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Is audit materiality informative? Evidence from China

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ABSTRACT

To improve the usefulness of audit opinions, on 23 March 2021, the China Securities Regulatory Commission mandated that auditors disclose overall quantitative materiality of consolidated financial statements in special explanations of modified audit opinions. This paper selects Chinese A-share companies issued with modified audit opinions for the period of 2020–2022 as the research sample and analyzes the assessment of materiality in audit practice and the informativeness of audit materiality. Our findings are as follows. (1) The most commonly used bases for materiality by auditors are profit and income, with considerable differences in the percentages applied to the different bases and variations even within the same base. (2) The higher the materiality amount, the poorer the audit quality. This negative correlation is mainly observed in scenarios where the audited companies engage in downward earnings management and where the competency of audit firms or auditors is relatively low. (3) Companies that disclose quantitative materiality in the special explanations of modified audit opinions have a lower earnings response coefficient than companies that do not disclose audit materiality. This research sheds light on the “black box” of the audit process and verifies the information value of audit materiality. The conclusions are of significant value to auditing standard-setters, investors and regulators.

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1. Introduction

Materiality is the magnitude of the impact of audit errors on the audit client's decision making, which is one of the fundamental concepts of auditing and is utilized throughout the audit process (Christensen et al., 2020). In planning and performing an audit, an auditor is required to make judgments about materiality to provide a basis for assessing the risks of material misstatement and preparing for further audit procedures. They must also apply materiality when evaluating the impacts of identified audit misstatements and uncorrected misstatements on financial statements. Therefore, materiality directly determines the quality of the audit. However, due to data limitations, how auditors in China establish materiality has remained a "black box."

On 9 March 2021, the China Securities Regulatory Commission (CSRC) issued its "Guidelines for the Application of Supervisory Rules—Audit Category No. 1," explicitly mandating that "an auditor should disclose the overall quantitative materiality of consolidated financial statements in special explanations of modified audit opinions, including materiality bases and percentages, calculation results (the amount) and the basis for selection." This guideline took effect on 23 March 2021, following which auditors began to disclose the overall materiality of consolidated financial statements in special explanations of modified audit opinions.¹

This regulatory policy provides an opportunity to enhance understanding of the selection of materiality bases and percentages in audit practice. We select Chinese A-share companies issued with modified audit opinions for the period of 2020–2022 as our research sample and examine three issues. First, we provide descriptive evidence on the disclosure of audit materiality as well as the selection of bases and percentages. Second, we explore the relationship between audit materiality and audit quality. Third, we examine whether the disclosure of quantitative materiality affects investor decision-making. By collating the disclosures of quantitative materiality, we find that the Big 10 audit firms are more likely to disclose audit materiality than other audit firms. In addition, profit and income are the bases most used by auditors and there is a certain connection between the percentage and the base, although, for the same base, the percentage chosen by auditors varies. Furthermore, the empirical results show that materiality is informative, with lower materiality indicating higher audit

¹ For example, BDO Lixin Audit Firm mentions in its "Special Explanation on Modified Audit Opinion for Innovative Medical Management Co., Ltd.'s 2022 Financial Statements" that: "The materiality related to the 2022 consolidated financial statements used in our audit is as follows: the selected base is income, the percentage used is 1%, and the basis for selection is that the company is a listed company mainly aimed at making a profit, with profitability being the financial indicator most concerned by investors. However, due to the pre-tax loss and significant fluctuations this period, 1% of operating income was used as the materiality, resulting in a calculation of RMB 7.097 million."

quality, especially in the case of companies with negative earnings management, companies audited by non-Big 10 audit firms and companies audited by auditors without industry expertise. In addition, companies that disclose audit materiality have a lower earnings response coefficient than companies that do not disclose materiality.

The key contributions of this paper are as follows. First, based on Chinese audit materiality data, this paper opens the “black box” of audit materiality in China to some extent by revealing the bases and percentages selected for materiality in audit practice. Previous studies infer audit materiality from the critical values for identifying major deficiencies in internal controls (Zheng and Xu, 2020; Zhou et al., 2021) or accounting firms’ internal audit guidelines (Blokdijk et al., 2003; Wang and Xu, 2009; Eilifsen and Messier, 2015). Although this approach is reasonable, it is subject to certain measurement errors. The few studies based on direct and observable materiality data tend to be empirical studies of developed countries, such as the UK and the US (Choudhary et al., 2019; Wang and Liu, 2019). This paper describes the bases and percentages of materiality actually used by Chinese auditors based on the latest data disclosed in special explanations of modified audit opinions.

Second, this study contributes to elucidating the global issue of whether to disclose materiality in audit reports. Currently, only the UK and the Netherlands require the disclosure of materiality in audit reports, whereas the International Auditing and Assurance Standards Board (IAASB) and the US’s Public Company Accounting Oversight Board (PCAOB) do not yet require the disclosure of materiality in audit reports. China’s aim is for its audit standards to converge continuously and comprehensively with international audit standards. Before March 2021, there was no requirement to disclose the level of audit materiality in China. In deciding to mandate the disclosure of materiality in special explanations of modified audit opinions, the CSRC combined securities markets’ audit practices and drew on international best practices for audits. Our research shows that companies that disclose materiality in special explanations of modified audit opinions have a lower earnings response coefficient (ERC) than other companies, indicating that the disclosure of audit materiality has a significant impact on the informativeness of earnings and investor decision-making.

Third, this paper verifies the relationship between materiality and audit quality, expanding empirical research on the audit process. DeFond and Zhang (2014) encourage researchers to find creative research scenarios and designs for empirical research on the audit process, especially regarding audit risk assessment and the determinants of audit procedures. Materiality is applicable throughout the audit process and is the basis for determining risk assessment and audit procedures. Therefore, this study enriches empirical research on the audit process from the perspective of audit materiality. Lastly, the findings of this paper are of value to investors, analysts and regulators. This study finds that higher audit materiality indicates lower audit quality. Investors, analysts and regulators can use materiality to judge audit quality, thereby making targeted investments, analyses or regulations.

The remainder of this paper is organized as follows. Part 2 describes the institutional background and reviews the literature; Part 3 explains the research questions and research design; Part 4 presents the empirical analysis and results; and Part 5 provides conclusions and implications.

2. Institutional background and literature review

2.1. Materiality-related auditing standards

China’s auditing standards relating to materiality are shown in Table 1. They include Standards No. 1221 (Materiality in Planning and Performing the Audit) and No. 1251 (Evaluating Misstatements Identified during the Audit). The former stipulates the determinant, execution, modification and documentation of materiality during the audit planning and execution phases, whereas the latter focuses on the application of the concept of materiality when evaluating the effect of identified misstatements on the audit and the effect of uncorrected misstatements on financial statements. In addition, there are various application guides relating to these standards as shown in Table 1 that provide detailed guidance for Chinese certified public accountants (CPAs) on applying the relevant audit standards. These guides and questions and answers provide detailed guidance for CPAs to apply the relevant audit standards in establishing materiality, evaluating the impact of uncorrected misstatements on financial statements and issuing modified opinions. According to the provisions of the

Table 1
Materiality-related auditing standards, application guidance and Q&A.

