The Impact of Auditor-Client Traffic Convenience on Earnings Management in China*

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Abstract

Purpose: This study aims to investigate the impact of auditor-client traffic convenience on accrual-based and real earnings management of the client firms. **Research design, data and methodology:** Using a sample of firms listed in Shanghai and Shenzhen Stock Exchanges over the period of 2007 to 2018, this paper empirically investigates the association between auditor-client traffic convenience and earnings management. We use three measures of auditor-client traffic convenience: railway traffic convenience, expressway traffic convenience, and air traffic convenience. The accrual-based earnings management is measured by abnormal accruals estimated by industry and year using the Modified Jones Model. **Results:** Findings indicate that traffic convenience is conducive to detecting and restraining positive accrual earnings management and real earnings management. After changing the measurement of independent variable and dependent variable, including potential omitted variables, the results are statistically unchanged. Further, the research shows that traffic convenience can not only improve audit quality, but also lead to higher fee premiums. Auditors didn't share with clients the cost reduction benefits caused by traffic convenience. **Conclusions:** Traffic convenience provides auditors with easy access to the client firms, alleviating the information asymmetry and improving corporate earnings quality. The findings have implications for regulators, audit practitioners and stakeholders.

Keywords : Travel Convenience, Accrual Earnings Management in China, Real Earnings Management

JEL Classification Code : M49, D82, M41, M42

1. Introduction

With the acceleration of China's transportation infrastructure construction, China is moving toward a transportation power. According to the statistical bulletins issued by the Ministry of Transport, the total operating mileage of China's railways in 2019 reached 139000 km, increasing 6.1% over the same period last year. The total mileage of highways reached 5012500 km, including 149600 km of expressways. The improvement of transportation infrastructure is conducive to strengthening regional communication and cooperation, improving the efficiency of resource allocation, and promoting economic growth (Hong, Chu, & Wang, 2011). Will the resulting reduction in transportation costs and transportation time affect the audit market? That is an interesting question. China's audit market is low-concentrated and highly competitive (DeFond, Wong, & Li, 1999). Listed firms exhibit "geopolitical preference" in auditor choice. State-owned enterprises, especially those with political connections, tend to engage local auditors for financial statement auditing (Wang, Wong, & Xia, 2008). As compared to the local auditors, non-local auditors lack competitiveness due to information asymmetry. However,

with the improvement of transportation infrastructure, the information asymmetry confronted by non-local auditors may be alleviated. This paper attempts to explore the impact of auditor–client proximity on earnings quality from the perspective of traffic convenience.

The traffic convenient auditor (TC auditor) in this paper refers to (1) local auditors and (2) non-local auditors who spends less than or equal to one hour taking the high-speed rail from the audit firm to where the client is located. In additional tests, this paper uses expressway traffic convenience and air traffic convenience as surrogates for traffic convenience. Expressway traffic convenient auditors refer to those who can drive on the expressway from the audit firm to the office of the client firm. And the office of the client firm is within 100km (200km) from the city where the audit firm is located. Air traffic convenient auditors refer to those who spend less than or equal to 2 hours flying from where the audit firm is located to the office of the client firm.

This research may contribute in the following ways. First, this paper extends the literature in the economic consequences of the shortening geographical distance between economic entities. Previous studies have focused on the impact of geographical distance on the behavior of economic entities (Bae, René, Stulz, & Tan, 2008; Coval & Moskowitz, 2001; Ivkovic & Weisbenner, 2005; Malloy, 2005). While this research examines the impact of traffic convenience on external audit, enriching prior literature. Second, prior literatures mainly investigate the determinants of audit quality from the perspective of audit firm or the client (Carey & Simnett, 2006; DeAngelo, 1981; Francis & Yu, 2009; Park, 2019). This research explores the impact of changes in macro environment on audit quality, extending the relevant literature in the determinants of audit quality. Third, this research provides empirical evidence on the impact of transport infrastructure construction on audit market, which has some implications for regulators, audit practitioners and stakeholders.

The remainder of this paper is structured as follows. In Section 2 theoretical analysis and hypotheses are presented. Section 3 discusses the model design, variable definitions and sample selection. Section 4 provides empirical results and additional tests, and Section 5 concludes.

