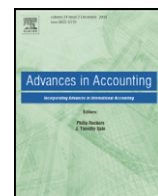




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Accounting restatements and audit quality in China

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ABSTRACT

This paper examines the effect of audit quality on accounting restatements in China. Evidence on the determinants and consequences of accounting restatements in emerging markets is scant, although these countries are more vulnerable to financial report manipulation and subsequent restatements. For accounting restatement analysis we regress non-cash flow restatement observations and cash flow restatement observations on audit quality and restatement–audit quality interaction variables. Earnings manipulation increases the likelihood of non-cash flow restatement observations, but high quality audit constrains this effect. However, no such evidence is found for cash flow restatements.

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1. Introduction

The dramatic increase in accounting restatements has attracted a considerable amount of academic, regulatory and public interest, given their undesirable consequences. A restatement represents an acknowledgement by the firm of a material omission or misstatement in their financial statements (Palmrose & Scholz, 2004). Firms restating financial statements have suffered substantial losses in market values (Palmrose, Richardson, & Scholz, 2004), increases in the cost of capital (Hribar & Jenkins, 2004), and high executive turnover (Hennes, Leone, & Miller, 2008; Srinivasan, 2005). Restatements call into question the credibility of a firm's future financial reports, because of its previously released low quality financial information. This increase in accounting restatements, and consequent shareholder losses, has drawn substantial public scrutiny of auditors' roles in ensuring the quality of financial statements (Romanus, Maher, & Fleming, 2008).

External auditors perform a critical role in establishing the credibility of financial statements by providing independent assurance to corporate stakeholders about the statements' integrity. Auditing also plays a significant role in enforcing and protecting investors' rights by detecting expropriation by insiders (Newman, Patterson, & Smith, 2005). Scrutiny of the audit profession following the dramatic increase in accounting restatements is not surprising, as external auditors' failure to detect a misstatement has been identified as one of the primary factors contributing to the increase in

restatements (Eilifsen & Messier, 2000). Failure of audit in preventing misstatements in financial reports can be due to either the auditor's failure to perform his/her job, limitations of the audit function itself, or both. This argument suggests a negative relationship between audit quality and the likelihood of accounting restatements, as confirmed by Romanus et al. (2008) who find that industry specialist auditors reduce the likelihood of restatements affecting core operating accounts. However, other studies find weaker support for audit quality to reduce the likelihood of restatement (Agrawal & Chadha, 2005; Lin, Li, & Yang, 2006).

This paper examines the association between audit quality and accounting restatements in China. China is an interesting setting in which to examine audit quality for a number of reasons. First, the Chinese audit market is very competitive due to the active participation of numerous small and medium-sized audit firms, in contrast to other Western audit markets which are dominated by the Big 4 audit firms. Second, the financial reporting environment in China has historically been dominated by state ownership, political interference and suppression of bad news, inhibiting the growth of an independent audit profession (Piotroski & Wang, 2012).

Our investigation on the effect of audit quality on accounting restatements considers both non-cash flow restatements (hereafter NCFREST) originating from accruals management affecting income statement and balance sheet items, and cash flow restatements (hereafter CFREST) originating from cash flow manipulation. Classifying restatements into different groups is important, because auditors' litigation risks differ in the presence of different types of restatements (e.g., economic versus technical restatements) (Palmrose & Scholz, 2004). Existing research finds that high quality auditors constrain managerial opportunistic accruals management behaviour (Becker, DeFond, Jiambalvo, & Subramanyam, 1998;

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Chen, Chen, Lobo, & Wang, 2011). In addition to accruals management, the recent cash flow management literature finds that firms also manipulate their cash flow information (Lee, 2012; Zhang, 2009), which challenges the traditional belief that cash is free of manipulation and thus can be used to gauge the credibility of earnings (Wild, Subramanyam, & Hasley, 2004). Despite this evidence, the monitoring function of auditors has remained unexplored both internationally as well as in China, specifically around constraining cash flow management. Thus, our paper attempts to address this issue. Investigating auditors' monitoring of both types of financial reporting manipulation is important because both accruals and cash flow from operations are used for contracting and valuation decisions.

Specifically, we argue that auditors' monitoring effectiveness is likely to be more prominent for NCFREST and no such expectation is made of CFREST. This argument is based on the observation that auditors are likely to be subject to intense scrutiny by regulatory authorities for failing to detect NCFREST cases (involving earnings restatements), as investors use information about current and potential earnings for investment decision making (Graham, Harvey, & Rajgopal, 2005). In the context of China, Firth, Lo, and Wong (2005) find that the Chinese Securities Regulatory Commission (hereafter CSRC) is more likely to sanction auditors if they fail to detect and report material misstatement fraud such as overstatement of assets or income, understatement of liabilities or expenses. For material misstatement fraud, auditors are more likely to be sanctioned for failing to detect revenue related misstatements. In contrast, there is little evidence of auditors being sanctioned over severe cash flow-related fraud.

To determine whether high quality audit differentially impacts on NCFREST and CFREST, we separately regress the restatement incidence (NCFREST versus CFREST) on audit firm size, earnings management (cash flow management) and a number of control variables. Consistent with prior research, we use audit firm revenue as a proxy for audit quality and identify the Top 8 largest audit firms as high quality auditors and all other audit firms as low quality auditors (Chen et al., 2011; DeAngelo, 1981). The results suggest that high quality audit indeed reduces the likelihood of earnings management-induced restatements, but this monitoring effect of high quality audit is absent for cash flow management-induced restatements.

This study contributes to the existing research on accounting restatements in a number of ways. First, unlike other Chinese restatement studies (Wang & Wu, 2011; Zhizhong, Juan, Yanzhi, & Wenli, 2011) that consider restatements generally, we categorise restatements into earnings-related and cash flow-related restatements and provide theoretical arguments for predicting auditor monitoring on these two types of restatements. We contribute to the restatement literature by providing a classification of restatements from an earnings-related and cash flow-related opportunistic reporting perspective. Second, we explore the audit monitoring function on cash flow management as a form of opportunistic reporting that is newly identified by the literature. Our investigation, despite being exploratory, highlights auditors' lack of awareness of cash flow management. To the best of our knowledge, our study is the first to examine the effect of high quality audit on restatements related to cash flow management. Therefore, our paper adds to the cash flow management literature.

Lastly, the findings of this paper enrich the understanding of the role of auditing as a governance mechanism in an economy dominated by government ownership. Historically, the value of external auditing for ensuring credible financial reporting in China has been undermined, in that most Chinese audit firms had affiliations with government agencies, government-sponsored bodies, universities or research institutions, making those firms vulnerable to political pressure. However, in recent years, there has been sustained

progress in market-based and contracting-based incentives for financial reporting transparency (Piotroski & Wang, 2012) increasing the demand for high quality audit.¹ Our evidence that high quality audit constrains earnings manipulation-related restatements is an important addition to the Chinese auditing literature. The results provide some confidence in the informational value of external auditing in China, indicating audit profession's contribution to the progression of transparency in the financial reporting environment.

2. Relevant literature and development of hypotheses

2.1. Literature survey

Eilifsen and Messier (2000) recognize four conditions that must be met for audited financial statements to be subsequently restated: (i) a material misstatement resulting from some types of inherent risk exists (e.g., management's aggressive accounting practices, misapplication of GAAP, and so forth); (ii) the misstatement has not been prevented or detected by the company's internal control; (iii) the external auditor has failed to detect the misstatement and therefore misstated financial statements are issued; and (iv) the misstatement is subsequently discovered and, if deemed material, requires the correction, restatement, and reissue of the original financial statements. Therefore, it is clear that a restatement meeting the above conditions suggests a breakdown of a company's internal control and external auditing. The SEC considers restatements to be audit failures and, in line with this assertion, research indicates that restatements increase the risk of securities class action lawsuits including lawsuits against auditors (Fuerman, 1997).

According to professional auditing standards, auditors are tasked with planning and performing an audit in order to obtain reasonable assurance that the financial statements are free of material misstatements (Public Company Accounting Oversight Board (PCAOB), 2010). To accomplish this task, auditors plan the nature, timing and extent of audit procedures after considering, among other factors, the degree of risk of material misstatement in financial reporting. This suggests a negative relationship between audit quality and the likelihood of accounting restatements. Romanus et al. (2008) find that auditor industry specialization reduces the likelihood of issuing restatements affecting core operating accounts, suggesting that industry specialization adds value in auditing a particularly critical area of the firms' continuing operations. In addition, they find that changing from a non-specialist to a specialist auditor increases the likelihood of restatement, and changing from a specialist to a non-specialist reduces the likelihood of restatement. Their findings are consistent with industry specialization enhancing auditors' role in improving the quality of the financial reporting process, particularly related to the core operations of their clients. However, Agrawal and Chadha (2005) fail to find any significant relationship between audit quality (proxied by Big 5/non-Big 5 audit groups) and accounting restatements. Lin et al. (2006) even find a positive association between audit quality and restatements, indicating that large and

¹ Chen et al. (2011) find support for this proposition as they document lower cost of equity capital for a subset of firms audited by Top 8 auditors. Gul, K, and Qiu (2010) find that high quality audit improves dissemination of more firm-specific information and reduces stock price synchronicity. Wang and Iqbal (2009) find evidence of Big 4 premiums for brand name as well as industry specialization in both the statutory and supplementary markets. Sami and Zhou (2008) and Zhou (2007) find that subsequent to the implementation of the new auditing standards in 1996 in China, listed companies experienced a significant increase in trading volume and accounting information quality as evidenced by reduced earnings management and decreased stock price synchronicity. Chen, Chi, and Lin (2012) find that client importance at the audit-office level impairs audit quality but only for small offices of non-Big 4 audit firms. Gul, Sun, and Tsui (2003) provide evidence that the market positively valued the earnings of firms audited by local Top 10 firms in the Shanghai stock market.

reputable auditors are more likely to issue restatements of their clients' accounts; however, no explanation has been provided for their finding.