Auditing standards	Auditing Standards for Chinese Certified Public Accountants No. 1221—Materiality in Planning and Performing an Audit Auditing Standards for Chinese Certified Public Accountants No. 1251—Evaluating Misstatements Identified during the Audit
Application guidance	Application Guidance on Auditing Standard No. 1221 Application Guidance on Auditing Standard No. 1251
Q&A	Chinese Certified Public Accountants Auditing Standards Questions and Answers No. 8—Materiality and Evaluation of Misstatements Chinese Certified Public Accountants Auditing Standards Questions and Answers No. 16—Qualified Opinions in Audit Reports

Chinese Institute of CPAs, auditors should master and implement audit standards, application guidelines and question answering when performing audit services.

Establishing materiality requires auditors to use their professional judgment. Generally, auditors first select a base and then multiply it by a certain percentage to determine the overall materiality for financial statements. The Chinese Auditing Standard No. 1221 “Materiality in Planning and Performing an Audit” and its Application Guide outline the factors that CPAs need to consider when choosing a base and the relationship between the percentage and the base. The Answers to Questions on Auditing Standard No. 8 “Materiality and Evaluation of Misstatements” provides some examples commonly used in practice for selecting materiality bases and percentages. However, it also emphasizes that the bases and percentages contained in the Answers to Questions are illustrative rather than prescriptive, and that auditors need to make appropriate choices and adjustments based on the specific circumstances of the audited entity and the audit engagement. Overall, Chinese auditing standards are qualitative in nature with respect to materiality and the assessment of materiality is based mainly on the auditor’s professional judgment. Therefore, to understand the materiality assessments in audit practice, it is necessary to systematically collate and analyze materiality based on the consolidated financial statements disclosed in special explanations of modified audit opinions.

2.2. Institutional background of materiality disclosure

In recent years, there has been a heated debate among regulators around the world about whether materiality should be disclosed in audit reports. Proponents state that disclosure of materiality can assist investors’ decision-making, whereas opponents argue that materiality disclosure may lead auditors to disclose quantitative materiality while ignoring qualitative descriptions of materiality (PCAOB, 2017), and that materiality disclosures are not comparable, resulting in inconsistent communications. In addition, they argue that because there are three materiality criteria—overall financial statement materiality, actual implementation materiality and thresholds for apparently minor misstatements—it is difficult to determine which materiality to disclose (PCAOB, 2011). Although the UK and the Netherlands require materiality disclosure in audit reports (FRC, 2013; NBA, 2014), neither the IAASB nor the PCAOB currently require materiality disclosure in audit reports (IAASB, 2015a, 2015b; PCAOB, 2017). Because China aims to align its auditing standards with the international auditing standards, before 2021, there was no requirement to disclose audit materiality in audit reports in China.

However, to standardize the issuance of appropriate audit opinions on financial statements by auditors and to further enhance the usefulness of audit opinions, in 2021, the CSRC issued Audit Category No. 1, which clearly requires the auditor to disclose the overall materiality of the consolidated financial statements in a special note on modified audit opinions, including the basis and percentage of materiality, the calculation results and the basis of selection. If there is a change in materiality between the current and previous periods, the reasons for the change must be disclosed. The guideline has been effective from 23 March 2021; as noted above, it was adopted by China in line with closely integrating audit market practices with the best practice of international audit markets. Two questions remain unanswered following the introduction of this policy.

First, do China's listed companies disclose audit materiality as required? Second, what are the economic consequences of materiality disclosure?

2.3. Empirical research on audit materiality

Materiality is one of the basic concepts of auditing and related studies are relatively abundant. However, due to a lack of observable data, the empirical research on audit materiality is limited. Some researchers measure audit materiality using critical values for the criteria for identifying significant deficiencies in internal control to explore the determinants of the materiality (Zheng and Xu, 2020) and the consequences (Zhou et al., 2021). By obtaining data from accounting firms' audit manuals or guides through questionnaires, some studies introduce the assessment of materiality (Eilifsen and Messier, 2015) and examine the determinants of materiality (Blokdijk et al., 2003) or the relationship between materiality and audit opinions (Wang and Xu, 2009). Based on the PCAOB's proprietary data, Choudhary et al. (2019) provide a brief introduction to the determinants of audit materiality and explore the relationship between materiality and financial statement reliability. Wang and Liu (2019) analyze the bases and percentages of the overall materiality of financial statements based on audit reports in the UK. In addition, scholars use experimental studies to examine the impact of audit materiality disclosure on the investment decisions of professional and non-professional investors (Christensen et al., 2020; Eilifsen et al., 2021; Zhang et al., 2021a, 2021b; Zhang et al., 2023) and the impact of materiality assessment methodologies on auditors' decision-making (Nelson et al., 2005).

In summary, although some progress has been made in empirical research on audit materiality, due to data limitations, most studies measure materiality in an indirect manner.² A small number of studies conduct research based on direct materiality data, but these studies present empirical evidence from developed countries. Furthermore, there are no archival studies focusing on the economic consequences of materiality disclosures. This gap in the literature provides research opportunities that we aim to address in this study. Based on the materiality data of consolidated financial statements disclosed in the special notes on modified audit opinions since 2021, we reveal the assessment of materiality in China's auditing practice and explore the relationship between materiality and audit quality, as well as the impact of materiality disclosure on the informativeness of earnings and investors' decision-making. In doing so, we address the abovementioned research gaps.

3. Research design and hypothesis development

With the implementation of the CSRC's Audit Category No. 1, CPAs began to disclose the materiality of the consolidated financial statements in special notes on modified audit opinions. For example, PAN-CHINA disclosed in its "Special Note on the Modified Audit Opinion on the 2022 Financial Statements of Zhejiang Furun Company"³ that "in performing the audit of the 2022 financial statements of Zhejiang Furun Company, we set the materiality amount of the consolidated financial statements at RMB 24.65 million. Zhejiang Furun is a profit-oriented enterprise and the auditors took the absolute value of its profit before tax from recurring operations of RMB 492.93 million (the absolute value of profit before tax excluding non-recurring gains and losses) as the base and multiplied it by 5 %, thus calculating the total materiality amount of the consolidated financial statements as RMB 24.65 million." This method of calculating materiality for the current period is consistent with that of the previous period. In another example, in its Special Note on Modified Audit Opinion of Innovative Medical Management Corporation,⁴ BDO explains the overall materiality of the 2022 consolidated financial statements used in its audit as follows: "the materiality base is operating revenue and the percentage applied to this base is 1 %. The main purpose of a listed company is to make a profit and profitability is the financial indicator that investors are most interested in. However, the pre-tax

² The literature measures materiality by extrapolating from accounting firms' internal audit manuals or the criteria for identifying significant deficiencies in internal control, rather than determining the level of materiality used by auditors in practice.

