Diversity of signing auditors and audit quality: Evidence from capital market in China

Manoj Athavale [a], Zhaorui Guo [b,*], Yun Meng [a], Tianshu Zhang [c]

[a] *Miller College of Business, Ball State University, Muncie, IN, 47306, USA*
[b] *School of Finance and Business, Shanghai Normal University, Shanghai, China*
[c] *School of Accounting, Shanghai University of International Business and Economics, Shanghai, China*

A R T I C L E   I N F O

A B S T R A C T

We examine whether the diversity of signing auditors affects audit quality of listed firms in China. Using the Blau's index of diversity measure based on eight characteristics of signing auditors and a series of audit quality proxies, including modified audit opinions (*MAO*), restatement of annual financial reports (*Restate*), and discretionary accruals (*DA*), we document a negative relationship between the diversity of signing auditors and firms' audit quality. Additional analyses show that corporate governance, signing auditor and audit firm characteristics moderate the relationship between the diversity of signing auditors and audit quality. Our findings suggest that reducing the diversity of signing auditors is an effective way to improve audit quality.

1. Introduction

Audit quality is an important part of the information disclosure system, which directly affects the quality of accounting information that leads to stakeholders' decisions and actions (Francis, 1984). A large body of literature investigates the factors contributing to audit quality from the perspective of audit firms and listed companies including audit firm size, audit firm or auditor rotation, and the corporate governance structure of listed companies (Behn et al., 2008; Choi et al., 2010; DeAngelo, 1981; DeFond & Zhang, 2014; Deng et al., 2012; Firth et al., 2012; Zhao et al., 2020). In addition, several recent studies suggest that personal characteristics of the signing auditors are associated with audit quality (Guan et al., 2016; He et al., 2017; Knechel et al., 2015). However, the literature focuses on various characteristics of *one* auditor (i.e., the engagement partner) on audit quality. In practice, a listed company's audit is generally the responsibility of several auditors, including the engagement and the review partners. These partners are all signing auditors. It is not clear how audit quality relates to the characteristics of an audit team. We examine this research question.

Several recent accounting scandals in Chinese capital market have turned the spotlight on audit quality issues. A listed company named FUREN Pharmaceutical (Stock Code: 600781.SH) failed to pay a RMB 60 million (approximately US$ 8.57 million) dividend

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* Corresponding author.
  E-mail address: shufegzr@163.com (Z. Guo).

promised to investors on July 20th, 2019, while apparently holding a cash balance of more than RMB 1.8 billion (approximately US$ 257 million).[1] Another case of accounting fraud occurred at KDX Company (002450.SZ) in 2018.[2] Ironically, the auditing firm of the two companies, Ruihua Certified Public Accountants Firm, had been issuing unqualified audit opinions for more than six years, when in fact, modified audit opinions seemed more appropriate in both cases. The auditing opinions on FUREN Pharmaceutical and KDX Company turned out to be completely lacking in their assurance function. Such an abominable level of audit quality seriously misled the investors' decisions and actions, damaged investor confidence, and thus adversely affected the order of the capital market. These events provided us with the impetus to explore the role of audit team characteristics in audit quality.

The purpose of this paper is to use a unique dataset of demographic information of signing auditors in China to examine how this impacts audit quality. The Chinese Institute of Certified Public Accountants (AICPA) website supplies personal information for on-the-job CPAs, including CPA ID, gender, affiliations, birth date, within-audit firm positions, educational background and partnership, among others.[3] Such detailed data are seldom available in other countries like the U.S. because the Securities and Exchange Commission (SEC) does not require listed companies to disclose the personal characteristics of signing auditors.[4] Therefore, we leverage the Chinese data to study the effect of auditor diversity on audit quality. Together with the annual reports of listed companies that disclose the names of signing auditors,[5] we can match the personal characteristics information of the signing auditors of each listed company, and measure the extent of the diversity of the team of signing auditors.

Our findings suggest that the diversity of signing auditors reduces audit quality due to the corresponding increase in conflicts and contradictions. Specifically, we find that a higher level of diversity in the signing audit team is associated with a lower probability of issuing non-standard audit opinions, a higher probability of annual financial statement restatement, and a greater degree of earnings management. Further analyses indicate that the corporate governance, signing auditor and audit firm characteristics moderate the impact of auditing team diversity on audit quality.

Our paper contributes to the auditing literature in several ways. First, we advance the literature on audit quality and team diversity by showing that the diversity of signing auditors negatively affects audit quality. Second, our results carry implications for corporate decisions aimed at enhancing audit quality. Even if some audit firms randomly select the signing auditors, our paper suggests that they can achieve better audit quality through good arrangement.[6] Meanwhile, the choice of audit firms is decided by listed companies, and listed companies can exert certain influence on the choice of the signing auditors. So, audit firms and listed companies should focus on reducing rather than increasing the diversity of signing auditors to create a transparent information environment. Finally, by using data unique to China's capital market, we illustrate the importance of disclosing demographic information of signing auditors in other capital markets. The SEC in the U.S. has recognized the importance of disclosing information regarding signing auditors to improve the transparency of information and has taken the first step of disclosing the names of signing auditors in 2017. Our findings encourage the disclosure of more information regarding the personal characteristics of the signing auditors.

Our study complements a concurrent paper by He et al. (2018), who also examine the effect of audit team diversity on audit quality. The conclusions of He et al. (2018) are completely opposite to our findings. They document a positive relationship between the diversity of signing auditors and audit quality. This contradiction drives us to explore the differences between the two studies. We find that there are several reasons for such discrepancies. First, the sample is different. Signing auditors information is obtained from the website of the Chinese Institute of Certified Public Accountants (CICPA). However, the CICPA website hasn't provided the birth date of signing auditors since 2014. Because the birth date data of signing auditors is only updated to 2014, we have to eliminate more than 50% of observations in the analysis, most for the observations after 2014. The reason is that we must know the ages of signing auditors to construct the diversity measure. Meanwhile, due to the difficulty of identifying signing auditors with the same Chinese names, we further delete some observations. This explains why our initial sample is 27,654, but the final observation is only 9,938 from 2007 to 2017. Further, we include samples with three or more signing auditors in the annual reports of listed companies while He et al. (2018)

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[1] Facing a letter of inquiry from Shanghai Stock Exchange, FUREN Pharmaceutical finally admitted the financial fraud and confessed that it only had RMB 127 million cash, of which RMB 123 million was restricted. The unrestricted amount was only RMB 3.8 million, so it could not pay the promised cash dividends.

[2] KDX company, a company listed on Shenzhen Stock Exchange, announced that it defaulted on its bonds worth RMB 1.5 billion on January 15, 2019 while holding more than RMB 15 billion of cash in its 2018 annual financial report. Subsequently, the China Securities Regulatory Commission (CSRC) uncovered financial fraud in the company's operations, revealing it had falsified net earnings of RMB 11.921 billion during 2015–2018.

[3] The AICPA official website is http://www.cicpa.org.cn/.

[4] In order to improve transparency regarding the engagement partner, the Public Company Accounting Oversight Board (PCAOB) in the U.S. adopted new rules and amended its auditing standards (Rule 3210 and Rule 3211). The rules required the disclosure of the name of the engagement partners on the new PCAOB Form AP, Auditor Reporting of Certain Audit Participants. . But the personal information of engagement partners are still not available in the U.S. market.

[5] On July 2, 2001, the Ministry of Finance of China stipulated that the audit report of a listed company must be signed and sealed by two certified public accountants in order to make the audit report valid. The signature of two certified public accountants is only a minimum requirement, and accounting firms can increase the number of signing auditors in an audit report of a listed company as appropriate. For example, many of the audit reports issued by accounting firms Huapu Tianjian and Baker Tilly International have three signing auditors. According to 2018 data, the average number of signature auditors per audit report of Huapu Tianjian and Baker Tilly International was 2.65 and 2.28, respectively.

[6] The structure of signing auditors is not the result of random selection to a large extent, which has been confirmed by our interview with some certified accountants to understand the actual situation. In the construction of the audit team, both from the perspective of audit firms and the perspective of signing auditors, the individual characteristics of the signing auditors are considered in order to achieve the harmonious work environment and the high audit quality.

only use samples with exactly two signing auditors (i.e., they delete samples with three or more signing auditors in their analysis). We contend that in a team setting, it is imperative to include audit teams of all sizes, not just two-member audit teams. Arguably, our findings are more accurate than those in He et al. (2018).

Second, the measure of the diversity of signing auditors is different in both papers. Each dimension is measured using 0–1 variables in He et al. (2018), while we use the Blau (1977) method in our paper. The 0–1 variables method is only suitable for categorical variables, but the Blau (1977) method accounts for both categorical and ordered variables at the same time. This is the reason the Blau (1977) method has been widely used in previous studies.

Last but not least, although the He et al. (2018) study examines seven dimensions of the diversity of signing auditors, only two of these dimensions relate to the individual characteristics of the signing auditors (i.e., partner and gender). Our study uses eight dimensions to analyze the individual characteristics of the signing auditors. In summary, our measure of the diversity of signing auditors is more credible.

The remainder of our paper proceeds as follows. Section 2 describes the literature and develops testable hypotheses. Section 3 articulates research design, including sample selection, variable definitions, and empirical models. Section 4 presents summary statistics and results. Section 5 addresses the endogeneity problem, while further analyses are presented in section 6. Finally, section 7 concludes the paper.