2. Theoretical Analysis and Hypotheses

The information advantage possessed by local entities has long been of concern to academia and practitioners. Prior research has provided evidence that investors who invest in local firms can earn a higher average rate of return (Coval & Moskowitz, 2001; Ivkovic & Weisbenner, 2005). Local analysts have information advantage and make more precise earnings forecasts (Bae et al., 2008; Malloy, 2005). Banks

take geographical distance from borrowers into consideration when making credit decisions. With the increase of geographical distance between banks and borrowers, monitoring costs for bank increase. Banks are likely to implement price discrimination against geographically distant borrowers (Degryse & Ongena, 2005). Previous research examining the association between geographical distance and auditor effort find mixed evidence on whether auditor-client proximity results in higher audit quality. Some studies hold that local auditors contact clients more frequently, having a better understanding of the integrity of the management and the business risk of the firm (Berger et al., 2005). Local auditors can make more reasonable audit plans, implement audit procedures more effectively and interpret the audit evidence more accurately (Knechel, Salterio, & Ballou, 2007). Local auditors can restrain corporate biased financial reports (Choi, Kim, Qiu, & Zang, 2012). Studies examining whether local auditors in China provide higher audit quality find evidence of a negative association between auditor-client proximity and audit quality (Li & Song, 2007). Local auditors, inextricably linked with local government, are more vulnerable to government intervention. Therefore, they are inclined to issue clear audit opinions for local state-owned enterprises (Wang et al., 2008).

China has a vast territory and a wide variety of the topography among provinces. The distance between two cities in one province can be longer than that between two cities in adjacent provinces. Moreover, there is a large gap in transport infrastructure among cities. And the social and economic development between eastern and western regions of China varies considerably (Wei, 2009). Local industrial policies, financial policies, taxation policies, and business environment are quite different among provinces in China. Risk-oriented auditing standards require auditors to have a good understanding of the firm and its environment. Field observation and face-to-face communication, which help to obtain the core information of the firm, are necessary in understanding the firm and its environment (Petersen, 2004). In order to make accurate risk assessment, auditors need to communicate face-to-face with the clients. With convenient transportation, auditors can spend more time in field audit, and communicate more frequently with managers, employees, customers, suppliers and banks. Auditors with convenient transportation have a better understanding of local policies and are more familiar with local business practice. They can make risk assessment more accurately, make a better audit plan, and implement audit procedures more effectively. Compared with non-traffic-convenient auditors (NTC auditors), TC auditors possess information advantages and have lower monitoring costs. The information asymmetry between auditors and client firms is alleviated. TC auditors can implement effective monitoring

and detect whether clients manipulate earnings through accruals. Based on the above analysis, the following hypothesis is presented:

H1: The auditor-client traffic convenience is negatively associated with the level of accrual earnings management of the client.

In addition to accrual-based earnings management, firms can manipulate earnings through real business activities, namely real earnings management (Cohen, Dey, & Lys, 2008; Cohen & Zarowin, 2010; Roychowdhury, 2006). Real earnings management refers to that firms manipulate earnings through real business activities such as investing, financing, etc. External monitoring has an important impact on corporate earnings management (Zang, 2012). When the external monitoring is weak, firms tend to use accrual-based earnings management. With strengthening supervision, firms may turn to real earnings management (Ewert & Wagenhofer, 2005). If TC auditors possess information advantage and can detect the client's accrual-based earnings management, the client may probably turn to real earnings management.

On the other hand, some research posits that high quality external audit can detect not only accrual-based earnings management, but also real earnings management (Choi, Choi, & Sohn, 2018). Due to convenient transportation, TC auditors can travel to and from the client's location at a lower cost, have a better understanding of the firm's R&D activities, production and operation, and make risk assessment more accurately. They can detect the potential real earnings management more easily. Besides, TC auditors can design more targeted audit plans, collect more evidence and evaluate evidence more accurately, which help to detect and prevent the client' real earnings management. Therefore, as compared to firms audited by NTC auditors, firms audited by TC auditors are expected to have significantly lower levels of real earnings management. Based on the above analysis, the association between auditor-client traffic convenience and real earnings management is a question which remains to be tested. Thus, we present the following alternative hypotheses:

H2a: The auditor-client traffic convenience is positively associated with the level of real earnings management of the client.

H2b: The auditor-client traffic convenience is negatively associated with the level of real earnings management of the client.

3. Research Design

3.1. Research Model and Variable Definition

Drawing on prior literature (Ashbaugh, LaFond, & Mayhew, 2003; Asthana, Raman, & Xu, 2015; Menon & Williams, 2004), this paper estimates the following models to investigate the impact of auditor-client traffic convenience on audit quality:

$$
\begin{aligned}
AQ_{i,t} = {} & \beta_0 + \beta_1 CONVENIENCE_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 LEV_{i,t} \\
& + \beta_4 ROA_{i,t} + \beta_5 CFFO_{i,t} + \beta_6 LOSS_{i,t} \\
& + \beta_7 GROWTH_{i,t} + \beta_8 SOE_{i,t} + \beta_9 TOP1_{i,t} \\
& + \beta_{10} TOP2\text{-}10_{i,t} + \beta_{11} BOARD_{i,t} \\
& + \beta_{12} INDP_{i,t} + \beta_{13} BIG4_{i,t} \\
& + \beta_{14} OPINION_{i,t} + YEAR + INDUSTRY \\
& + \varepsilon
\end{aligned} \tag{1}
$$