³ <http://static.cninfo.com.cn/finalpage/2023-04-28/1216661080.PDF>.

⁴ <http://static.cninfo.com.cn/finalpage/2023-04-28/1216660089.PDF>.

profit for the period was loss-making and fluctuated widely. Therefore, 1 % of operating income was used as the materiality for the period and the calculation result was RMB 0.71 million.”

Based on the materiality data disclosed in the special note on modified audit opinions, this paper mainly addresses the following three research questions (RQs): RQ1: what are the appropriate descriptive statistics for audit materiality?; RQ2: what is the relationship between materiality and audit quality?; and RQ3: what is the impact of materiality disclosure on investor decision-making? RQ1 involves basic descriptive analysis of the data, RQ2 examines the degree of informativeness embodied in materiality and RQ3 tests the economic consequences of disclosing this information about materiality.

3.1. Descriptive statistics of audit materiality

A systematic overview of materiality helps to understand the auditor’s professional judgment on materiality in audit practice. Although the “Guidance on Application of Regulatory Rules—Audit Category No. 1” requires the disclosure of the overall materiality of the financial statements in special explanatory notes to modified audit opinions, not all auditors comply with this requirement in practice. Therefore, we first provide descriptive statistics on materiality by year and by audit firms, before proceeding to analyze the bases selected by auditors and the percentages applied to these bases.

3.2. Relationship between materiality and audit quality

Materiality is a critical piece of information in an audit and the CSRC’s issuance of “Audit Category No. 1” aims to further enhance the usefulness of audit opinions. This raises the following questions: what information does materiality encompass? What is the relationship between audit materiality and audit quality?

According to “Chinese Auditing Standard No. 1221—Materiality in Planning and Performing an Audit,” materiality refers to misstatements (including omissions) that, whether individually or cumulatively, are expected to influence the economic decisions of financial statement users. In planning and performing an audit, the auditor is required to make subjective judgments about materiality, which provides a basis for assessing the risks of material misstatement and determining further audit procedures. A higher level of materiality implies a higher threshold for acceptable misstatements or omissions by the auditor, resulting in a smaller scope of risk assessment procedures and further audit procedures (Choudhary et al., 2019; Christensen et al., 2020), which may ultimately lead to lower audit quality. Therefore, from the perspective of audit inputs, there is a negative correlation between materiality and audit quality. Conversely, however, materiality could be positively correlated with audit quality because a higher level of materiality means that auditors can focus on analyzing, testing and addressing the most significant risks of the audited entity rather than covering everything, which could help to improve audit quality.

In addition, the choice of materiality is endogenous. “Chinese Certified Public Accountants Auditing Standards Question and Answer No. 8—Materiality and Evaluation of Misstatements” states that auditors should consider materiality from the perspective of financial statement users, taking into account factors such as the nature of the audited entity, its life-cycle stage, industry and economic environment. Auditors should use appropriate bases such as assets, liabilities, equity, revenue, profit or expenses, or items of particular interest to users of the financial statements. The relationship between the percentage and the chosen base is somewhat interdependent; regardless of whether the percentage is higher or lower, as long as it fits the specific situation, it can be appropriate. Therefore, the choice of materiality depends on the auditor’s subjective judgment after a comprehensive consideration of the audited entity’s situation and the needs of financial statement users. According to the risk-oriented audit standard, for audited entities with high audit risk, auditors usually choose a lower level of materiality to reduce the audit risk to an acceptable level. For example, auditors usually select a lower level of materiality for new clients, whereas for more familiar, long-term clients, they tend to choose a more lenient materiality percentage. Therefore, there may not be any relationship between audit materiality and audit quality. Based on this, we propose the following hypothesis:

H1: Materiality is not significantly related to audit quality.

To test H1, we construct model (1) as follows:

Table 2
Variable Definitions.

Variable	Definition
<i>absDA</i>	The absolute value of the residual calculated by the modified Jones model (Dechow et al., 1995).
<i>Materiality</i>	Materiality amount divided by total assets.
<i>Size</i>	The natural logarithm of total assets at year end.
<i>Lev</i>	Total liabilities divided by total assets.
<i>Lop</i>	Takes a value of 1 if the previous year's audit opinion is a qualified audit opinion, and 0 otherwise.
<i>SOE</i>	Takes a value of 1 for state-owned enterprises, and 0 otherwise.
<i>Age</i>	The natural logarithm of the number of years the company has been listed.
<i>Big10</i>	Takes a value of 1 if the audit firm is in the top 10 of the Annual Comprehensive Evaluation of 100 Accounting Firms Ranking Information issued by the China Annotations Association, and 0 otherwise.
<i>ROA</i>	Operating profit divided by total assets.
<i>Loss</i>	Takes a value of 1 if the net profit of the company in the current year is less than 0, and 0 otherwise.
<i>ST</i>	Takes a value of 1 if the listed company is issued a risk warning by the stock exchange in the current year, and 0 otherwise.

$$absDA_{i,t} = \beta_0 + \beta_1 Materiality_{i,t} + \beta_2 Size_{i,t} + \beta_3 Lev_{i,t} + \beta_4 Lop_{i,t} + \beta_5 SOE_{i,t} + \beta_6 Age_{i,t} + \beta_7 Big10_{i,t} + \beta_8 ROA_{i,t} + \beta_9 Loss_{i,t} + \beta_{10} ST_{i,t} + Year + Industry + \varepsilon \quad (1)$$

where the dependent variable (*absDA*) is the absolute value of discretionary accruals, calculated as the absolute value of the residuals from the modified Jones model (Dechow et al., 1995).⁵ Our independent variable, *Materiality*, is defined as the overall materiality amount of financial statements divided by total assets.⁶ Following the literature, we include some common control variables. According to Dechow et al. (2010), the financial characteristics of the firm (such as operating performance, leverage and size) affect the quality of earnings. In addition, the earnings management level of listed companies in China is influenced by the age of listing (Chen et al., 2001) and the type of ownership (Chan et al., 2006; Wang et al., 2008). Therefore, we control for company size (*Size*), the debt-to-asset ratio (*Lev*), state-owned enterprise status (*SOE*), years listed (*Age*), profitability (*ROA*), whether the company is operating at a loss (*Loss*) and whether it is subject to a risk warning from the stock exchange (*ST*), following the literature (Chen et al., 2001; Chan et al., 2006; Wang et al., 2008; Choi et al., 2012; Gul et al., 2013). We also control for auditor-related characteristics, including the size of the audit firm (*Big10*) and the audit opinion in the previous period (*Lop*) (Gong et al., 2016). The specific definitions are shown in Table 2. In addition, we control for industry and year fixed effects and cluster standard errors at the company level. If materiality is not related to audit quality, β_1 should be statistically nonsignificant, which would indicate that H1 is valid.

