Does the disclosure of internal control deficiency matter for accrual quality? Evidence from China

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ABSTRACT

Using a sample of Chinese listed firms that are required to audit and disclose any internal control deficiency (ICD), this paper examines the effect of mandatory ICD disclosure on accrual quality (AQ) in China. We find that relative to voluntary ICD disclosure, mandatory ICD disclosure is associated with poorer AQ, as proxied by abnormal accruals, suggesting that the mandated disclosure of ICD effectively identifies financial reporting quality in Chinese firms. This relationship is enhanced by government control of firms (especially the central government) and by the intensity of government inspections and is stronger in undeveloped regional markets. The results are robust to the application of the PSM-DID method and use of different measures and samples. Our findings demonstrate the critical role of the mandated disclosure of ICD and improve our understanding of internal control mechanisms in emerging markets.

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1. Introduction

A weak internal control system can lead to poor financial reporting quality (Ashbaugh-Skaife et al., 2009; Bizarro et al., 2011; Doyle et al., 2007a; Qin et al., 2021). In July 2002, the U.S. Congress passed the Sarbanes–Oxley Act (SOX), requiring management and auditors to evaluate a firm's internal control of its financial reporting (Public Company Accounting Oversight Board [PCAOB], 2004; Securities and Exchange Commission [SEC], 2003). A body of studies provide evidence that the mandatory disclosure of internal control deficiency (ICD) under SOX is an important mechanism for detecting financial reporting problems (e.g. Ashbaugh-Skaife et al., 2008; Doyle, et al., 2007a). However, the effectiveness of such regulation of firms' internal controls is still debated (Bedard, 2011; Costello and Wittenberg-Moerman, 2011; Doyle et al., 2007a; Rice and Weber, 2012). For example, Canada and Japan have implemented less restrictive regulations, because the mandatory disclosure of internal control systems is too costly to be efficient in some countries (Lu et al., 2011; Nishizaki et al., 2014). Some counties such as the UK and other European Union members have adopted a broad approach to the regulation of internal

control systems (Deumes and Knechel, 2008). Unlike those countries, China has imposed mandatory ICD disclosure regulations on increasingly large subsets of listed firms in waves since 2011. This progressive implementation of internal control regulation allows us to compare voluntary and mandatory ICD disclosure in contemporaneous periods, shedding light on the effectiveness of different approaches to regulating internal controls.

The mandatory disclosure of internal control systems (e.g. the U.S. SOX approach) is subject to ongoing debate related to issues of compliance and enforcement. Some studies find that SOX increases the cost of internal control, resulting in higher audit and assessment costs, extra managers' qualifications and time, etc. (Piotroski and Srinivasan, 2008; Chan et al., 2008; Bauer, 2015; Ge et al., 2017; Donelson et al., 2017; Nancy and Barnes, 2018). These implementation costs are disproportionately heavy for small public companies and foreign companies listed on U.S. stock exchanges, thus affecting their delisting and listing decisions (Piotroski and Srinivasan, 2008).[1] Lu et al. (2011) find that the cost of SOX North disclosures in Canada is lower than in the U.S. setting, as that regime does not include implementation effectiveness testing, direct management certification or external audits of such disclosures. They show that this lower cost approach is a credible and efficient type of ICD disclosure for Canadian companies.

China uses the U.S approach (see SOX Section 302 and 404), requiring Chinese listed firms to provide a management evaluation reports of the effectiveness of their internal control and an auditor's assessment of the effectiveness of their clients' internal control. Moreover, the Chinese government requires the Chinese Ministry of Finance to inspect listed firms' compliance with ICD disclosure regulations and to issue an annual report at the end of each fiscal year, which it has done every year since the mandate was implemented.[2] This approach to compliance raises more doubts about the regulations' effectiveness, because direct government enforcement in weak institutional environments is perceived as low quality and is not trusted by the public (La Porta et al., 1999). Given these concerns, the effectiveness of mandatory ICD disclosure, particularly in emerging markets like China, remains unclear.

We perform several analyses to explore the effectiveness of mandatory audits of ICD given the institutional characteristics of the Chinese market. We first examine the association between ICD disclosure and financial reporting quality as proxied by three measures of accrual quality (AQ). From 2011 to 2014, China sequentially imposed mandates on four expanding subsets of listed firms.[3] In our subsample of firms subject to mandatory disclosure, 4.4% of the firms receive non-standard audit opinions related to the incidence of ICD. In contrast, in the subsample of firms subject to voluntary disclosure, less than 1% of the firms receive non-standard audit opinions. This shows that mandatory disclosure increases the number of reported ICDs. It also shows that mandatory disclosure incurs significantly higher audit costs, as it requires more audit effort. Based on univariate and regression analyses, we find that firms that report an ICD have poorer AQ than firms that do not report an ICD. This relationship between the disclosure of ICDs and earnings quality has been identified in Western countries in prior studies (Ashbaugh-Skaife et al., 2008; Chan et al., 2008; Doyle et al., 2007a; Lu et al., 2011). Unlike prior studies, we differentiate between firms engaging in voluntary and mandatory disclosure in the Chinese regulatory setting. Our findings show that mandatory ICD disclosure is associated with nosier accruals – producing higher absolute abnormal accruals than voluntary ICD disclosure. Our evidence indicates that mandatory ICD disclosure is more significantly associated with financial reporting quality than voluntary disclosure. Under the market institutions in China (Krishnan, 2005; Doyle et al., 2007b; Lu et al., 2011; Zhang et al., 2007), we find that the effectiveness of mandatory ICD disclosure is stronger when firms are controlled by the government (especially when controlled by the central government), when government inspections are more intensive and in less developed regional markets. These results suggest that government control and enforcement play a critical role in enhancing the effectiveness of mandatory ICD disclosure, and that ICD disclosure regulation is critical for improving internal controls in an undeveloped market.

