

*Full Length Research Paper*

# Earnings management and the auditing value in China

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**Auditing has been identified as an area of immense importance for the development of China's stock market. Auditing not only provides reliable information for users, but, more importantly, it must coordinate the potential interests among the public, central and local state, and the nation. This study investigates the association between the auditing value and earnings management risk (EMR) induced by security regulation. It is hypothesized that, from the perspective of risk premiums, the auditing value increases as the EMR increase. Using a sample of 4,594 Chinese listed firms during 2001 to 2006, we find that auditing value is positively associated with EMR. We also find that different types of security regulation affect the auditing value. The results are robust to different model specifications and alternatives sample. Apart from providing some new evidence in the important area of auditing value, we also reveal interesting implications for auditing profession, regulators, entrepreneurs, and investors.**

**Key words:** Earnings management, auditing value, security regulation, risk premium.

## INTRODUCTION

The value of an audit has been an important issue. Enhancing the value of an audit increases transparency and facilitates public investors to better monitor firms. Understanding the factors that are associated with the value of an audit is a vital concern for regulators, investors, and the accounting profession. The primary objective of this study is to provide a refined analysis to examine the relationship between the auditing value and earnings management risks from the perspective of risk premiums. We focus on the following three questions: 1) does the regulation of special treatment or particular transfer designation affect the value of an audit? 2) Does the economic consequence of the regulation of delist affect the value of an audit? 3) Does the economic consequence of the regulation of right offerings affect the value of an audit?

In emerging market, the value of an audit plays an immense role in the Chinese capital market compared with that in advanced economies. Three factors motivated this study. First, in that almost all listed firms in China are carve-outs or spin-offs from large state-owned

enterprises (SOEs), the China Securities Regulatory Commission (CSRC) requires that all listed firms have their annual reports audited by certified public accounts (CPAs) so as to safeguard national recourses from misappropriation and embezzlement; provide more reliable information for decision makers. Second, according to the statistics done by CSRC, the number of listed firms reached 1,434 in 2006 and was 102.42 times that of 1991; the stock market value of listed firms reached RMB 8,940.4 billion dollars, and was 820.22 times that of 1991, which stimulated the strong demand for audit service. However, a lower quality of financial reporting and the absence of an investor protection, compared with the advanced economies, are obstacles to foreign investments. This means the audit is valued if the audit can improve quality of financial statement. In other words, in attesting the quality of accounting information, audit services thus think of an external monitoring role on behalf of the owners/shareholders (Fan and Wong, 2005).

Finally, for the Chinese security regulations, previous studies documented that the major earnings management incentives in Chinese listed firms are regulation-induced compared to the market-based or contracted-based motivation in U.S. firms (Aharony et al., 2000; Haw et al., 2000; Chen and Yuan, 2004; Yu et al., 2006). To

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date, however, there has been little research to further study the relationship between the auditing value and earnings management risks from the perspective of information value. Also, because of the uniqueness of the capital market and the auditing profession in China, it is of a great interest to study on how the value of an audit respond to government's security regulations in such an emerging and developing economy.

We conduct an empirical analysis on a sample of 4,594 firm-year observations from 2001 to 2006. Multivariate regression is applied to examine our research questions. We find that, 1) the value of an audit is positively associated with earnings management risk; 2) the regulation of special treatment or particular transfer designation positively affects the value of an audit; and 3) the regulations of and delisting and right offerings positively affects the value of an audit.

This study contributes to the literature on transitional economies in the followings two ways. First, this study empirically identifies the auditing value of different security regulations under China's gradual privatization process. Since it is not easy to measure the value of an audit, little research studies the auditing value issue. This study is new, in that it demonstrates that the unintended economic consequences of different security regulations affect the value of an audit. My findings suggest that the value of an audit depends on earnings management risks, while earnings management risks depends on the security regulation, which implies the government's regulatory mechanism is the key driver of the auditing value. This result supports the suggestion by Wallace (1980) that the audit is valued if the audit can reduce the noise and bias of financial information resulting from uncertainty. Second but not least, transplanting western institutions, for example, rigorous enforcement of financial reporting requirements, in the post-socialist societies is a vital part of the transition from a planned economy to a market economy. Studying how the value of an audit respond to security regulation helps us to understand this exciting but often bumpy process.

## **Institution settings**

### ***Incentive to avoid trading restriction and being delisted***

To protect the interests of investors and to maintain an orderly market, in 1998, the CSRC introduced a unique form of regulation—the special treatment (ST) designation. When a listed company suffers “abnormality in [its] financial situation” or “other situation abnormality,” and investors can not judge the company's prospects and their interests would be damaged, the company's stocks will be implemented with special treatment. Once a firm is designated an ST firm, its trading is regulated. For example, the firm is required to provide audited semi-annual

financial reports, and the company's stock-price fluctuation is subject to a daily 5% stop-buying and stop-selling limit; in other words, the price volatility is within  $\pm 5\%$ .

