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RESEARCH ARTICLE

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# Auditor Experiences, Accounting Firm Size, and Client Ownership

**Abstract** This study investigates whether accounting firms match the experience level of individual auditors with the risk level of clients in order to control audit risk. We find that accounting firms tend to assign more experienced auditors to non-state-owned clients that typically have higher tendency to engage in earnings management. Such an assignment pattern is more pronounced for non-Big 4 accounting firms. Further analysis suggests that auditors' experience helps reduce clients' earnings management level, proxied by abnormal accruals, and thus improves the audit quality. This study enriches the literature on the allocation of human resources and the risk control mechanism in the audit services industry, which has been seldom explored in prior studies.

**Keywords** auditor experiences, accounting firm size, client ownership, audit risk

## 1 Introduction

Audit quality is one of the most critical factors for the survival and development of accounting firms. Many studies have investigated the determinants of audit quality. A major strand of research on audit quality finds that the Big 4 accounting firms (the Big 4, hereafter) are able to provide better audit quality and enjoy a higher reputation in return, compared to non-Big 4 accounting firms (non-Big 4s, hereafter). For example, earnings quality of companies whose

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financial reports were audited by the Big 6 audit firms was more credible (Teoh and Wong, 1993); the Big 6 audit firms charged higher audit fees (Craswell et al., 1995), and had fewer litigation problems (Palmrose, 1988).

In a production view of the audit process (Simunic, 1980), the drivers of client risk and client complexity influence the level of effort exerted by auditors during the audit (Donohoe and Knechel, 2013). Hence, individual auditors' experiences are one of the key factors for audit quality (Chi and Chen, 2011). One possible approach to addressing clients' higher business risk is increasing audit effort, including increasing total audit hours or assigning more experienced staff to the audit team (Kim and Fukukawa, 2013). For instance, industry experience significantly enhances hypotheses generation in identifying errors. In addition, proportionately greater audit hours are assigned to more experienced audit staff for misstated accounts (Wright and Wright, 1997).

However, few studies examine whether accounting firms assign more experienced auditors to high risk clients to ensure audit quality, mostly because of the unavailability of archival data. Using a unique dataset from China, this study fills in the gap and enhances our understanding of the allocation of auditors in accounting firms. Furthermore, as the audit reputation and audit quality in non-Big 4s are inferior to that in the Big 4, non-Big 4s are more likely to take advantage of auditors' experience at the individual auditor level to compensate for their competitive disadvantages at the accounting firm level. Specifically, more experienced individual auditors would be assigned by non-Big 4s to audit highly risky clients, thereby providing more satisfaction to their clients and investors.

We use clients' ownership as a proxy for audit risk. Chen et al. (2011) suggest that state-owned enterprises (SOEs, hereafter) have weak motivations to manage earnings, while non-SOEs have stronger motivations. Therefore, non-SOEs have higher potential audit risks. Using unique data collected manually, we examine how clients' ownership affects the engagement of auditors' experiences. Based on a sample of listed companies in China over the period of 2006–2008, we find that accounting firms tend to allocate more experienced auditors to non-state-owned clients. Furthermore, such an effect primarily holds for non-Big 4s, suggesting that accounting firm size moderates the relationship between auditor experience and client risk.

This study differentiates from the prior literature in three ways. First, this

study investigates whether clients' ownership has a significant impact on the choice of individual auditors. Our findings suggests that accounting firms are likely to choose more experienced individual auditors when there is higher audit risk. This enriches our understanding about the risk aversion behavior of accounting firms. Second, this paper enriches related literature on the determinants of auditors' experience. To our knowledge, this is the first study to compare individual auditors' experience between the Big 4 and non-Big 4s. This study documents that the Big 4 and non-Big 4s rely on different strategies in improving audit quality. The Big 4 are equipped with considerable resources and advanced auditing techniques, such as more extensive industry experience, more stringent audit processes, and stronger information control systems. Consequently, the Big 4 are less dependent on auditors' personal experience to improve audit quality. By contrast, non-Big 4s rely more on auditors' personal experience to control audit quality due to the shortage of the above resources and technique advantages. Third, this study helps understand the audit behavior of non-Big 4s. A great number of studies examine whether and why the Big 4 possess higher audit quality. Nevertheless, few investigate non-Big 4s' audit practices. We find empirical evidence that individual auditors' experience plays a crucial role in the audit practices of non-Big 4s, thus providing us an insightful perspective. We also find that auditors' experience reduces clients' earnings management activities, therefore improving their earnings quality.

The remainder of this study is organized as follows. Section 2 introduces the institutional background, reviews the related literature, and develops research hypotheses. We describe research design in Section 3 and discuss the empirical results in Section 4. Section 5 provides further analysis and Section 6 provides robustness checks. Section 7 concludes the paper.