Our findings contribute to the literature in the following ways. First, we extend the literature on the consequences of internal control regulations such as the U.S. SOX. Our findings in an emerging market setting are consistent with prior studies conducted in Western countries that find that ICD disclosure is related to financial reporting quality (Ashbaugh-Skaife et al. 2008; Bedard, 2006). However, Chinese policies are different from the U.S.'s SOX 404. The aim of the Chinese ICD mandate is to ameliorate the ICD progressively from state-owned enterprises (SOEs) to non-SOEs and from large firms to small firms. That is, the SOEs and the large firms are encountering ICD mandate prior to their counterparts. Some studies such as Dang and Fang (2018) and Hu et al. (2020) have examined whether the mandatory audit regime of internal control in China (i.e. whether the firms have audited and issued the internal control reports) improves the financial reporting quality. They have not classified the audit opinions on the internal control reports. Using a sample of Chinese firms from the period before ICD disclosure was mandated, Ji et al. (2015); Ji et al. (2017) demonstrate that the voluntary disclosure of ICD is strongly associated with earnings quality in China. Building on their study, we extend the sample period to encompass the transition from voluntary ICD disclosure to mandatory disclosure, focusing on the effects of the modified audit opinions on internal control in mandatory disclosure regime. Limited research has directly examined how mandatory ICD disclosure differs from voluntary ICD disclosure. Based on its unique setting, our study provides fresh evidence that mandatory ICD disclosure is more useful for determining financial reporting quality than voluntary ICD disclosure.

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[1] Some observers cite the rising costs of compliance with SOX as one reason that European companies are delisting from U.S. exchanges in increasing numbers. Piotroski and Srinivasan (2008) also find that the costs associated with SOX compliance affect the listing decision of small foreign firms.

[2] Publicly listed Chinese firms are usually required to submit their documents (such as semi-annual and annual reports) to their respective stock exchanges for review before the reports are released to the public.

[3] These firms consist of cross-listed firms that issue stocks simultaneously in domestic and overseas markets (more than 90% of these firms are SOEs), A-share SOEs, A-share big non-SOEs and others.

Second, we add to the ongoing debates on the implementation of corporate disclosure regulation around the world (e.g. La Porta et al., 2006; Djankov et al., 2008; Jackson and Roe, 2009). Despite the perceived agency problems and incompetence of government regulators in weak institutional environments such as China, our results show that government control and enforcement of internal control regulation may enhance the quality of disclosures (Huang and Ke, 2018). We find that mandatory ICD disclosure is more effective when the layer and intensity of government control and inspection is higher, but the association between mandatory ICD disclosure and AQ does not vary with the quality of external auditors. Our findings contribute to the debate on the effectiveness of disclosure regulations and improve our understanding of internal controls in emerging markets.

A more subtle contribution relates to the role of governments in compensating for weak internal control systems by increasing substantive monitoring. It is extremely challenging to examine the effect of government control and enforcement, because it is difficult to measure these variables. Our study takes advantage of a series of regulatory reforms in China in which mandatory ICD disclosure is directly supervised by the government. We identify the layers of government ownership and the results of government inspections after the implementation of mandatory ICD disclosure. Our findings should be of interest to government regulators and financial market investors who wish to adopt the most effective approaches to improve firms' internal controls.

The rest of this paper is arranged as follows. Section 2 describes the institutional background in China and presents our two hypotheses. Section 3 introduces our research design, including our sample, variables and regression models. Section 4 presents the empirical tests and findings; the robustness tests are conducted in Section 5. Section 6 concludes the paper.

2. Institutional background and hypotheses

2.1. Institutional background

In accordance with the Chinese government's requirements, listed firms have gradually introduced external audits of their internal control disclosure for more than 10 years. Since 2006,[4] the China Securities Regulatory Commission (CSRC) has issued a series of policies designed to improve the ICD of publicly listed firms; these policies advise firms to voluntarily disclose ICD and have it assessed by external auditors. On 15 April 2010, China's Ministry of Finance and CSRC jointly issued a file called 'The guidelines for the internal control of the publicly listed enterprises', which mandated that cross-listed firms must implement external audits of ICD and publicly disclose the results as of 1 January 2011;[5] mandatory ICD disclosure was applied to all SOEs from the beginning of 2012 and to large non-SOEs from the beginning of 2013.[6] Since 2014, all listed firms have been required to adopt the same ICD disclosure regulations. Therefore, the first two policies apply to all SOEs regardless of firm size. Since 2013, the mandate has applied to non-SOEs, from large firms to small firms. Since 2011, China's government has issued detailed annual inspection reports on the compliance and enforcement of these regulations. Each report makes suggestions for adjusting the ICD mandatory disclosure requirement for the next year.[7]

The Chinese regulatory environment has unique advantages as a laboratory. First, the internal control system reforms initiated in China's SOEs are modelled on the U.S. SOX. As China's SOEs are managed by government bodies, their internal control systems are more complex than those of private firms. For instance, the effect of ICD disclosure on the internal corporate governance of China's SOEs is unclear, due to the lower demand for sound internal governance (Chen et al., 2006; Fan et al., 2007). Second, the mandatory external audits of ICDs were applied sequentially to different groups of firms between 2011 and 2014. This multi-regulation environment enables us to compare the effects of mandatory and voluntary audit policies. Third, we take advantage of an exogenous regulatory reform in China that is directly imposed by government, which enables us to identify the level of the government enforcement and observe post-reform changes.

2.2. Hypothesis development

2.2.1. The disclosure of internal control deficiency under mandatory external audits and financial reporting quality in China

Conceptually, an internal control system is an integrated framework for preventing and detecting errors or misstatements in firms' financial statements. Good internal controls are supposed to mitigate noise in financial statements, which is mainly reflected in the magnitude of abnormal accruals. Previous studies provide some evidence that reports indicating the presence of ICD are linked to poor AQ, particularly for firms subject to SOX 404 in the U.S. (Doyle et al., 2007a; Doyle et al., 2007b; Ashbaugh-Skaife et al., 2008). This evidence supports the 'accuracy enhancement' argument: the audit and disclosure of ICD help market participants to determine prices by contributing new information to pricing and accurately reflecting all problems underlying the disclosed financial information. Similarly, the internal control disclosure requirements imposed by

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[4] In 2006, the Shanghai and Shenzhen stock exchanges initially enacted a file named "An introduction for the internal control of the publicly listed enterprises". This official file stipulated the criteria of internal control quality, highlighted which firm could impose external audit on ICD and disclosed the auditing results voluntarily.

[5] All cross-listed firms are large SOEs.

[6] Large non-SOEs are those whose i) book value in 2011 was above RMB5,000 million; or ii) average annual net profit between 2009 and 2011 was over 30 million.

[7] See the following website for details: http://kjs.mof.gov.cn/zhengwuxinxi/diaochayanjiu

the Chinese government are supposed to ensure that the mandatory external audit of ICD disclosure effectively detects and discloses noisy AQ.