Moreover, ST firms are pressed to improve their financial situation with effort. If their financial situation gets worse, the regulation gets tighter. For example, any listed firm with three consecutive years of regulation is classified as a particular transfer (PT) firm. PT shares are allowed to trade only on Fridays. To prevent insider manipulation, the price increase in a PT share cannot exceed the 5% limit for any trading day. However, the price of a PT share is allowed to fall without limits. If the PT firms make a profit with an unqualified audit opinion in the following half of the year, on the contrary, they can apply to have their stocks relisted. If the PT firms are still unable to revitalize themselves within the six-month tolerance period they have to show a profit, on the contrary, they will be deleted from the stock exchanges—delisting. Delisting means the listed firms lose the valuable “shell.” ST and PT regulations reduce the value of the shell to listed firms. To avoid being delisted or being labelled with ST or PT status, the listed firms have strong incentives to manage their earnings upward to keep losses off the books.

### ***Incentive for rights offerings***

Since the CSRC and other related regulatory authorities have adopted a restrictive quota system to regulate the Chinese stock market (Pistor and Xu, 2005), almost all Chinese listed firms were under-capitalized at their IPOs. In order to sustain the current operation and future expansion, a listed firm needs to raise additional capital immediately after its IPO. A listed company may issue corporate bonds or ask the bank for a loan, if the company obtains approval from the Central Bank, the State Planning Commission, and other authorities concerned. However, listed firms prefer to raise new equity capital rather than to borrow because regulators seldom approve listed companies' requests to issue bonds and bank loans restrict firms in many ways (Haw et al., 2000). Moreover, listed firms are not responsible for dividends and principal, and they view equity financing as cost free (Chen et al., 2008). Therefore, rights issues are the most important way to raise additional capital in the current regulatory environment. This provides listed firms with strong incentives to manage earnings to meet the profitability requirement. In fact, most listed firms have had rights issues within three years of the firms' listing.

To be eligible for rights issues, a listed firm has to meet several requirements. In 1993, firms had to be profitable for two consecutive years before they could issue rights. Since the CSRC recognized the first profitability requirement was loose and most firms qualify to offer rights, the CSRC tightened the regulation by raising the minimum profitability requirement in September 1994. The CSRC

required firms to be profitable for three consecutive years and the three-year average ROE must be more than 10% before the firms could issue rights. In January 1996, the CSRC further toughened the profitability requirement, stating that firms must have more than 10% ROE for three consecutive years before the firms could issue rights. This led to a significant drop in the number of firms that issued rights in 1996. The CSRC then lowered the requirement in March 1999, stating that firms have to maintain, at a minimum, a reported ROE of 6% for three consecutive years, and the average ROE over these three years must be no less than 10% before the firms could issue rights. In March 2001, the CSRC further lowered the standard, requiring that firms must have an average ROE above 6% for three consecutive years. Since the CSRC depends on ROE to review a listed firm's application for rights offerings, listed firms have strong incentives to manage earnings above those regulatory thresholds.

## LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

### Earnings management induced by profitability regulation

Earnings management has been prevalent in Chinese listed companies. Prior studies suggested that Chinese listed firms have strong incentives to manage their earnings to meet regulatory standards to gain the right for an IPO, to raise new equity capital through rights offerings and to avoid trading restriction, or being delisted. For example, Aharony et al. (2000) showed that SOEs attempt to manage earnings to boost their chances of being selected for IPOs. To avoid delisting, Lee and Xue (2003) found that firms increase the discretionary accruals to defer the occurrence of losses before the loss year. In the loss year, the firms will adopt the opposite earnings management behaviour to take a big bath. Similarly, Ding et al. (2007) provided evidence that ST and PT firms tend to undertake a higher degree of earnings management by using non-operating items to avoid being delisted.

In addition, numerous studies also document the earnings management behaviour in response to the 0% rule, the 6% rule, and the 10% rule. When listed firms boost their earnings to meet these rules, the reported ROE is likely to be only marginally above the regulatory threshold (referred to as marginal ROE). Once the regulatory threshold is reached, any additional opportunistic behaviour in reported profit will increase only the expected cost, not the expected benefit. As research settings differ, this prediction of earnings management behaviour is analogous in spirit to the compensation plan research findings about the effect of the bonus plan's lower and upper bounds on earnings management (Healy, 1985).