## 2 Institutional Background, Literature Review and Research Hypotheses

### 2.1 Institutional Background

Several major international accounting firms have entered into the Chinese domestic market since 1992, and have obtained qualifications from the Chinese authorities to establish Sino-foreign cooperative accounting firms. With this

remarkable development speed, these firms have become the largest four accounting firms in Chinese mainland (i.e., Big 4s).[1] In 2005, the total annual revenue of the Big 4 were 4.598 billion yuan, accounting for 49% of the total annual revenues of the top-100 accounting firms in Chinese mainland. In 2007, the Big 4's total annual revenue were 9.011 billion yuan, twice that of 2005 and accounting for 54.72% of the total annual revenue of the top-100 accounting firms in Chinese mainland. Hence, the Big 4 exhibit their absolute competitive advantages over domestic accounting firms.

The Enron scandal woke up China's regulators from the blind trust placed in the Big 5 accounting firms to ensure audit quality.[2] To implement the new regulations for the public accounting industry from "The Eleventh Five-Year Plan," and to serve Chinese enterprises' "going out" strategy, the Chinese Institute of Certified Public Accountants (CICPA) proposed to further promote the development of the Chinese CPA profession, and to help domestic public accounting firms become bigger and stronger.

## 2.2 Literature Review

Litigation against auditors has increased dramatically in recent years (Krishnan and Krishnan, 1997), which makes accounting firms more and more conservative in their audit business. Before accounting firms accept audit engagements, they will evaluate client-related risk and use that evaluation to determine whether they will suffer a potential loss on the engagement. Will their net income reduce or will they be faced with future litigation? It is a process of risk evaluation and risk adaptation to decide whether or not to accept engagements (Johnstone, 2000). The auditors should consider the assessed levels of inherent and control risk in determining the nature, timing and extent of substantive procedures required to reduce audit risk to an acceptable level (International Standards of Audit 400). Audit risk is likely to induce audit failure. So, accounting firms take a variety of measures to reduce audit risk in order to avoid audit failure. For example, Ye and Li (2009) argue that in developing an overall audit plan, one should take full

[1] They are PricewaterhouseCoopers Zhong Tian CPAs Ltd, Ernst & Young Hua Ming Certified Public Accountants, Deloitte Touche Tohmatsu Certified Public Accountants LLP, and KPMG Huazhen (Special General Partnership).

[2] After the Enron scandal, Andersen, one of the Big 5 accounting firms, ended its 89 year career, and the Big 5 were reduced to the Big 4.

account of the number, experience, competence, and independence of auditors, and assign proper tasks to appropriate individual auditors based on their individual characteristics. Johnstone and Bedard (2001) show that accounting firms respond to fraud and error risk factors by applying engagement-planning strategies such as assigning more high-risk specialist personnel, or assigning more industry expert personnel.

### 2.2.1 Clients' Ownership and Audit Risk

The different nature of ownership between SOEs and non-SOEs results in different levels of quality of accounting information and motivations for earnings management. Under the protection of the government, SOEs have a lower risk of bankruptcy. For example, when there is a financial crisis, the government will help SOEs get over the crisis by reducing their tax burden, injecting capital to repay part of their debts, implementing a debt-equity swap, and establishing asset management companies to eliminate their bad debts, which in fact provide those SOEs with financial insurance to outside shareholders (Chen et al., 2011). Even if SOEs file for bankruptcy, sufficient subsidies would be provided (Faccio, 2006). All this government support reduces SOEs' motivation for earnings management to avoid the risk of bankruptcy. In addition, SOEs have preferential access to bank loans with lower costs. When banks receive SOEs' loan applications, they usually take into consideration political factors, including the unemployment rate and tax burdens, in addition to the credit risk and profit considerations. Therefore, banks tend to provide SOEs with lower interest loans. For non-SOEs, whose ultimate owners are non-government units such as private entrepreneurs, township-enterprises, and foreign companies, when dealing with their loan-applications, banks tend to mainly consider their profitability and liquidity risks (Chen et al., 2011). Therefore, SOEs have weak motivations to manage earnings, while non-SOEs have stronger motivations to do so. Indeed, analyzing 273 privately-owned and state-owned Chinese companies listed in 2002, Ding et al. (2007) conclude that privately-owned listed companies tend to maximize their accounting earnings more than state-owned listed companies. Meanwhile, Wang and Yung (2011) find lower levels of earnings management among state-owned enterprises than privately-owned firms in China, even after controlling for the effect of tunneling, and the effect of government protection on SOEs that might have played an

important role in mitigating the pressure on managers to manipulate firm-specific information. Therefore, we argue that non-SOEs have higher potential audit risks.