Palmrose and Scholz (2004) investigate the association between lawsuits against auditors and two types of restatements, namely economic or technical restatements. They define economic restatements as involving transactions and accounts related to core (recurring) earnings, and all other restatements as technical. They find that auditors are significantly more likely to be sued over economic restatements than technical ones. Additionally, they find that revenue restatements, the most frequent type of economic restatement, primarily contribute to this result. Both Romanus et al. (2008) and Palmrose and Scholz (2004) suggest it is necessary to examine the research issue in the context of different types of restatements. Following this line of research, we classify restatements into cash flow versus non-cash flow related restatements and contend that auditors' monitoring function is more effective for non-cash flow misstatements that are related to earnings management, but auditors' monitoring effect on cash flow management is not discernable.

2.2. Financial restatements, earnings management and cash flow

2.2.1. Management in China and audit context

There have been a number of regulatory initiatives for formalizing the appropriate procedure for reporting restatements. The first regulatory initiative to address accounting restatements was "The Standard of Changes in Accounting Policies and Estimates, and Corrections of Material Accounting Errors" (the 1999 Standard) from the Ministry of Finance (MOF). However, this standard required only that a restatement be disclosed in the company's forthcoming annual report, a requirement that jeopardized the informational value of restatements. Therefore CSRC issued Rule 19, titled "The Correction of Financial Information and its Disclosure" at the end of 2003. This was a significant milestone because Rule 19 demands that listed companies file an official report with the CSRC regarding any material events immediately, including the correction of financial statements, and submit a revised and audited annual report within 45 days if the most recent annual report is incorrect.

On February 15, 2006, the MOF announced that all publicly traded companies would adopt the new Accounting Standards of Business Enterprises (ASBE) for preparing financial statements, effective January 1, 2007 and onwards. This represented a major convergence towards the International Financial Reporting Standards (IFRSs). ASBE 28 "Changes in Accounting Policies and Estimates and Corrections of Accounting Errors" mandates that restatements will revise any affected line items in income statements and balance sheets, for any relevant quarter(s) and year(s) (Wang & Wu, 2011).²

Research on accounting restatements in China indicates that restatement firms take longer to file their annual reports in the post-restatement period compared with the pre-restatement period, thus increasing reporting delays (Ma, Zhang, & Du, 2013). Zhizhong et al. (2011) investigate associations between financial restatements and corporate governance and find that strong internal and external governance mechanisms reduce the likelihood of accounting restatements. Wang and Wu (2011) find that accounting restatements are higher for firms with weaker profitability and for firms with a state-controlled ownership structure. The main difference between our study and these studies relates to our categorization of restatements into earnings management-based and cash flow management-based restatements and auditors' differential monitoring incentives for these two types of restatements.

There was little need for independent auditing until the early 1980s when economic reform and opening of the economy was adopted by the government. In the mid-1980s, direct financing emerged in the form of share issuance to domestic shareholders resulting in a demand for independently verified financial statements. The Chinese Institute of Certified Public Accountants (CICPA) was established in 1989 in response to that need. Later, the establishment of the Shanghai Stock Exchange and Shenzhen Stock Exchange in 1990–91 provided direct incentives and pressures for market-oriented financial disclosure. In addition, the issuance of publicly traded shares to foreign investors began in 1992, increasing the information needs of foreign investors and the need for financial information verified by high quality audits. As a result, foreign accounting firms such as the Big 5 were allowed to establish joint ventures with local practitioners to perform financial statement audits.³

Chinese independent auditing standards have been promulgated since 1995 and are closely modelled after the International Standards on Auditing issued by the International Federation of Accountants (IFAC). The new standards improve upon the old standards issued by the China Institute of Certified Public Accountants (CICPA), by providing auditors with detailed auditing procedures, including audit planning procedures, sampling guidelines, standards of audit evidence, and clear guidance for audit opinion formulation (DeFond, Wong, & Li 2000, p. 276). The new auditing standards are found to be effective in improving audit independence (e.g., DeFond et al., 2000).⁴

The distinctive features of the Chinese audit market provide a good opportunity to undertake audit research using Chinese data. For instance, the Chinese auditing market is very competitive in that it is dominated by small and mid-sized audit firms, with the prominent Big 4 firms having an average market share of less than 10%. In addition, the Chinese audit market is segmented. Publicly listed companies that issue only domestic shares (A-shares) are required to undertake a statutory audit by any qualified audit firm in accordance with Chinese GAAP. The B-share companies with foreign investments are required to undergo a supplementary audit that follows the International Financial Reporting Standards (IFRS), in addition to the statutory audit. The statutory audit market has low entrance barriers and is highly competitive, while the supplementary market is dominated by the Big 4 firms because of China's regulatory preference for large foreign auditors. Because of the severe competition and segmentation of the audit market, audit quality varies among audit firms. Therefore, instead of using the Big 4, Chinese studies commonly use Top 8 or Top 10 auditors based on rankings of audit revenue as a proxy for audit quality (e.g., Chen et al., 2011). Using audit revenue as a rank is appropriate as large auditors tend to have more expertise and thorough work procedures due to their sufficient financial resources.

The provision of high quality audit is an assumed outcome of auditors' concerns about potential litigation and reputation risks (Hope & Langli, 2010). Litigation risk exposes auditors to direct financial penalties, while reputation loss impairs the auditor's ability to retain existing clients and attract new ones. In the US, auditors are exposed to costly litigation for providing substandard audit. However, the risk of litigation for auditors is negligible in China because of the legal rights constraints faced by investors. For example, an administrative penalty notice from regulatory agencies is a required prerequisite to filing a lawsuit against wrongdoers in the capital markets. Also, in the absence of a class-action system, it becomes prohibitively costly for individual investors to afford legal costs.

² For a more detailed discussion on the regulatory initiatives to address financial restatements in China, see Wang and Wu (2011).

³ Initially, these joint ventures were established between foreign accounting firms and the local Ministry of Finance. Therefore, the political connection between foreign accounting firms and local government is still very strong as foreign accounting firms have formed new partnerships with other local practitioners in recent years (Liu & Zhou, 2007).

⁴ For a detailed discussion on the background of the promulgation of the new set of auditing standards in China in 1995, please refer to DeFond et al. (2000).

Additionally, the incorporation of the majority of Chinese audit firms as limited liability companies means that auditors' liability will not exceed their investments in the accounting firms, and their personal assets will be exempted from damages (Chen et al., 2011).⁵ On the other hand, audit firms should be concerned about investigation from regulatory agencies and the resulting penalties which might include, among others, revocation of licenses. Recent empirical evidence suggests effective audit monitoring in earnings management perhaps due to improved shareholder protection in China and auditors' litigation concern, brought about by a more stringent regulatory environment.

2.2.2. Development of hypotheses

We contend that auditor monitoring effectiveness will be more intense for earnings management for the following reasons. First, it is commonly believed that earnings are prepared on an accrual basis, which inherently requires more estimation by accountants. This opens up the possibility of opportunistic reporting. Therefore, investors often suspect earnings manipulation. The Chinese accounting literature has evidenced rampant earnings management and accounting scandals in recent years that have caused public outrage in China and international attention (Chen & Yuan, 2004; Ding, Zhang, & Zhang, 2007; Firth, Fung, & Rui, 2007). Therefore, auditors' reputation concern over earnings and assets accounts misstatements is large. Uncovered earnings manipulation is subject to severe public scrutiny and negative publicity. Due to this concern, high quality auditors should have an incentive to put more effort into detecting misreporting associated with earnings management.

In addition, auditors face high litigation risk and more intense scrutiny by regulatory authorities for failing to detect misstatements attributed to earnings management. Firth et al. (2005) analyse enforcement actions issued by the CSRC against auditors in 72 fraudulent financial reporting cases involving listed companies in China during 1996 and 2002. They find that auditors are more likely to be sanctioned by regulators for failing to detect and report material misstatement frauds, with revenue-related frauds considered to be more egregious than asset-related frauds. The findings suggest that large audit firms are expected to be more vigilant in detecting and reporting misstatements on earnings and as a result, curb earnings management induced restatements. Taken together, we have developed the following hypothesis for non-cash flow restatements.

H1. High quality audit reduces the likelihood of earnings management-induced restatements.