2. Literature review and hypothesis development

2.1. Literature review

Jensen and Meckling (1976) point out that there is a divergence of interests between principals and agents in a firm with the separation of cash flow rights and control rights. External independent auditing is one of the important monitoring mechanisms that alleviates the firm's agency problem and restricts the managers' opportunistic behavior (Datar et al., 1991). To reduce agency costs, the auditor must discover and report any financial reporting errors as best as he/she can (DeAngelo, 1981; Watts & Zimmerman, 1981). The stronger the auditor's ability to do so, the higher the audit quality is. As an important part of the information disclosure system, the audit quality directly affects the quality of accounting information and in turn affects the decisions and actions of accounting information users (Francis, 1984). Therefore, there is great theoretical and practical significance in studying the determinants of audit quality.

2.1.1. Characteristics of accounting firms and listed companies

There are two strands of literature on the factors influencing audit quality. The first suggests that the characteristics of accounting firms are the most important factors. Within this perspective, research shows that the size of the accounting firm is closely related to audit quality (e.g., see DeAngelo, 1981; Beatty, 1989; DeFond & Jiambalvo, 1993; Lennox, 1999; Francis & Wang, 2008; Wang et al., 2008; Francis & Yu, 2009). The analysis of DeAngelo (1981) shows that the larger the size of the accounting firm, the more quasi-rent is at risk when inferior audit quality is known. Therefore, the probability of audit failure is lower for large accounting firms, and the audit quality is higher. Dye (1993) explains why the size of an accounting firm is paramount to high audit quality from another point of view, which is the *deep pocket* theory. This theory holds that in order to avoid losses, the Big Four pay more attention to their brands and reputations, maintain higher quality levels, and gain larger market shares. A series of empirical studies show that the size of accounting firms is positively associated with audit quality and that the international Big Four have high audit quality (Beatty, 1989; DeFond & Jiambalvo, 1993; Francis & Wang, 2008; Francis & Yu, 2009; Wang et al., 2008).

Accounting firm rotation is another factor influencing audit quality but the research on this topic renders mixed results. Dopuch and Schwartz (2001) and Kim et al. (2015) find that the rotation of accounting firms can significantly improve audit quality because the independence of accounting firms decreases with the extension of audit tenure. However, some other studies find that the rotation of accounting firms cannot improve audit quality, and its effect is only to make listed companies bear higher rotation costs and make auditors lose their professional competence (Shu, 2002; Daniels & Booker, 2011; Zhao et al., 2020).

The second strand of literature examines the role of the characteristics of listed companies. Chen et al. (2010) find a positive relationship between the size of listed companies and audit quality. They argue that the greater the media exposure of listed companies, the higher the risk of litigation and punishment the audit firm faces if the audit fails. This forces auditors and audit firms to improve audit quality. Deng et al. (2012) show that there is a positive relationship between the leverage of listed companies and audit quality. In China's capital market, there is a consensus that controlling shareholders of SOEs are reluctant to choose high-quality audits. Therefore SOEs have poorer audit quality than non-SOEs (Wang et al., 2008; Lin and Liu, 2009).

2.1.2. Characteristics of signing auditors

More recently, some studies show that the difference in corporate audit quality can be explained by the individual characteristics of signing auditors (Gul et al., 2013). The analysis of Chin and Chi (2009) shows that the higher the professional level of signing auditors, the lower the probability of restatement of corporate statements. Gul et al. (2013) find that the professional level of signing auditors is positively related to audit fees. This relationship is also observed by Goodwin and Wu (2014). Hardies et al. (2016) find that female auditors are, ceteris paribus, more likely to issue modified audit opinions than male auditors. Guan et al. (2016) document that the alumni relationship between the signing auditors and the management of the company damages the company's audit quality. He et al. (2017) find that the alumni relationship between the signing auditors and the audit committee members impairs audit quality. Bianchi (2018) shows that auditors' collaboration in multiple joint engagements can facilitate knowledge transfer and thus promote audit

Table 1
Sample distribution.

Panel A. Sample distribution by year	
Year	Observations
2007	475
2008	565
2009	613
2010	682
2011	856
2012	1,002
2013	1,104
2014	1,122
2015	1,140
2016	1,156
2017	1,223
Total	9,938

Panel B. Sample distribution by industry			
Industry	Industry Code	Observations	Percentage
Agriculture, forestry, animal husbandry, fishery	A	167	1.68%
Excavation	B	212	2.13%
Manufacturing-foodstuff and beverage	C0	363	3.65%
Manufacturing-textile, clothing and fur	C1	365	3.67%
Manufacturing-paper making and printing	C3	230	2.31%
Manufacturing-petroleum, chemistry and plastic cement	C4	1,021	10.27%
Manufacturing-electronics	C5	481	4.84%
Manufacturing-mental and non-mental	C6	801	8.06%
Manufacturing-machinery and infrastructure	C7	1,888	19.00%
Manufacturing-medicine and biological product	C8	599	6.03%
Manufacturing-lumbering and furniture	C9	179	1.80%
Power, gas and water	D	323	3.25%
Architecture	E	207	2.08%
Transportation and storing	F	336	3.38%
Information technology	G	811	8.16%
Wholesale and retail trade	H	621	6.25%
Real estate	J	570	5.74%
Social service	K	348	3.50%
Communication and culture	L	145	1.46%
Comprehensive type	M	271	2.73%
Total		9,938	100.00%

quality.

Multiple signing auditors, including the engagement partner and review partner, are generally responsible for a listed company audit. Ittonen and Trønnes (2014) postulate that an audit team consisting of two signing auditors can result in better audit quality than a single auditor because teamwork facilitates knowledge transfer. However, the above literature focuses on the individual partners and neglects the audit team. To the best of our knowledge, only one paper by He et al. (2018) focuses on the characteristics of all signing auditors. They examine the effect of audit team diversity on audit quality and find a positive association between the diversity of signing auditors and audit quality, but the basis of this conclusion is problematic, as we have discussed above.

2.2. Hypothesis development

Diversity of signing auditors refers to signing auditors' multi-dimensional elements, which may include different personal, value, cognitive, and experience factors. The diversity research originates from the upper echelon theory proposed by Hambrick and Mason (1984). They believe that executives of enterprises hold all aspects of the company's resources, undertake to formulate corporate strategy, and implement decision-making. Different personal characteristics of executives can form different cognitive patterns and shape the individual's perception of the environment and strategy to deal with problems. Therefore, such executive characteristics can determine a company's strategies, business behavior and outcomes.

Along with Hambrick and Mason (1984), studies of the diversity of executive teams account for almost all of the research on team diversity. Existing research shows that the diversity of executive teams can bring new knowledge and insights and help decision-making. In other words, the higher the diversity of executive teams, the more beneficial it is to the company. Carpenter and Fredrickson (2001) find that diversity reflects the level of communication and collaboration of executive teams more effectively than the homogeneity of executive teams, and thus is more conducive to interpreting the impact of team characteristics on enterprise activities. Henneke and Luthje (2007) believe that the executive team with high diversity has diversified human resources, diversified knowledge structures, multi-dimensional cognitive styles and multi-channel information sources, which are useful for the executives to observe, analyze and solve complex problems from different perspectives and improve the quality of decision-making. Naranjo-Gil and

Hartmann (2007) find that firms with high (low) executive diversity are more (less) likely to make changes in corporate strategies.

On the other hand, not all studies have shown that diversity has a positive effect on firms. Haleblian and Finkelstein (1993) suggest that executive diversity, which is the main source of knowledge barriers and conflicts among team members, often leads to internal conflict and poor corporate results. Yasemin (2003) reports that executive diversity negatively affects a firm's growth and performance. Boone et al. (2004) echo the findings in Yasemin (2003) and find that there is a negative correlation between the diversity of executive teams and corporate performance.

There are two completely different viewpoints on the role of team diversity in previous theoretical analyses and empirical research. Some proponents of team diversity argue that diversity leads to more knowledge and opinions, which helps the team to consider complicated problems from different perspectives and improve the level of communication and collaboration, ultimately increasing their efficiency. Opponents of team diversity perceive such diversity as barriers to knowledge, sources of conflict among team members, and even thought collisions that result in internal friction and division, ultimately reducing the team efficiency.

The audit responsibility of listed companies is generally borne by multiple auditors, including the engagement partner and review partner, who are both signing auditors. Given that the personal characteristics of an individual signing auditor can explain the variation in audit quality, we suspect that the attributes of a team of signing auditors should be associated with audit quality when multiple auditors work collaboratively to issue audit reports. Based on our above analysis, this paper proposes two competitive hypotheses as follows:

H1. **The higher the diversity of signing** auditor*s, the higher the audit quality under the same other conditions; that is to say signing* auditor*s' diversity has a positive association with audit quality.*

H2. **The higher the diversity of signing** auditor*s, the lower the audit quality under the same other conditions; that is to say signing* auditor*s' diversity has a negative association with audit quality.*

3. Research design

3.1. Sample selection

We use all the A-share firms listed in Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE) during the years 2007–2017 as our initial sample (27,654 observations). We begin with data from 2007 because China's listed companies adopted international accounting standards from 2007 and this reform makes it difficult and unscientific to compare financial information before and after 2007. Further, we delete financial industry firms (3,711 observations) and those firms with missing financial data, corporate governance data or personal information of auditors (especially age data of auditors) (14,005 observations). This leaves a final sample of 9,938 firm-year observations. Detailed sample distribution procedures are summarized in Table 1. We present sample distribution by year in Panel A and by industry in Panel B. The sample size is increasing year by year, which is in line with the development of China's capital market from Panel A. Meanwhile, manufacturing (machinery and infrastructure) is the most represented industry, with 1,888 firm-year observations in Panel B.