For example, Jiang and Wei (1998) showed that the percentage of firms with an ROE of just above 10% from 1994 to 1997 is increasing, and offer suggestions to curb the obvious earnings management behaviour. Xia and Yang (2002) took 1,088 listed companies in 2000 as a sample, and showed that the listed firms whose ROEs are within 6 to 7% or within 0 to 1% range manage earnings to meet regulatory benchmarks for offering stock rights and for avoiding delisting, respectively (we refer to firms whose marginal ROEs are within 0 to 1%, 6 to 7% or 10 to 11% under different regulatory environments as "borderline firms"). Consistent with these findings, Chen et al. (2001) examined the association between earnings management induced by profitability regulations and modified audit opinions (MAOs) over the period 1995 to 1997. The researchers found there is a significant association between receiving MAOs and reporting profits marginally above the target levels specified in stock delisting and rights offering regulations. This means earnings management for meeting the regulatory profitability requirements increases the frequency of receiving MAOs. Haw et al. (2000) found that firms whose ROEs are within 10 to 11% have higher abnormal accruals and non-operating income than other firms. The researchers also found that the borderline firms' earnings response coefficient is lower than that of other firms and that the borderline firms that conducted a rights issue later had less managed earnings than those firms that did not. Chen and Yuan (2004) provided evidence that there was a heavy concentration of ROEs in the area just above 10% for the period 1996 to 1998, and that listed firms use excess non-operating income to reach the 10% threshold. Furthermore, Yu et al. (2006) used a distribution approach and documented that earnings management exists at ROE thresholds, namely, at 10% for the period 1994 to 1998, 10 and 6% for the period 1999 to 2000 and 6% for the period 2001 to 2002. They further showed that earnings management at these thresholds was very rampant and that non-core income was the major means used in such earnings management. In short, the Chinese earnings management behaviour is primarily induced by the profitability regulation. For regulators, auditors, investors, and the public, this behaviour represents higher earnings manipulation risk when the listed firms are ST firms, PT firms, and borderline firms.

### Earnings management risk and the auditing value

Wallace (1980) argued that the audit is valued if the audit can reduce the noise and bias of financial information resulting from uncertainty and then improve the input data quality by means of the reduction of the risk premium. Consistent with these arguments, Balsam et al. (2003) and Ferguson et al. (2004) indicated that audit can serve a very important role in improving information credibility. Nevertheless, the value of an audit will also

affect the utility of financial audits. To define the concept of auditing value, we consider a simplified version of the “hiring or not hiring auditor problem”. The value of an audit is computed on the basis that the choice is between having no audit available and requiring the entrepreneur to hire an auditor who will provide the specified audit. The entrepreneur can decide to hire or not hire an auditor. Though the entrepreneur is the only one that knows a firm’s expected (monetary) real value, he is not sure how much the firm’s end-of-period value will be reported through accounting information system.

When no auditor is hired, we assume that a entrepreneur’s assets  $x$  face two states of the world: in state  $o$  the asset is overstated; in state  $u$  it is understated. The end-of-period values are  $(x + z)$  and  $(x - z)$ , respectively. The probabilities of overestimated and underestimated types are  $q$  and  $(1 - q)$ , respectively.

Now, let  $q$  and  $(1 - q)$  equal  $1/2$ , then the expected utility of  $x$  is equal to the expected value of the risks in terms of utilities, that is:

$$E\{u(x)\} = \frac{1}{2}[u(x+z) + u(x-z)] \tag{1}$$

The corresponding risks premium is equal to  $\pi_1(x, \tilde{z})$ , that is:

$$\pi_1(x, \tilde{z}) = \frac{1}{2}\sigma_{z1}^2\lambda_1(x) \tag{2}$$

When mandatory audits are introduced, an entrepreneur’s assets  $x$  still face two states of the world: in state  $o$  the asset is overstated; in state  $u$  it is understated. According to DeAngelo’s (1981) theorized analysis, the value of an audit to clients of audit services is defined as the joint probability that an auditor will (a) discover the breaches or errors in client’s accounting system and (b) report the breaches. This implies hiring an auditor is able to decrease the noises/variances of the accounting information, and increase the precision of information. Therefore, the end-of-period values are  $(x + sZ)$  and  $(x - sZ)$ , respectively, each with probability  $q$  and  $(1 - q)$ . The symbol  $s$  denotes the outcome of hiring an auditor ( $0 \leq s \leq 1$ ). The notations  $s=0$  and  $s=1$  indicate an audit can completely reduce the uncertainty of the accounting information and can not reduce any uncertainty of the accounting information, respectively.

Now, let  $s$  equal  $1/2$ ;  $q$  and  $(1-q)$  equal  $1/2$ , then the expected utility of  $x$  is equal to the expected value of the risks in terms of utilities, that is:

$$E\{u(x)\} = \frac{1}{2}[u(x + \frac{1}{2}z) + u(x - \frac{1}{2}z)] \tag{3}$$

The corresponding risks premium is equal to  $\pi_2(x, \tilde{z})$ , that is:

$$\pi_2(x, \tilde{z}) = \frac{1}{2}\sigma_{z2}^2\lambda_2(x) \tag{4}$$

We assume an entrepreneur is risk-averse and he has the same preferences whether hiring or not hiring an auditor, that is,  $\lambda_1(x) = \lambda_2(x) = \lambda$  for all  $x$ . Since the variances  $\sigma_{z2}^2$  are lower than  $\sigma_{z1}^2$ , the corresponding risk premiums, *ceteris paribus*, satisfy  $\pi_1(x, \tilde{z}) < \pi_2(x, \tilde{z})$  for every risk  $\tilde{z}$ . Accordingly, we define the differences between  $\pi_1(x, \tilde{z})$  and  $\pi_2(x, \tilde{z})$  as the value of an audit ( $V_a$ ), that is:

$$V_a = \pi_1(x, \tilde{z}) - \pi_2(x, \tilde{z}) = \frac{1}{2}\lambda\sigma^2 \tag{5}$$

where,

$$\sigma^2 = \sigma_{z1}^2 - \sigma_{z2}^2 \tag{6}$$

From the definition of  $V_a$ , we can clearly find that the value of an audit is a function of risk premiums and that the value of an audit depends on the riskiness of firm’s end-of-period value and the entrepreneur’s aversion to risk.