Since 1998 in China, the Cash flow Statement is required to be disclosed in listed companies' annual reports, as well as operating cash flows per share (CFOPS) along with EPS. The stock market perceives cash flows to be value relevant along with accounting earnings in China (Haw, Qi, & Wu, 2001). From a regulatory perspective, cash flow manipulation may have been an offshoot of the requirement by the CSRC in, 2001 to meet cash flow benchmarks for SEO purpose. Before the year 2000, achieving a minimum return on equity (ROE) was the only explicit requirement by CSRC when listed firms sought seasoned equity offerings (SEOs). Since earnings manipulation to achieve ROE became widespread, the CSRC made net cash flows and net cash flows from operations an additional requirement for SEOs in 2001. This regulatory threshold may have created incentives for cash flow manipulation among listed companies. Zhang (2009) investigates Chinese listed companies' cash flow management practices and report that cash flow management behaviours around zero and zero changes are more

prevalent in the Chinese market than in the U.S. market. Cash flow management around analyst cash flow forecasts, however, is no more prevalent than that in the U.S. market.

Despite the findings on firms' cash flow management, there is hardly any research about auditors' monitoring of cash flow management activities. In a market without enough sophisticated investors like China, cash flow management may not have caught the same attention of investors as earnings management has. We posit that the monitoring effect of auditors on cash flow management may not be discernable for the following reasons. Firstly, cash flow from operations as a result of cash accounting, is conventionally perceived to be less subjective and thus requires less auditor scrutiny. In addition, cash flow manipulation has only come to light recently in academic literature, and regulators and auditors may not have given it sufficient attention. That being said, auditors should carry out their responsibility to uncover and correct all material misstatements including cash flow manipulation. If this was the case, high quality auditors would constrain the material misstatements on cash flow which would lead to a lower likelihood of cash flow restatements. Due to the two-sided nature of the argument and lack of empirical evidence on this issue, we have developed the null hypothesis on cash flow restatements as they relate to cash flow management as follows.

H2. There is no effect of high quality audit on the likelihood of cash flow management induced restatements.

3. Research design

3.1. Empirical models

Restatement is normally used as a proxy for low quality financial reporting (Kinney, Palmrose & Scholz, 2004; Lin et al., 2006). Ettredge, Scholz, Smith, and Sun (2010) find that accrual earnings management as well as cash flow management precedes the restatements. As defined in the Appendix A, earnings management (EM) is the absolute value of discretionary accruals estimated using the models developed by Dechow, Sloan, and Sweeney (1995) and as modified by Kothari, Leone, and Wasley (2005). Cash flow management (CFM) is proxied by abnormal cash flow from operations. It is measured as the residual estimated using the model developed by Roychowdhury (2006), which regresses normal cash flow from operations, on sales and change in sales for every industry-year.⁶ Abnormal cash flow from operations could be a result of (1) misclassification of cash flow items among categories; (2) incorrect reporting of operating cash flows; and/or (3) real actions taken by managers to achieve certain goals regarding operating cash flows. Among those, the first two cash flow misstatements should be captured by auditors if they have exerted sufficient monitoring due to their concern over misclassification and/or incorrect reporting. The last reason for abnormal operating cash flow is at the managers' discretion and may not necessary cause misreporting per se.

We identify non-cash flow restatements and cash flow restatements respectively, and then match restatement sample observations with non-restatement control sample observations. The following regression analyses are conducted based on two sub-samples: NCFREST with control sample observations versus CFREST with control sample observations.

We consider the possibility that a direct investigation of the effect of audit quality on the probability of accounting restatements may produce biased results because of the endogenous relationship between

⁵ However, with the amendment of Securities Law on October 27, 2005, auditors are required to bear the joint and several liabilities with issuers for shareholder losses resulting from relying on audited financial statements that prove to be false, misleading, or contain major omissions (Dhaliwal et al., 2014). We test for the effect of this regulation later in the paper.

⁶ As a caveat of our study, we could not rule out the possibility that some abnormal cash flow may be attributed to certain real actions taken by managers to manipulate firms' operating cash flows, which does not necessary cause misstatement. Empirical evidence, however, finds a positive association between restatements and abnormal cash flows (a proxy for real earnings manipulation) (Ettredge et al., 2012).

audit quality, financial reporting quality (earnings and cash flow manipulation) and the incidence of accounting restatements. We, therefore, employ a Heckman two-stage test to control for the potential self-selection bias that might arise from the fact that firms select their auditors because of innate firm-specific factors. For instance, Francis, Maydew, and Sparks (1999) find that firms with a greater endogenous preference for total accruals are more likely to hire Big 6 auditors as external monitors, and consequently have lower estimated discretionary accruals. In the first stage probit model, we regress audit quality (AUDIT) on the likely determinants of auditor choice decision. For NCFREST subsample analysis, we use the following auditor choice model:

$$\begin{aligned} \Pr(\text{AUDIT}_{it}) = & \alpha_0 + \alpha_1 \text{EM}_{it} + \alpha_2 \text{SIZE}_{it} + \alpha_3 \text{CAPINT}_{it} + \alpha_4 \text{LEV}_{it} \\ & + \alpha_5 \text{ISSUE}_{it} + \alpha_6 \text{LOSS}_{it} + \alpha_7 \text{CYCLE}_{it} + \alpha_8 \text{PE}_{it} + \alpha_9 \text{ATO}_{it} \\ & + \alpha_{10} \text{SOE}_{it} + \alpha_{11} \text{CURR}_{it} + \alpha_{12} \text{QUICK}_{it} + \alpha_{13} \text{REGU}_{it} + \varepsilon_{it} \end{aligned} \quad (1)$$

where AUDIT (Audit Quality) is a dummy variable coded 1 for Top 8 audit firms based on audit revenue among all listed companies during sample years, and 0 otherwise and t is the year of misstatement.⁷ All variables are measured with the financials published in the misstatement year's financial statement and defined in the Appendix A.

The expected association between auditor choice and the explanatory variables is detailed below. In addition, we include earnings management (EM) measured as absolute value of discretionary accruals, because Kim, Chung, and Firth (2003) and Francis et al. (1999) find that both managers' accrual choices and auditor choices are endogenous, in that accruals are not only monitored by auditors; at the same time, firms' auditor choice is also affected by managers' reporting incentives pertinent to earnings management incentives. Following prior studies by Francis et al. (1999) and Kim et al. (2003), we also expect that the likelihood of a firm possessing high quality auditors increases with firm size (SIZE), capital intensity (CAPINT), operating cycle (CYCLE), price-to-earnings ratio (P/E), significant increase in outstanding shares (ISSUE), current ratio (CURR), quick ratio (QUICK), and membership in regulated industries (REG). Furthermore, we control for reporting of significant losses (LOSS), leverage (LEV), and asset turnover (ATO) as prior studies have found these variables to be negatively associated with the demand for higher audit quality. Finally, we include the effect of state-owned enterprises (SOE) on auditor choice decision. Wang, Wong, and Xia (2008) document that Chinese local SOEs are more likely to hire small auditors compared to non-SOEs. More detailed definitions of these variables are contained in the Appendix A.

The expected association between auditor choice and the explanatory variables is detailed below. In addition, we include earnings management (EM) measured as absolute value of discretionary accruals, because Kim et al. (2003) and Francis et al. (1999) find that both managers' accrual choices and auditor choices are endogenous, in that accruals are not only monitored by auditors; at the same time, firms' auditor choice is also affected by managers' reporting incentives pertinent to earnings management incentives. Following prior studies by Francis et al. (1999), Kim et al. (2003), and Chaney, Jeter, and Shivakumar (2004), we also expect that the likelihood of a firm possessing high

quality auditors increases with firm size (SIZE), capital intensity (CAPINT), operating cycle (CYCLE), price-to-earnings ratio (P/E), significant increase in outstanding shares (ISSUE), current ratio (CURR), quick ratio (QUICK), and membership in regulated industries (REGU).

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For CFREST subsample analysis, we replace EM with CFM and use the following auditor choice model:

$$\begin{aligned} \Pr(\text{AUDIT}_{it}) = & \alpha_0 + \alpha_1 \text{CFM}_{it} + \alpha_2 \text{SIZE}_{it} + \alpha_3 \text{CAPINT}_{it} + \alpha_4 \text{LEV}_{it} \\ & + \alpha_5 \text{ISSUE}_{it} + \alpha_6 \text{LOSS}_{it} + \alpha_7 \text{CYCLE}_{it} + \alpha_8 \text{PE}_{it} + \alpha_9 \text{ATO}_{it} \\ & + \alpha_{10} \text{SOE}_{it} + \alpha_{11} \text{CURR}_{it} + \alpha_{12} \text{QUICK}_{it} + \alpha_{13} \text{REGU}_{it} + \varepsilon_{it}. \end{aligned} \quad (2)$$

As defined in the Appendix A, CFM (Cash Flow Management) is a dummy variable, taking value of 1 if the restatement is related to the Statement of Cash Flow; control sample firms without restatement taking value 0. The definitions of all other variables are the same as those for Eq. (1) above.