3.3. The impact of materiality disclosure on investors' decision-making

Whether the disclosure of materiality can improve the usefulness of audit opinion and thus investor decision-making is an important question, worthy of study.

The auditor's overall objective in performing financial statement audit work is to express an opinion on whether the financial statements are prepared, in all material respects, in accordance with the applicable financial reporting framework and to provide reasonable assurance that the financial statements are free from material misstatement, whether due to fraud or error. The definitions of "material misstatement" and "material respects" reflect the auditor's professional judgment and represent the "accuracy" of the audit. Rational investors can use audit materiality to understand the scope of audit risk assessment procedures and the threshold for the impact of uncorrected misstatements on the financial statements to assess audit quality and financial reporting quality (Christensen et al., 2020). Therefore, disclosure of audit materiality enhances the informative value of the audit opinion and should assist investors in their decision-making.

⁵ Our sample consists of listed companies that have been issued a modified audit opinion by their auditors and we focus on the period of 2020–2022. Because it takes time to issue financial restatements, it is not feasible to measure audit quality by either audit opinions or financial restatements in this paper.

⁶ Materiality is calculated by multiplying the base by a percentage.

Nevertheless, auditors' materiality assessment depends on their professional judgment and is influenced by their understanding of the needs of financial statement users. According to "The Chinese Certified Public Accountants Auditing Standard No. 1221," it is reasonable for auditors to make the following assumptions about financial statement users: (1) They have appropriate knowledge of business, economic activities and accounting and are willing to carefully study the information in financial statements; (2) They understand that financial statements are prepared, presented and audited on the basis of materiality; (3) They recognize that accounting measurements have inherent uncertainties based on the application of estimates and judgments as well as the consideration of future events; and (4) They make reasonable economic decisions based on the information in financial statements. However, in the Chinese capital market, there are many retail investors, most of whom lack professional knowledge (Liu and Liu, 2014) and are irrational in their behavior (Wang and Sun, 2004; Lin and Yu, 2010; Hu and Chi, 2013). Therefore, investors may not be able to understand the concept of audit materiality and the relationship between materiality and audit quality. Only after the disclosure of audit materiality in special explanatory notes to modified audit opinions may such investors realize fully that the audit opinion provides a reasonable assurance that the financial statements are prepared, in all material respects, in accordance with the applicable financial reporting framework, rather than an absolute assurance (Zhang et al., 2021a, 2021b). Therefore, disclosure of materiality can negatively influence investor decisions.

In addition, in contrast with the UK and the Netherlands, which directly disclose materiality in audit reports, China requires the disclosure of the overall materiality of the consolidated financial statements in the special explanation of the modified audit opinion. According to information processing theory, individuals have limited cognitive ability, which manifests in limited attention and processing capacity (Libby et al., 2002; Hirshleifer and Teoh, 2003). The consequences of different disclosure locations and methods may vary significantly (Zhao and Chen, 2011; Zhang et al., 2021a, 2021b). Compared with the audit report, the special explanatory notes of the modified audit opinion are less visible to investors, and thus the disclosure of materiality in the special explanatory notes of the modified audit opinion may not have a significant impact on investor decision-making. Based on this, we propose the following hypothesis:

H2: The disclosure of audit materiality is not related to investor decisions.

To test H2, using ERC to measure investor response, we construct model (2) as follows:

$$CAR_{i,t} = \beta_0 + \beta_1 Disclose_{i,t} + \beta_2 UE_{i,t} + \beta_3 UE * Disclose_{i,t} + \beta_4 Size_{i,t} + \beta_5 Lev_{i,t} + \beta_6 SOE_{i,t} + \beta_7 Age_{i,t} + \beta_8 Big10_{i,t} + \beta_9 ROA_{i,t} + \beta_{10} Loss_{i,t} + \beta_{11} ST_{i,t} + Year + Industry + \varepsilon \quad (2)$$

where the dependent variable (CAR) is the cumulative abnormal return over the five trading days before and after audit materiality disclosure.⁷ $Disclose$ indicates whether materiality is disclosed; it takes a value of 1 if the listed company discloses materiality in a special note on the modified audit opinion, and 0 otherwise. UE is the unexpected earnings, which is the difference between the current year's net income and the previous year's net income divided by the current year's market value of equity. The specific definitions of the remaining variables are presented in Table 2. In addition, we control for industry and year fixed effects and cluster standard errors at the firm level. The interaction term $UE * Disclosure$ measures the difference in ERC due to the disclosure of materiality. If the disclosure of materiality is not significantly related to investor decisions, then β_3 should be nonsignificant.

3.4. Sample selection and data sources

The CSRC's "Provisional Application Guidelines for Regulatory Rules—Audit No. 1" state that, starting from 23 March 2021, auditors should disclose the overall materiality of the consolidated financial statements in the specific explanations of modified audit opinions. This disclosure includes the materiality base, percentage, amount and selection justification. As the date that the disclosure requirements commenced coincides with the period when listed companies disclosed their annual audit reports for 2020, our sample period is 2020–2022.

⁷ We use 150 days to 30 days before the event date as the estimation period.

Our research sample consists of Chinese A-share listed companies that received modified audit opinions during the period of 2020–2022. We exclude samples that disclosed special explanations for modified audit opinions before 23 March 2021. For RQ3, we delete samples with missing control variables, resulting in a final sample of 716 observations. For RQ1, we further delete samples that did not effectively disclose the basis and percentage used for materiality in the special note on the modified audit opinion according to the regulations. This results in a final sample of 396 observations for RQ1. For RQ2, we remove samples that did not effectively disclose the audit materiality amount in the special note on the modified audit opinion, as well as financial companies and samples with missing control variables, which results in a final sample of 338 observations.

To eliminate the influence of outliers, all continuous variables are winsorized at the top and bottom 1%. Following Petersen (2009), all regression results employ company-level clustering to correct the standard errors of the coefficient estimates. The audit materiality data used in this paper are manually compiled from the special notes on the modified audit opinions of listed companies. The remaining data are all obtained from the China Stock Market & Accounting Research database.