However, it is unclear whether the mandated ICD audit of internal control is effective for tracking internal control weakness in China. Some critics point to the cost–benefit analysis of a SOX approach. One major concern is the high cost of compliance with the SOX disclosure requirement. With respect to ICD disclosure, some studies argue that the external audit and management assessment required by SOX impose disproportionate costs on foreign companies and smaller public companies in the U.S. exchange (Hoitash et al., 2008; Hoitash et al., 2009; Kinney and Shepardson, 2011; Piotroski and Srinivasan, 2008). This may lead to cost-cutting measures such as providing incomplete audit work or hiring low quality auditors, which will offset the benefit of the ICD disclosure requirement. Other studies argue that relative to voluntary disclosure, mandatory disclosure is less effective for internal control because voluntary disclosure is an endogenous choice of the firm, whereas mandatory disclosure is an exogenous shock to the firm (Chen et al., 2018). Furthermore, the effect of a mandatory disclosure requirement that is enforced by the government critically depends on the underlying economics and legal institutions (Hail et al., 2010). In brief, if Chinese mandatory ICD disclosure is credible, an external auditor's report of a weak system of internal controls should indicate an increased risk of errors in financial accounting, which will be reflected in the quality of the accounting accruals. Hence, we provide the following hypothesis.

Hypothesis 1:. *the internal control deficiency disclosed in a mandatory audit regime is associated with lower AQ.*

2.2.2. Impact of government control on the effectiveness of mandatory ICD audits

Mandatory ICD disclosures are not only independently audited or inspected but are often subject to intense monitoring from governments and may be verified by government inspections. On the one hand, in weak institutional environments, the public may distrust the government and/or regulators due to the perceived low quality of government enforcement (La Porta et al., 1999). Governments have varying political incentives in addition to economic incentives related to the outcomes of corporate disclosure. Accordingly, there have been frequent calls to give market forces (e.g. information intermediation, financial agents) a more prominent role in enforcing corporate disclosure requirements (Meeks and Meeks, 2001; Bushman and Landsman, 2010). On the other hand, market institutions in weak institutional environments may not be able to take up the full burden of enforcement (Huang and Ke, 2018). Governments can serve as an important mechanism for disciplining firm behaviour and discouraging firms from engaging in behaviour that misallocates capital resources, as governments have more interest in maintaining order in the capital market (Brada, 1996, Tang et al., 1999). Governments' monitoring intensity may substitute for third-party verification and increase the credibility of the reports because governments must respond to public pressure to police firms' disclosure behaviour.

These consequences of mandatory ICD disclosure in emerging markets cannot be inferred from the current internal control literature. As such, we develop the following hypotheses.

Hypothesis 2 *((a):).* *The relationship between mandated ICD disclosure and AQ decreases with government control.*

Hypothesis 2 *((b):).* *The relationship between mandated ICD disclosure and AQ increases with government control.*

2.3. Market development and the effectiveness of mandatory ICD audits

The effectiveness of mandatory ICD disclosure may depend on the credibility of the legal system that ensures compliance with disclosure regulations and protects the rights of investors and creditors. Based on this argument, prior studies find that disclosure has a stronger effect on firms in developed markets (e.g. Salter, 1998; Frost et al., 2006; Jaggi and Low, 2000; Shleifer and Vishny, 1997; La Porta et al., 2000). Like other emerging economies, China is commonly viewed as a country with weak legal institutions, and its disclosure regulation is subject to much scepticism due to concerns over its implementation. However, some studies argue that the rich information environment of developed markets make it difficult to observe the economic consequences of enhanced disclosures (Callahan et al., 1997; Healy and Palepu, 2001; Core, 2001; Leuz and Verrecchia, 2000). Therefore, an undeveloped market environment with a poor information environment may provide a more powerful setting for detecting the effects of increased disclosure (Verrecchia, 2001). The disclosure level in undeveloped markets is relatively low, thus ICD disclosure mandates could convey useful information to the market about the quality of a firm's internal control. The incremental effects of ICD disclosure on financial reporting quality in a poor environment could thus be much more significant than in the rich disclosure environment of developed markets (Verrecchia, 2001; Zhou, 2007). Following these arguments, we develop the following hypotheses.

Hypothesis 3 *((a)).* *The association between mandatory ICD disclosure and AQ is stronger in developed markets.*

Hypothesis 3 *((b)).* *The association between mandatory ICD disclosure and AQ is stronger in undeveloped markets.*

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3. Research design

3.1. Measures of AQ: Abnormal accruals

To test the above hypotheses, we use abnormal accruals to measure the AQ of firms. Given the robustness concerns associated with the economic environment, and with reference to Ashbaugh-Skaife et al. (2008), we obtain abnormal revenue adjusted by the average return of the stock market, in accordance with the modified Jones model (Dechow et al. 1995). We present the following model to detect a firm's earnings management:

$$\frac{TA_{i,t}}{A_{i,t-1}} = a_0 + a_1 \frac{1}{A_{i,t-1}} + a_2 \frac{\Delta REV_{i,t} - \Delta AR_{i,t}}{A_{i,t-1}} + a_3 \frac{PPE_{i,t}}{A_{i,t-1}} + a_4 ABNRET_{i,t} + a_5 DABNRET_{i,t}$$
$$+ \alpha_6 DABNRET_{i,t} \times ABNRET_{i,t} + \varepsilon_{i,t} \quad (1)$$

where TA is computed as operating profit minus operating cash flow and ΔREV is the difference between operating profits in year t and year t-1. PPE denotes the net value of fixed assets. A is the value of total assets in year t-1. $ABNRET$ is the buy and hold return over the fiscal year minus the equal-weighted market return over the fiscal year (taken from CSMAR). If $ABNRET$ is less than 0, $DABNRET$ is equal to 1, and otherwise 0. i and t denote the firm and year, respectively. Based on asymmetric loss versus gain recognition under conservative accounting, this specification allows abnormal accruals to be different depending on whether the economic climate of the firm is negative or positive. We estimate the manipulated accruals using three steps. First, we estimate the expected accruals (NTA) for each industry (for firms in the manufacturing industry, we use CSRC's two-digit SIC code, and for others, we use one-digit SIC) each year using a cross-sectional regression; we require at least 15 firms in each SIC group and at least five observations in the industry group to have negative $ABNRET$ values. Second, we calculate "unadjusted abnormal accruals" using TA minus NTA. Third, we rank firms within each industry group into ten groups based on their prior year's return on asset (ROA). The accrual quality is measured by the adjusted abnormal accruals that is the difference between the "unadjusted abnormal accruals" and median abnormal accruals for firms in the same industry ROA decile.