### 2.2.2 Accounting Firm Size and Audit Quality

Some literature has investigated why the Big 4 can exercise effective monitoring of clients' financial reporting process. Earning quality is superior for the firms audited by accounting firms with brand name reputation (Teoh and Wong, 1993) and industry specializations (Krishnan, 2003). Apart from the reputation effect and industry expertise, the Big 4 are equipped with more available resources, which brings to them relatively better audit quality in return than their counterparts (Louis, 2005).

Specifically, Dowling and Leech (2007) conclude that, when public accounting firms efficiently and effectively implement an audit project, audit support systems are the key technology application. The systems are comprised of electronic working papers, extensive help files, such as auditing manuals, and accounting and auditing standards, related legal systems and decision support systems. Superior audit support systems are regarded as possessing the following features: efficiency in enforcing the audit methodology and the audit procedures, capacities of restrictedly enforcing the audit programs for all clients, of automatically tailoring client files, and of automatically integrating the work components across the audit process. Additionally, excellent audit support systems rarely fail in being equipped with superior automated decision support systems; however, poor audit ones manually tailor client files, passively accept small audit engagements, manually integrate and manually check data. Diverse accounting firms are in possession of various sorts of audit support systems. Gul et al. (2009) argue that high-quality audit services of the Big 4 are attributed to their substantial investment in auditing technologies, infrastructure, human resources training, and organizational control systems. Thus, auditors in these firms are more capable of detecting irregularities and misrepresentations (Simunic and Stein, 1987).

### 2.2.3 Individual Auditors' Experiences and Audit Quality

Accounting firms are professional service organizations and should be equipped

with qualified auditors (Cheng et al., 2009). For instance, accounting firms should have auditors with required competencies and professional characteristics to perform audit tasks (Maijoor and Witteloostuijn, 1996). Auditors with more audit experience can more easily detect plausible errors (Libby and Frederick, 1990), and make fewer errors when preparing auditing reports (Cheng et al., 2009). More experienced auditors are likely to hold important positions (Gibbins, 1984), and have a more active impact on the performance of accounting firms by attracting and sustaining client relationships (Bröcheler et al., 2004).

Based on the previously cited literature, we argue that non-SOEs have a higher audit risk, and audit risk is likely to be controlled by the Big 4 through governance mechanisms, risk management, and procedure controls. Although prior studies investigate the important impact of individual auditors' experience on audit quality, little research focuses on whether and how accounting firms assign individual auditors to undertake high-risk audit tasks based on their experience. In addition, few studies compare whether there are differences in the dependence on the auditor's personal experience and the difference of audit strategies and mechanisms in controlling risk between the Big 4 and non-Big 4s. In this paper, we aim to fill the gap.

### 2.3 Research Hypotheses

As discussed above, non-SOEs, with enhanced earnings management motivation, present with higher risk. Experienced auditors tend to prioritize controlling risks (Teeter and Brennan, 2008), and structure their knowledge of financial statement errors with audit objectives (Nelson et al., 1995). Experience can be expected to contribute to high audit quality. Therefore, to avoid audit risk, accounting firms choose more experienced individual auditors to engage in audit tasks. Hence, we formulate the following hypothesis.

**Hypothesis1:** *Ceteris paribus*, accounting firms are more likely to appoint more experienced auditors to audit non-state-owned-enterprises.

The Big 4 provide higher audit quality because they possess enriched industry experience, advanced training systems, and audit risk control systems (Zhu et al., 2010). These factors reduce the reliance on individual auditor experience in the Big 4. While for the non-Big 4s the risk management systems are generally not well-established because the heavy investment costs may exceed their capacity to bear. Non-Big 4s therefore are inferior to the Big 4 in control systems and audit

resources. Chi and Chen (2011) find that it is unable to ignore the importance of individual auditors' experience to audit quality. In order to survive and make progress under conditions of fierce market competition, accounting firms tend to rely on individual auditors' experience in winning the trust of clients and guaranteeing better audit quality. Consequently, compared to the Big 4, non-Big 4s are under more pressure to assign more experienced individual auditors to audit non-SOEs to control audit risk. This reasoning leads us to propose our second hypothesis.

**Hypothesis 2:** *Ceteris paribus*, non-Big 4s are more likely to allocate experienced individual auditors to non-SOEs, compared to the Big 4.

