	211.46**	9.376	211.07***	9.746	211.14***
LNNAF	?	0.006	2.82***	0.006	2.96***	0.006	2.85***
LNTA	+	0.467	85.02***	0.468	85.29***	0.467	85.06***
D100_SEC	-	-0.148	-			-0.098	-4.48***
D100_SEC_AU	-			-0.137	-9.57***	-0.065	-3.03***
BIG4	+	0.517	26.35***	0.515	26.26***	0.517	26.37***
ROA	?	-0.533	-	-0.539	-11.39***	-0.536	-11.33***
RETURN	-	0.007	0.86	0.007	0.85	0.007	0.85
VOLATILITY	+	0.167	1.79*	0.181	1.94*	0.171	1.83*
LEV	+	0.163	5.64***	0.161	5.56***	0.164	5.65***
INVREC	+	0.301	7.66***	0.299	7.62***	0.303	7.71***
INSTIT_PCT	+	0.033	1.42	0.029	1.22	0.032	1.36
SPECIAL	+	0.271	4.96***	0.275	5.02***	0.272	4.97***
BM	-	-0.157	-	-0.157	-12.44***	-0.156	-12.43***
SGSEGS	+	0.135	11.33***	0.132	11.06***	0.134	11.27***
FOROPS	+	0.392	23.41***	0.393	23.44***	0.391	23.31***
EMPPLAN	+	0.133	7.15***	0.132	7.09***	0.133	7.16***
LAG	+	0.002	7.46***	0.002	7.78***	0.002	7.52***
INITIAL	-	-0.228	-	-0.226	-10.76***	-0.227	-10.82***
INDUSTRY	?	YES		YES		YES	
YEAR DUMMIES	?	YES		YES		YES	
N		22,886		22,886		22,886	
F-stat		770.03		769.43		754.12	
Adj R square		60.72%		60.70%		60.73%	

***, **, * represents significance at the 1%, 5% and 10% level respectively, using two-tailed tests

We use alternative distance measures to substitute the dummy variables by using LNDIS_SEC and LNDIS_SEC_AU, which are the log transformation of the actual distance. As reported in Panel C of Table 5, when LNDIS_SEC is included only, the coefficient on LNDIS_SEC is negative and significant (-0.043, t-statistics=-10.79) at the 1 percent level in two-tailed tests. When LNDIS_SEC_AU is included only, the coefficient on LNDIS_SEC_AU is negative and significant (-0.024, t-statistics=-8.59) at the 1 percent level in two-tailed tests. When both variables are included in the model, the coefficients remain negative and statistically significant (LNDIS_SEC =-0.035, t-statistics=-6.94 and LNDIS_SEC_AU=-0.009, t-statistics=-2.38) at the 1 and 5 percent level. These results confirm with the finding in Panel A and support the H1 and H2's predictions. All other control variables have consistent sign and remain statistically significance. The tests of overall models fit result in F-statistics ranging from 755 to 771, all statistically significant (p-value<0.01). We find adjusted R square ranging from 60.67% to 60.75%.

Panel C: The Relation between Audit Fees and Geographic Proximity between Client Firms and SEC Office and between Auditor Engagement Office and SEC Office; Distance Measured by the Log Transformation of Actual Distance in Kilometers