Observation: The value of an audit increases as the riskiness of end-of-period value ( $\sigma^2$ ) increase. Differentiating with respect to  $\sigma^2$ , we obtain:

$$\frac{dV}{d\sigma^2} = \frac{1}{2}\lambda > 0 \tag{7}$$

The preceding result indicates that an increase in firm’s riskiness (for example, earnings management risk) is likely to increase the incremental variance of firm’s end-of-period value and the incremental value of an audit.

Observe that if firm’s earnings management risk increases, then the variance of firm’s end-of-period value increases from  $\sigma^2$  to  $\sigma_d^2$  ( $\sigma_d^2 > \sigma^2$ ), and thus the entrepreneur’s risk premium increases form  $\pi$  to  $\pi^d$  ( $\pi^d \geq \pi$ ). Furthermore, the value of an audit increases from  $V_a$  to  $V_d$  and the value of an audit ( $V_d$ ) is greater than  $V_a$ , that is:

$$V_d = \pi^d - \pi^a > V_a = \pi - \pi^a \tag{8}$$

This observation implies that the riskier the firm's end-of-period value the greater is the incentives to hire an auditor so as to avoid as much firm-specific risk as possible. In turn, hiring an auditor suggests that the audited accounting information is more useful for entrepreneur than non-audited accounting information. Consequently, the value of an audit increases as riskier payoffs increases.

In that ST, PT, and borderline firms represent higher earnings management risk in Chinese stock market, and in that the value of an audit increases as the firm's riskiness increase, the following hypothesis can be advanced:

H<sub>1</sub>: The auditing value is positively associated with earnings management risk.

H<sub>1a</sub>: There is a positive association between the auditing value and the special treatment or particular transfer designation.

H<sub>1b</sub>: There is a positive association between the auditing value and reporting marginal ROE (0%, 1%).

H<sub>1c</sub>: There is a positive association between the auditing value and reporting marginal ROE (6%, 7%) and (10%, 11%).

## METHODOLOGY

### Regression model and variable definitions

On the basis of previous studies (Simunic, 1980; Firth, 1997; Crasewill and Francis, 1999; Abbott et al., 2003), we develop the following model to test our hypothesis:

$$LNFE = b_0 + b_1 STPT + b_2 DELIST + b_3 RIGHT6\% + b_4 RIGHT10\% + b_5 BIG4 + b_6 TOP10 + b_7 OPIN1 + b_8 OPIN2 + b_9 LNTA + b_{10} REC + b_{11} LEV + b_{12} AREA1 + b_{13} AREA2 + b_{14} AREA3 + b_{15} AREA4$$

In this study, our dependent variable is the value of an audit. Wallace (1980) suggested auditing is an economic service in essence. In addition, economists have argued that the demand for a product/service relies on the perceived customer utility (value), and the customer perceived value is the maximum price the customer will pay. That is, the higher the customer perceived value, the higher the actual auditing value. This means that the perceived customer value shall be the central role in audit pricing. Therefore, it is reasonable to use audit fees to proxy the value of an audit. We use natural log audit fees (*LNFE*) to proxy the value of an audit.

The test variables of interest are *STPT*, *DELIST*, *RIGHT6%*, and *RIGHT10%*. We use *STPT*, which is a dummy variable that take a value of 1 if the listed firm is labelled as ST or PT shares and 0 otherwise. We code *DELIST* as 1 if a reported ROE is between 0 and 1%, and 0 otherwise. The variables, *STPT* and *DELIST*, are designed to test H<sub>1a</sub> and H<sub>1b</sub>, that capture the effect of the delisting buffer mechanism. The next dummy variables, *RIGHT6%*, and *RIGHT10%*, are used to test H<sub>1c</sub> and capture the effect of earnings management induced by regulatory requirements on ROE for rights offering. *RIGHT6%* is coded 1 if a reported ROE is between 6 and 7%, and 0 otherwise. *RIGHT10%* is coded 1 if a reported ROE is between 10 and 11%, and 0 otherwise. Positive signs are expected for the test variables *STPT*, *DELIST*, *RIGHT6%*, and *RIGHT10%*.