4. Empirical results and discussion

4.1. Descriptive statistics of audit materiality

Despite the CSRC's mandate that auditors disclose the overall materiality of the consolidated financial statements after 23 March 2021, not all auditors have made the required disclosures in practice. Table 3 provides a detailed list of materiality disclosures. Panel A shows the materiality disclosures by year. It is evident that from 2020 to 2022, 396 firms (54.8% of the sample) disclosed audit materiality as required, with the remainder (45.2%) not disclosing materiality.⁸ Only 32.38% of the sample made the required disclosure in 2020, although this proportion increased to 62.00% in 2021 and 70.7% in 2022, indicating that increasing numbers of audit firms are gradually adhering to the new regulations. Panel B shows materiality disclosures by type of audit firm (Big 10 and non-Big 10). As many as 70.72% of companies audited by the Big 10 disclosed materiality, whereas the proportion for non-Big 10 clients is only 47.70%, indicating that the Big 10 are more likely to conform with the disclosure requirements than the non-Big 10 auditors. Panel C shows the disclosure of materiality by audit firms. The audit firms with 100% disclosure of materiality include Xigema, PwC, Shenzhen Jiu'An, Shenzhen Zhongxin International and Shenzhen Yongxin Ruihe, whereas 15 audit firms, including EY and Deloitte, did not disclose materiality in the special statements on modified audit opinions at all. The disclosure percentages of the remaining 33 audit firms range from 0% to 100%.

Table 4 shows the bases and percentages of overall materiality used by auditors for the consolidated financial statements. Panel A presents the descriptive statistics for the materiality bases. It can be observed that the most commonly used bases for materiality are profit (44.70%) and income (42.17%). In this regard, one auditor commented that “for profit-oriented enterprises, revenue and profit are the financial indicators that most users of financial statements pay most attention to.”⁹ This aligns with the statement in the Application Guide of the Chinese Auditing Standard No. 1221, which states that “for profit-oriented entities, profit before tax from recurring operations is generally used as the base. If profit before tax from recurring operations is volatile, other bases may be more appropriate, such as gross profit or income.” In addition to profit and income, auditors also selected assets (6.31%), equity (5.05%), gross profit (1.26%) and expenses (0.25%) as bases.

Panel B presents the descriptive statistics for the percentages applied to the materiality bases. When profit is used as the base, the average percentage selected by the auditors is around 5.35%, whereas when the base is income, the average percentage is about 0.80%. It can be seen that there are large differences in the percentages applied to different bases. This conforms with the sentiments of the “Chinese Auditing Standards QA No. 8—Misstatement of Materiality and Evaluation,” which states that “there is a certain link between the percentage and the selected base. For example, the percentage applied to the pre-tax profit base is usually higher than that applied to the income base. For a profit-oriented manufacturing entity, the CPA may consider 5% of pre-tax profit to be appropriate; whereas for non-profit organizations, the CPA may consider 1% of

⁸ Although the special note on a modified audit opinion is issued by the listed company, it is provided by the relevant audit firm.

⁹ <http://static.cninfo.com.cn/finalpage/2021-04-20/1209723051.PDF>.

Table 3
Audit materiality disclosure.

Panel A: Audit materiality disclosure by year				
Year	Non-disclosures	Disclosures	Disclosure ratio	
2020	165	79	32.38 %	
2021	95	155	62.00 %	
2022	67	162	70.74 %	
Total	327	396	54.77 %	
Panel B: Audit materiality disclosure by type of audit firm				
CPA Firm type	Non-disclosures	Disclosures	Disclosure ratio	
Big10	65	157	70.72 %	
Non-Big10	262	239	47.70 %	
Total	327	396	54.77 %	
Panel C: Audit materiality disclosure by audit firms				
CPA Firms	Non-disclosures	Disclosures	Disclosure ratio	
XIGEMA	0	6	100.00 %	
PwC	0	6	100.00 %	
SHENZHEN JIUAN	0	2	100.00 %	
SHENZHEN ZHONGXIN INTERNATIONAL	0	1	100.00 %	
SHENZHEN YONGXIN RUIHE	0	1	100.00 %	
BDO	4	50	92.59 %	
PAN-CHINA	5	51	91.07 %	
GONGZHENG TIANYE	1	6	85.71 %	
HEXIN	2	11	84.62 %	
CHINA AUDIT ASIA PACIFIC	5	21	80.77 %	
RSM	3	7	70.00 %	
SUYA JINCHENG	4	9	69.23 %	
GRANT THORNTON	5	8	61.54 %	
PENGSHENG	2	3	60.00 %	
ZHONGGUANGCAI GUANGHUA	33	49	59.76 %	
ZHONGHUA	4	5	55.56 %	
ZHONGHUI	4	5	55.56 %	
ZHONGSHENZHONGHUAN	19	20	51.28 %	
CHONGQING KANGHUA	1	1	50.00 %	
LIXINZHONGLIAN	5	5	50.00 %	
ZHONGZHENG TIAN TONG	1	1	50.00 %	
BEIJING XINGCHANGHUA	1	1	50.00 %	
UNITAX ZHENQING	2	2	50.00 %	
SHENZHEN XUTAI	1	1	50.00 %	
DAHUA	33	32	49.23 %	
ASIAN PACIFIC (GROUP)	23	21	47.73 %	
SHINEWING	13	11	45.83 %	
BAKERLITY	6	5	45.45 %	
WUYIGE	16	11	40.74 %	
ZHONGXINGHUA	29	17	36.96 %	
ZHONGXI	9	5	35.71 %	
YONGTUO	11	6	35.29 %	
HUAXIN	8	4	33.33 %	
TALENT	7	3	30.00 %	
BEIJINGXINGHUA	8	3	27.27 %	
SCPA	7	2	22.22 %	
REANDA	12	3	20.00 %	
PEKING	5	1	16.67 %	
ZHONGZHUN	5	0	0.00 %	
JONTEN	5	0	0.00 %	
CAC	5	0	0.00 %	
BEIJING ZHONGTIANHUAMAO	2	0	0.00 %	
HUAXING	7	0	0.00 %	

Table 3 (continued)

Panel A: Audit materiality disclosure by year			
Year	Non-disclosures	Disclosures	Disclosure ratio
EY	3	0	0.00 %
SINONG	1	0	0.00 %
DELOITTE	1	0	0.00 %
ZHEJIANG TIANPING	1	0	0.00 %
TTCPA	1	0	0.00 %
SHENZHEN GUANGSHEN	2	0	0.00 %
HUNANRONGXIN	2	0	0.00 %
SHANDONG SHUNTIANXINCHENG	1	0	0.00 %
HENGAN	1	0	0.00 %
SHENZHEN ZHENGYI	1	0	0.00 %
Total	327	396	54.77 %

Note: Disclosure ratio = Number of disclosures/(number non-disclosures + number of disclosures)*100 %.

Table 4
Descriptive statistics of materiality bases and percentages.