LNAUDIT	Predicted sign	OLS estimate	t-stat	OLS estimate	t-stat	OLS estimate	t-stat
INTERCEPT	?	9.870	200.03***	9.783	205.59***	9.876	199.93***
LNNAF	?	0.006	2.68***	0.006	2.94***	0.006	2.70***
LNTA	+	0.465	84.46***	0.467	84.96***	0.465	84.45***
LNDIS_SEC	-	-0.043	-10.79***			-0.035	-6.94***
LNDIS_SEC_AU	-			-0.024	-8.59***	-0.009	-2.38**
BIG4	+	0.513	26.21***	0.511	26.07***	0.513	26.22***
ROA	?	-0.530	-11.21***	-0.537	-11.34***	-0.531	11.24***
RETURN	-	0.006	0.84	0.006	0.85	0.006	0.84
VOLATILITY	+	0.173	1.85*	0.194	2.07*	0.177	1.90*
LEV	+	0.158	5.47***	0.157	5.42***	0.159	5.48***
INVREC	+	0.303	7.73***	0.293	7.46***	0.303	7.73***
INSTIT_PCT	+	0.039	1.66*	0.025	1.08	0.036	1.53
SPECIAL	+	0.273	4.98***	0.278	5.07***	0.273	4.99***
BM	-	-0.157	-12.45***	-0.157	-12.48***	-0.157	-12.45***
SGSEGS	+	0.134	11.27***	0.131	10.97***	0.134	11.24***
FOROPS	+	0.396	23.72***	0.397	23.71***	0.395	23.62***
EMPPLAN	+	0.128	6.92***	0.126	6.78***	0.128	6.87***
LAG	+	0.002	7.44***	0.002	7.78***	0.002	7.45***
INITIAL	-	-0.230	-10.96***	-0.227	-10.82***	-0.230	-10.96***
INDUSTRY	?	YES		YES		YES	
YEAR	?	YES		YES		YES	
N		22,886		22,886		22,886	
F-stat		770.80		768.44		754.67	
Adj R square		60.74%F		60.67%		60.75%%	

***, **, * represents significance at the 1%, 5% and 10% level respectively, using two-tailed tests

Panel D of Table 5 reports the results when V1 (D100_SEC_AU=1 and D100_SEC=1), V2 (D100_SEC_AU=1 and D100_SEC=0), V3 (D100_SEC_AU=0 and D100_SEC=1) and V4 (D100_SEC_AU=0 and D100_SEC=0) are included separately. When V1 and V4 are included into the regression, the coefficient on V1 is negatively significant (at the 1 percent level) but the coefficient on V4 is negatively insignificant. The comparison between V1 and V4 shows that V1 is significantly lower than V4 (t-statistics=-10.69, p-value<0.01, not tabulated). It indicates that if clients' headquarters and their auditors are located further away from SEC than 100 kilometers, the auditors charge a significantly lower fee than if they both are within 100 kilometers' radius. When V1, V2 and V3 are included, the coefficients on V1 is negative but V3 is positive and both are significant; however the coefficient on V2 loses the significance. The comparison among V1, V2, and V3 show that V2 is significantly lower than V3 (t-statistics=-1.84, p-value<0.10, not tabulated) at the 10 percent level. V1 is significantly lower than V2 (t-statistics=-6.78, p-value<0.01, not tabulated) and V3 (t-statistics=-6.39, p-value<0.01, not tabulated). When V2, V3 and V4 are included in the regression, the coefficients are all significantly positive at the 1 percent level. The comparisons of the coefficients show that V2 is significantly lower than V3 (t-statistics=-1.84, p-value<0.10, not tabulated) at the 10 percent level. V3 is significantly higher than V4 (t-statistics=2.33, p-value<0.05, not tabulated) at the 5 percent level; however, V2 is insignificantly different than V4. This suggests auditors closer to SEC charge the highest fees to those firms located further away to SEC more than 100 kilometers (coefficient on V3). It also suggests that audit fees are irrelevant when clients are closer

to the SEC whether their auditors are located closer to or further away from SEC within 100 kilometers' radius (the insignificant indifference between coefficient of V2 and that of V4). It indicates that when the client headquarters are under the scope of the SEC they are fully aware of the regulation and governance from the SEC and these firms can efficiently self-regulate. Compare to this situation when the client headquarters are outside the scope of the SEC (V1 and V3), the results suggest the audit fees are significantly higher for those are under the scope of the SEC because they are more informed about SEC enforcement, and more aware of the consequences of compromising their independence than those are outside the scope.