Following Simunic (1980), Firth (1997), Crasewill and Francis (1999), and Abbott et al. (2003), we control for individual client

characteristics through the following variables. *LNTA* is defined as the natural log of total assets and is used to controls for auditee size. The next four variables serve as client risk proxies. *REC* represents the proportion of total assets in accounts receivable and is used to control for client's inherent risk in an engagement. *LEV* is measured by total book value of debts to assets and is used to capture the risk of a client failing, which potentially exposes the auditor to loss. Large debts expose the auditor to significant audit risk in the event of default. *OPIN1* and *OPIN2* measure the impact of audit opinion on audit fees. We code *OPIN1* as 0 when client receive an unqualified opinion, and 1 otherwise. We code *OPIN2* as 0 when client receive an unqualified opinion or an unqualified opinion with explanatory notes, and 1 otherwise.

In addition to using the afore control variables, we include two variables, *BIG4* and *TOP10*, as additional controls to capture the respective effects of auditor size on audit fees. Audit firms were divided into Big 4 or non-Big 4. We further divide non-Big 4 into top 10 and non-top 10 domestic auditors because the major audit suppliers in the China capital market are domestic auditors (Aini, 2004; Peng and Liu, 2008). The variable *BIG4* is coded 1 if the client's financial statement is audited by Big 4 auditors and 0 otherwise. *TOP10* is coded 1 if the client's financial statement is audited by top 10 domestic auditors and 0 otherwise. Similar to prior studies, we expect audit fees to be positively related to client size, client risk, and auditor size.

Finally, there are likely to be variations in audit fees across clients in different geographical location. Liu et al. (2003) and Chen et al. (2007) suggested imbalanced economic development between geographical regions results in different price level, wherein the audit fee would be higher if the client is located in a more developed region. To control for the impact of difference in economic development level on audit fees, we include four dummy variables (*AREA1*, *AREA2*, *AREA3*, and *AREA4*) based on the geographical region in which the firm operates. Table 1 defines the dependent, test and control variables in detail.

### Sample selection and data collection

Our sample starts with the entire population of A-shares of listed Chinese firms on the Shenzhen and Shanghai stock exchanges for and covers a period of six years from 2001 to 2006. In view of the regulatory nature of financial institutions, banking, finance, and insurance firms, they are not included in the study. We exclude the firms that issue both A- and B-shares; that issue both A- and H-shares since they are different from A-share firms in terms of their information environment, reporting requirements, and information dissemination process. We also exclude the data in the listing year due to distinguish our study from the IPO earnings management.

Furthermore, we drop the observations with missing values in either dependent variable or independent variables. Finally, we delete the observations with extreme variable values (0.5% at both tails). After applying various filters, our final sample consists of 4,594 firm-year observations. Table 2 provides the distribution of sample firms by year. They are not clustered in any particular year and are well spread out.

Listed firms' audit fee data are obtained from the China Stock Market and Accounting Research (CSMAR) Audit Opinion and Fees database developed by the Shenzhen GTA Information Technology Co, while financial data are collected from the China database of the Taiwan Economic Journal (TEJ) and company financial reports.

## EMPIRICAL RESULTS

### Descriptive statistics

Descriptive data for the variables used in the study are

**Table 1.** Definitions of variables.

Variable	Description
LNFEET	Natural log of audit fees
STPT	A dummy variable, 1 if the listed firm is designated as a special treatment or particular transfer firm by CSRC, and 0 otherwise;
DELIST	A dummy variable, 1 indicates $0 \leq ROE \leq 1\%$ , and 0 otherwise;
RIGHT6%	A dummy variable, 1 indicates $6\% \leq ROE \leq 7\%$ , and 0 otherwise;
RIGHT10%	A dummy variable, 1 indicates $10\% \leq ROE \leq 11\%$ , and 0 otherwise;
LNTA	Natural log of total assets;
REC	Accounts receivable divided by total assets;
LEV	Debt ratio (total book value of debt divided by assets);
OPIN1	A dummy variable, 0 if the listed firm receives an unqualified opinion, and 1 otherwise;
OPIN2	A dummy variable, 0 if the listed firm receives an unqualified opinion or an unqualified opinion with explanatory notes, and 1 otherwise;
BIG4	A dummy variable, 1 if financial statements audited by Big 4 auditors, 0 otherwise;
TOP10	A dummy variable, 1 if financial statements audited by top domestic auditors, 0 otherwise;
AREA1	Geographical region, 1 if the auditee's address is in Shanghai, Beijing, Tianjin, Guangdong or Zhejiang, and 0 otherwise;
AREA2	Geographical region, 1 if the auditee's address is in Fujian, Jiangsu, Shandong or Liaoning, and 0 otherwise;
AREA3	Geographical region, 1 if the auditee's address is in Heilongjiang, Jilin, Xinjiang, Hainan, Hubei or Hebe, and 0 otherwise;
AREA4	Geographical region, 1 if the auditee's address is in Anhui, Sichuan, Guangxi, Chongqing, Hunan, Jiangxi, Inner Mongolia, Henan, Shanxi, Yunnan, or Tibe, and 0 otherwise.