$$
\begin{aligned}
AQ_{i,t} = {} & \beta_0 + \beta_1 LOCAL_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 LEV_{i,t} \\
& + \beta_4 ROA_{i,t} + \beta_5 CFFO_{i,t} + \beta_6 LOSS_{i,t} \\
& + \beta_7 GROWTH_{i,t} + \beta_8 SOE_{i,t} \\
& + \beta_9 TOP1_{i,t} + \beta_{10} TOP2\text{-}10_{i,t} \\
& + \beta_{11} BOARD_{i,t} + \beta_{12} INDP_{i,t} \\
& + \beta_{13} BIG4_{i,t} + \beta_{14} OPINION_{i,t} + YEAR \\
& + INDUSTRY + \varepsilon
\end{aligned} \tag{2}
$$

where the dependent variable, $AQ_{i,t}$, is measured by accrual earnings management, $DA_{i,t}$, and real earnings management, $REM_{i,t}$. The higher accrual-based and real earnings management, the lower audit quality. We define $DA_{i,t}$ as abnormal accruals estimated by industry and year using the Modified Jones Model (Dechow, Sloan, & Hutton, 1995; Guay, Kothari, & Watts, 1996). $REM_{i,t}$ is calculated with three indicators: abnormal operating cash flow (ABCFO), abnormal discretionary cost (ABDISP) and abnormal production cost (ABPROD). $REM_{i,t} = ABPROD_{i,t} - ABCFO_{i,t} - ABDISP_{i,t}$. The independent variable is auditor-client traffic convenience. We use two measures of traffic convenience: $CONVENIENCE_{i,t}$ and $LOCAL_{i,t}$. $CONVENIENCE_{i,t}$ is an indicator variable which takes the value of 1 if it takes the auditor less than or equal to 1 hour to travel from the audit firm to where the client is located, and 0 otherwise. $LOCAL_{i,t}$ is an indicator variable which takes the value of 1 if the audit firm is located in the same city as the client, and 0 otherwise.

Drawing on prior literature (Cohen et al., 2008; Dechow, Ge, & Schrand, 2010; Roychowdhury, 2006), we include the following control variables in the model: firm size ($SIZE_{i,t}$), leverage ($LEV_{i,t}$), profitability ($ROA_{i,t}$), cash flow ($CFFO_{i,t}$), business risk ($LOSS_{i,t}$), revenue growth ($GROWTH_{i,t}$), ownership property ($SOE_{i,t}$), ownership concentration ($TOP1_{i,t}$), ownership balance ($TOP2\text{-}10_{i,t}$), board size

($BOARD_{i,t}$), proportion of independent directors ($INDP_{i,t}$), auditor size ($BIG4_{i,t}$), and auditor opinion ($OPINION_{i,t}$). Time and industry fixed effects are controlled with *YEAR* and *INDUSTRY*. The main variables are as defined in Table 1.

Table 1: Definition of Variables

Variable	Definition
DA	The absolute value of abnormal accruals estimated by industry and year using the Modified Jones Model
REM	Real earnings management, calculated with three indicators: abnormal operating cash flow (ABCFO), abnormal discretionary cost (ABDISP) and abnormal production cost (ABPROD). $REM_{i,t} = ABPROD_{i,t} - ABCFO_{i,t} - ABDISP_{i,t}$
CONVENIENCE	Indicator variable equal to 1 if it takes the auditor less than or equal to 1 hour to travel from the audit firm to where the client is located, and 0 otherwise.
LOCAL	Indicator variable equal to 1 if the audit firm is located in the same city as the client, and 0 otherwise.
SIZE	The natural logarithm of total assets
LEV	The ratio of total liabilities to total assets
ROA	The ratio of net income scaled by average total assets
CFFO	Operating cash flow scaled by total assets
LOSS	Indicator variable equal to 1 if the net income is negative, and 0 otherwise.
GROWTH	Sale growth rate
SOE	Indicator variable equal to 1 if a firm is state-owned, and 0 otherwise.
TOP1	The largest shareholders' stockholding rate
TOP2_10	The sum stockholding rate from the second largest shareholder to the tenth largest shareholder
BOARD	The natural logarithm of the number of directors
INDEPENDENT	The proportion of independent directors
BIG4	Indicator variable equal to 1 if a firm is audited by one of the Big Four accounting firms, and 0 otherwise.
OPINION	Indicator variable equal to 1 if the audit opinion is not unqualified opinion, and 0 otherwise.

3.2. Sample and Data

The sample period for our analyses is 2007-2018 because the new auditing standards started in 2007. To construct our sample, we delete financial firms and industries with less than 10 firms. We also exclude special treatment (ST) firms and firms with missing financial data. The final sample has a total of 10974 observations. Our variable of interest, $CONVENIENCE_{i,t}$ and $LOCAL_{i,t}$, is collected manually. First, we inquire about the city of the office or branch office of the signing CPA from CICPA website

(https://cmispub.cicpa.org.cn/cicpa2web/). Then, we collect the data of traffic convenience on China Railway website (https://www.12306.cn/). The data of expressway distance, which is used to calculate expressway traffic convenience, is collected using Baidu map. The data of flight time, which is used to calculate air traffic convenience, is collected on the website of Ctrip International (https://flights.ctrip.com/international/search/domestic).