Panel A: Descriptive statistics of materiality bases			
Base	Observations	Percentages	
Profit	177	44.70 %	
Income	167	42.17 %	
Assets	25	6.31 %	
Equity	20	5.05 %	
Gross profit	5	1.26 %	
Expenses	1	0.25 %	
Profit, equity and income	1	0.25 %	
Total	396	100 %	

Panel B: Descriptive statistics of materiality percentages					
Base	Mean	SD	Min	Median	Max
Profit	5.35	1.40	1	5	10
Income	0.80	0.73	0.10	0.50	7
Assets	0.51	0.27	0.03	0.50	1
Equity	1.77	1.47	0.10	1.10	5
Gross profit	2.56	1.57	0.80	2	5
Expenses	1	–	1	1	1
Profit, equity and income	2.50	–	2.50	2.50	2.50

Note: For profit, the bases used include profit before tax, total profit, net profit, adjusted profit before tax (deduction, average of recent years, etc.), adjusted total profit and adjusted net profit. The bases for income include a sample of the operating income and the average operating income of recent years. The equity bases consist of equity, average equity in recent years and equity attributable to the parent company. The bases for assets include the total assets, the average value of total assets in recent years and the total amount of unaudited assets. In the special explanation of the modified audit report issued by Sichuan Blu-ray Development Co., Ltd. in 2022, ShineWing selected the absolute value of consolidated profit, equity and income as the base for the materiality. Because this is the only case of such a base, no standard deviation is presented. Similarly, there is no standard deviation presented for the base using expenses because there is only one such observation.

revenue or expenses to be appropriate.” In addition, there is some variation in the percentages applied to the same benchmark, e.g., when profit is the base, the percentages used range from 1 % to 10 %; when income is the base, they range from 0.10 % to 7 %.

4.2. Relationship between materiality and audit quality

Table 5 reports the descriptive statistics of the main variables, with Panel A providing the descriptive statistics of the full sample and Panel B providing those for the subsamples and the results of the difference test. It can be observed from Panel A that the mean value of *absDA* is 0.102. The mean value of *Materiality* is 0.005, which means that, on average, the audit materiality is 0.5 % of total assets. The descriptive statistics show that compared with peer companies, the sample companies have a higher proportion of modified audit opinions issued in the previous period, are less likely to be SOEs, have a lower return on assets and a higher probability of incurring losses this year and are subject to risk warnings. The remaining variables are consistent with the literature.

Panel B shows the results of the univariate tests. We divide the full sample into lower and higher materiality subsamples and compare the dependent variables and control variables between these two subsamples. The comparison shows that the absolute value of discretionary accruals is higher in the higher materiality subsample, in terms of both the mean and the median, and that the difference is significant. In addition, compared with samples with lower materiality, companies with higher materiality are smaller, have a shorter listing age, are more likely to incur losses and are subject to risk warnings.

Table 6 reports the results of testing Hypothesis 1. Columns (1) and (2) show the regression results of model (1) without and with control variables, respectively. The coefficients of *Materiality* (4.013 and 2.865) are positive and significant at the 1 % level, indicating that the higher the materiality, the higher is the level of discretionary accruals and, therefore, the lower is the audit quality. This result shows that overall, auditors fail to select the appropriate materiality considering the situation of the audited entity and the needs of the users of the financial statements. Economically, according to the results of column (2), for every 1 % increase in the

Table 5
Descriptive statistics for testing H1.

Panel A: Full sample descriptive statistics

Variables	Observations	Mean	SD	Min	Median	Max
<i>absDA</i>	338	0.102	0.088	0.000	0.078	0.308
<i>Materiality</i>	338	0.005	0.006	0.000	0.003	0.048
<i>Size</i>	338	21.919	1.195	20.006	21.854	24.857
<i>Lev</i>	338	0.594	0.234	0.105	0.654	0.829
<i>Lop</i>	338	0.666	0.473	0	1	1
<i>SOE</i>	338	0.124	0.330	0	0	1
<i>Age</i>	338	2.814	0.439	1.609	2.890	3.434
<i>Big10</i>	338	0.396	0.490	0	0	1
<i>ROA</i>	338	-0.038	0.061	-0.086	-0.078	0.137
<i>Loss</i>	338	0.725	0.447	0	1	1
<i>ST</i>	338	0.379	0.486	0	0	1

Panel B: Subsample descriptive statistics and difference test

Variables	Mean			T-value	Median		
	Low materiality	High materiality			Low materiality	High materiality	Z value
	N = 169	N = 169			N = 169	N = 169	
<i>absDA</i>	0.089	0.115	-2.75***	0.072	0.090	-2.37**	
<i>Size</i>	22.155	21.683	3.69***	22.151	21.570	4.57***	
<i>Lev</i>	0.583	0.606	-0.92	0.626	0.711	-1.09	
<i>Lop</i>	0.627	0.704	-1.50	1	1	-1.50	
<i>SOE</i>	0.148	0.101	1.32	0	0	1.32	
<i>Age</i>	2.865	2.763	2.15**	3.045	2.773	2.15**	
<i>Big10</i>	0.373	0.420	-0.89	0	0	-0.89	
<i>ROA</i>	-0.033	-0.044	1.61	-0.045	-0.086	3.28***	
<i>Loss</i>	0.663	0.787	-2.57**	1	1	-2.55**	
<i>ST</i>	0.331	0.426	-1.80*	0	0	-1.79*	

Note: ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

Table 6
Audit materiality and audit quality.

Variable	(1) <i>absDA</i>	(2) <i>absDA</i>	(3) <i>absDA</i> <i>DA > 0</i>	(4) <i>absDA</i> <i>DA < 0</i>
<i>Materiality</i>	4.013*** (3.90)	2.865*** (3.11)	-1.211 (-0.42)	2.162** (2.12)
<i>Size</i>		-0.011** (-2.34)	-0.021** (-2.12)	-0.009* (-1.81)
<i>Lev</i>		0.079*** (3.56)	0.027 (0.67)	0.089*** (3.32)
<i>Lop</i>		0.013 (1.45)	-0.002 (-0.10)	0.006 (0.55)
<i>SOE</i>		0.015 (0.92)	0.022 (0.75)	0.007 (0.41)
<i>Age</i>		-0.018 (-1.46)	-0.007 (-0.35)	-0.022 (-1.35)
<i>Big10</i>		-0.023** (-2.25)	-0.027* (-1.74)	-0.017 (-1.37)
<i>ROA</i>		0.033 (0.21)	0.720*** (3.03)	-0.761*** (-3.64)
<i>Loss</i>		0.017 (0.98)	0.021 (0.78)	-0.032 (-1.46)
<i>ST</i>		0.016 (1.30)	0.037 (1.65)	0.008 (0.66)
Year	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
Constant	0.060** (2.24)	0.259** (2.41)	0.472* (1.97)	0.246** (2.19)
Observations	338	338	92	246
R-squared	0.162	0.28	0.444	0.355

Note: *t* values are shown in parentheses; ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

standard deviation of the audit materiality, the absolute value of the discretionary accrual increases by 16.9 % relative to the sample average, indicating that the impact of audit materiality on audit quality is economically significant.