## 3 Research Design

### 3.1 Sample Selection

Our sample initially comprised all listed A-share companies from 2006 to 2008. We then applied the following restrictions: a) a firm should disclose the names of the signatory certified public accountants;[3] b) a firm should not be a financial firm; c) a firm/year should not have missing data. These criteria yielded a usable sample of 4,240 firm-year observations representing 1,571 firms in the sample period. Individual CPA experience data were manually collected from the official CICPA (http://cmis.cicpa.org.cn) website. Other accounting data were obtained from the China Stock Market and Accounting Research Data Base (CSMAR).

### 3.2 Research Models and Variables

#### 3.2.1 Research Models

We test the first hypothesis by the following model:

$$\begin{aligned} \mathrm{Ln}(EXPER) = {} & \alpha_0 + \alpha_1 nonSOE + \alpha_2 nonBig4 + \alpha_3 CurrentRatio \\ & + \alpha_4 Ln(Asset) + \alpha_5 Receivable + \alpha_6 Inventory \\ & + \sum \alpha_i year_i + \sum \alpha_i industry_i + \varepsilon. \end{aligned} \tag{1}$$

[3] In China, the engagement auditors are required to sign their names on the audit reports and their names are publicly disclosed to the users of the audit reports.

To test the second hypothesis, we add the interaction term of *nonBig4*nonSOE* in model (1) and form model (2).

$$\begin{aligned} \mathrm{Ln}(EXPER) = {} & \beta_0 + \beta_1 nonSOE + \beta_2 nonBig4 + \beta_3 CurrentRatio \\ & + \beta_4 Ln(Asset) + \beta_5 Receivable + \beta_6 Inventory \\ & + \beta_7 nonBig4 * nonSOE + \sum \beta_i year_i + \sum \beta_i industry_i + \varepsilon. \end{aligned} \tag{2}$$

3.2.2 Variables

3.2.2.1 Dependent Variable: Experience of Signatory Auditors

Experience of signatory auditors (Ln*(EXPER)*):We define the experience of an individual signatory CPA as the number of years since the auditor obtained the qualification of CPA. As normally two auditors are required to issue one audit report, we use the average experience of the two auditors as the auditors' experience. Audit is a profession bound by laws and regulations. Auditors should possess the necessary qualifications and be under the authority of professional management organizations (Hay and Davis, 2004). Liu (1997) argues that in addition to educational backgrounds, work experiences and qualification levels of individual auditors are also determinants of audit quality. Accounting firms should support their staff in obtaining CPA certification, as it is one of the most important steps in their professional development (Christopher, 2005; Cheng et al., 2009). Auditor quality is positively associated with an in-charge who is a CPA (Aldhizer et al., 1995; Hay and Davis, 2004).

3.2.2.2 Test Variables

The nature of clients' ownership (*nonSOE*): *NonSOE* is used to measure the nature of clients' ownership which equals 1 if the ownership nature of the ultimate controlling shareholders of listed companies is not the state, or a state-owned legal entity, and 0 otherwise. The nature of ownership may have an impact on accounting information quality and the motivation of earnings management. As we discuss above, non-SOEs have stronger earnings management motivation (Chen et al., 2011), and thus comprise a higher audit risk. Audit quality is the lifeblood of accounting firms, and audit risk is the primary factor that is taken into account by accounting firms. It is an important and interesting research question concerning whether accounting firms appoint experienced individual auditors to perform audit tasks according to client characteristics and audit risk. We expect that non-Big 4s allocate more

experienced individual auditors for non-SOEs.

Accounting firm size (*nonBig4*): This is an indicator that equals 1 if listed companies' annual reports are not audited by the Big 4, and 0 otherwise.

#### 3.2.2.3 Control Variables

We also include the following control variables that may be related to the allocation of auditors.

Liquidity (*CurrentRatio*): Firms with low liquidity risk may have some potential operating risks. Therefore, accounting firms should assign more experienced individual auditors to provide audit services for firms with lower liquidity. We use current ratio to measure firms' liquidity. *CurrentRatio* is the ratio of current assets to current liabilities.

Firm size (Ln(*Asset*)): Generally, large firms may have complex businesses; as a result, accounting firms tend to allocate more experienced individual auditors to conduct audit tasks for large firms. Firm size (Ln(*Asset*)) is defined as the natural logarithm of the book value of total assets.

Inventory ratio (*Inventory*): Inventory ratio is the percentage of inventories to total assets. Inventory is an important item in a firm's balance sheet, especially for a manufacturing company; it is also crucial in a firm's operating cycle. A survey of U.S. GAAP (Generally Accepted Accounting Principles) violations conducted by the Securities and Exchange Commission (SEC) shows that 70% of the violations involving material misstatements are related to receivables and inventories (Feroz et al., 1991).Therefore, accounting firms may assign more experienced auditors to audit firms with a higher percentage of inventories in order to reduce audit risk.