We manually collect the personal characteristics information of the signing auditors, which is published on the Chinese Institute of Certified Public Accountant website (http://www.cicpa.org.cn/).[7] We then match this data with the auditor information from the annual reports. The data on financial ratios and corporate governance are obtained from the China Stock Market & Accounting Research (CSMAR) and WIND databases. We winsorize all continuous variables at the 1% and 99% quantile levels.

3.2. Key variable definitions

3.2.1. Measurement of audit quality

The definition of audit quality is quite explicit and understandable at the theoretical level, i.e., it is the market-assessed joint probability of discovering and reporting financial reporting errors (DeAngelo, 1981; Watts & Zimmerman, 1981). However, in empirical research, it is not realistic to seek a direct quantitative measure of audit quality. In this paper, we construct three different proxy variables for audit quality based on previous research in order to strengthen the reliability of the conclusion. The specific proxy variables are as follows.

The first proxy variable is modified audit opinion (*MAO*). DeFond and Zhang (2014) document that the issuance of a modified audit opinion represents the underlying audit quality. We use a dummy variable (*MAO*) that has a value of one if the firm received a modified audit opinion, zero otherwise, to proxy for audit quality, following the extant audit literature (DeFond et al., 1999; Gul et al., 2013; He et al., 2017; Si et al., 2017). There are four types of *MAO*, i.e., qualified opinions, unqualified opinions with explanatory paragraphs, disclaimers of opinions and adverse opinions.

The second proxy variable is the restatement of the annual financial reports (*Restate*) since annual financial report restatement is another effective proxy for audit quality (Chen et al., 2018; DeFond & Zhang, 2014). In order to remove the interference of factors unrelated to audit quality, we exclude restatements arising from changes in accounting standards or government tax rules, or mergers and acquisitions, as in Wang and Wu (2012) and Gul et al. (2013).

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[7] This website reports the signing auditors' personal information, e.g., unique CPA ID, gender, affiliations, birth date, within-audit firm positions, educational background, partnership.

Finally, the third proxy variable is discretionary accruals (*DA*). A high-quality audit can constrain opportunistic earnings management. Discretionary accruals, as the most widely used earnings management indicator, have been broadly applied as an audit quality measure in auditing research (Choi et al., 2010; Francis & Yu, 2009; Guan et al., 2016; Gul et al., 2013; Mughal et al., 2021). In order to construct the *DA* variable, we follow Kothari et al. (2005) and use the modified Jones (1991) model. Specifically, we first estimate the following regression equation:

$$\frac{TA_{it}}{ASSETS_{it-1}} = k_1\left(\frac{1}{ASSETS_{it-1}}\right) + k_2\left(\frac{\Delta REV_{it}}{ASSETS_{it-1}}\right) + k_3\left(\frac{PPE_{it}}{ASSETS_{it-1}}\right) + \varepsilon_{it} \tag{1}$$

where *TA* is the total accruals (operating profit minus cash flow from operations), *A* is total assets, *ΔREV* is the change in sales revenue, and *PPE* is property, plant, and equipment. Respectively, *i* and *t* represent firm i and year t. Then, we recover the estimated coefficients of k_1, k_2, and k_3 and insert them into Equation (2) below:

$$NDA_{it} = \widehat{k}_1\left(\frac{1}{ASSETS_{it-1}}\right) + \widehat{k}_2\left(\frac{\Delta REV_{it}}{ASSETS_{it-1}}\right) + \widehat{k}_3\left(\frac{PPE_{it}}{ASSETS_{it-1}}\right) \tag{2}$$

where *NDA* is the non-discretionary accruals. We estimate Equation (2) by industry and year. Then, we calculate *DA* as $TA_{i,t}/ASSETS_{i,t-1}$ – $NDA_{i,t}$.

3.2.2. Diversity of signing auditors

We follow Harjoto et al. (2015) to construct the Blau's index of diversity of signing auditors (*DIVERSITY*) by using eight dimensions for each auditor (age, gender, functional background, education, university, tenure, position, and partner). Each dimension has a specific scoring rubric. They are:

- Age: If a signing auditor's age is younger than 35, 36 to 40, 41 to 45, 46 to 50, or over 50, then the score is 1, 2, 3, 4, and 5, respectively.
- Gender: If a signing auditor is female, the score is 1; if male, the score is zero.
- Functional background: If a signing auditor's major in his/her education experience is accounting and audit, other business-related areas, law, others, or generalist (have two or more than two majors), then the score is 1, 2, 3, 4, and 5, respectively.
- Education: This is the highest education level attained by a signing auditor. The education level has a value of 1, 2, 3, 4, and 5 for completion of high school, postsecondary school, college, a master's degree, and a doctoral degree, respectively.
- University: If signing auditors graduated from the same university, the score is 1; if not, the score is zero.
- Tenure on the job: If a signing auditor's tenure is less than 3 years, 3–6 years, 7–9 years, 10–12 years, or over 12 years, then the score is 1, 2, 3, 4, and 5, respectively.
- Position in audit firm: If a signing auditor's current position is general auditor; manager or project manager; department manager or deputy department manager or senior manager; director auditor or deputy director auditor or chief auditor or chief inspector; chairperson or vice-chairperson; then the score is 1, 2, 3, 4, and 5, respectively.
- Partnership: If a signing auditor is a partner of the audit firm, the score is 1; if not, the score is zero.

Then, we use each dimension's proportion (p) of the ith signing auditor to calculate a diversity index, which is $(1 - \Sigma p_i^2)$. Thus, a listed company's signing auditors' diversity index (*DIVERSITY*) is the sum of eight dimensional values of diversity.

3.3. Base empirical model

We employ the following model to test whether audit quality is related to the diversity of signing auditors:

$$Quality = \beta_0 + \beta_1 \times Diversity + \beta \times Controls + \sum Industry + \sum Year + \varepsilon \tag{3}$$

where *Quality* represents the dependent variable, *MAO*, *Restate*, or *DA*. In this model, *Diversity* is our focus variable, the diversity of signing auditors, which is measured as the Blau's index by using eight dimensions for each signing auditor. *Controls* is a set of control variables, *Industry* indicates industry fixed effects, *Year* shows year fixed effects, and *ε* is a random error term.

We use a set of control variables to eliminate the possible influence of firm characteristics on the research results, following He et al. (2017) and Bianchi (2018). These control variables include the natural logarithm of firm size (*Size*), financial leverage (*Leverage*), return on assets (*ROA*), asset liquidity (*Liquidity*), net accounts receivables (*REC*), inventories (*INV*), whether the firm incurred a loss (*Loss*), cash flow from operating activities (*CFO*), growth opportunity (*Growth*), whether the firm is a state-owned enterprise (*SOE*), and whether the firm employs the international Big Four as its audit firm (*Big4*).[8] The detailed definitions of all the variables are set out in Table 2.

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[8] There are slight differences in the control variables according to the dependent variable used (i.e., *MAO*, *Restate* or *DA*). For more details, please refer to the regression results in Table 4.

Table 2
Variable definitions.

Variable name	Variable definitions
MAO	An indicator variable that has a value of 1 if a modified audit opinion is issued by the audit firm, zero otherwise.
Restate	An indicator variable that has a value of 1 if the annual financial report is restated subsequently, zero otherwise.
DA	The degree of earnings management, measured as discretionary accruals calculated by the Jones (1991) model.
Diversity	Signing auditors' diversity, measured as the Blau's index by using eight dimensions for each auditor. The specific measurement method is presented in section 3.2.2 of the paper.
Big4	An indicator variable that has a value of 1 if a Big 4 accounting firm is hired by the listed company, zero otherwise.
Size	Firm size, equal to the natural logarithm of the firm's total assets.
Leverage	Financial leverage of a firm, equal to the ratio of total liabilities to total assets.
ROA	Return on assets, calculated as net income before extraordinary items divided by total assets.
Liquidity	The ratio of current assets to current liabilities.
REC	The ratio of net accounts receivables to total assets.
INV	The ratio of inventories to total assets.
Loss	An indicator variable that has a value of 1 for firms with negative net income, zero otherwise.
CFO	Cash flow from operating activities, measured as net cash flow from operating activities divided by total assets.
Growth	Growth opportunity, measured as current sales minus last year's sales, deflated by last year's sales.
SOE	An indicator variable that has a value of 1 if the firm is a state-owned enterprise, zero otherwise.
CAPEXP	Capital expenditures, measured as capital expenditure scaled by total assets.
Industry	Vector of indicator variables to capture industry fixed effects, with 20 industry indicator variables, a two-digit code for the manufacturing sector and a one-digit code for other sectors (using the China Securities Regulatory Commission's classification).
Year	Vector of indicator variables to capture year fixed effects.

Table 3
Summary statistics.

Variable	Observations	Mean	Std	Min	Max	Quantile		
						25%	Median	75%
MAO	9938	0.044	0.204	0.000	1.000	0.000	0.000	0.000
Restate	9938	0.068	0.252	0.000	1.000	0.000	0.000	0.000
DA	9938	0.006	0.100	−0.316	0.379	−0.043	0.004	0.051
Diversity	9938	2.616	0.686	0.000	4.667	2.000	2.500	3.000
Size	9938	21.975	1.284	19.073	25.781	21.079	21.837	22.688
Leverage	9938	0.458	0.221	0.051	1.082	0.285	0.451	0.618
ROA	9938	0.037	0.060	−0.238	0.209	0.013	0.036	0.065
Liquidity	9938	2.229	2.357	0.204	16.171	1.035	1.490	2.395
REC	9938	0.107	0.099	0.000	0.449	0.028	0.081	0.160
INV	9938	0.164	0.154	0.000	0.751	0.063	0.124	0.205
Loss	9938	0.093	0.291	0.000	1.000	0.000	0.000	0.000
CFO	9938	0.042	0.076	−0.208	0.258	0.001	0.042	0.087
Growth	9938	0.217	0.622	−0.656	4.666	−0.030	0.113	0.288
SOE	9938	0.431	0.495	0.000	1.000	0.000	0.000	1.000
Big4	9938	0.053	0.225	0.000	1.000	0.000	0.000	0.000
CAPEXP	9938	0.051	0.049	0.000	0.241	0.014	0.036	0.072

This table presents descriptive statistics of all the main variables used in our study. Variable definitions are presented in Table 2. All continuous variables are winsorized at the 1% and 99% quantile level.