For the sample when auditors are under the scope of the SEC, the results suggest that these auditors exert more effort to make sure the high-quality service provided to those clients are outside the scope of the SEC which are further away therefore they charge a higher fee to those clients (V3 and V4). For the sample when auditors are outside the scope of the SEC, these auditors charge a higher fee to their clients who are geographically closer to the SEC because the SEC is more likely to investigate these firm located closer (V1 and V2).

Panel D: The Relation between Audit Fees and Geographic Proximity between Client Firms and SEC Office and between Auditor Engagement Office and SEC Office; Different Combinations of Distance Dummy Variables

LNAUDIT	Predicted sign	OLS estimate	t-stat	OLS estimate	t-stat	OLS estimate	t-stat
INTERCEPT	?	9.678	198.02***	9.735	210.88***	9.573	207.32***
LNNAF	?	0.006	2.73***	0.006	2.75***	0.006	2.75***
LNTA	+	0.467	85.15***	0.468	85.17***	0.468	85.17***
V1		-0.198	-8.65***	-0.165	-10.65***		
V2				0.011	0.42	0.176	6.78***
V3				0.095	2.33**	0.260	6.39***
V4		-0.032	-1.43			0.165	10.65***
BIG4	+	0.521	26.58***	0.521	26.60***	0.521	26.60***
ROA	?	-0.540	-11.43***	-0.543	-11.48***	-0.543	-11.48***
RETURN	-	0.007	0.87	0.007	0.88	0.007	0.88
VOLATILITY	+	0.164	1.75*	0.166	1.78*	0.166	1.78*
LEV	+	0.157	5.42***	0.155	5.37***	0.155	5.37***
INVREC	+	0.310	7.91***	0.312	7.94***	0.312	7.94***
INSTIT_PCT	+	0.034	1.45	0.033	1.41	0.033	1.41
SPECIAL	+	0.270	4.93***	0.270	4.94***	0.270	4.94***
BM	-	-0.156	-12.42***	-0.156	-12.42***	-0.156	-12.42***
SGSEGS	+	0.134	11.26***	0.133	11.18***	0.133	11.18***
FOROPS	+	0.392	23.42***	0.392	23.43***	0.392	23.43***
EMPPLAN	+	0.135	7.28***	0.135	7.29***	0.135	7.29***
LAG	+	0.002	7.41***	0.002	7.47***	0.002	7.47***
INITIAL	-	-0.227	-10.83***	-0.227	-10.81***	-0.227	-10.81***
INUSTRY	?	YES		YES		YES	
YEAR	?	YES		YES		YES	

N	22,886	22,886	22,886
F-stat	755.66	740.07	740.07
Adj R square	60.78%	60.79%	60.79%

***, **, * represents significance at the 1%, 5% and 10% level respectively, using two-tailed tests

Robustness Check

We also run above regression by substituting LNAUDIT (audit fees) with LNFEES (total fees) as dependent variable for further analysis. We find the empirical results are qualitatively similar to the tabulated results.

CONCLUDING REMARKS

In this research, we conduct an analysis to examine how the distances between the client and the SEC offices and between the auditors and the SEC offices affect the quality of the audit service. Our results highlight that the further the auditors and their clients are from the SEC offices, the lower the audit fees are, which suggest that higher information asymmetry, proxied by the distance, leads to lower audit quality, which is justified by the lower audit fees.

Our research contributes to a better understanding of the interactions among auditors, their clients, and the regulatory agency. We provide solid evidence on information asymmetry across different economic agents, identify factors that affect the quality of the auditors' service; and propose methods to mitigate the negative impact on audit quality.

ENDNOTES

1. https://www.census.gov/geographies/reference-files/time-series/geo/gazetteer-files.html
2. https://support.sas.com/rnd/datavisualization/mapsonline/html/misc.html
3. https://communities.sas.com/t5/SAS-Communities-Library/Driving-Distances-and-Drive-Times-using-SAS-and-Google-Maps/ta-p/475839
4. http://www.sec.gov/contact/addresses.htm
5. http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html
6. Kennedy (1992) indicates that VIFs of greater than 10 is worrisome and implies that three is a mulitcollinearity problem.

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