In addition, we divide the sample into two groups, $DA > 0$ and $DA < 0$, to test the relationship between the audit materiality and earnings management in different directions, that is, upward and downward earnings management, respectively. From the results in columns (3) and (4), when $DA > 0$, the coefficient of *Materiality* is -1.211, but it is not significant. However, for the $DA < 0$ subsample, the coefficient of *Materiality* is 2.162, which is significant at the 5 % level, indicating that the negative correlation between audit materiality and audit quality occurs mainly in firms with downward earnings management. This may be because upward earnings management leads to greater audit risk than downward earnings management, and hence auditors are more motivated to inhibit upward (vs. downward) earnings management by expanding the scope of testing and increasing audit procedures (Caramanis and Lennox, 2008; Ke et al., 2014). However, auditors have weaker incentives to suppress downward earnings management and are less likely to increase audit effort, such that the negative correlation between materiality and audit quality occurs mainly in firms with downward earnings management.

Next, we perform a series of robustness tests, including replacing the measures of the independent and dependent variables. Specifically, considering that profit and income are the most commonly used materiality bases for auditors, we re-measure the explanatory variables by dividing the materiality amounts by net profit (*Materiality2*) and income (*Materiality3*). From the regression results shown in columns (1) and (2), respectively, of Table 7, it is evident that the coefficients of *Materiality2* and *Materiality3* remain positive and significant. In addition, considering that the materiality bases of different samples are inconsistent, we rank each

Table 7
Robustness tests.

Variable	(1)	(2)	(3)	(4)
	<i>absDA</i>	<i>absDA</i>	<i>absDA</i>	<i>absDA2</i>
<i>Materiality2</i>	0.002* (1.79)			
<i>Materiality3</i>		0.347** (2.05)		
<i>Materiality4</i>			0.046*** (9.17)	
<i>Materiality</i>				3.938*** (4.52)
<i>Size</i>	-0.012** (-2.57)	-0.011** (-2.36)	-0.005 (-1.19)	-0.010** (-2.14)
<i>Lev</i>	0.088*** (3.99)	0.091*** (4.22)	0.090*** (4.59)	0.082*** (3.74)
<i>Lop</i>	0.014 (1.55)	0.011 (1.18)	0.014* (1.67)	0.020** (2.11)
<i>SOE</i>	0.012 (0.80)	0.016 (1.02)	0.020 (1.37)	0.007 (0.43)
<i>Age</i>	-0.025* (-1.82)	-0.024* (-1.91)	-0.022* (-1.90)	0.002 (0.16)
<i>Big10</i>	-0.019* (-1.84)	-0.019* (-1.86)	-0.023*** (-2.67)	-0.024** (-2.42)
<i>ROA</i>	0.048 (0.29)	0.060 (0.39)	0.016 (0.12)	-0.042 (-0.29)
<i>Loss</i>	0.025 (1.35)	0.021 (1.21)	0.011 (0.72)	0.034** (2.10)
<i>ST</i>	0.018 (1.46)	0.019 (1.50)	0.012 (1.15)	0.012 (1.04)
Year	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
Constant	0.303*** (2.74)	0.268** (2.48)	0.048 (0.51)	0.148 (1.44)
Observations	338	338	333	338
R-squared	0.252	0.274	0.404	0.361

Note: *Materiality2* is equal to the materiality amount divided by net profit; *Materiality3* is equal to the materiality amount divided by operating income; *Materiality4* is ranked according to the caliber of the materiality of each type from low to high and the percentage of each group is divided into three groups from lowest to highest values. The lowest group of *Materiality4* takes a value of 1, the middle group of *Materiality4* takes a value of 2 and the highest group of *Materiality4* takes a value of 3. *absDA2* is the absolute value of discretionary accruals estimated using the nonlinear model of Ball and Shivakumar (2006). In calculating *Materiality4*, we divide each materiality base into three groups based on the caliber of the base, and we retain only the observations corresponding to bases with sample sizes greater than 10.

type of base to control the problem of base selection. *Materiality4* is sorted according to the materiality base of each type from low to high and the percentages of each group are divided into three parts from low to high, with the lowest group of *Materiality4* taking a value of 1, the middle group of *Materiality4* taking a value of 2 and the highest group of *Materiality4* taking a value of 3. The regression results are shown in column (3) of Table 7 and it can be observed that the coefficient of *Materiality4* is positive and significant, indicating that our conclusions are robust. Finally, we use the absolute value of manipulable accruals (*absDA2*), estimated using the nonlinear model of Ball and Shivakumar (2006), to measure audit quality, with the regression results shown in column (4) of Table 7. The coefficient on *Materiality* remains positive and significant.

We further examine the impact of competence at the audit firm and individual auditor levels. The greater the auditor's expertise, the better the auditor will be able to select appropriate bases and percentages that consider factors such as the nature of the client's business, the stage of its life cycle and the industry and economic environment in which it operates. For companies with a higher audit risk, auditors with higher professional competence will choose a lower level of materiality and vice versa to ensure consistency in audit quality. Therefore, we expect the negative correlation between materiality and audit quality to occur mainly in the

Table 8
The impact of industry expertise.

Variable	(1)	(2)	(3)	(4)
	<i>absDA</i>	<i>absDA</i>	<i>absDA</i>	<i>absDA</i>
	Big 10	Non-Big 10	Auditor with industry expertise	Auditor without industry expertise
<i>Materiality</i>	0.968 (0.66)	4.002*** (3.70)	-0.15 (-0.11)	4.601*** (4.85)
<i>Size</i>	-0.001 (-0.17)	-0.013** (-2.20)	-0.013** (-2.21)	-0.009 (-1.15)
<i>Lev</i>	0.073* (1.91)	0.063* (1.94)	0.107*** (3.50)	0.055 (1.62)
<i>Lop</i>	0.017 (1.19)	0.017 (1.30)	0.018 (1.37)	0.002 (0.13)
<i>SOE</i>	0.021 (0.94)	0.024 (1.08)	0.014 (0.77)	0.010 (0.30)
<i>Age</i>	-0.028 (-1.41)	-0.017 (-0.94)	-0.019 (-1.11)	-0.025 (-1.42)
<i>Big10</i>			-0.001 (-0.06)	-0.048*** (-3.59)
<i>ROA</i>	0.025 (0.12)	0.024 (0.10)	0.033 (0.12)	-0.038 (-0.18)
<i>Loss</i>	0.031 (1.28)	0.002 (0.08)	0.006 (0.22)	0.020 (0.67)
<i>ST</i>	0.004 (0.20)	0.029* (1.71)	0.022 (1.39)	0.017 (0.96)
Year	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
Constant	0.066 (0.39)	0.317** (2.17)	0.223* (1.69)	0.255 (1.44)
Observations	134	204	169	169
R-squared	0.329	0.308	0.278	0.376