4. Summary statistics and results

4.1. Descriptive statistics

We present the summary statistics of the main variables for the 9,938 firm-year sample in Table 3. The mean of *MAO* and *Restate* are 0.044 and 0.068, respectively. That means that 4.4% of firms have a modified audit opinion issued by audit firms, and 6.8% of firms have annual financial reports restated subsequently. The mean and standard deviation *DA* is 0.006 and 0.100, suggesting that there are great differences in the degree of earnings management among sample firms. From the data, the mean of *Diversity* is 2.616, but the minimum and maximum of this variable are 0.000 and 4.667, respectively, indicating good discreteness.

4.2. Base multivariate results

The main empirical results of Equation (3) regarding the impact of diversity of signing auditors on audit quality are presented in Table 4. Columns (1) and (2) of Table 4 report how the diversity of signing auditors affects modified audit opinions (*MAO*). The coefficient associated with *Diversity* is −0.247 and significant at the l% levels, suggesting that the diversity of signing auditors and the probability of modified audit opinions are negatively correlated. That is, diversity of signing auditors does restrain the issuance of

Table 4

Regression analysis of the effect of auditor diversity on audit quality.

Variable	MAO		Restate		DA	
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	13.688***	14.405***	−2.503***	−0.032	−0.120***	−0.156***
	(10.71)	(10.36)	(−2.75)	(−0.03)	(−9.39)	(−11.52)
Diversity	−0.227**	−0.247***	0.194***	0.138**	0.002**	0.002**
	(−2.43)	(−2.58)	(2.98)	(2.07)	(2.13)	(2.29)
Size	−0.855***	−0.875***	−0.111***	−0.173***	0.007***	0.010***
	(−14.56)	(−13.54)	(−3.27)	(−3.67)	(11.08)	(15.89)
Leverage	5.192***	5.434***	−0.202	0.382	−0.025***	−0.043***
	(16.21)	(16.16)	(−0.85)	(1.50)	(−7.05)	(−11.75)
ROA	−7.946***	−7.950***	−2.688***	−1.675**	0.893***	0.887***
	(−10.48)	(−10.20)	(−3.32)	(−1.99)	(69.34)	(70.50)
Liquidity	0.065*	0.070*				
	(1.72)	(1.78)				
REC	−1.526**	−2.034***				
	(−2.40)	(−2.75)				
INV	−2.607***	−2.373***				
	(−5.58)	(−4.51)				
Loss	0.345*	0.361*	−0.016	0.049	0.002	0.002
	(1.74)	(1.81)	(−0.10)	(0.32)	(1.05)	(1.06)
MAO			0.151	0.016		
			(0.71)	(0.07)		
CFO	−2.640***	−2.474***	−1.144*	−1.113**	−0.974***	−1.012***
	(−3.38)	(−3.09)	(−1.91)	(−1.77)	(−107.30)	(−113.37)
Growth	−0.121	−0.151	0.053	0.032	−0.013***	−0.013***
	(−1.14)	(−1.33)	(0.79)	(0.47)	(−12.14)	(−12.58)
SOE	−0.257*	−0.229*	−0.348***	−0.197*	−0.005***	−0.004***
	(−1.93)	(−1.66)	(−3.59)	(−1.93)	(−3.33)	(−2.66)
Big4	0.440	0.469	0.006	0.118	−0.012***	−0.013***
	(1.05)	(1.11)	(0.03)	(0.51)	(−3.73)	(−4.53)
Industry FE	No	Yes	No	Yes	No	Yes
Year FE	No	Yes	No	Yes	No	Yes
Pseudo R-Sq/Adj R-Sq	0.370	0.378	0.022	0.048	0.364	0.624
N	9938	9938	9938	9938	9938	9938

This table presents the regression results about the relationship between auditor diversity and audit quality. When the dependent variable is *MAO* or *Restate*, Logit regression is used and Z-statistics are reported in parentheses; when the dependent variable is *DA*, OLS regression is used and T-statistics are reported in parentheses. The statistics are corrected for serial correlation and heteroscedasticity with the Huber/White/sandwich estimator (clustered) for variance. The asterisks ***, **, and * suggest two-tailed statistical significance at the 1%, 5%, and 10% levels, respectively. All variables are defined in Table 2.

modified audit opinions, so the higher the diversity of signing auditors, the lower the probability that the listed company receives the modified audit opinion. Specifically, the probability of issuing the modified audit opinion is reduced by 21.89% (=1-exp (-0.247)) when the diversity of signing auditors is increased by one unit. This result sheds light on the idea that signing auditors' diversity has a negative association with audit quality, which is consistent with our proposed H2.

The results of the other variables show that the estimated coefficients of *Leverage* and *Liquidity* are all positive and significant at the 1% and 10% level, respectively, indicating that the higher the assets-to-debt ratio and the larger the current ratio, the greater the probability of a modified audit opinion received by the listed company. The estimated coefficients of *ROA*, *REC*, *INV*, and *CFO* are all negative and significant at the 1% level, revealing that the higher the return on total assets, the proportion of accounts receivables, the proportion of inventories, and the proportion of cash flow from operating activities, the lower the probability of modified audit opinions being issued by auditors. Finally, state-owned enterprises are less likely to receive modified audit opinions.

Columns (3) and (4) of Table 4 report how the diversity of signing auditors affects the restatement of annual financial reports (*Restate*). The coefficient on *Diversity* is 0.138 and significant at the 5% level, suggesting that the diversity of signing auditors and the probability of restatement of annual financial reports are positively correlated. In other words, diversity of signing auditors does boost the restatement of annual financial reports. In numeric terms, the probability of restatement of annual financial reports is increased by 14.8% (=exp (0.138) −1) when the diversity of signing auditors is increased by one unit. The relationship between the diversity of signing auditors and the restatement of annual financial reports confirms the conclusion that the greater the difference in the characteristics of signing auditors, the lower the audit quality provided by the audit team. This result further supports our proposed H2 that signing auditors' diversity has a negative association with audit quality.

The estimated coefficients of *Size*, *ROA*, *CFO*, and *SOE* are all negative and significant at different levels. These results indicate that the larger the size of the listed firm, the higher the return on total assets and the more abundant the cash flow from operating activities, the lower the probability of restatement of annual financial reports. In addition, the probability of annual financial reports' restatement in state-owned enterprises is lower than that in non-state-owned enterprises.

Columns (5) and (6) of Table 4 show the impact of signing auditors' diversity on earnings management of listed companies

Table 5
Analysis based on auditor rotation.

Variable	MAO		Restate		DA	
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	24.805***	20.525***	−4.795***	−8.109	−0.200***	−0.134***
	(7.04)	(7.93)	(-2.46)	(-0.02)	(-7.44)	(-2.98)
Diversity	−0.276**	−0.344**	0.393***	0.192*	0.002**	0.002*
	(-2.20)	(-2.07)	(2.94)	(1.88)	(1.75)	(1.79)
Size	−1.284***	−1.128***	−0.077	−0.151*	0.011***	0.011***
	(-7.67)	(-9.71)	(-0.82)	(-1.94)	(8.37)	(11.09)
Leverage	4.362***	5.152***	−0.775	0.303	−0.031***	−0.041***
	(5.60)	(8.07)	(-1.49)	(0.72)	(-4.14)	(-7.30)
ROA	−9.974***	−8.493***	−2.085	−0.469	0.963***	0.907***
	(-4.89)	(-5.89)	(-1.13)	(-0.33)	(34.36)	(46.41)
Liquidity	−0.141	−0.058				
	(-1.26)	(-0.61)				
REC	−1.107	−1.543				
	(-0.66)	(-1.28)				
INV	−4.246**	−3.412***				
	(-2.38)	(-3.31)				
Loss	−0.170	−0.271	0.135***	0.445**	0.003	0.003
	(-0.30)	(-0.65)	(2.45)	(2.10)	(0.70)	(1.10)
MAO			0.480	−0.358		
			(0.98)	(-0.87)		
CFO	−2.155	−3.273**	−4.096***	−2.360**	−0.979***	−1.022***
	(-1.02)	(-2.29)	(-3.27)	(-2.34)	(-51.82)	(-76.22)
Growth	−0.189	−0.190	0.228*	0.028	−0.019***	−0.019***
	(-0.92)	(-0.96)	(1.85)	(0.23)	(-7.46)	(-10.89)
SOE	−0.323	−0.178	−0.583***	−0.436***	−0.001	−0.002
	(-0.99)	(-0.73)	(-2.75)	(-2.65)	(-0.50)	(-1.15)
Big4	1.001	1.015	0.706	0.410	−0.010	−0.015***
	(1.23)	(1.55)	(1.59)	(1.15)	(-1.39)	(-3.45)
Industry FE	No	Yes	No	Yes	No	Yes
Year FE	No	Yes	No	Yes	No	Yes
Pseudo R-Sq/Adj R-Sq	0.310	0.399	0.039	0.065	0.585	0.654
N	3917	3917	3917	3917	3917	3917

This table presents the regression results about the relationship between audit diversity and audit quality around the turnover of auditors. In order to solve the potential endogeneity problem, this table only includes 3917 firm-year observations in which the audit firm has not changed and the signing auditors have changed according to the CSRC regulations (No. [2003]13). When the dependent variable is *MAO* or *Restate*, Logit regression is used and Z-statistics are reported in parentheses; when the dependent variable is *DA*, OLS regression is used and T-statistics are reported in parentheses. The statistics are corrected for serial correlation and heteroscedasticity with the Huber/White/sandwich estimator (clustered) for variance. The asterisks ***, **, and * suggest two-tailed statistical significance at the 1%, 5%, and 10% levels, respectively. All variables are defined in Table 2.

measured by discretionary accruals (*DA*). The estimated coefficient of *Diversity* is 0.002, which is significant at the 5% level, suggesting that the higher the diversity of signing auditors, the higher the degree of earnings management. This result confirms the above conclusion that the diversity of signing auditors has a negative impact on the audit quality of listed firms and is consistent with H2.