Receivable ratio (*Receivable*): Receivables are typically regarded as high-risk accounts (Francis and Krishnan, 1999). Thus accounting firms may assign more experienced auditors to provide service for firms with a higher percentage of receivables in order to lower audit risk. Receivable ratio (*Receivable*) is the percentage of the amount of receivables to total assets.

As well, year and industry dummies are included to control for changes in the macroeconomic environment common to all firms over the sample period and the industrial fixed effect, respectively. The main variables are summarized in Table 1.

According to H1, we expect the regression coefficient on *nonSOE*to be positive. That is, accounting firms are more likely to choose experienced individual auditors to conduct audit tasks when auditing non-state-owned

enterprises. With regards to H2, the coefficient of *nonBig 4*nonSOE* is expected to be positive. That is, non-Big 4s, as compared with the Big 4, are more likely to assign more experienced individual auditors to conduct non-SOEs' audit tasks.

**Table 1** Variable Definition

| Variable | Definintion |
|---|---|
| Ln(*EXPER*) | Auditing experiences of individual auditors, the natural logarithm of the average registration years of signatory CPAs |
| *NonSOE* | A dummy variable that equals 1 if an audit client is not a state-owned enterprise, and 0 otherwise |
| *NonBig4* | A dummy variable that equal 1 if a listed company's annual report is not audited by a Big 4 accounting firm, and 0 otherwise |
| *Current Ratio* | The ratio of current assets to current liabilities |
| Ln(*Asset*) | The natural logarithm of the book value of total assets |
| *Receivable* | The percentage of the amount of receivables to total assets |
| *Inventory* | The percentage of inventories to total assets |

# 4 Empirical Analysis

## 4.1 Descriptive Statistics

Descriptive statistics of the variables used are reported in Table 2. As Table 2 shows, the average natural logarithm of the average registration year of individual auditors (or signatory CPAs) is 2.287, with arrange from a minimum of 0 years to the maximum of 3.045. 43.2% of listed companies are non-SOEs, and the rest (56.8%) are controlled by the government. A majority of the clients are audited by Non-Big 4s (94.4%), and the rest (5.6%) of the clients are audited by the Big 4.

**Table 2** Descriptive Statistics of the Main Variables

| Variables | N | Mean | Std. Dev. | Min. | Max. |
|---|---|---|---|---|---|
| Ln(*EXPER*) | 4,240 | 2.287 | 0.302 | 0.000 | 3.045 |
| *NonSOE* | 4,240 | 0.432 | 0.495 | 0.000 | 1.000 |
| *NonBig4* | 4,240 | 0.944 | 0.230 | 0.000 | 1.000 |
| *CurrentRatio* | 4,240 | 1.497 | 1.289 | 0.097 | 8.340 |
| Ln(*Asset*) | 4,240 | 21.392 | 1.206 | 18.367 | 26.288 |
| *Receivable* | 4,240 | 0.096 | 0.089 | 0.000 | 0.430 |
| *Inventory* | 4,240 | 0.172 | 0.151 | 0.000 | 0.746 |

Note: All variables are defined in Table 1.

Meanwhile, we divide the full sample into two groups: one is the firms whose annual reports are audited by the Big 4 (the Big 4 group), and the other is the firms whose annual reports are audited by non-Big 4s (non-Big 4s group). We then apply univariate tests to compare auditing experiences of individual auditors (Ln(*EXPER*)) between the two groups. The result is reported in Table 3.

**Table 3** The Result of the Univariate Test of the Dependent Variable

| Y= Ln(*EXPER*) | Big 4s group | Non-Big 4s group |
|---|---|---|
| N | 237 | 4,003 |
| Mean | 2.114 | 2.297 |
| Mean differences | 9.163*** | |

As Table 3 shows, the mean of Ln(*EXPER*) in the Big 4group is 2.114, while it is 2.297 in the non-Big 4s group. The mean difference test is significant at the 1% level. The result indicates that experience in the non-Big 4s group is significantly richer than that in the Big 4 sample.

## 4.2 Correlation Analysis

Table 4 reports the Pearson correlation coefficients among the variables. *NonSOE*is positively and significantly associated with Ln(*EXPER*) at the 10% level. It indicates that more experienced auditors are more likely to be assigned to audit non-SOEs. Meanwhile, Ln(*EXPER*) is significantly and positively related to *nonBig4* at the 1% level, which means that non-Big 4s are equipped with more experienced individual auditors for public clients, which may enhance their audit quality and reduce the possibility of audit failure.