We obtain the absolute value of adjusted abnormal accruals denoted by $ABCDACC$. We further differentiate two types of abnormal accruals based on their sign: positive abnormal accruals ($DACC\_p$), which are abnormal accruals greater than 0, and negative abnormal accruals ($DACC\_n$), which are abnormal accruals less than 0.[8]

3.2. Regression models

We use the following panel-data regression model as our baseline model, to test the first hypothesis:

$$AQ_{it} = \beta_0 + \beta_1 ICD_{i,t-1} + \beta_2 CG_{i,t-1} + \Phi Control_{i,t-1} + \varepsilon_{i,t} \quad (2)$$ where AQ denotes accrual quality. We use the three variables defined above, $ABSDACC$, $DACC\_p$ and $DACC\_n$, as proxies for AQ in the regression model.[9] ICD is an indicator variable that shows whether a firm is subject to an external audit of its internal control and obtains a non-standard report. If the firm's external auditor issues a non-standard report on internal control, ICD equals 1, and if the firm receives a standard report, ICD equals 0.

The vector CG includes several variables measuring internal corporate governance: the number of members in a firm's audit committee, $Acsize$, computed as the natural logarithm of the number of members in an audit committee; the ratio of independent directors in the audit committee/board committee, $Acindept$, denoted by the proportion of independent directors in an audit committee; $Acfin$, denoted by the proportion of members with financial expertise in an audit committee.

The selection criterion for these three variables is as follows. Prior research finds that higher financial reporting quality is associated with higher monitoring quality by the audit committee (e.g. Bédard et al., 2004; Dhaliwal et al., 2006; Carcello et al., 2006). According to listed firm governance standards (endorsed by CSRC), all listed firms must appoint audit committees with the following two characteristics: (1) independent directors are in the majority and appointed by the convener; and (2) at least one independent director member has financial expertise. Therefore, we follow Krishnan (2005) and use three measures of the quality of a firm's audit committee: the natural logarithm of the number of members ($Acsize$); the proportion of members that are independent directors ($Acindept$); and the proportion of members with financial expertise ($Acfin$).

The following control variables (**Controls**) are included in accordance with prior studies showing the impacts of firm characteristics (we discuss the variables in detail in the Appendix).

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[8] For robustness, we also adopt another measure of AQ: absolute abnormal working capital accruals (AB_WCA) (Doyle et al., 2007 a; Ashbaugh-Skaife et al., 2008). We estimate AB_WCA, with the following OLS regression for each industry each year:

$$\frac{WCA_{i,t}}{A_{i,t-1}} = a_0 + a_1 \frac{1}{A_{i,t-1}} + a_2 \frac{\Delta REV_{i,t} - \Delta AR_{i,t}}{A_{i,t-1}} + a_3 ABNRET_{i,t} + a_4 DABNRET_{i,t}$$
$$+ a_5 DABNRET_{i,t} \times ABNRET_{i,t} + \varepsilon_{i,t} \quad (2)$$

where WCA is net income before extraordinary items plus depreciation and amortisation, minus cash flow from operations. AB_WCA is equal to the absolute value of the difference between WCA and expected WCA. All of the other variables in Model (2) are as defined in Model (1). We present the results of Equation (2) in Section 3.3.4.

[9] $ABSDACC$ and $DACC$ are used in the full sample. $DACC\_p$ and $DACC\_n$ are used in the specified samples.

Complexity of a firm's business. According to Ashbaugh-Skaife et al. (2008), firms with more complex business are likely to have noisier accruals or larger abnormal accruals due to measurement problems associated with transfer pricing and the elimination of intersegment sales. Accordingly, following Ashbaugh-Skaife et al. (2008), we use the number of segments as a control variable to capture these effects.

Volatility of a firm's operations. A high standard deviation of cash flow from operations indicates high uncertainty in the operating environment and therefore a heavy use of approximations and estimations and low AQ (Dechow and Dichev, 2002). Firms undergoing restructuring are likely to have noisier accruals and larger abnormal accruals due to the accounting recognition of goodwill and other intangibles and asset impairment frequently following restructuring. Thus, we use the standard deviation of operating cash flows (*STDCFO*) and the restructuring dummy variable (*Restructure*) to proxy for the effects of volatility in operations on AQ.

Firm size. Dechow and Dichev (2002) point out that large firms have more stable and predictable operations, and therefore less estimation errors. Thus, we use the log value of total assets to control for the effect of firm size (*SIZE*).

Growth ability. According to Ashbaugh-Skaife et al. (2008), rapidly growing firms are also likely to have noisier accruals caused by absorption costing distortions to income when inventory build-ups occur in anticipation of future sales growth. Thus, we control for sales growth (*Growth*) and the percentage of inventory to total assets (*Inventory*).

Financial risk. Prior research demonstrates that firms facing financial distress are likely to report larger absolute abnormal accruals (Dechow et al., 1995; DeAngelo et al., 1994; Kothari et al., 2005; McNichols, 2000). Following Doyle et al. (2007a); Doyle et al. (2007b) and Ashbaugh-Skaife et al. (2008), we use the percentage of the last three years that a firm reports losses and financial distress, as measured by the ranked value of Altman's (1968) Z-score (*ZSCORE*), to control for these effects on AQ.

Accounting conservatism. Accounting conservatism can constrain managerial opportunistic behaviour in financial reporting and offset managerial biases with its asymmetric verifiability requirement (Watts, 2003). However, some studies argue that conservatism may increase earnings management (e.g. Penman and Zhang, 2002). Thus, we use the book-to-market ratio (*BM*) to proxy for accounting conservatism, where lower *BM* values indicate more conservative accounting (Givoly and Hayn, 2000).

Audit quality. The literature indicates that firms audited by Big 4 auditors have better information quality than those audited by smaller auditors (Becker et al., 1998; Francis et al., 1999). Accordingly, we add a dummy variable, Big 4, to identify whether a firm's report is issued by a Big 4 auditor. If the internal control or financial report of the firm is audited by a Big 4 auditor, Big 4 = 1, and 0 otherwise.

Turnover of managers. According to DeAngelo (1988) and Pourciau (1993), incoming executives tend to take an immediate 'bath', which they typically blame on the poor decision of prior management in the year of the executive change. Thus, we use the dummy variable (*Turnover*) to capture whether a firm underwent executive turnover in the year to control for the effect of executive turnover on AQ.

Refinancing. Prior studies document income-increasing management activities around seasoned equity offerings (SEOs) (e.g. Rangan, 1998; Teoh et al., 1998; Shivakumar, 2000) to meet refinancing criteria. Thus, we add a dummy variable, *Refinance*, to control for the effect of firms' refinancing on AQ. If a firm is involved in an SEO in a given fiscal year, *Refinance* = 1, and 0 otherwise.[10]

Industry / Year. Industry dummy and year dummy are included to control for industry fixed effects and year fixed effects.