The results from the control variables are as follows. The larger the company's size, the higher the degree of earnings management; the financial leverage, cash flow from operating activities, and the ratio of sales growth are negatively correlated with the degree of earnings management, respectively. Meanwhile, the ratio of return on total assets is positively correlated with the degree of earnings management; discretionary accruals of SOEs are significantly lower than those of non-SOEs; and finally, the degree of earnings management of listed companies audited by the international Big Four is lower than those audited by non-Big Four accounting firms.

5. Robustness checks

5.1. Endogeneity analysis

All of the above multivariate results support H2, i.e., the higher the diversity of signing auditors, the lower the audit quality under the same other conditions; that is to say, signing auditors' diversity has a negative association with audit quality. However, the above analysis does not account for endogeneity. Although it sounds far-fetched and there is no empirical support that audit quality or other characteristics of listed companies in turn affect the diversity of signing auditors, we still cannot completely rule out this possibility. At

Table 6
Analysis based on Re-constructing the sample.

Variable	MAO		Restate		DA	
	Coefficients	Z-Statistics	Coefficient	Z-statistics	Coefficient	T-statistics
Intercept	15.011***	10.41	0.209	0.20	−0.158***	−11.40
Diversity	−0.306***	−3.06	0.143**	2.03	0.002**	2.15
Size	−0.893***	−13.35	−0.176***	−3.65	0.010***	15.76
Leverage	5.435***	15.76	0.345	1.33	−0.044***	−11.86
ROA	−7.793***	−9.83	−1.905**	−2.21	0.887***	68.92
Liquidity	0.064	1.61				
REC	−2.281***	−3.01				
INV	−2.417***	−4.48				
Loss	0.397**	1.95	0.026	0.16	0.003	1.40
MAO			−0.080	−0.35		
CFO	−2.527***	−3.09	−1.085*	−1.68	−1.017***	−110.85
Growth	−0.177	−1.52	0.016	0.22	−0.013***	−12.26
SOE	−0.302**	−2.11	−0.211**	−2.01	−0.004***	−2.41
Big4	0.544	1.29	0.131	0.56	−0.014***	−4.53
Industry FE	Yes		Yes		Yes	
Year FE	Yes		Yes		Yes	
Pseudo R-Sq/Adj R-Sq	0.389		0.050		0.061	
N	9278		9278		9278	

This table presents the regression results about the relationship between audit diversity and audit quality after deleting observations with three or more signing auditors. When the dependent variable is *MAO* or *Restate*, Logit regression is used and Z-statistics are reported in parentheses; when the dependent variable is *DA*, OLS regression is used and T-statistics are reported in parentheses. The statistics are corrected for serial correlation and heteroscedasticity with the Huber/White/sandwich estimator (clustered) for variance. The asterisks ***, **, and * suggest two-tailed statistical significance at the 1%, 5%, and 10% levels, respectively. All variables are defined in Table 2.

the same time, the relationship between the diversity of signing auditors and audit quality may also be caused by omitted variables. Therefore, it is still necessary to consider the problem of endogeneity. Here we use a quasi-natural experiment to solve this potential problem.

According to China's regulations on the compulsory rotation of auditors,[9] the duration of a continuous audit of a listed company by a signing auditor must not exceed five years, which means that the compulsory replacement of a signing auditor after five years is a thoroughly exogenous event. We can use this event to investigate how the audit quality is influenced by a change of diversity of signing auditors after the compulsory replacement of the signing auditors. For this reason, we only retain the sample of the firm-year in which the audit firms have not changed and the signing auditors have changed. The specific procedure is as follows: 1) the firm-year sample is retained if the signing auditors have not changed for five years, but only the signing auditors have been replaced in the sixth year; 2) selecting the firm-year sample of one year before and one year after the replacement of signing auditors as the research sample. Finally, we obtain 3917 firm-year observations. These selected firm-year observations can ensure that the change in audit quality is just caused by the diversity of signing auditors. Using a re-regression of Equation (3), we obtain the results regarding the relationship between audit quality and diversity of signing auditors, which are presented in Table 5.

Here, we can see how the diversity of signing auditors affects modified audit opinions (*MAO*) in Columns (1) and (2), restatement of annual financial reports (*Restate*) in Columns (3) and (4), and earnings management of the listed company measured by discretionary accruals (*DA*) in Columns (5) and (6), respectively, which are all proxies of audit quality. The results show that the higher the diversity of signing auditors, the lower the probability that the listed company receives a modified audit opinion, the higher the probability that the listed company restates its annual financial reports, and the higher the degree of earnings management of the listed company. That is to say, even if we consider the potential endogeneity problem, the main results of our study have not changed at all, which support H2.

5.2. Re-constructing the sample

Ittonen and Trønnes (2014) find that an audit team consisting of two signing auditors can result in better audit quality. Does it mean that audit firms should arrange two signing auditors to make an audit team, and in that case, the diversity of auditors plays the positive effect? If the answer is YES, the result of this paper that signing auditors' diversity has a negative effect on audit quality may be caused by the sample of three or more signing auditors. In order to exclude this possibility, we construct the sample following He et al. (2018)

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[9] In 2003, the China Securities Regulatory Commission (CSRC) issued *The provisions on the regular rotation of signature Certified Public Accountants in Audit Business of Securities and Futures* (No. [2003]13), which clearly stipulates that a signing auditor must not provide audit services to a client firm for more than five years.

Table 7

Regression analysis of the effect of auditor diversity on the time delay of annual report disclosure.

Variable	Time Delay of Annual Report Disclosure	
	Coefficients	T-Statistics
Intercept	4.107***	63.84
Diversity	0.027***	6.55
Size	0.017***	5.90
Leverage	−0.010	−0.49
ROA	−0.602***	−10.21
Liquidity	−0.002	−1.08
REC	0.025	0.71
INV	−0.045*	−1.76
Loss	−0.002	−0.16
CFO	−0.119***	−2.81
Growth	−0.015***	−3.06
SOE	−0.027***	−4.07
Big4	−0.045***	−3.26
Industry FE	Yes	
Year FE	Yes	
Adj R-Sq	0.054	
N	9938	

This table presents the regression results about the relationship between auditor diversity and the time delay in annual reports disclosure. The statistics are corrected for serial correlation and heteroscedasticity with the Huber/White/sandwich estimator (clustered) for variance. The asterisks ***, **, and * suggest two-tailed statistical significance at the 1%, 5%, and 10% levels, respectively. All variables are defined in Table 2.

through deleting firms audited by three or more signing auditors. The new firm-year observation is 9,278 after deleting 653 observations with three signing auditors and 7 observations with four signing auditors.[10] We re-run Equation (3) regression and present the results in Table 6.

We find that the coefficient of *Diversity* is −0.306 and significant at the 1% level when the dependent variable is *MAO*. Further, the coefficient of *Diversity* is both significantly positive when the dependent variable is *Restate* or *DA*, respectively. This suggests that even if we exclude the observations with three or more signing auditors, our results remain unchanged and are robust.

5.3. More empirical evidence to verify the effect of diversity of signing auditors

To figure out the mechanism, we examine the effect of the diversity of signing auditors on the time delay of annual report disclosure. We expect that if the negative relationship between the diversity of signing auditors and audit quality is caused by conflicts and contradiction among signing auditors, it will delay the audit process and take the longer time to issue audit opinions, which may ultimately delay the annual report disclosure.

The result is shown in Table 7. The time delay of annual report disclosure is measured by the natural logarithm of the difference between the actual disclosure date of annual report and the expected disclosure date of annual report. In order to control the influence of other factors on the time of annual report disclosure, we include some control variables, such as *Size, Leverage, ROA, Liquidity, REC, INV, Loss, CFO, Growth, SOE,* and *Big4*. The detailed definitions of the variables are presented in Table 2. It shows that the coefficient on *Diversity* is 0.027 and significant at the 1% level, suggesting that the diversity of signing auditors is positively correlated with the time delay of annual report disclosure. This result provides some evidence for the mechanism of how the diversity of signing auditors influences audit quality.

6. Further research

Robustness analyses ensure the reliability of the results. We further explore whether corporate governance, signing auditor, and audit firm characteristics can influence the relationship between signing auditors' diversity and audit quality.

6.1. Influence of corporate governance

6.1.1. Foreign shareholdings
Whether a listed company has foreign shareholdings plays an important role in corporate governance in China's capital market. The

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[10] In our sample, there are 653 observations with three signing auditors and 7 observations with four signing auditors. Further, the proportion of observations with three signing auditors is 6.57% (653/9,938), and the proportion of observations with four signing accountants is about 0.07% (7/9,938). Overall, the proportion of observations with more than two signing auditors account for 6.64% of the sample.

Table 8
Cross-sectional analysis of foreign shareholdings.