Other data is collected from China Stock Market & Accounting Research Database (CSMAR).

4. Empirical Results

4.1. Descriptive Statistics

Table 2 presents descriptive statistics for main variables. The mean and median of *DA* in the sample are 0.069 and 0.080 respectively. The minimum and maximum *REM* are -0.547 and 0.698 respectively, suggesting that a big difference exists in the levels of earnings management of Chinese listed firms. The mean *CONVENIENCE* and the mean *LOCAL* are 0.549 and 0.447, suggesting that 54.9% of the sample firms engage traffic convenient auditors in financial statement audit, of which 44.7% engage local auditors. The mean value of *ROA* is 0.039, which indicates that the overall performance of listed firms is poor. About 40% of the firm-years are state-owned enterprises. Almost 10 percent of the observations report a loss in the sample period. Only 4.4% of the sample firms are audited by Big Four auditors, much smaller than that in developed capital markets. Besides, 3.2% of the firm-years receive modified audit opinion.

Table 3 reports the mean differences of accrual-based and real earnings management between firms audited by TC auditors and firms audited by NTC auditors as well as t-test results. For the full sample, the mean *DA* of firms audited by TC auditors is significantly less than that audited by NTC auditors. For DA^+ group, the mean *DA* of firms audited by TC auditors is less than that audited by NTC auditors at the 5% significance level. While for DA^- group, there is no significant difference between TC auditors and NTC auditors. Besides, the mean REM of firms audited by TC auditors is significantly less than that audited by NTC auditors. This indicates that traffic convenience can not only help to restrain positive accrual-based earnings management, but also prevent real earnings management.

4.2. Baseline Regression Results

Table 4 reports the regression results of estimating Eq. (1) and Eq. (2) using *CONVENIENCE* measure of auditor-client traffic convenience. In column 1 of Table 4, the coefficient

on *CONVENIENCE* is negative (β=-0.0018) but not significant. In column 2 of Table 4, the coefficient on *CONVENIENCE* is significantly negative (β=-0.0040). In column 3 of Table 4, the coefficients on *CONVENIENCE* is positive and significant at the 5% level. The results suggest that auditors with traffic convenience can refrain clients from manipulating earnings by increasing incomes but cannot prevent clients from manipulating earnings by increasing losses. The results in column 4 provide evidence that firms audited by TC auditors have significantly lower levels of real earnings management. Additionally, the results show positive and significant coefficients on *LEV, LOSS, GROWTH, TOP1*, and *TOP2_10*, and negative coefficients on *SIZE, CFFO* and *SOE*. This suggests that larger firms,

firms with more cash flows and stated-owned firms tend to have lower levels of earnings management, while firms with higher leverage, loss-making firms, firms with higher growth and firms with higher ownership concentration are likely to have higher levels of earnings management.

Table 5 reports the regression results of estimating Eq. (1) and Eq. (2) using *LOCAL* measure of auditor-client traffic convenience. The results in columns 1, 2, 3, and 4 of Table 5 provide similar inferences to those in Table 4. The coefficients of *LOCAL* in columns 2 and 4 are both negative and significant at the 1% level, consistent with hypotheses H1 and H2b. While the coefficient of *LOCAL* in column 3 is significantly positive.

Table 2: Descriptive Statistics

Variable	N	Mean	S.D.	Min	p25	Median	p75	Max
DA	10974	0.069	0.080	0.001	0.020	0.044	0.086	0.455
REM	10974	-0.018	0.167	-0.547	-0.095	-0.028	0.041	0.698
CONVENIENCE	10974	0.549	0.498	0.000	0.000	1.000	1.000	1.000
LOCAL	10974	0.447	0.497	0.000	0.000	0.000	1.000	1.000
SIZE	10974	22.168	1.222	19.883	21.295	22.028	22.871	25.928
LEV	10974	0.443	0.206	0.065	0.282	0.437	0.597	0.926
ROA	10974	0.039	0.061	-0.217	0.013	0.035	0.067	0.217
CFFO	10974	0.043	0.070	-0.169	0.005	0.042	0.083	0.244
LOSS	10974	0.106	0.307	0.000	0.000	0.000	0.000	1.000
GROWTH	10974	0.188	0.460	-0.574	-0.020	0.108	0.277	3.005
SOE	10974	0.407	0.491	0.000	0.000	0.000	1.000	1.000
TOP1	10974	34.214	14.686	8.430	22.570	32.070	43.670	74.090
TOP2_10	10974	22.485	12.687	2.136	12.210	21.430	31.360	54.560
BOARD	10974	2.140	0.199	1.609	1.946	2.197	2.197	2.708
INDEPENDENT	10974	0.374	0.054	0.333	0.333	0.333	0.429	0.571
BIG4	10974	0.044	0.206	0.000	0.000	0.000	0.000	1.000
OPINION	10974	0.032	0.175	0.000	0.000	0.000	0.000	1.000