Note: *t* values are shown in parentheses; ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

lower competence group. Following DeFond and Zhang (2014), we use audit firm size (Big 10 or non-Big 10) to measure audit firm competence, whereas auditor competence is measured by the auditor's industry expertise.¹⁰

Table 8 reports the regression results. The coefficient of *Materiality* is positive but nonsignificant when the firm is audited by a Big 10 audit firm, whereas the coefficient of *Materiality* in the non-Big 10 group is positive and significant at the 1% level. These results suggest that the negative correlation between materiality and audit quality is more pronounced for non-Big 10 audit firms than for Big 10 audit firms. The results in columns (3) and (4) show that the coefficient of *Materiality* is nonsignificant in the group of auditors with industry expertise, whereas in the group of auditors without industry expertise, the coefficient of *Materiality* is positive and significant at the 1% level. The above results show that the negative correlation between materiality and audit quality is mainly evident for companies audited by auditors with no industry expertise.

4.3. Impact of materiality disclosure on investor decision-making

Table 9 reports the descriptive statistics for the main variables used to test Hypothesis 2. The mean value of *CAR* is -0.126, indicating that on average, the stock price falls after the disclosure of modified audit opinions. The mean value of *Disclose* is 0.520, indicating that 52% of the observations disclose audit materiality, which is close to the value of 54.77% for the full sample in Table 3. These firms have a higher percentage of modified audit opinions in the previous period, are less likely to be state-owned, have a lower return on assets, are more likely to incur a loss in the current year and are more likely to be subject to a risk warning than peer firms.

¹⁰ Auditor industry expertise is calculated using the industry portfolio share method based on the square root of the total assets of audited listed firms for the industry expertise of certified public accountants, with specific data from the CNRDS database.

Table 9
Descriptive statistics for testing H2.

Variable	Observations	Mean	SD	Min	Median	Max
<i>CAR</i>	716	-0.126	0.276	-1.410	-0.053	0.749
<i>UE</i>	716	0.000	0.345	-3.812	-0.007	2.283
<i>Disclose</i>	716	0.520	0.500	0	1	1
<i>Size</i>	716	21.820	1.356	18.910	21.750	26.920
<i>Lev</i>	716	0.644	0.280	0.051	0.661	1.015
<i>Lop</i>	716	0.634	0.482	0	1	1
<i>SOE</i>	716	0.123	0.329	0	0	1
<i>Age</i>	716	2.662	0.558	0.693	2.639	3.434
<i>Big10</i>	716	0.309	0.462	0	0	1
<i>ROA</i>	716	-0.105	0.142	-0.356	-0.081	0.223
<i>Loss</i>	716	0.732	0.443	0	1	1
<i>ST</i>	716	0.355	0.479	0	0	1

Table 10
The impact of audit materiality disclosures on investors' decisions.

Variable	(1)	(2)
	<i>CAR</i>	<i>CAR</i>
<i>Disclose</i>	0.046** (1.98)	0.024 (1.04)
<i>UE</i>	0.010 (0.20)	0.011 (0.22)
<i>UE*Disclose</i>	-0.207** (-2.58)	-0.191** (-2.57)
<i>Size</i>		0.021** (2.38)
<i>Lev</i>		-0.145*** (-2.94)
<i>SOE</i>		-0.001 (-0.06)
<i>Age</i>		0.039** (2.19)
<i>Big10</i>		0.039* (1.89)
<i>ROA</i>		-0.035 (-0.28)
<i>Loss</i>		-0.046* (-1.65)
<i>ST</i>		0.059*** (2.77)
Year	Yes	Yes
Industry	Yes	Yes
Constant	-0.047 (-1.56)	-0.477*** (-2.60)
Observations	716	716
R-squared	0.149	0.197

Note: *t* values are shown in parentheses; ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

Table 10 reports the test results for Hypothesis 2. Columns (1) and (2) show the regression results of model (2) without and with control variables, respectively. The coefficients of *UE*Disclose* are negative and significant, indicating that the disclosure of audit materiality significantly reduces firms' ERC response.¹¹ A possible reason is that after the disclosure of audit materiality in the modified audit opinion report, investors

¹¹ The explanatory variable *CAR_{it}* is the cumulative abnormal return of 5 trading days before and after the disclosure of audit materiality. In addition, we use the cumulative abnormal returns of 1, 3 or 7 trading days before and after the disclosure for the robustness test, and the conclusion remains qualitatively similar. Results are available upon request by contacting the authors.

become fully aware that the audit opinion provides reasonable rather absolute assurance that the financial statements are prepared in accordance with the applicable financial reporting basis in all material aspects, leading to a further reduction in the perceived reliability of the financial statements by investors.

5. Conclusions and implications

We take Chinese A-share listed companies issued with modified audit opinions during the period from 2020 to 2022 as a research sample to analyze materiality assessments in auditing practice, the relationship between materiality and audit quality and the impact of materiality disclosure on investor decision-making. We present four key results. First, the Big 10 audit firms are more likely to disclose audit materiality than peers. Second, the most common bases for materiality used by auditors are profit and income, the percentages applied to the different bases vary greatly and, even for the same base, the percentages vary to some extent. Third, the higher the materiality, the poorer is the quality of the audit. This negative correlation occurs mainly when the client firms engage in downward earnings management and among audit firms and auditors of lower competence than peers, indicating that materiality predicts the audit quality and has a certain level of informativeness. Fourth, disclosing audit materiality reduces investors' perceptions of the reliability of financial reports.

The research in this paper assists in understanding how auditors establish materiality in auditing practice, thus opening the “black box” of the auditing process to an extent. In addition, our findings have important implications. First, for the auditing standard-setters, although the relevant rules emphasize that the bases and percentages contained in the questions and answers are examples, not regulations, auditors rely heavily on the examples in auditing standards, application guides and questions and answers in practice. Therefore, standard-setters should pay attention to this phenomenon and treat the examples provided with caution. Second, materiality itself is informative, and this enables investors, analysts and regulators to judge the quality of audits or audited financial statements based on materiality and make better investment decisions or enhance the efficiency of regulation.

The conclusions of this study are based on the sample companies that disclose materiality during our period of analysis. However, there may be an element of self-selection in whether materiality is disclosed; thus, the research conclusions may be affected by an endogeneity problem. In addition, the research samples for this study are listed companies that have been issued with modified audit opinions, which may limit the generalizability of the research conclusions.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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