Panel A. Dependent variable: *MAO*				
Variable	QFII		Non-QFII	
	Coefficients	Z-Statistics	Coefficients	Z-Statistics
Intercept	40.062***	2.83	13.589***	9.57
Diversity	−0.315	−0.46	−0.253***	−2.59
Control Variables	Yes	Yes		
Industry FE	Yes	Yes		
Year FE	Yes	Yes		
Pseudo R-Sq	0.545	0.517		
N	965	8973		
Panel B. Dependent variable: *Restate*				
Variable	QFII		Non-QFII	
	Coefficients	Z-Statistics	Coefficients	Z-Statistics
Intercept	3.884	0.84	−0.193	−0.18
Diversity	−0.515*	−1.88	0.193***	2.77
Control Variables	Yes	Yes		
Industry FE	Yes	Yes		
Year FE	Yes	Yes		
Pseudo R-Sq	0.117	0.051		
N	965	8973		
Panel C. Dependent variable: *DA*				
Variable	QFII		Non-QFII	
	Coefficients	T-Statistics	Coefficients	T-Statistics
Intercept	−0.088**	−2.06	−0.165***	−11.41
Diversity	−0.001	−0.31	0.002***	2.55
Control Variables	Yes	Yes		
Industry FE	Yes	Yes		
Year FE	Yes	Yes		
Adj R-Sq	0.629	0.624		
N	965	8973		

This table presents the cross-sectional regression results of foreign shareholdings. The dependent variable is *MAO* in Panel A, *Restate* in Panel B, and *DA* in Panel C. All variables are defined in Table 2. The Z (or T)-statistics are corrected for serial correlation and heteroscedasticity with the Huber/White/sandwich estimator (clustered) for variance. The asterisks ***, **, and * suggest two-tailed statistical significance at the 1%, 5%, and 10% levels, respectively.

Qualified Foreign Institutional Investor (*QFII*) program is one of the first efforts to improve the internationalization of China's capital market. Once licensed, foreign investors are permitted to buy RMB-denominated A-shares in Shanghai and Shenzhen Stock Exchanges. Kim and Yi (2015) consider that foreign investors have superior capabilities, resources, methods, and skills to explore and utilize value-relevant, firm-specific information. Based on this perspective, Gul et al. (2010) find that synchronicity is higher for firms that issue shares exclusively to domestic investors than for firms that issue shares to both domestic and foreign investors, suggesting that foreign investors play an important governance role in improving the information environment of listed companies. Huang and Zhu (2015) show that QFII are more likely to participate in arm's-length negotiations and monitoring in a listed company, suggesting involving foreign institutional investors in corporate governance practices can significantly reduce expropriation by controlling shareholders. Following this argument, we consider that foreign shareholding can play a positive role in improving audit quality. There, compared with foreign-shareholding companies, the diversity of signing auditors of non-foreign-shareholding companies has a more significant negative impact on audit quality.

We divide all the observations into two groups (*QFII* vs. *Non-QFII*) according to whether they have foreign shareholdings or not and then regress respectively. Results for foreign shareholdings are reported in Panels A, B, and C of Table 8. From Panel A, we observe that the coefficient of *Diversity* is only negative and significant at the 1% level in the sub-sample of *Non-QFII*, whose dependent variable is *MAO*. When the dependent variable is *Restate* (or *DA*), the coefficient of *Diversity* is only positive and significant at the 1% level in the sub-sample of *Non-QFII* from Panel B (Panel C) of Table 6. The results are in line with our expectations that foreign shareholding improves corporate governance and helps to improve the quality of accounting information, thus alleviating the negative impact of the diversity of signing auditors on audit quality.

6.1.2. Analyst coverage

As information intermediaries, financial analysts play an important role in enhancing transparency in listed companies by overcoming the information asymmetry between executives and investors (Bushman et al., 2004; Healy & Palepu, 2001). Therefore, agency problem is reduced when analyst coverage is extensive (Chen et al., 2015; He et al., 2017; Irani & Oesch, 2013). The monitoring role of analysts in corporate governance helps to cut down earnings management (Yu, 2008) and opportunistic disclosures (Christensen et al., 2013). From this perspective, we surmise that analyst coverage has a moderator effect in the relationship between the diversity of

Table 9
Cross-sectional analysis of analyst coverage.

Panel A. Dependent variable: *MAO*

Variable	More coverage		Less coverage	
	Coefficients	Z-Statistics	Coefficients	Z-Statistics
Intercept	−4.710	0.00	13.107***	8.54
Diversity	−0.266	−0.99	−0.244**	−2.36
Control Variables	Yes	Yes		
Industry FE	Yes	Yes		
Year FE	Yes	Yes		
Pseudo R-Sq	0.223	0.362		
N	4669	5289		

Panel B. Dependent variable: Restate

Variable	More coverage		Less coverage	
	Coefficients	Z-Statistics	Coefficients	Z-Statistics
Intercept	−0.271	−0.15	−0.698	−0.51
Diversity	0.090	0.89	0.184**	2.05
Control Variables	Yes	Yes		
Industry FE	Yes	Yes		
Year FE	Yes	Yes		
Pseudo R-Sq	0.048	0.061		
N	4669	5289		

Panel C. Dependent variable: *DA*

Variable	More coverage		Less coverage	
	Coefficients	T-Statistics	Coefficients	T-Statistics
Intercept	−0.032*	−1.77	−0.250***	−11.40
Diversity	0.001	0.91	0.003**	2.22
Control Variables	Yes	Yes		
Industry FE	Yes	Yes		
Year FE	Yes	Yes		
Adj R-Sq	0.717	0.586		
N	4669	5289		

This Table 7 presents the cross-sectional regression results of analyst coverage. The dependent variable is *MAO* in Panel A, *Restate* in Panel B, and *DA* in Panel C. All variables are defined in Table 2. The Z (or T)-statistics are corrected for serial correlation and heteroscedasticity with the Huber/White/sandwich estimator (clustered) for variance. The asterisks ***, **, and * suggest two-tailed statistical significance at the 1%, 5%, and 10% levels, respectively.

signing auditors and audit quality.

Panels A, B, and C of Table 9 report the regression results by dividing all the observations into two groups (>Median vs. ≤Median) based on whether the analyst coverage number of a firm is greater than the median of all analyst coverages for the study year.[11] Panel A of Table 9 shows the coefficient of *Diversity* is only negative and significant in the sub-sample of less analyst coverage, and in the sub-sample of more analyst coverage, the coefficient of *Diversity* is no longer significant. This means that financial analysts have effectively curbed the effect of the diversity of signing auditors on the probability of modified audit opinions. Panel B (and C) of Table 7 also reveals that the significant positive correlation between the diversity of signing auditors and restatement of annual financial reports (and discretionary accruals) exists only in the sub-sample of less analyst coverage. Generally speaking, the lower the analyst coverage, the more significant the negative effects of the diversity of signing auditors on audit quality, which indicates that financial analysts, as information intermediaries, help to increase the quality of accounting information and thus reduce the negative impact of the diversity of signing auditors on audit quality. The results are consistent with our expectation.

6.1.3. Regional marketization degree

Marketization characterizes the process of transforming an economy away from a planned economic system to a market-based economy system in a country or region. Focusing on China, market-oriented reforms started in the late 1970s have been greatly successful in enhancing economic development to date. However, the degrees of economic development and legal system development are not balanced and the marketization process is different in different regions (Wang et al., 2019). In areas with lower levels of marketization, the legal system is poorer. Therefore, legal system provides worse protection to investors' interests in the regions with lower degrees of marketization. After all, the legal risk of audit failure is small, the punishment for the violation of signing auditors is also weak, and so the negative influence of the signing auditors' diversity on audit quality is pronounced. We surmise that the negative effect of the signing auditors' diversity on audit quality is mainly in the listed companies located in the regions with lower

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[11] We also divide all the observations into two groups according to whether the analyst coverage number of a firm is greater than the average of all analyst coverages for the study year. As a result, no essential change has taken place.

Table 10

Cross-sectional analysis of marketization.

Panel A. Dependent variable: *MAO*

Variable	High marketization		Low marketization	
	Coefficients	Z-Statistics	Coefficients	Z-Statistics
Intercept	15.761***	6.24	14.256***	8.20
Diversity	−0.221	−1.31	−0.272**	−2.34
Control Variables	Yes		Yes	
Industry FE	Yes		Yes	
Year FE	Yes		Yes	
Pseudo R-Sq	0.344		0.400	
N	4748		5190	

Panel B. Dependent variable: *Restate*

Variable	High marketization		Low marketization	
	Coefficients	Z-Statistics	Coefficients	Z-Statistics
Intercept	1.587	0.98	−0.440	−0.32
Diversity	0.064	0.63	0.189**	2.09
Control Variables	Yes		Yes	
Industry FE	Yes		Yes	
Year FE	Yes		Yes	
Pseudo R-Sq	0.057		0.068	
N	4748		5190	

Panel C. Dependent variable: *DA*

Variable	High marketization		Low marketization	
	Coefficients	T-Statistics	Coefficients	T-Statistics
Intercept	−0.158***	−8.22	−0.167***	−8.55
Diversity	0.001	0.59	0.003**	2.30
Control Variables	Yes		Yes	
Industry FE	Yes		Yes	
Year FE	Yes		Yes	
Adj R-Sq	0.656		0.601	
N	4748		5190	

This table presents the cross-sectional regression results of marketization. The dependent variable is *MAO* in Panel A, *Restate* in Panel B, and *DA* in Panel C. All variables are defined in Table 2. The Z (or T)-statistics are corrected for serial correlation and heteroscedasticity with the Huber/White/sandwich estimator (clustered) for variance. The asterisks ***, **, and * suggest two-tailed statistical significance at the 1%, 5%, and 10% levels, respectively.

marketization.