Based on first stage Probit regression results, we compute inverse Mills ratios (IMR) and incorporate IMR into second stage regression to rule out the possibility of auditors' self-selection bias. Our second stage regressions used to test hypotheses are specified for NCFREST and CFREST subsamples respectively are as follows:

$$\begin{aligned} \text{NCFREST}_{it} = & \beta_0 + \beta_1 \text{AUDIT}_{it} + \beta_2 \text{EM}_{it} + \beta_3 \text{LEVERAGE}_{it} + \beta_4 \text{AGE}_{it} \\ & + \beta_5 \text{ZSCORE}_{it} + \beta_6 \text{FINANCE}_{it} + \beta_7 \text{GROWTH}_{it} + \beta_8 \text{BSIZE}_{it} \\ & + \beta_9 \text{DUAL}_{it} + \beta_{10} \text{STOWN}_{it} + \beta_{11} \text{INSTITUTE}_{it} + \beta_{12} \text{MGROWN}_{it} \\ & + \beta_{13} \text{IMR}_{it} + \varepsilon_{it} \end{aligned} \quad (3)$$

$$\begin{aligned} \text{CFREST}_{it} = & \delta_0 + \delta_1 \text{AUDIT}_{it} + \delta_2 \text{CFM}_{it} + \delta_3 \text{LEVERAGE}_{it} + \delta_4 \text{AGE}_{it} \\ & + \delta_5 \text{ZSCORE}_{it} + \delta_6 \text{FINANCE}_{it} + \delta_7 \text{GROWTH}_{it} + \delta_8 \text{BSIZE}_{it} \\ & + \delta_9 \text{DUAL}_{it} + \delta_{10} \text{STOWN}_{it} + \delta_{11} \text{INSTITUTE}_{it} + \delta_{12} \text{MGROWN}_{it} \\ & + \delta_{13} \text{IMR}_{it} + \varepsilon_{it} \end{aligned} \quad (4)$$

where NCFREST (Balance Sheet and/or Income Statement Restatements) is a dummy variable, taking value 1 if the restatement is related to Balance Sheet or Income Statement; control sample firms without restatement taking value 0 and CFREST (Cash Flow Restatement) is a dummy variable, taking value of 1 if the restatement is related to the Statement of Cash Flow; control sample firms without restatement taking value 0. This method is appropriate because of our interest in the determinants of restatements which need to be measured in the year when the misstatement occurs. All variables are measured with the financials published in the misstatement year's financial statement and defined in the Appendix A.

Eq. (3) is tested using the NCFREST sub-sample, while Eq. (4) is tested with the CFREST sub-sample. The coefficients on AUDIT in both equations are the variables of primary interest with respect to H1 and H2. We include in the above equations a set of control variables that are known to affect the magnitude of accounting restatements and are explained below.

LEVERAGE is measured as the ratio of total debt over total assets and is expected to increase the restatement likelihood because of managerial incentives for earnings manipulation to avoid covenant violations (Abbott, Parker, & Peters, 2004). AGE (time since stock listing) is related

⁷ Over our sample period, Top 8 auditors by our definition include Big 4 and other large Chinese domestic audit firms. Chinese domestic audit firms' revenue was relatively lower than the Big 4's until 2007 when they showed faster growth rate in terms of revenue. By 2011, for the first time, a domestic audit firm, Ruihua, saw its revenue surpass the ¥1 billion hurdle. This rapid growth trend for domestic Chinese audit firms has continued with the support of government policies and mergers between domestic audit firms. In 2012, Ruihua overtook Ernst & Young and KPMG in revenue, and ranked as the third largest audit firm in China. This was also the first time KPMG was not among the Chinese Big 4, indicating the loss of dominance of the Big 4 in China (Gillis, 2014). For domestic audit firms, the Top 8 change from year to year with certain audit firms consistently appearing on the list, and a few shifting over our sample period.

to firms' reporting difficulties and is expected to be negatively related to the possibility of restatement, because newly listed companies experience difficulty with SEC-enforced reporting requirements which leads to more incidence of restatements (Beasley, 1996). ZSCORE (financial distress) increases the likelihood of management opportunistic reporting and thus leads to subsequent restatement. A negative coefficient on this variable is expected because the higher a Z score is, the lower the chance of bankruptcy (Altman, 1968).

FINANCE (external financing) has been found to be associated with opportunistic reporting to reduce the cost of financing. A positive association, therefore, is expected between FINANCE and restatement (Abbott et al., 2004). GROWTH (growth opportunities) is also found to be related positively to the likelihood of restatement (Abbott et al., 2004).

A number of variables which proxy for firms' oversight mechanisms are also controlled. They are BSIZE (board size), DUAL (CEO duality), STOWN (state ownership), INSTITUTE (institutional ownership), and MGROWN (managerial ownership). Larger boards are good at monitoring functions because of their greater available resources. However, larger boards could also create coordination problems and suboptimal decisions (Jensen, 1993). Thus, no prediction is made for this variable. CEO duality reduces the effectiveness of board monitoring and is positively related to earnings manipulation (Dechow, Sloan, & Sweeney, 1996). Therefore, we expect a positive effect for DUAL on the likelihood of restatement.

Percentage of state ownership is included in the equation because Wang and Wu (2011) find that firms with low state ownership are less likely to restate financial statements. Previous studies report that there is a negative relation between block shareholder ownership (INSTITUTE) and restatements (Abbott et al., 2004) because of the increased monitoring function by these types of shareholders. Finally, MGROWN (management ownership) may have either positive (alignment of interest) or negative (entrenchment argument) effects on information quality. As a result, there is no prediction made for the coefficient of this variable.

Year and industry effects are controlled in all the regression specifications. Standard errors are clustered at the firm level in all regressions.

3.2. Sample selection

Due to the absence of a restatement database, we manually collected our sample from Shanghai and Shenzhen Stock Exchanges' listed companies over the period 2001 to 2011. Initially, we searched for restatement announcements in companies' news using the key words: restatement, revising, adjustment, and error, in the Wind database. We focused on restatements reported in annual reports but not in interim reports. Although restatements in interim reports are not uncommon, we excluded interim restatements because they are included in restatements in annual reports. We only considered restatements in the balance sheet, income statement, and the statement of cash flow. Restatements just affecting notes of the financial statements were excluded from our sample.

The final sample includes 557 financial statement-related restatements. We then manually checked the annual reports of these firms to identify the exact financial statements restated, the specific items restated and the amounts adjusted. It is to be noted that our sample is smaller than those of Ma et al. (2013) and Wang and Wu (2011). The former study uses a total of 1050 restatement observations from 2003 to 2011 while the latter uses 911 restatements from 1999 to 2005. The sample difference between our study and these two studies is attributed to our focus on restatements that involve financial statement items only.

However, the other studies may have included both restatements affecting financial statement items, and restatements of non-financial statement items. For example, some restatements are announced because of the wrong financial ratios (e.g., net asset per share) and wrong percentages of shareholdings of particularly large shareholders

disclosed in the notes to financial statements.⁸ We have identified a large number of such restatements and excluded those from our sample because our interest is in restatements pertinent to opportunistic reporting specifically earnings management and cash flow management involving numbers from the financial statements.

To be included in the sample, firms need to have A-shares issued during this period. So, we eliminate 10 restatements from the B share market which differs in listing conditions and disclosure requirements compared to the A-share market. A further 63 observations are eliminated because of the unavailability of matched control firms. We then eliminate 53 observations without financial statements and corporate governance data. Thus, we have identified 431 observations with financial statement restatements.⁹ Table 1 Panel A presents sample selection procedures. All financial and market related data were retrieved from the China Stock Market and Accounting Research (CSMAR) database.

Panel B of Table 1 shows the distribution of 431 restatement observations categorised as NCFREST and CFREST. We categorise restatement observations into two groups. As a result of categorisation, 270 (86) observations are identified as NCFREST and CFREST respectively. To run logistic regression using Eqs. (3) and (4), where the dependent variable is the restatement dummy, we must identify non-restatement firms as the control sample. For this purpose, we conduct a one-to-one match between restatement firms and firms that have not restated their financials in any year over the sample period. Specifically, we match restatement firms with control non-restatement firms using two criteria. First, a control firm should have market value of equity within 30% of the restatement sample firm in the year preceding the misstatement; second, a control firm should be from the same four digit industry. In case no control firm can be found in its four-digit industry, a matching firm is selected from a three-digit or two-digit industry. After matching, we have 540 (172) observations for regression analysis for the NCFREST (CFREST) sub-sample. Due to our research design using sub-sample regression analysis, 75 overlapping restatements are not used. The industry distribution of the sample observations is presented in Panel C, Table 1. The Machinery, Equipment and Instrument, and Real Estate industries account for 18.33% and 10.44% of the total restatement observations respectively.