Meanwhile, *nonSOE* is positively related to *nonBig4*, *Currentratio*, *Receivable,* and *Inventory*, and negatively related to Ln(*Asset*), indicating that non-SOEs are likely to be clients of non-Big 4s, and non-SOEs are likely to have higher current ratio, smaller firm size, and higher percentage of inventories or receivables to total assets. In addition, *nonBig4* is positively related to *Currentratio*, *Receivable,* and *Inventory*, and negatively related to Ln(*Asset*), indicating that the clients of non-Big 4s have higher current ratio, smaller firm size, and higher percentage of inventories or receivables to total assets.

To further test the existence of multicollinearity, we compute the variance inflation factor (VIF) for independent variables. The largest of the main

independent variables is 1.57, well below the rule of thumb cutoff of 10.0 for multiple regression models (Kennedy, 1998). Thus we conclude that multicollinearity is unlikely to be a serious problem in our study.

**Table 4** Pearson Correlation Coefficients

| | Ln(*EXPER*) | *nonSOE* | *nonBig4* | *CurrentRatio* | Ln(*Asset*) | *Receivable* | *Inventory* |
|---|---|---|---|---|---|---|---|
| Ln(*EXPER*) | 1.000 | | | | | | |
| *NonSOE* | 0.030* | 1.000 | | | | | |
| *NonBig4* | 0.139*** | 0.071*** | 1.000 | | | | |
| *CurrentRatio* | 0.014 | 0.090*** | 0.059*** | 1.000 | | | |
| Ln(*Asset*) | –0.031** | –0.295*** | –0.413*** | –0.166*** | 1.000 | | |
| *Receivable* | –0.009 | 0.124*** | 0.095*** | 0.017 | –0.237*** | 1.000 | |
| *Inventory* | –0.016 | 0.069*** | 0.073*** | 0.079*** | 0.050*** | –0.043*** | 1.000 |

Note: (1) All variables are defined in Table 1. (2) ***, **, * denote significance at the 1%, 5% and 10% level (two-tailed), respectively.

## 4.3 Multivariate Results

Table 5 reports the regression results for the full-sample with 4,240 firm-year observations. Column (1) shows that the coefficient of *nonSOE*is significantly positive, illustrating that accounting firms tend to allocate more experienced individual auditors to audit non-SOEs. This finding is consistent with H1. The reason behind this result could be that as compared to SOEs, non-SOEs have stronger motivations to manage earnings. Thus, accounting firms appoint experienced individual auditors to mitigate potential audit risk.

The significantly positive relation between *nonBig4* and Ln(*EXPER*) implies that compared with the Big 4, non-Big 4s are more likely to assign more experienced auditors to improve audit quality.

As can be seen from the correlation analysis, clients of the Big 4 are more likely to be SOEs. Hence, non-Big 4s seem to audit more non-SOEs, which are exposed to greater inherent risk and control risk. Were audit risk not controlled, auditors would be prone to issue erroneous opinions, thus increasing the possibility of audit failure. As non-Big 4s are inferior to the Big 4 in terms of risk management systems, reputation, and ability, they might rely more on auditors' personal experience to control audit risk in the process of auditing clients with more risk.

**Table 5** The Main Regression Results

| | (1) | (2) |
|---|---|---|
| *NonSOE* | 0.018* | –0.115*** |
| | (1.81) | (–2.67) |
| *NonBig4* | 0.207*** | 0.164*** |
| | (9.37) | (6.37) |
| *CurrentRatio* | 0.002 | 0.002 |
| | (0.55) | (0.49) |
| Ln(*Asset*) | 0.009** | 0.008* |
| | (1.95) | (1.83) |
| *Receivable* | 0.009 | 0.008 |
| | (0.17) | (0.15) |
| *Inventory* | –0.037 | –0.035 |
| | (–1.01) | (–0.97) |
| *NonBig4*nonSOE* | | 0.139*** |
| | | (3.17) |
| *Constant* | 1.822*** | 1.874*** |
| | (15.99) | (16.30) |
| Year and industry dummies | Yes | Yes |
| Adj $R^2$ | 0.036 | 0.039 |
| *N* | 4,240 | 4,240 |
| *F* | 9.028 | 9.095 |

Note: (1) All variables are defined in Table 1. (2) *T* values are included in the parenthesis. (3) ***, **, * denote significance at the 1%, 5% and 10% level (two-tailed), respectively.

Column (2) reports the regression results of model (2) that includes the interaction term of *nonBig4*nonSOE*. The coefficient of *nonBig4*nonSOE* is significantly positive, indicating that when auditing non-SOEs, non-Big 4s are more likely to assign more experienced auditors than the Big 4. Therefore, H2 is supported.

Now we turn to the estimates of the control variables. The coefficients of Ln(*Asset*) in Columns (1) and (2) are all positive and significant, indicating that when clients are of larger size, accounting firms usually assign more experienced auditors. This may be because larger clients have more complicated businesses, producing more potential auditing risk. Other control variables are all insignificant.