**Table 2.** Sample distribution by year.

Year	2001	2002	2003	2004	2005	2006	Total
Number of Obs.	719	781	800	809	804	681	4,594
Percent	15.65	17.00	17.41	17.61	17.50	14.84	100

provided in Table 3. The mean (median) audit fee paid is RMB \$ 418,714 (RMB \$ 350,000). For the test variables, on average, 10.93% of the sample firms (*STPT*) were ST or PT firms. With respect to reported ROE, 10.73% of the sample firms (*DELIST*) were between 0 and 1%, 8.51% of the sample firms (*RIGHT6%*) were between 6 and 7%, and 3.05% of the sample firms (*RIGHT10%*) were between 10 and 11%. For the control variables, only 1.96% of the sample firms (*BIG4*) were audited by Big 4 auditors, while 41.73% of the sample firms (*TOP10*) are audited by top 10 domestic auditors. With regards to the geographical region where the firm operates, 33.46% of the sample firms (*AREA1*) were located in the five more developed Chinese regions (Shanghai, Beijing, Tianjin, Guangdong or Zhejiang).

We also perform correlation analysis for all the relevant variables (not reported here). The correlation matrix reveals that audit fee (*LNFEET*) is positively correlated with the test variables. Among independent variables, few variables are highly inter-correlated (above 0.5). Variables with high significant correlations include *OPIN1* and *STPT* (0.4849), and *OPIN1* and *OPIN2* (0.6925). These statistically significant correlations, however, have not

created any serious problem of multicollinearity, as regression diagnostics which are discussed further for the main analyses do not indicate the existence of any such problems.

### Univariate analysis

Table 4 presents the univariate results of audit fee. The mean and median value of audit fee (at RMB \$ 489,812 and 406,452) for ST or PT firm (*STPT*) is significantly higher than that (RMB \$ 409,992 and 350,536) for non-ST or non-PT firm. Similarly, the mean and median audit fees of firms within reported marginal ROE (*RIGHT6%*, *RIGHT10%*) are all significantly larger than that of firms without reported marginal ROE. The mean (median) audit fees of firms that receive dirty opinion (*OPIN1*, *OPIN2*) are significantly higher than that of firms receiving clean opinion. Also, the mean (median) audit fees of firms that audited by Big 4 (*BIG4*) and top 10 domestic auditors (*TOP10*) are significantly higher than that of firms audited by non-Big 4 and non-top 10 domestic auditors. Finally, the mean (median) audit fees of firms that were located in

**Table 3.** Descriptive statistics.

<b>Panel A: Descriptive statistics for continuous variables</b>					
<b>Variable name</b>	<b>Mean</b>	<b>Median</b>	<b>Standard deviation</b>	<b>25<sup>th</sup> percentile</b>	<b>75<sup>th</sup> percentile</b>
<i>FEE</i>	418,714	350,000	231857.38	300,000	500,000
<i>LNFE</i>	12.8376	12.7657	0.4436	12.6115	13.1224
<i>LNTA</i>	13.8214	13.7951	0.8235	13.3281	14.3320
<i>REC</i>	0.1944	0.1657	0.1415	0.0875	0.2712
<i>LEV</i>	0.6953	0.4067	13.1242	0.2692	0.5559

  

<b>Panel B: Mean, median, and frequencies for dichotomous variables</b>				
<b>Variable name</b>	<b>Mean</b>	<b>Median</b>	<b>Number of firms coded "1"</b>	<b>Number of firms coded "0"</b>
<i>STPT</i>	0.1093	0	502	4092
<i>DELIST</i>	0.1073	0	493	4101
<i>RIGHT6%</i>	0.0851	0	391	4203
<i>RIGHT10%</i>	0.0305	0	140	4454
<i>OPIN1</i>	0.1184	0	544	4050
<i>OPIN2</i>	0.0605	0	278	4316
<i>BIG4</i>	0.0196	0	90	4504
<i>TOP10</i>	0.4173	0	1557	2947
<i>AREA1</i>	0.3346	0	1537	3057
<i>AREA2</i>	0.1802	0	828	3766
<i>AREA3</i>	0.1667	0	766	3828
<i>AREA4</i>	0.2536	0	1165	3429

the more developed geographical region (*AREA1*) are significantly higher, compared to other regions. To summarize, results of univariate test of *STPT*, *RIGHT6%* and *RIGHT10%* above are consistent with the prediction that the auditing value increases as the firm's earnings management risks increase. However, results of univariate test of *DELIST* are mixed. One possible explanation is that Table 4 results based on univariate tests do not adequately control for other factors affecting the auditing value. Further, we return to this point where we use a multivariate test to control other factor affecting the auditing value, as well as, further exploring this result by partitioning the sample according to firm's incentives of earnings management.

### Multivariate regression results

Table 5 reports the multivariate regression results. As shown in Table 5, a good linear fit is achieved in the regression. The adjusted R-square for the fee models range from 31.15 and 35.90%, which indicates a moderate explanatory power of models. The *F* statistic is statistically significant indicating meaningful relationships between the dependent and independent variables. In terms of regression diagnostics, all the variance inflation factors (VIFs) values are less than 10 (not reported here), indicating nonexistence of between independent variables (Hair et al., 1998).