4. Findings and discussions

4.1. Descriptive statistics

Descriptive statistics for the variables are reported in Panel A, Table 2. All results reported are based on the restatement sample only. All the variables except AUDIT, STWON, INSTITUTE, MGROWN and AGE are winsorized at the top and bottom 1% of their distributions to control for the effects of outliers. The mean of absolute value of discretionary accrual (EM) is 0.10 while the mean of CFM is 0.04. The mean of AUDIT is 0.12 implying that the majority of the restatement firms use small local auditors. This percentage is lower than 0.18 as reported in Chen et al. (2011) who use a shorter sample period (2001–2004) and a

⁸ For example, the restatement announcement of Huojian Ltd (company code 600879) on October 30, 2012 involved a correction of the net assets per share and the adjusted net assets per share to the amount of ¥3.08 for the fiscal year ended December 31, 2001. Another example comes from Hacı Ltd (code 400044) announcing on November 05, 2011 that "One major shareholder of Harbin Shengxin Technological Ltd, Liang, Jicheng was mistakenly named as Zhu, Jixun in the published shareholding structure disclosed in the announcements made in China Security Press, Shanghai Security Press, and Security Times".

⁹ Financial statement restatement frequency has fluctuated over our sample period. The number of restatements increased in the early years from 2001 to 2003 and reached its highest in 2003 with 84 incidences of material financial statement restatements. However, this increasing trend was overturned with a steady decline in the following years. This decline in restatement frequency may be due to improved financial reporting quality, more efficient audit monitoring, better shareholder protection and a more stringent regulatory environment in China.

Table 1
Sample selection and industry distribution.

Panel A: Sample selection				
Description	Observations			
Number of restatements collected from annual reports (2001–2011)	557			
Less: Restatements from B share market	(10)			
Less: Observations without control firms based on firm size	(63)			
Less: Lack of control variables data observations	(53)			
Number of restatement observations for testing H ₁	431			
Panel B: Sample allocation among restatement categories				
Test of H ₁ :	NCFREST	CFREST	Firms with both types of restatements	Total
Restatement firms only	270	86	75	431
Restatement firms and their size-matched control firms	540	172	150	862
Panel C: Industry distribution of restatement observations				
Industry name (code)	Observations	% of sample		
01 – Farming, forestry, animal husbandry & fishery	10	2.32%		
02 – Mining and quarrying	10	2.32%		
03 – Food and beverage	28	6.50%		
04 – Textile, clothing, fur	7	1.62%		
06 – Papermaking, printing	3	0.70%		
07 – Petroleum, chemical, rubber, plastic	41	9.51%		
08 – Electronic	22	5.10%		
09 – Metal, nonmetal	26	6.03%		
10 – Machinery, equipment, instrument	79	18.33%		
11 – Medicine, biologic products	23	5.34%		
12 – Other manufacturing	2	0.46%		
13 – Production & supply of power, gas & water	17	3.94%		
14 – Construction	10	2.32%		
15 – Transportation, storage	13	3.02%		
16 – Information technology industry	23	5.34%		
17 – Wholesale and retail trades	25	5.80%		
19 – Real estate	45	10.44%		
20 – Social services	17	3.94%		
21 – Transmitting, culture industry	8	1.86%		
22 – Integrated	22	5.10%		
Total	431	100.00%		

much larger number of sample observations (3310 firm-year observations). The restatement sample has a low level of state, institutional, and managerial ownership. Panel B of Table 2 compares the mean values of the variables between restatement and nonrestatement control sample firms. Two-tailed t-statistics suggest that restatement firms tend to have greater absolute discretionary accruals, lower quality auditors, higher likelihood of bankruptcy (lower ZSCORE), less external financing, higher growth rate, and lower levels of state and managerial ownership than non-restatement control sample firms.

The correlation matrix is reported in Table 3. The correlation between NCFREST and CFREST is significantly negative suggesting that firms either restate their Balance Sheet/Income Statement, or the Statement of Cash Flow, but not both. AUDIT shows a significantly negative correlation with NCFREST (−0.08) but not with CFREST (−0.016). The absolute values of discretionary accruals (EM) and cash flow management (CFM) are measured and used for the NCFREST and CFREST sub-sample analysis respectively. Therefore, it is irrelevant to present the correlation between CFM and NCFREST and the correlation between EM and CFREST. Both STOWN and INSTITUTE are negatively correlated with NCFREST. Among all control variables, only DUAL is positively correlated with NCFREST. Interestingly, GROWTH is negatively correlated with NCFREST, but it is positively correlated to CFREST. Correlation analysis does not indicate a multicollinearity problem.

4.2. Regression analysis on likelihood of restatement

Table 4 presents regression results for a Heckman two-stage test using Eqs. (1) and (2) at the first stage and then Eqs. (3) and (4) at

Table 2
Descriptive analysis.

Panel A: Descriptive statistics for restatement observations						
Variables	Observations	Mean	Median	S.D.	Max	Min
EM	270	0.07	0.06	0.16	2.66	0.01
CFM	86	0.04	0.03	0.14	0.68	−1.32
AUDIT	356	0.12	0.00	0.32	1.00	0.00
AGE	356	6.83	7.00	3.53	19.00	0.00
ZSCORE	356	0.02	0.02	0.07	0.38	−1.18
FINANCE	356	−0.05	−0.03	0.25	1.10	−2.95
GROWTH	356	0.16	0.09	0.34	2.88	−0.54
BSIZE	356	9.46	9.00	2.21	19.00	3.00
DUAL	356	0.15	0.00	0.35	1.00	0.00
STOWN (%)	356	8.91	0.31	0.20	75.00	0.00
INSTITUTE (%)	356	8.12	0.71	14.66	72.43	0.00
MGROWN (%)	356	0.65	0.002	0.04	0.55	0.00
Panel B: Comparison in means of variables between restatement sample observations and control sample observations						
Variable	Restatement firms	Control firms	t-statistic	p-value		
EM	0.1019	0.0738	2.08***	0.02		
CFM	0.0442	0.0533	−0.08	0.43		
AUDIT	0.1160	0.1729	−2.38***	0.00		
AGE	6.8333	6.5991	0.91	0.81		
ZSCORE	0.0227	0.0319	−1.89**	0.03		
FINANCE	−0.0504	−0.0267	−1.29*	0.09		
GROWTH	0.1595	0.1274	1.65**	0.05		
BSIZE	9.4629	9.5268	−0.41	0.33		
DUAL	0.1468	0.1382	0.36	0.64		
STOWN (%)	8.9104	11.0723	−1.52*	0.06		
INSTITUTE (%)	8.1211	7.3012	0.73	0.77		
MGROWN (%)	0.6500	1.6200	−2.26***	0.01		

For brevity, we only present descriptive statistics for the variables used in the second stage regressions of Heckman test.

the second stage. The test is conducted using two sub-samples, namely: (1) NCFREST firms with their matched nonrestatement firms; and (2) CFREST firms with their matched non-restatement firms. For the NCFREST subsample, a first stage Probit model analysis using NCFREST as the dependent variable shows that earnings management is not an economically significant determinant of sample firms' choice of auditors (coefficient −0.42, z-statistics −0.62). However, the CFREST subsample analysis shows that the propensity to hire smaller auditors increases with an increase in cash flow manipulation (coefficient −3.63, z-statistic −1.94, significant at 5% level).

The other determinants of auditor choice for the NCFREST subsample are insignificant except for CURR (significantly positive) and QUICK ratio (significantly negative). For the CFREST subsample, the coefficient on SIZE is positive and significant, suggesting large firms tend to hire high quality auditors. As described before, based on the first stage Probit regression results, IMR is computed which then is incorporated into second stage regressions – Eqs. (3) and (4).

Second stage analysis shows that for the NCFREST subsample there is a significant negative effect of high quality audit (AUDIT) on the likelihood of NCFREST (coefficient −0.44, z-statistic −2.42, significant at 1% level). Thus, the result lends support to H1. We also find a significantly positive coefficient on EM (coefficient 0.94, z-statistic 2.09, significant at 5% level), suggesting that earnings management is positively associated with the likelihood of non-cash flow restatements. This is consistent with the argument that restatements might be the consequence of aggressive accounting practices (Eilifsen & Messier, 2000).

CFREST subsample analysis shows that the effect of high quality audit (AUDIT) is insignificant although the sign is as expected (coefficient −0.01, z-statistic −0.02), suggesting auditors' ineffective monitoring on cash flow restatements. Hence, we accept the null hypothesis as stated in H2. The coefficient on CFM is also insignificant despite being positive.

Table 3
Correlation matrix.

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
NCFREST (1)	1.000													
CFREST (2)	−0.65***	1.000												
EM (3)	0.09**	−	1.000											
CFM (4)	−	−0.09*	−0.53***	1.000										
AUDIT (5)	−0.08**	−0.02	−0.02	−0.004	1.000									
AGE (6)	0.047	−0.12**	0.11	−0.007	−0.05	1.000								
ZSCORE (7)	−0.015	0.008	−0.08**	0.09**	0.02	−0.046	1.000							
FINANCE (8)	−0.017	−0.08**	0.07**	0.42***	0.01	0.12**	0.21***	1.000						
GROWTH (9)	−0.12**	0.15***	−0.08**	−0.09*	0.01	−0.10**	0.058	0.028	1.000					
BSIZE (10)	0.002	0.014	−0.09**	0.10**	0.07**	−0.08*	0.035	0.10**	−0.026	1.000				
DUAL (11)	0.14***	−0.06	0.04	0.001	−0.03	0.023	−0.065	−0.06	−0.059	−0.11**	1.000			
STOWN (12)	−0.10**	0.04	−0.06	−0.030	−0.01	−0.27***	0.003	−0.027	−0.008	0.059	−0.005	1.000		
INSTITUTE (13)	−0.13***	0.11**	−0.06	0.12**	0.09***	0.20***	0.15***	0.12**	0.21***	−0.004	−0.002	−0.24***	1.000	
MGROWN (14)	−0.09*	0.12**	0.02	0.001	0.06*	−0.15***	0.06	−0.05	0.012	−0.016	0.011	−0.064	0.02	1.000

Correlation analysis is based on restatement observations.