In summary, the multivariate results provide evidence that accounting firms

tend to make more use of auditors' individual experiences to reduce audit risk and to enhance audit quality when their clients are non-SOEs. Meanwhile, compared with the Big 4, non-Big 4s are more likely to assign experienced auditors to non-SOEs.

## 5 Further Analysis

As we discuss above, individual auditors' experience is one of the key factors for audit quality (Chi and Chen, 2011). Experienced auditors can detect more precisely the inherent risk in relation to financial statements. To sustain their reputation in the audit industry, auditors are motivated to disclose clients' problems or to push the management to correct the detected weaknesses, thus improving the earnings quality of their clients. Prior studies find that industry specialist auditors help improve financial reporting quality by constraining management's opportunistic accounting choice as measured in discretionary accruals (Balsam et al., 2003; Krishnan, 2003; Lim and Tan, 2008; Gul et al., 2009; DeBoskey and Jiang, 2012). As industry expertise is one kind of auditor experience, we argue that experienced auditors also help mitigate accrual-based earnings management. Accordingly, we formulate the following model.

$$\begin{aligned} Accruals = {} & \alpha_0 + \alpha_1 Ln(EXPER) + \alpha_2 CurrentRatio \\ & + \alpha_3 Ln(Asset) + \alpha_4 Receivable + \alpha_5 Inventory \\ & + \sum \alpha_i year_i + \sum \alpha_i industry_i + \varepsilon, \end{aligned} \tag{3}$$

where, *Accruals* is calculated using four methods. Following Dechow and Dichev (2002), we estimate abnormal accruals (DD's accruals) as the difference between working capital accruals and the fitted values from the accrual model. Discretionary accruals (Jones accruals and Modified Jones' accruals, respectively) are also calculated using the Jones model and the modified Jones model, respectively (DeFond and Jiambalvo, 1994; Dechow et al., 1995). In addition, following Kothari et al. (2005), we also estimate performance-matched discretionary accruals (Koth's accruals). Performance matching on return on assets controls for the effect of performance on measured discretionary accruals (Kothari et al., 2005).

We then run the estimate model (3) and the results are reported in Table 6. Consistent with our prediction, the estimated coefficient of Ln(*EXPER*) is significantly negative at the 5% or 1% level for all the accruals measures,

suggesting auditors' experience help to reduce clients' earnings management, and in turn, improving audit quality.

**Table 6** The Results of Regressing Earnings Management on Auditors' Experience

| | DD's accruals | Modified Jones's accruals | Jones' accruals | Koth's accruals |
|---|---|---|---|---|
| Ln(*EXPER*) | –0.006** | –0.014*** | –0.013*** | –0.010** |
| | (–2.10) | (–3.03) | (–2.95) | (–2.52) |
| *CurrentRatio* | –0.002*** | –0.002 | –0.001 | –0.001 |
| | (–2.60) | (–1.42) | (–1.08) | (–0.08) |
| Ln(*Asset*) | –0.005*** | –0.002 | –0.002 | 0.001 |
| | (–5.89) | (–1.35) | (–1.35) | (1.14) |
| *Receivable* | –0.016 | –0.040** | –0.040** | –0.032** |
| | (–1.37) | (–2.24) | (–2.24) | (–2.01) |
| *Inventory* | –0.016** | 0.043*** | 0.039*** | 0.046*** |
| | (–2.05) | (3.59) | (3.27) | (4.42) |
| *Constant* | 0.159*** | 0.123*** | 0.124*** | 0.042*** |
| | (7.84) | (3.89) | (3.93) | (1.53) |
| Year and industry dummies | Yes | Yes | Yes | Yes |
| Adj. $R^2$ | 0.036 | 0.055 | 0.052 | 0.065 |
| *N* | 2,314 | 2,325 | 2,325 | 2,325 |
| *F* | 5.837 | 8.494 | 8.112 | 9.926 |

Note: (1) All variables are defined as in Table 1. (2) *T* values are included in the parenthesis. (3) ***, **, * denote significance at the 1%, 5% and 10% level (two-tailed), respectively.

## 6 Robustness Checks

In this section we perform several robustness checks to examine the sensitivity of our results.

### 6.1 Using a Percentage of State Ownership as a Proxy of *nonSOE*

We use the percentage of state ownership (*State ownership*, which is the proportion of state-held shares at the end of each accounting year) as an alternative proxy for *nonSOE* and run the regressions of models (1) and (2) respectively. The results, reported in Table 7, are also similar to those in Table 5.