Taken together, if Hypothesis 1 holds and there is a significant and positive relationship between audits of internal control deficiencies – either mandatory or voluntary – and abnormal accruals, we confirm that ICD disclosure by an external auditor is a credible indication of nosier AQ. If internal corporate governance is associated with ICD, the coefficients of the five variables included in *CG* should significantly mitigate any abnormal accruals.

To test Hypothesis 2, we use the independent variable *MandatoryICD*, which is equal to 1 if the CSEC requires the firm to have an external audit of its internal control system and obtains a non-standard report, and otherwise 0. Alternatively, we divide the sample into two subgroups based on the two variables of government control. First, we divide the sample into SOE and non-SOE subsamples based on a firm's ultimate controller and further divide the sample based on the level of government that operates the business. Second, we measure government control based on the intensity of government inspections of compliance with mandated ICD disclosure since 2011. We expect the association between mandatory ICD and AQ to vary across subsamples.

Similarly, to test Hypothesis 3, we divide the sample into two subgroups based on the market development of Chinese jurisdictions. We divide the sample based on the market development index of the region where a firm is located. If a firm is located in a province with the index above median level of provinces in the year, it is categorized into a sample in the highly developed market (High_Market), and if a firm is located in a province with the index below median level of provinces in the year, it is categorized into a sample in the undeveloped market (Low_Market). In accordance with Hypothesis 3, we anticipate that the effects of mandatory ICD will vary across subsamples.

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[10] In China, SEO issuers are required to meet the condition that their returns on equity have been greater than 6% in the previous three years. SEO issuers possibly manipulate earnings upward in anticipation of meeting this requirement. Thus, we define *Refinance* alternatively as equal to 1 if the firm conducted an SEO within one, two or three years, and find that the empirical results do not change.

3.3. Sample and data

Our sample consists of all firm-year observations of firms publicly listed on the Chinese main A-share market and the Small and Medium Enterprise (SME) market between 2007 and 2015. We include SMEs to examine the effect of firm size in our tests. Consistent with the literature, we exclude 437 observations of financial firms, 5,783 observations with missing variables, 3,232 observations with extreme values and 3,593 observations without data on the auditing internal control system. We get all accounting and financial data from the CSMAR (Chinese Stock Market and Accounting Research) database, which is widely used in China-related research. Our final sample consists of 6,511 firm-year observations.

Panel A of Table 1 describes the sample in our study. In the pre-2011 sample, all of the firms voluntarily audit their internal control systems. In 2011, the first internal control disclosure policy (Policy 1) was applied to cross-listed firms, which were all large SOEs (A Firms). As shown in Table 1, in the 2011 sample, of the 533 firms with audits of their internal control systems, 44 are firms listed on the domestic main markets (A-share) and overseas markets and are thus mandated to audit and disclose reports on their internal control systems. In 2012, the second internal control disclosure policy (Policy 2) became effective for A-share main-board SOEs (hereafter, A-share SOEs or B Firms). Among the 1,028 internal control audits in that subgroup, 765 are mandatory, including all cross-listed firms and A-share SOEs. The third internal control disclosure policy (Policy 3) became effective in 2013, extending mandatory audits to large A-share main-board non-SOEs (hereafter, A-share non-SOEs or C Firms). The 2013 subgroup includes 943 firms mandated to audit and disclose their internal control systems, including all cross-listed firms, A-share SOEs and large non-SOEs. The most recent internal control disclosure policy (Policy 4) was extended to small A-share non-SOEs (D Firms) in 2014. Hence, the firms subject to mandatory internal control audits in the 2014 and 2015 subgroups consist of all A-share main-board listed firms. In 2014 and 2015, 318 and 399 firms, all listed in SME markets, voluntarily audited their internal control systems, respectively.

Panel B of Table 1 presents the internal control deficiency disclosures by year. Up to 2011, some firms voluntarily hire external auditors to audit their internal control systems, and very few of these firms receive non-standard audit reports on significant ICD. In the post-2011 sample, around 4% of the firms required to audit their internal control systems receive non-standard audit reports. In contrast, less than 1% of the firms that voluntarily hire external auditors to audit their internal control systems receive non-standard audit reports. In brief, more ICD is disclosed under mandatory disclosure than under voluntary disclosure.

Panel C of Table 1 describes the audit costs of ICD surrounding the mandated ICD disclosure policy. As shown in Panel A, this policy is sequentially mandated for four subsets of listed firms (A–D Firms). We find that the audit fees for all categories are significantly higher after the mandate is implemented, indicating that mandatory disclosure increases audits costs, suggesting that audit efforts are higher when the audits are mandated.

Table 2 compares the characteristics of ICD disclosure firms versus non-ICD firms. Firms with ICD disclosures are on average larger and more mature than non-ICD disclosure firms, as measured by the number of segments, growth, restructuring activities, refinancing, book-to-market ratio, Z-score and size. We argue that larger firms may have weaker internal controls as a result of more complex operations and business and higher financing risks. In addition, 10% of the ICD disclosure firms are audited by international Big 4 auditors, but only 5% of the non-ICD firms choose Big 4 auditors. As expected, Big 4 auditors are better able to identify deficiencies in internal control systems. There is no large variation in performance, measured by ROA and ROE, between ICD and non-ICD firms or in the corporate governance structure, as indicated by CEO turnover or the percentage of independent directors in audit committee.

4. Empirical results

4.1. Univariate tests

Table 3 presents the relationship between ICD disclosure and AQ in univariate tests. Panel (1) depicts the difference in AQ (proxied by *ABSDACC*, *DACC_p* and *DACC_n*) between observations with standard audit reports on internal control (no-ICD firms) and those without standard audit reports on internal control (ICD firms). The abnormal accruals of ICD firms measured by *ABCDACC* and *DACC_n* are significantly higher than those of no-ICD firms,[11] suggesting that ICD is significantly related to nosier AQ. The positive abnormal accruals (*DACC_p*) of ICD firms are also higher, but the difference is not significant. Panel (2) depicts the difference in AQ between observations with mandatory ICD audits and those with voluntary ICD audits. The abnormal accruals of mandatory audit firms, measured by *ABCDACC*, *DACC_p* and *DACC_n*, are all higher than those of voluntary audit firms, but the differences are not significant, suggesting that mandatory audits are more effective at detecting AQ.

4.2. Association between ICD disclosure and AQ

Table 4 shows the results of Model (2), which examines whether ICD disclosure is related to AQ.[12] Column (1) shows that the coefficients of ICD on absolute abnormal accruals are significant and positive (0.015 with *t* = 4.19). Then, we divide the

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[11] The coefficient of is negative, indicating that the negative abnormal accruals get more negative.