Panels A, B, and C of Table 10 show the results by dividing all the observations into two groups (>Median vs. ≤Median) based on whether the listed firm is located in a region ranking higher than the median of all degrees of marketization for the study year.[12] The results are consistent with our expectation that the negative effect of the signing auditors' diversity on audit quality is mainly in the listed companies located in the regions with lower marketization. Specifically, these phenomena exist only in the sub-sample of low marketization, and disappear in the sub-sample of high marketization, i.e., the relationship of the negative (positive) effects of the diversity of signing auditors on modified audit opinions (restatement of annual financial reports and discretionary accruals) is pronounced when the listed companies are located in the regions with lower degrees of marketization.

6.2. Influence of characteristics of signing auditor and audit firm

6.2.1. Collaboration experience of signing auditors

In this section, we consider the impact of the collaboration experience of the signing auditors in previous year(s) on the relationship between the diversity of signing auditors and audit quality. The experience of collaboration in the previous year(s) is an important factor affecting the relationship between the diversity of signing auditors and audit quality. It is because collaboration experience may make communication smoother in future collaboration. Based on this point, the experience of collaboration can counteract or weaken the knowledge barriers and conflicts among signing auditors arising from the diversity of team members and effectively alleviate the

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[12] The degree of marketization is a comparative indicator for China's provinces in terms of market-oriented reforms. Wang et al. (2019) compile 19 components of institutional arrangements and policies in five major areas of market-oriented reforms from 2001 to 2018. The five major dimensions are the size of the government in the regional economy; the economic structure, mainly concerning the growth of the non-state sector and the reform of state enterprises; inter-regional trade barriers, including price controls; factor market development, including factor mobility; and legal system. We also divide all the observations into two groups according to whether the listed firm is located in a region ranking higher than the average of all degrees of marketization for the study year. As a result, no essential change has taken place.

Table 11
Cross-sectional analysis of collaboration experience.

Panel A. Dependent variable: *MAO*

Variable	Co-work		Non-co-work	
	Coefficients	Z-Statistics	Coefficients	Z-Statistics
Intercept	13.864***	7.77	16.213***	7.06
Diversity	−0.226*	−1.78	−0.322**	−2.16
Control Variables	Yes		Yes	
Industry FE	Yes		Yes	
Year FE	Yes		Yes	
Pseudo R-Sq	0.389		0.386	
N	6110		3828	

Panel B. Dependent variable: *Restate*

Variable	Co-work		Non-co-work	
	Coefficients	Z-Statistics	Coefficients	Z-Statistics
Intercept	1.605	1.20	−2.211	−1.38
Diversity	0.019	0.21	0.250**	2.41
Control Variables	Yes		Yes	
Industry FE	Yes		Yes	
Year FE	Yes		Yes	
Pseudo R-Sq	0.054		0.070	
N	6110		3828	

Panel C. Dependent variable: *DA*

Variable	Co-work		Non-co-work	
	Coefficients	T-Statistics	Coefficients	T-Statistics
Intercept	−0.179***	−10.53	−0.118***	−5.20
Diversity	0.001	1.28	0.003**	1.98
Control Variables	Yes		Yes	
Industry FE	Yes		Yes	
Year FE	Yes		Yes	
Adj R-Sq	0.638		0.599	
N	6110		3828	

This table presents the cross-sectional regression results of collaboration experience. The dependent variable is *MAO* in Panel A, *Restate* in Panel B, and *DA* in Panel C. All variables are defined in Table 2. The Z (or T)-statistics are corrected for serial correlation and heteroscedasticity with the Huber/White/sandwich estimator (clustered) for variance. The asterisks ***, **, and * suggest two-tailed statistical significance at the 1%, 5%, and 10% levels, respectively.

negative impact of diversity of signing auditors on audit quality.

Panels A, B, and C of Table 11 show the results by dividing all the observations into two groups (*Co-work* vs. *Non-co-work*) based on whether these signing auditors have collaboration experience in the previous year(s). In the sub-sample of *Non-co-work*, the relationship of the negative (positive) effects of the diversity of signing auditors on modified audit opinions (restatement of annual financial reports and discretionary accruals) is still pronounced, while these relationships either weaken or disappear in the *Co-work* sub-sample. These results are in line with our expectation that previous collaboration experience is helpful in alleviating the conflict between signing auditors, which effectively weakens the negative impact of diversity of signing auditors on audit quality.

6.2.2. Big Four accounting firm

Finally, yet importantly, we consider the impact of international Big Four on the relationship between the diversity of signing auditors and audit quality. The theory and empirical studies show that the Big Four are synonymous with high audit quality (Beatty, 1989; DeAngelo, 1981; DeFond & Jiambalvo, 1993; Francis & Wang, 2008; Francis & Yu, 2009; Lennox, 1999; Wang et al., 2008). Since the Big Four pay more attention to their brands and reputations, the phenomenon of the negative impact of diversity of signing auditors on audit quality should weaken or even disappear if the signing auditors belong to a Big Four firm.

Panels A, B, and C of Table 12 show the results by dividing all the observations into two groups (*Big4* vs. *Non-Big4*) based on whether these signing auditors belong to a Big Four accounting firm. In the sub-sample of *Non-Big4*, the relationship of the negative (positive) effects of the diversity of signing auditors on modified audit opinions (restatement of annual financial reports and discretionary accruals) is still significant at different levels, while these relationships disappear in the *Big4* sub-sample. These results indicate that the personal influence of the signing auditors is weakened by the standard and unified audit procedures of the Big Four and the phenomenon of the negative impact of signing auditors' diversity on audit quality mainly exists in the companies that hire non-Big Four accounting firms.

Table 12
Cross-sectional analysis of Big Four.

Panel A. Dependent variable: *MAO*

Variable	Big4			Non-Big4	
	Coefficients		Z-Statistics	Coefficients	Z-Statistics
Intercept	16.094		1.53	14.073***	10.04
Diversity	−0.185		−0.21	−0.227**	−2.33
Control Variables	Yes			Yes	
Industry FE	Yes			Yes	
Year FE	Yes			Yes	
Pseudo R-Sq	0.571			0.375	
N	528			9410	

Panel B. Dependent variable: *Restate*

Variable	Big4		Non-Big4	
	Coefficients	Z-Statistics	Coefficients	Z-Statistics
Intercept	−14.261	−0.01	−0.043	−0.04
Diversity	0.375	0.99	0.132*	1.93
Control Variables	Yes		Yes	
Industry FE	Yes		Yes	
Year FE	Yes		Yes	
Pseudo R-Sq	0.205		0.048	
N	528		9410	

Panel C. Dependent variable: DA

Variable	Big4		Non-Big4	
	Coefficients	T-Statistics	Coefficients	T-Statistics
Intercept	−0.118**	−2.28	−0.166***	−11.71
Diversity	−0.002	−0.68	0.002**	2.32
Control Variables	Yes		Yes	
Industry FE	Yes		Yes	
Year FE	Yes		Yes	
Adj R-Sq	0.667		0.623	
N	528		9410	

This table presents the cross-sectional regression results of Big Four accounting firms. The dependent variable is *MAO* in Panel A, *Restate* in Panel B, and *DA* in Panel C. All variables are defined in Table 2. The Z (or T)-statistics are corrected for serial correlation and heteroscedasticity with the Huber/White/sandwich estimator (clustered) for variance. The asterisks ***, **, and * suggest two-tailed statistical significance at the 1%, 5%, and 10% levels, respectively.

7. Conclusion

The audit of a listed company is generally the responsibility of multiple auditors, including the engagement partner and the review partner. Therefore, it is imperative to test and verify whether the characteristics of auditor teams can affect audit quality. Unfortunately, the existing literature has not yet explored this field because there is no available data in the capital markets of western developed countries, including the U.S. Use the unique data of China, we examine the impact of auditor diversity on audit quality. We find a negative relationship between the diversity of signing auditors and audit quality, meaning the greater the diversity of signing auditors, the lower the audit quality since the diversity of signing auditors makes it more likely for auditors to have conflicts and contradictions. Specifically, greater diversity of signing auditors is associated with a lower probability of issuing modified audit opinions, a higher probability of the restatement of annual financial reports, and a greater degree of earnings management. Further analysis shows that corporate governance, signing auditor and audit firm characteristics all play very important moderator roles in the relationship between the diversity of signing auditors and audit quality.

Our paper deepens the understanding of audit quality and delves into the role of auditor team characteristics by systematically investigating the influence of team diversity of signing auditors on audit quality. Meanwhile, our paper broadens the research field of team diversity. It reveals that diversity, at least the diversity of signing auditors, does not have a positive influence and that the reduction of diversity of signing auditors will not result in collusion, but will lead to higher work efficiency and improve audit quality. When considering the arrangement of signing auditors, accounting firms need to pay more attention to the individual characteristics of signing auditors and strive to reduce the diversity of signing auditors when they audit the same listed company.

Credit author statement

Manoj Athavale leads the conduct formal analysis and project administration.
Zhaorui Guo leads the writing - original draft, writing - review and editing
Yun Meng leads the data curation and literature review.
Tianshu Zhang leads funding acquisition and methodology.