We only present the correlation matrix for the variables used in the second stage regressions of the Heckman test.

Correlation analysis is conducted for the variables used in the first stage regressions of the Heckman test (untabulated).

***, **, and * represent significance at the 1%, 5%, and 10% levels.

The findings indicate that cash flow management does not necessarily lead to cash flow restatements. In addition, auditors do not constrain cash flow restatement likelihood although detecting and correcting material intentional and unintentional misstatements is the auditors' responsibility, which is well accepted and specified in auditing standards.¹⁰ The coefficients on IMR in both equations are insignificant suggesting the absence of a confounding effect of auditor self-selection bias on our results. Our untabulated results using single stage regressions without a Heckman test suggest similar conclusions.

Of the control variables, MGROWN is negatively related to the possibility of restatement for the NCFREST sample, implying that high managerial ownership serves as a corporate governance mechanism to improve financial reporting quality, reducing the possibility of accounting restatements. The coefficient on ZSCORE (a proxy for financial distress) is negative and significant for both subsamples, consistent with the conjecture that financial distress increases the likelihood of restatement because a higher ZSCORE signals less financial distress. In addition, high growth firms tend to restate cash flow as evidenced by the positive coefficient on GROWTH in the CFREST subsample analysis. Finally, the coefficient on DUAL is negative and significant for the CFREST group.

4.3. Additional analysis

4.3.1. Market reaction test

In an additional analysis we investigate the market reaction to these two categories of restatement disclosures conditional on audit quality differences. Earlier research in the U.S. by Palmrose et al. (2004) found a negative stock price reaction immediately following the restatement announcement. Unlike Palmrose et al. (2004), we proxy management opportunistic reporting as earnings management and cash flow management specifically, in order to capture all intentional non-GAAP reporting behaviours, rather than only those disclosed by a firm itself or discovered by regulatory authorities. Although the market may be able to forecast and punish 'fraud' in the setting of restatements, it is unclear whether the market can see through more implicit earnings and cash flow management practices that still may have implications for subsequent restatements (Ettredge et al., 2010).

In China, Wang and Wu (2011) find stock market reaction to restatement announcements is insignificant. However, this may not portray a

clearer picture of the market reaction to restatement announcements for at least two reasons that are pertinent to our study.

First, if market reaction to restatement announcements is considered in aggregate without due recognition given to the cash flow versus non cash flow restatements, then the true reaction to restatements may be masked. We argue that when restatement occurs, potential earnings management inherent in firms' financial restatements accentuates market negative reaction, whereas this effect may not be discernible for potential cash flow management because of investors' risk aversion towards earnings manipulation and their lack of awareness of cash flow management. Second, market reaction to cash flow versus non cash flow restatements could also be moderated by audit quality. High quality audit should mitigate the negative cumulative market returns for restatement firms that are potentially subject to earnings management, because the risk perceived by investors may be reduced if the firms are audited by high quality auditors.

Untabulated univariate result shows that the mean cumulative abnormal returns (CAR) measured over long event windows – CAR(−30, 30), CAR(−50, 50) and CAR(−80, 80) – for the NCFREST sample are significantly more negative than those of their CFREST counterparts.¹¹ Therefore, the findings suggest that compared to the restatements that only affect the cash flow statement, investors are more risk-averse to non-cash flow restatements, which may be due to investors' earnings fixation tendency. Untabulated results of the multivariate analysis on the effect of these two categories of restatements show that over long restatement announcement windows, such as CAR(−50, 50) and CAR(−80, 80), market reaction is more negative if the restatement is sceptical of earnings management¹²; however, this negative reaction

¹¹ The rationale for using a long event window in China is justified by the less sophisticated nature of the Chinese stock markets. The distinctive institutional environment, such as weak legal protection of investors, greater information asymmetry, financial illiteracy, speculative mentality of individual investors, and private information acquisition, weakens market efficiency. In addition, since private information acquisition was not prohibited in China before 2007, leakage of sensitive information like accounting restatements well before the actual announcement, occurs frequently (Dong & Xue, 2010). Even after 2007, large investors, such as state and institutional investors, still have information advantages compared to individual investors. Thus, stock price sensitive information is available in an asymmetric manner. Using longer event windows is more appropriate for a market with slow price discovery. Some U.S. studies, too, have used CAR over long event windows e.g., CAR(−50, 50), to examine market reaction to restatement announcements (Audit Analytics, 2008; Hennes et al., 2008).

¹² For this analysis, only signed discretionary accrual measurement shows the negative market effect, but the absolute value of discretionary accruals does not significantly contribute to negative market returns. This result suggests that investors are more risk-averse towards incoming increasing earnings management, and thus stock prices punish firms' incoming increasing earnings management when there are earnings related restatements.

¹⁰ A question remaining unanswered by our study is why auditors have not taken into account cash flow management in the presence of cash flow misstatement. Future studies could make further inquiries into the auditors' work procedures for auditing cash flow items, their awareness of cash flow management, and their litigation and reputation concerns over cash flow misstatements.

Table 4

Regression results on likelihood of restatements using Heckman two-stage test to control for self-selection bias for auditor choice.

First-stage probit			Second-stage probit		
Dependent variable	NCFREST sub-sample	CFREST sub-sample	Dependent variable	NCFREST sub-sample	CFREST sub-sample
AUDIT	Model 1	Model 2	NCFREST (CFREST)	Model 3	Model 4
Variables	Coefficient	Coefficient	Variables	Coefficient	Coefficient
CONSTANT	−0.19	−10.60**	CONSTANT	0.53	1.08
Z-Statistic	−0.08	−2.06	Z-Statistic	0.88	1.04
EM (CFM)	−0.42	−3.63**	AUDIT	−0.44***	−0.01
Z-Statistic	−0.62	−1.94	Z-Statistic	−2.42	−0.02
SIZE	−0.02	0.47**	EM (CFM)	0.94**	1.23
Z-Statistic	−0.21	1.94	Z-Statistic	2.09	0.76
CAPINT	−0.87	−1.02	AGE	0.01	0.00
Z-Statistic	−1.48	−0.60	Z-Statistic	0.67	0.13
LEV	0.28	−0.95	ZSCORE	−0.93*	−9.44*
Z-Statistic	1.41	−0.56	Z-Statistic	−1.06	−1.78
ISSUE	0.10	0.40	FINANCE	−0.20	−0.58
Z-Statistic	0.53	1.08	Z-Statistic	−0.75	−0.61
LOSS	0.39	1.35	GROWTH	0.05	1.20*
Z-Statistic	0.91	1.14	Z-Statistic	0.24	1.87
CYCLE	−0.02	−0.01	BSIZE	−0.01	−0.04
Z-Statistic	−1.68	−0.36	Z-Statistic	−0.48	−0.72
PE	−0.00	0.00	DUAL	0.15	−0.87**
Z-Statistic	−0.03	1.14	Z-Statistic	0.88	−1.98
ATO	−0.13	0.54	STOWN	−0.76	−1.47
Z-Statistic	−0.57	1.51	Z-Statistic	−1.56	−1.57
SOE	0.04	−0.02	INSTITUTE	0.00	0.01
Z-Statistic	0.22	−0.04	Z-Statistic	0.63	0.62
CURR	0.46**	0.22	MGROWN	−3.06**	−0.83
Z-Statistic	2.01	0.23	Z-Statistic	−2.09	−0.58
QUICK	−0.52**	−0.90	IMR	0.12	0.16
Z-Statistic	−2.09	−0.85	Z-Statistic	1.02	0.51
REGU	0.48	−5.12			
Z-Statistic	0.40	−0.01			
Year indicators	Yes	Yes	Year indicators	Yes	Yes
Industry indicators	Yes	Yes	Industry indicators	Yes	Yes
N	540	172	N	540	172
Pseudo R ²	0.14	0.34	Pseudo R ²	0.13	0.10

The regression is conducted on unbalanced panel data.

To control for potential heteroskedasticity and autocorrelation problems, the standard errors are clustered by firm/years, providing a more robust standard error estimation and reliable t-statistics (Petersen, 2009).

All the regression equations also control for unobservable industry effects.

***, **, and * significant at the 1%, 5%, and 10% levels respectively (two-tailed test).

is not discernible for restatements associated with cash flow management. Meanwhile, the result also suggests that high quality audit mitigates the negative market reaction to NCFREST over longer restatement announcement windows.