[12] We follow Ashbaugh-Skaife et al. (2008) to use Tobit regression and only report Log likelihood because the Adj_R2 loses effectiveness in Tobit regressions.

Table 1
Sample description Panel A: Description of mandatory and voluntary ICD firms.

Year	ICD firms	firms under disclosure mandate	Mandatory ICD disclosure	Voluntary ICD disclosure
2007	36	–	0	36
2008	64	–	0	64
2009	190	–	0	190
2010	318	–	0	318
2011	533	cross-listing firms (A)	44	489
2012	1028	cross-listing firms (A), A-share SOEs (B)	765	263
2013	1341	cross-listing firms (A), A-share SOEs (B), large non-SOEs (C)	943	398
2014	1521	all A-share firms: cross-listing firms (A), A-share SOEs (B), large non-SOEs (C), small non-SOEs (D)	1203	318
2015	1480	all A-share firms: cross-listing firms (A), A-share SOEs (B), large non-SOEs (C), small non-SOEs (D)	1081	399
Total	6511		4036	2475

Note: This table presents the distribution of mandatory ICD disclosure firms and voluntary ICD disclosure firms from 2011 to 2015. Mandatory ICD disclosure firms refer to the firms were required to audit and disclose internal control deficiencies according to the policy. Voluntary ICD disclosure firms were the firms that audited and disclosed internal control deficiencies voluntarily. The cross-listing firms(A) refer to the firms listed both on the domestic main markets (A-share) and overseas markets. A-share SOEs(B) refer to the state-owned enterprises listed on A-share main board, large non-SOEs (C) refers to large size non-state-owned enterprises listed on A-share main board, small non-SOEs (D) refers to small size non-state-owned enterprises listed on A-share main board.

Panel B: Observation number of internal control deficiency disclosure in each year after external audit

year	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Mandatory audit:										
deficiency disclosure (ICD)	/	/	/	/	1	19	42	62	56	180
standard disclosure (no ICD)	/	/	/	/	43	746	901	1141	1025	3856
Voluntary audit:										
deficiency disclosure (ICD)	0	1	1	1	4	2	4	4	6	23
standard disclosure (no ICD)	36	63	189	317	485	261	394	314	393	2452

Note: This table presents the distribution of deficiency disclosure (receiving a non-standard audit report on internal control, or disclosing ICD) and standard disclosure (receiving a standard audit report on internal control, or disclosing no ICD) under mandatory disclosure regime and voluntary disclosure regime from 2007 to 2015.

Panel C: Audit cost surrounding the mandatory disclosure policy applied

Total audit fees	Firm A (RMB)	Firm B (RMB)	Firm C (RMB)	Firm D (RMB)
Before	4,904,003	763,299.5	993,230.7	333,368.3
After	6,890,901	1,375,302	1,707,863	842,741
Difference	−1,986,898***	−612,002.1***	−714,632.3***	−509,372.2***
t-value	(−4.567)	(−23.216)	(−12.494)	(−21.094)

Note: This table describes the audit costs of ICD disclosure surrounding the mandated ICD disclosure policy. The t statistics value is included in brackets. ***, **, and * denote the1%, 5%, and 10% significant level, respectively.

Table 2
Variable description for ICD disclosure firms enacted internal control audit.

Variables	ICD				No-ICD				Difference T-test of mean
	Mean	Median	Min	Max	Mean	Median	Min	Max	
Segment	9.454	7.000	1.000	26.000	8.394	9.000	1.000	26.000	10.950***
Growth	0.206	0.015	−0.393	9.815	0.361	0.111	−0.393	9.815	−7.713***
Inventory	0.159	0.106	0.000	0.770	0.188	0.127	0.000	0.770	−8.352***
Restructure	0.941	1.000	0.000	1.000	0.737	1.000	0.000	1.000	28.500***
Stdcfo	0.059	0.055	0.009	0.331	0.066	0.046	0.007	0.331	−6.760***
BM	0.487	0.272	−0.081	1.534	0.369	0.424	−0.081	1.534	19.740***
Zscore	5.321	2.136	−1.090	40.867	4.617	2.592	−1.090	40.867	4.590***
Big4	0.100	0.000	0.000	1.000	0.051	0.000	0.000	1.000	9.454***
Size	22.53	21.922	18.724	25.288	21.56	22.381	18.724	26.237	39.070***
Turnover	0.290	0.000	0.000	1.000	0.295	0.000	0.000	1.000	−0.519
Refinance	0.0294	0.000	0.000	1.000	0.0183	0.000	0.000	1.000	3.722***
Acsize	1.203	1.099	0.000	1.946	1.244	1.099	0.000	1.946	−6.568***
Acindept	0.672	0.667	0.000	1.000	0.666	0.667	0.000	1.000	0.614
Acfin	0.669	0.400	0.000	1.000	0.647	0.333	0.000	1.000	8.755***
ROA	0.031	0.001	−0.317	0.181	0.029	0.027	−0.317	0.222	1.522
ROE	0.032	0.008	−46.517	18.968	0.154	0.064	−50.082	10.147	−0.788

Note: This table presents the descriptive statistics of the variables used in our analysis. The sample consists of the data of 6,511 firm-year observations enacted internal control audit from 2007 to 2015. The t values are included in the parentheses; ***, **, and * denote the 1%, 5%, and 10% significant level, respectively.

Table 3
Univariate analysis of full sample and subsets of sample.

Accrual quality (mean)	Full sample			ICD disclosure sample		
	ICD firms (n = 203)	No-ICD firms (n = 6308)	T-test of difference	Mandatory-ICD (n = 180)	Volunteer-ICD (n = 23)	T-test of difference
Unsigned accruals (ABSDACC)	0.074	0.051	6.073***	0.076	0.059	1.029
Positive accruals (DACC_p)	0.062	0.053	1.508	0.062	0.062	0.003
Negative accruals (DACC_n)	−0.082	−0.052	−6.482***	−0.084	−0.066	−0.771

Note: This table presents the relationship between ICD disclosure and AQ in univariate tests. The mean value and t values are shown in the table. ***, **, and * denote the 1%, 5%, and 10% significant level, respectively.

Table 4
Regression results on the effects of ICD disclosure on accrual quality.