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References

Beatty, R. (1989). Auditor reputation and the pricing of initial public offerings. *The Accounting Review, 64*(10), 693–709.
Behn, B. K., Choi, J., & Kang, T. (2008). Audit quality and properties of analyst earnings forecasts. *The Accounting Review, 83*(2), 327–349.
Bianchi, P. A. (2018). Auditors' joint engagements and audit quality: Evidence from Italian private companies. *Contemporary Accounting Research, 35*(3), 1533–1577.
Blau, P. M. (1977). *Inequality and heterogeneity*. New York: Free Press.
Boone, C., Olffen, W. V., Witteloostuijn, A. V., & Brabander, B. D. (2004). The genesis of top management team diversity: Selective turnover among top management teams in Dutch newspaper publishing. *Academy of Management Journal, 47*(5), 633–656.
Bushman, R., Piotroski, J., & Smith, A. (2004). What determines corporate transparency? *Journal of Accounting Research, 42*(2), 207–252.
Carpenter, M. A., & Fredrickson, J. W. (2001). Top management teams, global strategic posture, and the moderating role of uncertainty. *Academy of Management Journal, 44*(3), 533–546.
Chen, T., Harford, J., & Lin, C. (2015). Do analysts matter for governance? Evidence from natural experiments. *Journal of Financial Economics, 115*(2), 383–410.
Chen, S., Sun, S., & Wu, D. (2010). Client importance, institutional improvements, and audit quality in China: An office and individual auditor level analysis. *The Accounting Review, 85*(1), 127–158.
Chen, C. L., Weng, P. Y., & Chien, C. Y. (2018). Qualified foreign institutional investor ownership deregulation and the restatement of financial reports— empirical findings from Taiwan. *International Review of Economics & Finance, 56*(7), 465–485.
Chin, H., & Chi, H. (2009). Reducing restatements with increased industry expertise. *Contemporary Accounting Research, 26*(3), 729–765.
Choi, J., Kim, C., Kim, J., & Zang, Y. (2010). Audit office size, audit quality, and audit pricing. *Auditing: A Journal of Practice & Theory, 29*(1), 73–97.
Christensen, P., Frimor, H., & Sabac, F. (2013). The stewardship role of analyst forecasts, and discretionary versus non-discretionary accruals. *European Accounting Review, 22*(2), 257–296.
Daniels, B. W., & Booker, Q. (2011). The effects of audit firm rotation on perceived auditor independence and audit quality. *Research in Accounting Regulation, 23*(1), 78–82.
Datar, S., Feltham, G. A., & Hughes, J. S. (1991). The role of audits and audit quality in valuing new issues. *Journal of Accounting and Economics, 14*(3), 3–49.
DeAngelo, L. E. (1981). Auditor independence, 'low balling' and disclosure regulation. *Journal of Accounting and Economics, 3*(2), 113–127.
DeFond, M. L., & Jiambalvo, J. (1993). Factors related to auditor-client disagreements over income-increasing accounting methods. *Contemporary Accounting Research, 9*(2), 415–431.
DeFond, M. L., Wong, T. J., & Li, S. (1999). The impact of improved auditor independence on audit market concentration in China. *Journal of Accounting and Economics, 28*(3), 269–305.
DeFond, M. L., & Zhang, J. (2014). A review of archival auditing research. *Journal of Accounting and Economics, 58*(2), 275–326.
Deng, M., Melumad, N., & Shibano, T. (2012). Auditors' liability, investments, and capital markets: A potential unintended consequence of the Sarbanes-Oxley Act. *Journal of Accounting Research, 50*(5), 1179–1215.
Dopuch, N., & Schwartz, K. R. (2001). An experimental investigation of retention and rotation requirements. *Journal of Accounting Research, 39*(1), 93–117.
Dye, R. (1993). Auditing standards, legal liabilities, and auditor wealth. *Journal of Political Economy, 101*(5), 887–914.
Firth, M., Rui, O. M., & Wu, X. (2012). How do various forms of auditor rotation affect audit quality? Evidence from China. *International Journal of Accounting, 47*(1), 109–138.
Francis, J. (1984). The effect of audit firm size on audit prices: A study of the Australia market. *Journal of Accounting and Economics, 8*(6), 133–151.
Francis, J. R., & Wang, D. (2008). The joint effect of investor protection and Big 4 audits on earnings quality around the world. *Contemporary Accounting Research, 25*(1), 157–191.
Francis, J. R., & Yu, M. D. (2009). Big 4 office size and audit quality. *The Accounting Review, 84*(5), 1521–1552.
Goodwin, J., & Wu, D. (2014). Is the effect of industry expertise on audit pricing an office-level or a partner-level phenomenon? *Review of Accounting Studies, 19*(4), 1532–1578.
Guan, Y., Su, L. N., Wu, D., & Yang, Z. (2016). Do school ties between auditors and client executives influence audit outcomes? *Journal of Accounting and Economics, 61*(2), 506–525.
Gul, F. A., Kim, J. B., & Qiu, A. A. (2010). Ownership concentration, foreign shareholding, audit quality, and stock price synchronicity: Evidence from China. *Journal of Financial Economics, 95*(3), 425–442.
Gul, F. A., Wu, D., & Yang, Z. (2013). Do individual auditors affect audit quality? Evidence from archival data. *The Accounting Review, 88*(6), 1993–2023.
Haleblian, J., & Finkelstein, S. (1993). Top management team size, CEO dominance, and firm performance: The moderating roles of environmental turbulence and discretion. *Academy of Management Journal, 36*(4), 844–863.
Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review, 9*(2), 193–206.
Hardies, K., Breesch, D., & Branson, J. (2016). Do (fe)male auditors impair audit quality? Evidence from going-concern opinions. *European Accounting Review, 25*(1), 7–34.
Harjoto, M., Laksmana, I., & Lee, R. (2015). Board diversity and corporate social responsibility. *Journal of Business Ethics, 132*(4), 641–660.
Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics, 31*(1–3), 405–440.
He, C., Li, C. K., Monroe, G. S., & Si, Y. (2018). *Diversity of signing auditors and audit quality*. Available at SSRN 3239092.
Henneke, D., & Luthje, C. (2007). Interdisciplinary heterogeneity as a catalyst for product innovativeness of entrepreneurial teams. *Creativity and Innovation Management, 16*(2), 121–132.
He, X., Pittman, J. A., Rui, O. M., & Wu, D. (2017). Do social ties between external auditors and audit committee members affect audit quality? *The Accounting Review, 92*(5), 61–87.
Huang, W., & Zhu, T. (2015). Foreign institutional investors and corporate governance in emerging markets: Evidence from split share reform in China. *Journal of Corporate Finance, 32*, 312–326.
Irani, R. M., & Oesch, D. (2013). Monitoring and corporate disclosure: Evidence from a natural experiment. *Journal of Financial Economics, 109*(2), 398–418.
Ittonen, K., & Trønnes, P. C. (2014). Benefits and costs of appointing joint audit engagement partners. *Auditing: A Journal of Practice & Theory, 34*(3), 23–46.
Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305–360.
Jones, J. J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research, 29*(2), 193–228.
Kim, H., Lee, H., & Lee, J. E. (2015). Mandatory audit firm rotation and audit quality. *Journal of Applied Business Research, 31*(3), 1089–1106.
Kim, J. B., & Yi, C. H. (2015). Foreign versus domestic institutional investors in emerging markets: Who contributes more to firm-specific information flow? *China Journal of Accounting Research, 8*(1), 1–23.
Knechel, R. W., Vanstraelen, A., & Zerni, M. (2015). Does the identity of engagement partners matter? An analysis of audit partner reporting decisions. *Contemporary Accounting Research, 32*(4), 1443–1478.

Kothari, S., Leone, A., & Wasley, C. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics, 39*(1), 163–197.

Lennox, C. S. (1999). Audit quality and auditor size: An evaluation of reputation and deep pockets hypotheses. *Journal of Business Finance and Accounting, 26*(7), 779–804.

Liu, Z. J., & Liu, M. (2009). The impact of corporate governance on auditor choice: Evidence from China. *Journal of International Accounting, Auditing and Taxation, 18* (1), 44–59.

Mughal, A., Tao, Q., Sun, Y., & Xiang, X. (2021). Earnings management at target firms and the acquirers' performance. *International Review of Economics & Finance, 75* (3), 384–404.

Naranjo-Gil, D., & Hartmann, F. (2007). Management accounting systems, top management team heterogeneity and strategic change. *Accounting, Organizations and Society, 32*(7), 735–756.

Shu, S. Z. (2002). Auditor resignations: Clientele effects and legal liability. *Journal of Accounting and Economics, 29*(1), 173–205.

Si, Y., Fonseka, M., Tian, G. L., & Feng, H. (2017). Audit risk and articulation errors from different cash flow disclosures: Evidence from China. *Asia-Pacific Journal of Accounting and Economics.* https://doi.org/10.1080/16081625

Wang, X., Fan, G., & Yu, J. (2019). *Marketization index of China's provinces: NERI report 2018*. Beijing: Social Science Academic Press (in Chinese).

Wang, Q., Wong, T. J., & Xia, L. (2008). State ownership, the institutional environment, and auditor choice: Evidence from China. *Journal of Accounting and Economics, 46*(1), 112–134.

Wang, X., & Wu, M. (2012). The quality of financial reporting in China: An examination from an accounting restatement perspective. *China Journal of Accounting Research, 4*(4), 167–196.

Watts, R., & Zimmerman, J. (1981). *The market for independence and independent auditors*. Rochester, NY: University of Rochester. Unpublished Manuscript.

Yasemin, Y. K. (2003). Experience-based top management team competence and sustained growth. *Organization Science, 14*(6), 707–719.

Yu, F. (2008). Analyst coverage and earnings management. *Journal of Financial Economics, 88*(2), 245–271.

Zhao, Y., Xu, N., Zhou, D., & Chan, K. C. (2020). *Audit partner rotation and negative information hoarding: Evidence from China*. forthcoming: Accounting and Finance.