Table 3: Univariate Analysis

	Full Sample		DA⁺		DA⁻		REM	
	N	Mean	N	Mean	N	Mean	N	Mean
CONVENIENCE=0	4945	0.071	2645	0.072	2300	0.070	4945	-0.014
Difference		-0.003* (1.75)		-0.004** (1.97)		-0.001 (0.49)		-0.007** (2.32)
LOCAL=1	4902	0.068	2555	0.067	2347	0.069	4902	-0.024
LOCAL=0	6072	0.070	3220	0.071	2852	0.070	6072	-0.013
Difference		-0.002* (1.75)		-0.004** (2.01)		-0.001 (0.46)		-0.011*** (3.54)

Note: *, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

Table 4: Auditor-Client Traffic Convenience, Accrual-Based and Real Earnings Management

	(1)	(2)	(3)	(4)
	Full Sample	**DA⁺**	**DA⁻**	**REM**
CONVENIENCE	-0.0018	-0.0040**	0.0044**	-0.0053**
	(-1.25)	(-2.57)	(2.30)	(-2.04)
SIZE	-0.0088***	-0.0008	-0.0115***	-0.0090***
	(-11.02)	(-0.87)	(-11.23)	(-6.34)
LEV	0.0266***	0.0191***	0.0023	0.0565***
	(5.66)	(3.70)	(0.39)	(6.78)
ROA	0.0433**	0.8157***	-0.6492***	0.0694**
	(2.41)	(38.04)	(-26.90)	(2.17)
CFFO	-0.1258***	-0.9120***	0.6673***	-1.4486***
	(-11.09)	(-59.13)	(35.61)	(-71.93)
LOSS	0.0314***	0.0197***	0.0092**	-0.0250***
	(10.34)	(5.15)	(2.56)	(-4.64)
GROWTH	0.0268***	0.0097***	0.0432***	-0.0591***
	(16.53)	(5.61)	(20.39)	(-20.51)
SOE	-0.0065***	-0.0024	-0.0051**	-0.0108***
	(-3.87)	(-1.35)	(-2.34)	(-3.61)
TOP1	0.0002***	0.0002***	0.0002**	0.0006***
	(4.26)	(3.37)	(2.48)	(5.87)
TOP2_10	0.0002***	0.0001*	0.0003***	0.0004***
	(3.12)	(1.80)	(3.58)	(3.75)
BOARD	-0.0084*	-0.0009	-0.0111*	-0.0065
	(-1.87)	(-0.19)	(-1.90)	(-0.82)
INDEPENDENT	0.0082	0.0086	-0.0098	-0.0247
	(0.52)	(0.51)	(-0.48)	(-0.89)
BIG4	0.0043	0.0079*	0.0064	0.0006
	(1.18)	(1.94)	(1.39)	(0.09)
OPINION	0.0340***	0.0085	0.0290***	-0.0170**
	(8.00)	(1.60)	(5.97)	(-2.25)
Intercept	0.2491***	0.0523**	0.2658***	0.2345***
	(12.43)	(2.40)	(10.34)	(6.59)
YEAR	Yes	Yes	Yes	Yes
INDUSTRY	Yes	Yes	Yes	Yes
N	10974	5775	5199	10974
Adj.R²	0.142	0.466	0.355	0.387
F-value	19.39	118.31	67.53	162.21
P-value	<0.001	<0.001	<0.001	<0.001

Note: *, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

4.3. Further discussion

4.3.1. Expressway Traffic Convenience and Earnings Management

With the development of expressways in China, more and more people choose to travel by car or by coach. Auditors in adjacent cities may drive or take a coach to where the client is located. Thus, this paper uses expressway traffic convenience as the proxy for auditor-client traffic convenience. Table 6 (<=100km) and Table 7 (<=200km) present the regression results of estimating Eq. (1) and Eq. (2) using *CONVENENCE* measure of expressway traffic

convenience. The results in column 2 (column 4) of Table 6 and Table 7, using DA^+ (REM) measure of earnings quality, reveal a negative and significant coefficient on

CONVENENCE. However, the results in column 1 (column 3) of Table 6 and Table 7 are mixed.