	(1)	(2)	(3)	(4)	(5)	(6)
	ABSDACC	DACC_p	DACC_n	ABSDACC	DACC_p	DACC_n
Constants	0.054***	0.018	−0.075***	0.054***	0.057**	−0.075***
	(2.88)	(0.68)	(−2.96)	(2.88)	(2.14)	(−2.97)
ICD	0.015***	0.020***	−0.025***	−0.002	0.000	−0.007
	(4.19)	(3.88)	(−5.53)	(−0.15)	(0.01)	(−0.48)
MandatoryICD				0.019*	0.001	−0.020
				(1.67)	(0.04)	(−1.32)
Segment	−0.000	0.005***	0.002	−0.000	0.002	0.002
	(−0.17)	(2.76)	(0.99)	(−0.10)	(0.93)	(0.95)
Growth	0.001	0.009***	0.005***	0.001	0.004***	0.005***
	(1.04)	(6.56)	(3.23)	(1.06)	(3.60)	(3.25)
Inventory	0.013**	0.057***	0.023***	0.013**	0.047***	0.023***
	(2.35)	(7.21)	(3.06)	(2.36)	(5.90)	(3.06)
Restructure	0.002	0.004	−0.004	0.002	0.001	−0.004
	(0.46)	(0.71)	(−0.69)	(0.45)	(0.24)	(−0.68)
Stdcfo	0.429***	−0.032	−0.451***	0.429***	0.398***	−0.451***
	(26.07)	(−1.36)	(−20.29)	(26.07)	(16.98)	(−20.29)
BM	−0.015***	0.018***	0.022***	−0.015***	−0.004	0.022***
	(−5.02)	(4.13)	(5.45)	(−5.02)	(−1.00)	(5.45)
Zscore	−0.000***	0.001***	0.001***	−0.000***	0.000	0.001***
	(−3.31)	(4.30)	(5.19)	(−3.32)	(1.39)	(5.21)
Big4	−0.001	−0.010***	−0.002	−0.001	−0.004	−0.002
	(−0.53)	(−2.68)	(−0.61)	(−0.50)	(−1.00)	(−0.63)
Size	−0.001*	−0.002*	0.001	−0.001*	−0.002*	0.001
	(−1.89)	(−1.84)	(1.49)	(−1.90)	(−1.86)	(1.51)
Turnover	0.000	−0.003	−0.001	0.000	−0.001	−0.001
	(0.21)	(−1.32)	(−0.51)	(0.18)	(−0.53)	(−0.48)
Refinance	−0.000	0.015*	0.003	−0.000	0.002	0.003
	(−0.07)	(1.87)	(0.35)	(−0.08)	(0.27)	(0.36)
Acsize	0.003	−0.004	−0.003	0.003	0.002	−0.003
	(1.59)	(−1.37)	(−1.15)	(1.57)	(0.89)	(−1.13)
Acindept	−0.002	−0.002	0.002	−0.002	−0.002	0.002
	(−0.62)	(−0.43)	(0.58)	(−0.62)	(−0.45)	(0.56)
Acfin	0.001	−0.002	−0.003	0.001	0.000	−0.003
	(0.22)	(−0.36)	(−0.49)	(0.21)	(0.07)	(−0.44)
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	10123.66***	4831.24***	5125.98***	10125.06***	4831.25***	5126.85***
n	6511	3092	3419	6511	3092	3419

Note: The dependent variable - ABSDACC (absolute value of discretionary accruals), DACC_p (positive discretionary accruals), DACC_n (negative discretionary accruals) respectively indicates accrual quality of financial statement. The independent variables include ICD (a dummy variable that takes value of 1 if the auditor issues a non-standard report on internal control) and MandatoryICD (A dummy variable that takes value of 1 if ICD audit is mandatory and a non-standard report is issued in the fiscal year). The t values are included in the parentheses; ***, **, and * denote the 1%, 5%, and 10% significant level, respectively.

abnormal accruals into positive and negative accruals. Column (2) shows that in the positive accrual subgroup, ICD is positively and significantly associated with positive abnormal accruals (*DACC_p*; 0.020 with *t* = 3.88), whereas in the negative subgroup ICD is negatively and significantly associated with negative abnormal accruals (*DACC_n*; −0.025 with *t* = −5.53). Consistent with studies of the U.S. setting (e.g. Ashbaugh-Skaife et al., 2008), our results suggest that ICD disclosure by external auditors

effectively identifies financial reporting problems. In columns (4) to (6), we include mandatory ICD disclosure (*Mandatory-ICD*) as a dummy variable, which captures a subset of ICD firms. Columns (4) shows that the coefficients of *Mandatory-ICD* on absolute abnormal accruals are significant and positive (0.019, significant at 10 % level), indicating the poorer AQ of these firms. This evidence suggests that the effect of mandatory audits on AQ is marginally stronger than the effect of voluntary audits. These results support Hypothesis 1 by indicating that when audits are mandatory, ICD more strongly reflects poorer financial reporting quality.

To provide more evidence, we break down the sample into two groups – firms under mandatory ICD audit versus firms under voluntary ICD audit – and then rerun Model (2) for the two samples. The results, reported in Panel A of Table 5, show that ICD is associated with higher absolute abnormal accruals (*ABSDACC*) and more negative abnormal accruals (*DACC_n*) in the mandatory audit sample (the positive abnormal accruals (*DACC_p*) is also higher, but not significantly). Furthermore, we conduct Chow tests on the difference in the coefficients between the two samples. The results show that the effects on *ABSDACC* and *DACC_n* are significantly different between mandatory ICD disclosure and voluntary ICD disclosure, meanwhile the effects on the positive abnormal accruals (*DACC_p*) are not different between two samples.

We then use a sample of firms reported internal control deficiency. As the non-standard audit opinions are rare in China (e.g. Chen et al., 2001), we obtain only 203 observations overall. We run a regression where the dependent variable is the accrual quality, and the independent variables are Mandatory (=1 for mandatory review; = 0 voluntary review) plus other control variables. In Table 5 Panel B, the results show that the mandatory audit on internal control deficiency is positively associated with the absolute value of discretionary accruals, significantly at 10% level, consistent with our prediction in hypothesis 1. By classifying the sign of the discretionary accruals, the mandatory audit on internal control deficiency has no significant effects on positive discretionary accruals and negative discretionary accruals, respectively.

Taken together, our findings support Hypothesis 1, suggesting that in mandatory audit regimes, ICD effectively reveals financial reporting problems.