For the test variables of interest, the coefficient of *STPT* is positive and highly significant ( $p < 0.01$ ), thus providing support for our  $H_{1a}$ . The coefficient of *DELIST* is generally positive and significant for models 2 and 4; but not significant for models 1 and 4. The result partly supports  $H_{1b}$ . The variables *RIGHT6%* and *RIGHT10%* are significantly positive ( $p < 0.01$ ), thus providing support for our  $H_{1c}$ . These results indicate the higher the level of earnings management risks, the greater variances of firm's end-of-period value, *ceteris paribus*, the greater payoffs of risk premiums, and thus the higher value of an audit. In other words, the value of an audit increases as the earnings management riskiness increase. We believe that by controlling for other factors affecting the auditing value, multivariate tests provide more reliable evidence than univariate tests reported in Table 4.

For the control variables, all are significant and in the expected direction. The coefficients for *LNTA*, *REC*, *LEV*, *OPIN1*, and *OPIN2*, are all positive and significant, indicating that auditors tend to charge more for larger clients (*LNTA*) and those with weaker financial condition (*REC*, *LEV*, *OPIN1* and *OPIN2*). The coefficients on *BIG4* and *TOP10* are both positive and significant, which indicates that Big4 can earn a significant audit fee premium compared to non-Big4; domestic top 10 can earn a significant audit fee premium compared to non-top10. The coefficients on the geographical region variables (*AREA1*, *AREA2* and *AREA3*) are generally significant as well. The results suggest that clients located in a more developed

Table 4. Univariate test.

Dummy variable	Audit fee					
	Mean		Median		Difference	
	D=1 (n1)	D=0 (n0)	D=1 (n1)	D=0 (n0)	t statistic	z   statistic
STPT	489,812(502)	409,992(4092)	406,452(502)	350,536(4092)	79,820***(7.3213)	55,916***(5.7508)
DELIST	402,663(493)	420,644(4101)	387,333(493)	350,553(4101)	-17,981(1.6272)	36,780(0.5386)
RIGHT6%	472,968(391)	413,667(4203)	401,935(391)	350,514(4203)	59,301***(4.8493)	51,421***(5.6571)
RIGHT10%	467,736(140)	417,173(4454)	403,000(140)	350,608(4454)	50,563***(2.5422)	52,392****(4.3682)
OPIN1	474,538(544)	411,216(4050)	392,683(544)	350,557(4050)	63,322****(6.0037)	42,126****(4.7661)
OPIN2	499,597(278)	413,504(4316)	403,077(278)	350,582(4316)	86,093****(6.0239)	52,495****(5.0636)
BIG4	918,163(90)	408,734(4504)	705,000(90)	350,553(4504)	509,429****(21.6658)	354,447****(10.5348)
TOP10	503,067(1557)	358,894(2947)	444,458(1557)	339,474(2947)	144,173****(23.7770)	104,984****(21.3230)
AREA1	490,482(1537)	382,631(3057)	399,615(1537)	348,227(3057)	107,851****(15.2465)	51,388****(12.6535)
AREA2	404,249(828)	421,894(3766)	353,468(828)	350,697(3766)	-17,645**(-1.9834)	2,771(0.4367)
AREA3	385,645(766)	425,331(3828)	349,839(766)	359,847(3828)	-39,686***(-4.3328)	-10,008****(2.9220)
AREA4	383,717(1165)	430,604(3429)	351,014(1165)	360,476(3429)	-46,887***(-5.9858)	-9,462****(4.0143)

regions have higher audit fees on average, than clients in other regions.

### Sensitivity analysis

We conduct a number of sensitivity analyses to confirm the robustness of our results. First, to further learn whether different regulatory environments affects the auditing value, we partition the sample into three groups based on firm's return on equity (ROE) and perform separate regressions on the three samples. We orderly define the listed firms whose ROEs are within [0%, 6%], [6%, 10%] and [>10%] as Group I, Group II, and Group III. Second, we vary the criterion for the two variables DELIST and RIGHTS by incrementally increasing the cut-off point of marginal ROE 1% at a time to capture the effect of variation in our definition of marginal ROE.

The results of our sensitivity analyses (not

reported here) show that *DELIST* begin to lose significance when marginal profitability range was set at 3% (above the requirement) and *TOP10* and *OPIN1* were in control. In addition, the adjusted R-square for the model decreases gradually (from 35.26 to 34.67%). Estimated coefficients on other variables remained qualitatively similar throughout the variation range from 2 to 5%. Similarly, we find the same pattern when marginal profitability range was set at 2% (above the requirement) and *BIG4* and *OPIN1* were in control.