Table 5: Local Auditors, Accrual-Based and Real Earnings Management

	(1)	(2)	(3)	(4)
	Full Sample	**DA⁺**	**DA⁻**	**REM**
LOCAL	-0.0019	-0.0046***	0.0059***	-0.0095***
	(-1.27)	(-2.92)	(3.04)	(-3.58)
SIZE	-0.0088***	-0.0007	-0.0116***	-0.0088***
	(-10.98)	(-0.80)	(-11.33)	(-6.22)
LEV	0.0266***	0.0189***	0.0024	0.0560***
	(5.66)	(3.67)	(0.41)	(6.72)
ROA	0.0433**	0.8159***	-0.6500***	0.0698**
	(2.41)	(38.05)	(-26.94)	(2.19)
CFFO	-0.1260***	-0.9124***	0.6690***	-1.4495***
	(-11.10)	(-59.16)	(35.67)	(-72.00)
LOSS	0.0314***	0.0196***	0.0092**	-0.0252***
	(10.33)	(5.13)	(2.57)	(-4.67)
GROWTH	0.0269***	0.0098***	0.0432***	-0.0592***
	(16.55)	(5.62)	(20.40)	(-20.53)
SOE	-0.0064***	-0.0022	-0.0055**	-0.0102***
	(-3.82)	(-1.24)	(-2.49)	(-3.40)
TOP1	0.0002***	0.0002***	0.0002**	0.0006***
	(4.23)	(3.33)	(2.53)	(5.83)
TOP2_10	0.0002***	0.0001*	0.0003***	0.0004***
	(3.13)	(1.82)	(3.54)	(3.78)
BOARD	-0.0083*	-0.0008	-0.0111*	-0.0066
	(-1.86)	(-0.17)	(-1.91)	(-0.84)
INDEPENDENT	0.0084	0.0095	-0.0099	-0.0241
	(0.54)	(0.57)	(-0.49)	(-0.86)
BIG4	0.0044	0.0081**	0.0059	0.0014
	(1.20)	(1.99)	(1.29)	(0.22)
OPINION	0.0340***	0.0083	0.0290***	-0.0172**
	(8.00)	(1.57)	(5.98)	(-2.28)
Intercept	0.2484***	0.0508**	0.2673***	0.2335***
	(12.41)	(2.33)	(10.41)	(6.57)
YEAR	Yes	Yes	Yes	Yes
INDUSTRY	Yes	Yes	Yes	Yes
N	10974	5775	5199	10974
Adj.R²	0.142	0.467	0.356	0.388
F-value	19.51	118.39	67.68	162.54
P-value	<0.001	<0.001	<0.001	<0.001

Note: *, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

Table 6: Expressway Traffic Convenience (<=100km) and Earnings Management

	(1)	(2)	(3)	(4)
	Full Sample	**DA$^+$**	**DA$^-$**	**REM**
CONVENIENCE	-0.0026*	-0.0044***	0.0042**	-0.0074***
	(-1.76)	(-2.82)	(2.20)	(-2.87)
Intercept	0.2491***	0.0518**	0.2668***	0.2344***
	(12.44)	(2.38)	(10.38)	(6.60)
Control Variables	Yes	Yes	Yes	Yes
YEAR	Yes	Yes	Yes	Yes
INDUSTRY	Yes	Yes	Yes	Yes
N	10974	5775	5199	10974
Adj.R^2	0.142	0.466	0.355	0.387
F-value	43.17	118.37	67.52	162.37
P-value	<0.001	<0.001	<0.001	<0.001

Note: *, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

Table 7: Expressway Traffic Convenience (<=200km) and Earnings Management

	(1)	(2)	(3)	(4)
	Full Sample	**DA$^+$**	**DA$^-$**	**REM**
CONVENIENCE	-0.0024	-0.0027*	0.0028	-0.0044*
	(-1.63)	(-1.74)	(1.46)	(-1.67)
Intercept	0.2495***	0.0511**	0.2663***	0.2339***
	(12.45)	(2.34)	(10.35)	(6.57)
Control Variables	Yes	Yes	Yes	Yes
YEAR	Yes	Yes	Yes	Yes
INDUSTRY	Yes	Yes	Yes	Yes
N	10974	5775	5199	10974
Adj.R^2	0.142	0.466	0.355	0.387
F-value	43.16	118.15	67.42	162.16
P-value	<0.001	<0.001	<0.001	<0.001

Note: *, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

The coefficient of *CONVENENCE* in column 1 and 3 of Table 6 are significantly negative and positive respectively. But both coefficients in Table 7 are not significant. On the whole, the results are similar to the baseline results, which indicate that firms audited by TC auditors have significantly lower levels of positive accrual-based and real earnings management.

4.3.2. Air Traffic Convenience and Earnings Management

China's civil aviation industry started late, but developed rapidly. Nowadays a considerable number of auditors choose to travel by air. Thus, we use air traffic convenience as the proxy for auditor-client traffic convenience. Table 8 reports the multiple regression results using *CONVENENCE* measure of air traffic convenience. The results in column 2 (column 4) of Table 8, using *DA$^+$* and *REM* measure of earnings management, reveal a significantly negative coefficient on *CONVENENCE*. The results in column 3 of Table 8, using *DA$^-$* measure of earnings management, reveals a significantly positive coefficient on *CONVENENCE*. In column 1, the coefficient of *CONVENENCE* is negative but not significant. Therefore, the results in Table 8 support our prediction.