4.3.2. Litigation risk and accounting restatements

Unlike U.S. auditors who are subject to shareholders' litigation for financial statement misrepresentation, auditors in China were not subject to any real litigation risk before 2005. However, to address the deficiency in legal protection of investors and the lack of a clear delineation of civil liability for auditor misconduct, China amended the Securities Law on October 27, 2005, which became effective on January 1, 2006. This law, for the first time prescribed that auditors will have to bear joint and several liabilities with issuers for shareholder losses resulting from relying on audited financial statements that prove to be false, misleading, or containing major omission (Dhaliwal, Liu, Xie, & Zhang, 2014). The authors document that negative press coverage prior to the audit report date significantly increases the probability of auditors issuing modified audit opinions but only during the post-reform period (2006–2009). To examine whether this regulatory reform has any bearing on our findings we run a regression analysis for the pre-reform period (2001–2005) and the post-reform period (2006–2009). Untabulated results show that the coefficient on EM is insignificant during the pre-reform period. However, the coefficient on EM becomes positive and significant (coefficient 1.72, z-statistic 1.93) while that of AUDIT becomes negative and

significant at better than the 5% level (coefficient estimate −0.50 and, z-statistic −2.23) in the post-reform period. This finding suggests that auditors' constraining effect on earnings management-induced restatements became more intense in the post litigation reform period. However, analysis on CREST for the two time periods does not provide any significant results.

5. Conclusion

The scrutiny of the audit profession following the dramatic increase in accounting restatements is not surprising, as external auditors' failure to detect a misstatement has been identified as one of the primary factors contributing to increased restatements (Eilifsen & Messier, 2000). Using accounting restatements data from China, we investigate whether high quality audit as proxied by audit firm revenue reduces the likelihood of accounting restatements. After controlling for self-selection bias, the results document that high quality audit indeed reduces the likelihood of restatements. However, this effect is more pronounced for firms with earnings management-induced restatements as opposed to cash flow management-induced restatements, possibly because of the intense scrutiny by regulatory authorities on earnings management concerns. Additionally, we also find that the market reacts negatively to non-cash flow restatement announcements in relation to earnings management but this effect is not discernible for cash flow restatements. High quality auditors lower the negative market reaction to

non-cash flow restatements. Further analysis of 2005 auditing litigation reform suggests improved audit monitoring of non-cash flow restatements post-reform.

Our study extends extant restatement literature by providing a new classification of restatements in light of intentional misreporting captured by earnings management and cash flow management. By differentiating restatements into types, our findings shed light into the variation in auditors' monitoring effectiveness. In addition, our study also enriches the audit literature by exploring auditors' concerns over cash flow misstatements, which is an under researched area. Lastly, our inquiry into audit quality and audit effectiveness in a competitive and segmental audit market, provides confidence in Chinese auditors' monitoring function and highlights the importance of legal reform in strengthening auditors' legal liabilities.

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Appendix A. Variable definitions

Variables	Definition	Measurement
NCFREST	Balance sheet and/or income statement restatements	Dummy variable, taking value 1 if the restatement is related to Balance Sheet or Income Statement; control sample firms without restatement taking value 0.
CFREST	Cash flow restatement	Dummy variable, taking value of 1 if the restatement is related to the Statement of Cash Flow; control sample firms without restatement taking value 0.
EM	Earnings management	Earnings management calculated following Dechow et al. (1995) and Kothari et al. (2005) to decompose earnings into its discretionary (DA) and non-discretionary (NDA) components. Kothari et al. (2005) develop a performance-matched DA model to alleviate the misspecification problem when applied to samples experiencing non-random performance. We estimate the following equation for all firms in the same industry (using the CSRC two-digit industry code) in each year to get industry-specific parameters to calculate the non-discretionary component of total accruals (NDA). DA is then the residual from the following equation, i.e., $DA = ACC - NDA$: $ACC_t = \alpha_0(1/Assets_{t-1}) + \alpha_1\Delta Sales_t + \alpha_2PPE_t + \alpha_3ROA_t + \varepsilon_t$ Where ACC equals net income minus operating cash flows, PPE is gross property, plant, and equipment and ROA is return on assets. All variables except ROA are deflated by lagged assets. EM is calculated using relevant financial statement data prior to restatement announcement to capture the intensity of earnings management prior to restatement. Absolute value of discretionary accrual is used for analysis because auditors should be concerned about both income-increasing and income-decreasing discretionary accruals.
CFM	Cash flow management	Cash flow management proxied by unexpected cash flow from operations (CFO). Roychowdhury (2006) regresses normal cash flow from operations, on sales

(continued)

Variables	Definition	Measurement
		and change in sales for every industry-year, to get industry-specific parameters in each year. Dechow, Kothari, and Watts (1998) and Lee (2012) model a firm's cash-generating process at the firm-level by regressing CFO on firm-specific parameters using annual data over the prior ten years. Unexpected CFO is the difference between expected and actual CFO and is proxied for cash flow management. We did not follow this approach, because the ten-year requirement on annual data would significantly reduce our sample. Instead, we first estimate the following equation for each two-digit SIC industry group in each sample year: $\frac{CFO_{i,t}}{TA_{i,t-1}} = \lambda_0 + \lambda_1 \frac{1}{TA_{i,t-1}} + \lambda_2 \frac{Sale_{i,t}}{TA_{i,t-1}} + \lambda_3 \frac{\Delta Sale_{i,t}}{TA_{i,t-1}} + \varepsilon_{i,t}$ where $CFO_{i,t}$ is the cash flow from operations of firm <i>i</i> for the period <i>t</i> , $TA_{i,t-1}$ is the total assets of firm <i>i</i> at the end of period <i>t</i> - 1, $Sale_{i,t}$ and $\Delta Sale_{i,t}$ are the sales and change in sales of firm <i>i</i> during period <i>t</i> . We use the parameter estimates from the above equation to generate expected CFO, and unexpected CFO is the difference between actual and expected CFO.
AUDIT	Audit quality	A dummy variable coded 1 for top 8 audit firms based on audit revenue among all listed companies during sample years, and 0 otherwise.
AGE	Age of stock listing	The number of years a firm is listed on the exchange.
ZSCORE	Financial distress	Altman Z Score to predict bankruptcy using the coefficients from the original Altman formula. The higher the Z score is, the lower the chance of bankruptcy.
GROWTH	Growth	Average growth rate of total assets in the two years preceding the misstatements.
BSIZE	Board size	Number of board numbers.
DUAL	CEO and chairman duality	Dummy variable taking value of 1 if CEO and chairman are the same, otherwise 0.
STOWN	State ownership	The cumulative percentage of state ownership.
INSTITUTE	Institutional ownership	The cumulative percentage of institutional ownership.
MGROWN	Managerial ownership	The cumulative managerial share ownership.
CAPINT	Capital intensity	Property, Plant and Equipment scaled by Sales for firm <i>i</i> in year <i>t</i> .
ISSUE	New share issuance	An indicator variable that takes the value of 1 if the number of outstanding shares in firm <i>i</i> increases by more than 10% during year <i>t</i> , otherwise 0.
LOSS	Loss	An indicator variable that takes the value of 1 if earnings after tax (EAT) scaled by lagged total assets (<i>t</i> - 1) for firm <i>i</i> in year <i>t</i> is negative and the absolute value of change in EAT scaled by lagged total assets during year <i>t</i> is greater than 10%, otherwise zero.
CYCLE	Operating cycle in months	(Days' sales in inventory + accounts receivable)/30 for firm <i>i</i> in year <i>t</i> .
PE	Price/Earnings ratio	Price to earnings ratio for firm <i>i</i> in year <i>t</i> .
ATO	Asset turnover	Asset turnover for firm <i>i</i> in year <i>t</i> , calculated as total sales divided by total assets.
SOE	State control	Whether largest shareholder is the government.
CURRENT	Current ratio	Current ratio for firm <i>i</i> in year <i>t</i> , calculated as current assets divided by current liabilities.
QUICK	Quick ratio	Quick ratio for firm <i>i</i> in year <i>t</i> , calculated as quick assets (CA-INV) divided by current liabilities.
REGU	Regulated industry	An indicator variable that takes the value of 1 if firm <i>i</i> is a member of a regulated industry in year <i>t</i> , otherwise 0.