**Table 7** The Results Using the Percentage of State Ownership as an Alternative Proxy

| | (1) | (2) |
|---|---|---|
| *State ownership* | –0.048** | –0.060*** |
| | (–2.21) | (–2.66) |
| *Big4* | –0.208*** | –0.270*** |
| | (–9.36) | (–7.68) |
| *CurrentRatio* | 0.002 | 0.002 |
| | (0.53) | (0.50) |
| Ln(*Asset*) | 0.010** | 0.010** |
| | (2.14) | (2.03) |
| *Receivable* | 0.008 | 0.007 |
| | (0.14) | (0.13) |
| *Inventory* | –0.039 | –0.037 |
| | (–1.06) | (–1.03) |
| *State ownership*Big4* | | 0.183** |
| | | (2.28) |
| *Constant* | 2.030*** | 2.043*** |
| | (19.83) | (19.94) |
| Year and industry dummies | Yes | Yes |
| Adj $R^2$ | 0.037 | 0.038 |
| *N* | 4,209 | 4,209 |
| *F* | 9.149 | 8.97 |

Notes: (1) All variables are defined in Table 1. (2) *T* values are included in the parenthesis. (3) ***, **, * denote significance at the 1%, 5% and 10% level (two-tailed), respectively.

## 6.2 Split-Sample Analysis: The Big 4 vs. non-Big 4s

We divide full sample firms into two groups: theBig 4 group in which all the firms' annual reports were audited by the Big 4; and the non-Big 4 group in which the firms' annual reports were not audited by the Big 4. Then we ran the estimate model (1) for the two groups, respectively. The main results, which are generally consistent with our main findings, are reported in Table 8. The coefficient of *nonSOE* is significantly negative for the Big 4 group (Column 1), but is significantly positive for Non-Big 4s group (Column 2). The result indicates that the Big 4 provide audit service for non-SOEs with less experienced auditors, while non-Big 4s assign more experienced auditors to audit non-SOEs. Our hypotheses are supported.

**Table 8** Auditor Experience and Client Ownership Type: Split-sample Regressions

| | Big 4s group | Non-Big4s group |
|---|---|---|
| *NonSOE* | –0.168** | 0.026*** |
| | (–2.21) | (2.74) |
| *CurrentRatio* | –0.068 | 0.003 |
| | (–1.58) | (0.93) |
| Ln(*Asset*) | –0.057** | 0.011** |
| | (–2.04) | (2.42) |
| *Receivable* | –2.373*** | 0.063 |
| | (–3.89) | (1.25) |
| *Inventory* | –0.437 | –0.018 |
| | (–1.07) | (–0.51) |
| *Constant* | 4.007*** | 1.973*** |
| | (5.42) | (19.29) |
| Year and industry dummies | Yes | Yes |
| Adj $R^2$ | 0.119 | 0.021 |
| *N* | 237 | 4,003 |
| *F* | 2.992 | 5.518 |

Notes: (1) All variables are defined in Table 1. (2) *T* values are included in the parenthesis. (3) ***, **, * denote significance at the 1%, 5% and 10% level (two-tailed), respectively.

As we discuss above, non-Big 4s seem to audit more non-SOEs, which have stronger earning management motivations. Since non-SOEs have a higher audit risk, non-Big 4s tend to assign more experienced auditors to lower the audit risk due to the disadvantage of their lower investment in auditing control systems. On the contrary, SOEs are the main clients of the Big 4, and they always pay high audit fees. Therefore, the Big 4 are more likely to assign less experienced auditors for unimportant clients such as non-SOEs.

## 7 Conclusion

Accounting firms tend to rely on experienced individual auditors to conduct audit tasks for audit clients with high risk. The Big 4 have extensive industry experience, along with stricter audit control processes and audit risk control systems. Thus, the Big 4 have high audit quality and reputation. On the other hand, non-Big 4s do not have the same advantages in auditing resources. In order to overcome the difficulties resulting from weak capability and lower reputation,

they rely more on auditor experience at the individual auditor level in order to improve audit quality and to control audit risk, such as litigation risk. In this study, we show that when non-Big 4s audit non-SOEs with higher audit risk, they usually assign more experienced auditors to audit those clients. We also find that auditors' experience helps reduce clients' earnings management activities, and in turn, improve audit quality.

These findings enrich our understanding of how accounting firms, especially non-Big 4s, control for audit risk. Auditors' experience is an effective measure to reduce audit risk. Non-Big 4s tend to improve audit quality and to reduce audit risk by hiring experienced individual auditors. This study also extends prior literature by examining audit behaviors of non-Big 4s. It demonstrates that non-Big 4s consciously and reasonably match clients' risk levels with auditor experience to lower audit risk, enriching our understanding of the audit strategy of non-Big 4s.

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