Table 8: Air Traffic Convenience and Earnings Management

	(1)	(2)	(3)	(4)
	Full Sample	**DA+**	**DA-**	**REM**
CONVENIENCE	-0.0011	-0.0035**	0.0037*	-0.0072***
	(-0.74)	(-2.21)	(1.91)	(-2.74)
Intercept	0.2483***	0.0505**	0.2667***	0.2340***
	(12.40)	(2.32)	(10.38)	(6.58)
Control Variables	Yes	Yes	Yes	Yes
YEAR	Yes	Yes	Yes	Yes
INDUSTRY	Yes	Yes	Yes	Yes
N	10974	5775	5199	10974
Adj.R^2	0.142	0.466	0.355	0.387
F-value	43.10	118.23	67.47	162.34
P-value	<0.001	<0.001	<0.001	<0.001

Note: *, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

4.3.3. Auditor-Client Traffic Convenience and Audit Fees

TC auditors have information advantage over NTC auditors. With the increase of geographical distance, information asymmetry and monitoring costs increase (Jensen, Kim, & Yi, 2013). Convenient transportation brings easy communication and reduces information cost. Lower costs may reduce audit fees. TC auditors have lower information costs and transportation costs. They may charge lower audit fees. But on the other hand, TC auditors can detect accrual-based and real earning management. The higher quality audit service they provide may lead to higher audit fess. To investigate the association between auditor-client traffic convenience and audit fees, we present the following null hypothesis.

H3: There is no significant difference in audit fees between TC auditors and NTC auditors.

The audit fee model is constructed as follows:

$$
\begin{aligned}
AUDITFEE_{i,t} = {} & \beta_0 + \beta_1 CONVENIENCE_{i,t} \\
& + \beta_2 SIZE_{i,t} + \beta_3 LEV_{i,t} + \beta_4 ROA_{i,t} \\
& + \beta_5 CFFO_{i,t} + \beta_6 CURRENT_{i,t} \\
& + \beta_7 LOSS_{i,t} + \beta_8 GROWTH_{i,t} \\
& + \beta_9 REV_{i,t} + \beta_{10} INVENTORY_{i,t} \\
& + \beta_{11} SOE_{i,t} + \beta_{12} TOP1_{i,t} \\
& + \beta_{13} TOP2\text{-}10_{i,t} + \beta_{14} BOARD_{i,t} \\
& + \beta_{15} INDP_{i,t} + \beta_{16} BIG4_{i,t} \\
& + +\beta_{17} OPINION_{i,t} + YEAR \\
& + INDUSTRY + \varepsilon \quad\quad (3)
\end{aligned}
$$

$$
\begin{aligned}
AUDITFEE_{i,t} = {} & \beta_0 + \beta_1 LOCAL_{i,t} + \beta_2 SIZE_{i,t} \\
& + \beta_3 LEV_{i,t} + \beta_4 ROA_{i,t} + \beta_5 CFFO_{i,t} \\
& + \beta_6 CURRENT_{i,t} + \beta_7 LOSS_{i,t} \\
& + \beta_8 GROWTH_{i,t} + \beta_9 REV_{i,t} \\
& + \beta_{10} INVENTORY_{i,t} + \beta_{11} SOE_{i,t} \\
& + \beta_{12} TOP1_{i,t} + \beta_{13} TOP2\text{-}10_{i,t} \\
& + \beta_{14} BOARD_{i,t} + \beta_{15} INDP_{i,t} \\
& + \beta_{16} BIG4_{i,t} + +\beta_{17} OPINION_{i,t} \\
& + YEAR + INDUSTRY + \varepsilon \quad\quad (4)
\end{aligned}
$$

where the dependent variable, $AUDITFEE_{i,t}$, is the natural logarithm of total audit fees. Following prior literature (Hay, Knechel, & Wong, 2006; Pong & Whittington, 1994; Simunic, 1980), we control for client-specific attributes and auditor-specific attributes that have an effect on audit fees. $REV_{i,t}$ and $INVENTORY_{i,t}$ are proxies for receivables divided by total assets and inventory divided by total assets. Business risk is measured by the ratio of current assets to current liabilities (CURRENT). All other variables are as defined in Eq. (1) and Eq. (2).

Table 9 presents the regression results of estimating Eq. (3) and Eq. (4). The coefficients on CONVENIENCE and LOCAL are positive and significant at the 1% level, suggesting that compared with NTC auditors, TC auditors charge significantly higher audit fees. Convenient transportation encourages auditors to contact clients more frequently. Auditors may conduct more substantive procedures and collect more evidence, which lead to higher costs and increasing audit fees.