References

- Abbott, L., Parker, S., & Peters, G. (2004). Audit committee characteristics and restatements. *Auditing: A Journal of Practice and Theory*, 23(1), 69–87.
- Agrawal, A., & Chadha, S. (2005). Corporate governance and accounting scandals. *Journal of Law and Economics*, 48(2), 371–406.
- Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *Journal of Finance*, 23(4), 589–609.
- Analytics, Audit (2008). Financial restatement and market reactions. Retrieved from http://www.alacrastore.com/acm/2033_sample.pdf
- Beasley, M. (1996). An empirical analysis of the relation between the board of director composition and financial statement fraud. *The Accounting Review*, 71, 433–465.
- Becker, C. L., DeFond, M. L., Jiambalvo, J., & Subramanyam, K. (1998). The effect of audit quality on earnings management. *Contemporary Accounting Research*, 15(1), 1–24.
- Chaney, P. K., Jeter, D., & Shivakumar, L. (2004). Self-selection of auditors and audit pricing in private firms. *The Accounting Review*, 79(1), 51–72.
- Chen, H., Chen, J. Z., Lobo, G. J., & Wang, Y. (2011). Effects of audit quality on earnings management and cost of equity capital: Evidence from China. *Contemporary Accounting Research*, 28(3), 892–925.
- Chen, B., Chi, W., & Lin, W. Y. (2012). Auditors' brand-name reputation, audit office size and the impact of client importance on audit quality at the office level: Evidence from China. Working paper. Zhongnan University of Economics and Law and National Chengchi University.
- Chen, K. C. W., & Yuan, H. (2004). Earnings management and capital resource allocation: Evidence from China's accounting-based regulation of rights issues. *The Accounting Review*, 79(3), 645–665.
- China Securities Regulatory Commission (CSRC) (2001). *The Directive Suggestion on Review Procedure of Issuing and Approving Commission to Equity Issuing by Public Firms*.
- DeAngelo, L. E. (1981). Auditor size and audit quality. *Journal of Accounting and Economics*, 3(3), 183–199.
- Dechow, P., Kothari, S. P., & Watts, R. (1998). The relation between earnings and cash flows. *Journal of Accounting and Economics*, 25(2), 133–168.
- Dechow, P., Sloan, R., & Sweeney, A. (1996). Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the SEC. *Contemporary Accounting Research*, 13, 1–36.
- Dechow, P. M., Sloan, R., & Sweeney, A. (1995). Detecting earnings management. *The Accounting Review*, 70, 193–226.
- DeFond, M. L., Wong, T. J., & Li, S. H. (2000). The impact of improved auditor independence on audit market concentration in China. *Journal of Accounting and Economics*, 28(3), 269–305.
- Dhaliwal, D. S., Liu, Q., Xie, H., & Zhang, J. (2014). Negative press coverage, litigation risk, and audit opinions in China. Working paper. University of Arizona Wuhan University, University of Kentucky and Guangdong University of Finance and Economics.
- Ding, Y., Zhang, H., & Zhang, J. (2007). Private vs. state ownership and earnings management: Evidence from Chinese listed companies. *Corporate Governance: An International Review*, 15, 223–238.
- Dong, M., & Xue, Q. (2010). The effect of governance transparency on earnings response coefficient: Evidence from emerging markets. *International Journal of Accounting, Auditing and Performance Evaluation*, 6(2/3), 158–190.
- Eilifsen, A., & Messier, W. F. (2000). The incidence and detection of misstatements: A review and integration of archival research. *Journal of Accounting Literature*, 19, 1–43.
- Ettredge, M. L., Scholz, S., Smith, K., & Sun, L. (2010, (April/May)). How do restatements begin? Evidence of earnings management preceding restated financial reports. *Journal of Business Finance and Accounting*, 332–355.
- Firth, M., Fung, P. M. Y., & Rui, O. M. (2007). Ownership, two-tier board structure, and the informativeness of earnings – Evidence from China. *Journal of Accounting and Public Policy*, 26(4), 463–496.
- Firth, M., Lo, P. L. L., & Wong, R. M. K. (2005). Financial statement frauds and auditor sanctions: An analysis of enforcement actions in China. *Journal of Business Ethics*, 62(4), 367–381.
- Francis, J., Maydew, E. L., & Sparks, H. C. (1999). The role of big 6 auditors in the credible reporting of accruals. *Auditing*, 18(2), 17–35.
- Fuerman, R. D. (1997). Naming auditor defendants in securities class actions. *Journal of Legal Economics*, 7(1), 72–91.
- Gillis, P. (2014). *The Big Four and the development of the accounting profession in China*. Bingley: Emerald Group Publishing Limited.
- Graham, J. R., Harvey, C. R., & Rajgopal, S. (2005). The economic implications of corporate financial reporting. *Journal of Accounting and Economics*, 40(1–3), 3–73.
- Gul, F. A., Jeong-Bon, & Qiu, A. (2010). Ownership concentration, foreign shareholding, audit quality, and stock price synchronicity: Evidence from China. *Journal of Financial Economics*, 95(3), 425–442.
- Gul, F. A., Sun, S. Y. J., & Tsui, J. S. L. (2003). Audit quality, earnings, and the Shanghai Stock Market return. *Journal of Accounting Auditing and Finance*, 411–427.
- Haw, I.-M., Qi, D., & Wu, W. (2001). The nature of information in accruals and cash flows in an emerging capital market: The case of China. *The International Journal of Accounting*, 36(4), 391–406.
- Hennes, K. M., Leone, A. J., & Miller, B. P. (2008). The importance of distinguishing errors from irregularities in restatement research: The case of restatements and CEO/CFO turnover. *The Accounting Review*, 83(6), 1487–1519.
- Hope, O. K., & Langli, J. C. (2010). Auditor independence in a private firm and low litigation risk setting. *The Accounting Review*, 85(2), 573–605.
- Hribar, P., & Jenkins, N. T. (2004). The effect of accounting restatements on earnings revisions and the estimated cost of capital. *Review of Accounting Studies*, 9(2–3), 337–356.
- Jensen, M. C. (1993). The modern industrial revolution, exit, and the failure of internal control systems. *Journal of Finance*, 48, 831–880.
- Kim, J. -B., Chung, R., & Firth, M. (2003). Auditor conservatism, asymmetric monitoring, and earnings management. *Contemporary Accounting Research*, 20(2), 323–359.
- Kinney, W. R., Palmrose, Z. -V., & Scholz, S. (2004). Auditor independence and nonaudit services: What do the restatements suggest? *Journal of Accounting Research*, 42(3), 561–588.
- Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics*, 39, 163–197.
- Lee, L. F. (2012). Incentives to inflate reported cash from operations using classification and timing. *The Accounting Review*, 87(1), 1–33.
- Lin, J., Li, J., & Yang, J. (2006). The effect of audit committee performance on earnings quality. *Managerial Auditing Journal*, 21(9), 921–933.
- Liu, F., & Zhou, F. (2007). Does big 4 represent high audit quality? *Accounting Research*, 3, 79–89 (in Chinese).
- Ma, C., Zhang, J., & Du, H. (2013). Chinese accounting restatement and the timeliness of annual report. Working paper. Xi'an Jiaotong University and University of Houston.
- Newman, D. P., Patterson, E. R., & Smith, J. R. (2005). The role of auditing in investor protection. *The Accounting Review*, 80(1), 289–313.
- Palmrose, Z. V., Richardson, V., & Scholz, S. (2004). The determinants of market reactions to restatement announcements. *Journal of Accounting and Economics*, 37(1), 59–89.
- Palmrose, Z. V., & Scholz, S. (2004). The circumstances and legal consequences of non-GAAP reporting: Evidence from restatements. *Contemporary Accounting Research*, 21(1), 139–180.
- Petersen, M. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies*, 22(1), 435–480.
- Piotroski, J. D., & Wang, T. J. (2012). Institutions and information environment of Chinese listed firms. In Joseph Fan, & Randall Morck (Eds.), *Capitalizing China*. Chicago: University of Chicago Press.
- Public Company Accounting Oversight Board (2010). Report on observations of PCAOB inspectors related to audit risk areas affected by the economic crisis. *PCAOB Release No. 2010-006*.
- Romanus, R. N., Maher, J. J., & Fleming, D. M. (2008). Auditor industry specialization, auditor changes, and accounting restatements. *Accounting Horizons*, 22(4), 389–413.
- Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics*, 42, 335–370.
- Sami, H., & Zhou, H. (2008). Do auditing standards improve the accounting disclosure and information environment of public companies? Evidence from the emerging markets in China. *The International Journal of Accounting*, 43(2), 139–169.
- Srinivasan, S. (2005). Consequences of financial reporting failure for outside directors: Evidence from accounting restatements and audit committee members. *Journal of Accounting Research*, 43(2), 291–334.
- Wang, K. O. S., & Iqbal, Z. (2009). Audit pricing and auditor industry specialization in an emerging market: Evidence from China. *Journal of International Accounting, Auditing and Taxation*, 18(1), 60–72.
- Wang, Q., Wong, T. J., & Xia, L. (2008). State ownership, the institutional environment, and auditor choice: Evidence from China. *Journal of Accounting and Economics*, 46(1), 112–134.
- Wang, X., & Wu, M. (2011). The quality of financial reporting in China: An examination from an accounting restatement perspective. *China Journal of Accounting Research*, 4(4), 167–196.
- Wild, J., Subramanyam, K. R., & Hasley, R. (2004). *Financial statement analysis*. New York, NY: McGraw/Irwin.
- Zhang, R. (2009). Cash flow management in the Chinese stock market: An empirical assessment with comparison to the U.S. market. *Frontiers of Business Research in China*, 2, 301–322.
- Zhizhong, H., Juan, Z., Yanzhi, S., & Wenli, X. (2011). Does corporate governance affect restatement of financial reporting? Evidence from China. *Nankai Business Review*, 13(5), 45–52.
- Zhou, H. (2007). Auditing standards, increased accounting disclosure, and information asymmetry: Evidence from an emerging market. *Journal of Accounting and Public Policy*, 26(5), 584–620.