Next, for Group II, *RIGHT* begin to lose significance when marginal profitability range was set at 8% (above the requirement). The adjusted R-square decreases gradually. Likewise, for Group III, *RIGHT* begin to lose significance and the adjusted R-square decreases gradually when marginal profitability range was set at 14% (above the requirement) and *TOP10* was in control. These results imply that our primary results

reported in Table 5 are robust to the sensitivity tests. Also, our primary results are relatively insensitive to variation in the definition of marginal profitability range. What's more important, management appears to have carefully selected profitability levels to report so as to maximize the benefit of earnings management, which is analogous to Healy's (1985) compensation plan research findings, that is, once the required profit level is reached, any increase in reported ROE by earnings management will increase its expected cost, but not its expected benefit.

### CONCLUSIONS AND IMPLICATIONS

The accounting profession in China has achieved remarkable progress since its reestablishment in the 1980s. An important issue on the Chinese stock market is the role of auditing. Unlike the advanced economies, the Chinese domestic audit

**Table 5.** Multivariate regression results.

Variable	Model 1 coefficient (t-statistic)	Model 2 coefficient (t-statistic)	Model 3 coefficient (t-statistic)	Model 4 coefficient (t-statistic)
Intercept	9.1368***(92.1258)	9.2618***(96.5212)	9.1482***(92.2135)	9.2737***(96.5751)
<b>Test variable</b>				
<i>STPT</i>	0.2573***(12.5326)	0.2546***(12.8478)	0.2633***(13.0158)	0.2634***(13.4874)
<i>DELIST</i>	0.0137(0.7729)	0.0281*(1.6597)	0.0156(0.8780)	0.0302*(1.7600)
<i>RIGHT6%</i>	0.0992***(5.0227)	0.1105***(5.7976)	0.0972***(4.9257)	0.1080***(5.6706)
<i>RIGHT10%</i>	0.1419***(4.4598)	0.1276***(4.1538)	0.1409***(4.4274)	0.1263***(4.1082)
<b>Control variable</b>				
<i>LNTA</i>	0.2429***(34.5575)	0.2311***(33.9175)	0.2421***(34.4386)	0.2303***(33.7780)
<i>REC</i>	0.1604***(3.9558)	0.1461***(3.7344)	0.1719***(4.2754)	0.1605***(4.1360)
<i>LEV</i>	0.0018***(4.2850)	0.0017***(4.2936)	0.0017***(4.1396)	0.0017***(4.1360)
<i>OPIN1</i>	0.0873***(4.4389)	0.0999***(5.2572)		
<i>OPIN2</i>			0.1063***(4.1170)	0.1154***(4.6265)
<i>BIG4</i>	0.5587***(14.1603)		0.5595***(14.1755)	
<i>TOP10</i>		0.1871***(23.4739)		0.1866***(23.4012)
<i>AREA1</i>	0.3543***(15.1443)	0.2816***(12.3472)	0.3546***(15.1528)	0.2822***(12.3608)
<i>AREA2</i>	0.2241***(8.9847)	0.2138***(8.8847)	0.2246***(9.0022)	0.2144***(8.9035)
<i>AREA3</i>	0.1901***(7.5455)	0.1820***(7.4859)	0.1888***(7.4927)	0.1806***(7.4230) ***
<i>AREA4</i>	0.2245***(9.3794)	0.2153***(9.3236)	0.2249***(9.3942)	0.2157(9.3316)
Observation	4594	4504	4594	4504
Adjusted R <sup>2</sup>	0.3119	0.3590	0.3115	0.3581
<i>F statistic</i>	161.1827***	198.8320***	160.8753***	198.0864***

market is characterized by newly formed audit firms. Meanwhile, auditors are subject to economic incentives and the discipline of markets and regulations. This study is motivated by a need to understand whether the auditing value is positively associated with earnings management risk; whether the security regulations of special treatment, delisting, and right offerings affect the value of an audit.

Based on a sample of 4,594 Chinese listed

firms, we find that the value of an audit increases as earnings management risk increase. We also find that results suggest that, 1) the value of an audit is positively associated with earnings management risk; 2) the regulation of special treatment or particular transfer designation positively affects the value of an audit; and 3) the regulations of and delisting and right offerings positively affects the value of an audit. These results suggest that the unintended economic

consequences of different security regulations stimulate the strong demand for audit service.

This study provides a unique test of the informational value of audits in the Chinese stock market. Our findings strongly suggest that the audit is valued if the audit can reduce the noise and bias of financial information resulting from uncertainty, which is consistent with Wallace's (1980), Balsam et al. (2003) and Ferguson et al. (2004). In particular, as society becomes more complex, decision

makers are more likely to receive unreliable information. The most common way for investors to obtain reliable information is to have an independent audit. Decision makers can then use the audited information on the assumption that is reasonably complete, accurate, and unbiased, which is helpful to make a right decision. To sum up, we provide evidence in favour of the informational role of auditing. Audit can serve a very important role in improving information credibility.

From the perspective of information hypothesis and risk premium, this study investigates the auditing value in China. Future research should further explore the Chinese auditing value from the perspective of insurance hypothesis and monitoring hypothesis.

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