Table 9: Auditor-Client Traffic Convenience and Audit Fees

	(1)	(2)
	AUDITFEE	**AUDITFEE**
CONVENIENCE	0.0530***	
	(6.59)	
LOCAL		0.0526***
		(6.35)
Intercept	5.4886***	5.5118***
	(47.97)	(48.20)
Control Variables	Yes	Yes
YEAR	Yes	Yes
INDUSTRY	Yes	Yes
N	10724	10724
Adj.R^2	0.604	0.604
F-value	356.27	356.11
P-value	<0.001	<0.001

Note: *, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

4.3.4. Additional Tests

To test the robustness of the results, the following tests are conducted:

1. Change the measurement of dependent variables. Use abnormal accruals estimated by industry and year using the Cash Flow Jones Model (Dechow & Dichev, 2002) as alternative measures for accrual-based earnings management and re-run the tests. The results as presented in column 1 and 2 of Table 10 are similar to those presented in the baseline regressions.

2. To control the potential effect of auditor switch on the association between auditor-client traffic convenience and earnings management, we run sensitivity test by including an indicator variable of auditor switch (*Switch*) as a control variable. The results are presented in column 3-6 of Table 10. The inferences remain unchanged.

3. To control the potential effect of property right on the association between auditor-client traffic convenience and earnings management, we divide the full sample into two partitions: state-owned firms and private firms. The results are presented in Table 11. The results still hold.

Table 10: Additional Test (1)

	(1)	(2)	(3)	(4)	(5)	(6)
	DA⁺	**DA⁺**	**DA⁺**	**REM**	**DA⁺**	**REM**
Convenience	-0.0038***		-0.0030**	-0.0066**		
	(-2.91)		(-2.01)	(-2.31)		
Local		-0.0032**			-0.0039**	-0.0091***
		(-2.45)			(-2.53)	(-3.12)
Switch			0.0083**	-0.0109**	0.0085***	-0.0107**
			(2.55)	(-2.14)	(2.58)	(-2.10)
Intercept	0.0316	0.0297	0.0791***	0.1882***	0.0776***	0.1849***
	(1.57)	(1.48)	(3.49)	(4.69)	(3.43)	(4.61)
YEAR	Yes	Yes	Yes	Yes	Yes	Yes
INDUSTRY	Yes	Yes	Yes	Yes	Yes	Yes
N	4737	4737	5775	10973	5775	10973
R^2	0.6513	0.6510	0.5042	0.4147	0.5044	0.4150
F-value	100.8847	100.6013	69.0509	88.1610	68.9318	88.1372
P-value	<0.000	<0.000	<0.000	<0.000	<0.000	<0.000

Note: *, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectivel.

Table 11: Additional Test (2)

	Stated-Owned Firms				Private Firms			
	DA⁺	REM	DA⁺	REM	DA⁺	REM	DA⁺	REM
Convenience	-0.0052**	-0.0075**			-0.0015	-0.0065*		
	(-2.23)	(-2.01)			(-0.86)	(-1.91)		
Local			-0.0051**	-0.0085**			-0.0034*	-0.0093***
			(-2.17)	(-2.26)			(-1.86)	(-2.60)
Intercept	0.0576**	0.0979**	0.0553*	0.0941**	0.1001***	0.2157***	0.0992***	0.2144***
	(1.98)	(2.13)	(1.90)	(2.05)	(3.48)	(3.90)	(3.45)	(3.88)
YEAR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
INDUSTRY	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	2290	4463	2290	4463	3485	6510	3485	6510
R²	0.4509	0.4392	0.4509	0.4393	0.5511	0.4211	0.5515	0.4214
F-value	40.95	76.87	40.94	76.91	93.84	104.49	93.97	104.61
P-value	<0.000	<0.000	<0.000	<0.000	<0.000	<0.000	<0.000	<0.000

Note: *, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

5. Conclusions

Using a large sample of Chinese firms over the period of 2007 to 2018, this paper empirically investigates the impact of auditor-client traffic convenience on accrual-based and real earnings management. Results indicate that compared to firms audited by NTC auditors, firms audited by TC auditors have significantly lower levels of positive accrual-based t and real earnings management. When using expressway traffic convenience and air traffic convenience as the proxies for auditor-client traffic convenience, the results remain unchanged. The association between auditor-client traffic convenience and earnings management is not affected by means of transport. Furthermore, this study investigates the association between auditor-client traffic convenience and audit fees. The results indicate that TC auditors did not share with their clients the cost-cutting benefits due to convenient transportation. While providing higher quality audit service to clients, TC auditors charged higher audit fees.

The findings of this study have the following implications. First, with the improvement of China's transportation infrastructure, the information disadvantage of non-local auditors is alleviated. Firms can take TC auditors into consideration as they can provide higher quality audit service. Second, local auditors are previously appealing to firms due to their geographical advantages. Nowadays, with the spread of high-speed railway and flight, non-local auditors, especially reputable non-local auditors, become more competitive and appealing reducing. Audit firms should grasp this chance to attract clients and expand market shares through providing high-quality audit services. Third,

regulators should enhance supervision over non-local auditors. Due to information asymmetry and high costs of transportation, non-local auditors have difficulties in obtaining "soft information" of the clients and implementing audit procedures. Policy makers should increase the punishment of violators, impelling non-local auditors to strictly follow the auditing standards and improve the audit quality.

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