4.3. Government control of ICD disclosure

It is difficult to measure the intensity of government control. We first create a measure based on government inspections of compliance with ICD disclosure regulations. We search and download the annual inspection reports issued by the government reporting on compliance with the external audit requirement. Longer and more detailed reports indicate more attention from CSRC regulators. In particular, the report issued in 2012 on compliance with the first ICD policy (effective in 2011) is the longest, at about 36,000 words. The report on the second ICD policy (effective in 2012) is about 25,000 words, and the subsequent reports (in 2013 and the years later) are even shorter.[13] We use the length of reports as a proxy for the intensity of government inspections and include an interaction in Model (2). The results in column (1) to (3) of Table 6 support the argument that the mandatory ICD regime–AQ relationship is stronger, in terms of both absolute abnormal accruals and negative accruals, when the government report is longer.

Next, we employ the textual analysis to identify the keywords indicating the severity and attention of government in the annual government inspection report. These keywords are based on a bag of words such as "problems", "improve", "facilitate", and "enhance". We use the number of these keywords to denote the strength of government supervision (*Supervise*) and include an interaction in Model (2). The results are reported in Table 6, Column (4) - (6), showing that the mandatory ICD regime–AQ relationship is significantly stronger, in terms of both absolute abnormal accruals and negative accruals, when the government supervision is stronger. Taken together, these findings suggest that stronger government control strengthens the effectiveness of mandatory ICD audits, supporting Hypothesis 2(b).

The government control can be exerted through direct government ownership and management. On the one hand, the direct government ownership per se is exposed to tight government monitoring. As a result, the ICD in mandatory audit regime is more effective in firms with direct management of government ownership (i.e. state-owned enterprises). On the other hand, the direct government ownership may deter the implementation of mandatory audit as the government also plays the external monitoring role in implementation. Since the government uses SOEs to achieve its political purposes, the firms owned by the state do not require the same quality accounting information as those not owned by the state (e.g. Bushman and Piotroski, 2006; Liu et al., 2014). Hence, the ICD in mandatory audit regime can be less effective in SOEs with direct government ownership. Based on these different viewpoints, we then test whether the ownership structure moderates the effect of ICD under mandatory audit. Government ownership involves intense government involvement in a firm's corporate activities (Chen et al., 2006; Fan et al., 2007). We partition the sample based on ownership type – whether the firms are ultimately held by a government body – and rerun Model (2) on the subsamples. Panel A of Table 7 shows that the relationship between ICD in mandatory regimes is only significantly related to poorer AQ, measured by *ABSDACC*, *DACC_p* and *DACC_n*, in the SOE subsample. Chow tests of the differences in the coefficients show that the relationship between mandatory ICD and AQ in the SOE subsample is significantly more pronounced than in the non-SOE subsample. These results support Hypothesis 2(b), indicating that mandatory ICD audits are more effective in SOEs, which are subject to more government control.

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[13] See the following website for details: http://kjs.mof.gov.cn/diaochayanjiu/ .

Table 5
The effects of internal control auditing and ICD disclosure on accrual quality Panel A: The effects of internal control auditing on accrual quality using the subsamples partitioned based on the mandatory audit and voluntary audit.

| | ABSDACC | | DACC_p | | DACC_n | |
	(1)	(2)	(3)	(4)	(5)	(6)
	Mandatory	Voluntary	Mandatory	Voluntary	Mandatory	Voluntary
Constants	0.054***	0.055***	0.057**	0.057**	−0.075***	−0.073***
	(2.88)	(2.92)	(2.14)	(2.14)	(−2.98)	(−2.87)
ICD	0.017***	−0.002	0.001	0.000	−0.026***	−0.005
	(4.51)	(−0.21)	(0.14)	(0.01)	(−5.66)	(−0.38)
Segment	−0.000	−0.000	0.002	0.002	0.002	0.002
	(−0.10)	(−0.37)	(0.93)	(0.93)	(0.94)	(1.30)
Growth	0.001	0.001	0.004***	0.004***	0.005***	0.004***
	(1.06)	(1.13)	(3.60)	(3.60)	(3.25)	(3.07)
Inventory	0.013**	0.013**	0.047***	0.046***	0.023***	0.023***
	(2.36)	(2.27)	(5.90)	(5.90)	(3.06)	(3.09)
Restructure	0.002	0.002	0.001	0.001	−0.004	−0.004
	(0.45)	(0.41)	(0.24)	(0.24)	(−0.67)	(−0.67)
Stdcfo	0.429***	0.433***	0.398***	0.399***	−0.451***	−0.458***
	(26.07)	(26.32)	(16.98)	(17.01)	(−20.29)	(−20.50)
BM	−0.015***	−0.016***	−0.004	−0.004	0.022***	0.023***
	(−5.02)	(−5.23)	(−1.00)	(−1.00)	(5.47)	(5.83)
Zscore	−0.000***	−0.000***	0.000	0.000	0.001***	0.001***
	(−3.32)	(−3.57)	(1.39)	(1.38)	(5.23)	(5.47)
Big4	−0.001	−0.001	−0.004	−0.004	−0.002	−0.002
	(−0.51)	(−0.53)	(−1.00)	(−1.00)	(−0.64)	(−0.55)
Size	−0.001*	−0.001*	−0.002*	−0.002*	0.001	0.001
	(−1.90)	(−1.90)	(−1.86)	(−1.87)	(1.51)	(1.34)
Turnover	0.000	0.001	−0.001	−0.001	−0.001	−0.002
	(0.18)	(0.53)	(−0.53)	(−0.52)	(−0.47)	(−0.95)
Refinance	−0.000	−0.001	0.002	0.002	0.003	0.004
	(−0.08)	(−0.14)	(0.27)	(0.27)	(0.36)	(0.46)
Acsize	0.003	0.003	0.002	0.002	−0.003	−0.003
	(1.57)	(1.51)	(0.89)	(0.89)	(−1.12)	(−1.13)
Acindept	−0.002	−0.001	−0.002	−0.002	0.002	0.001
	(−0.62)	(−0.56)	(−0.45)	(−0.45)	(0.55)	(0.41)
Acfin	0.001	0.001	0.000	0.000	−0.003	−0.002
	(0.21)	(0.28)	(0.07)	(0.07)	(−0.42)	(−0.41)
Industry	Yes	Yes	Yes	Yes	Yes	Yes
year	Yes	Yes	Yes	Yes	Yes	Yes
Chow-test	4.99***		0.01		3.39**	
Log likelihood	10125.05***	10114.92***	4831.25***	4831.24***	5126.73***	5110.85***
n	3826	2685	1775	1317	2044	1375

Note: The dependent variable - ABSDACC (absolute value of discretionary accruals), DACC_p (positive discretionary accruals), DACC_n (negative discretionary accruals) respectively indicates accrual quality of financial statement. The independent variable is ICD (a dummy variable that takes value of 1 if the auditor issues a non-standard report on internal control). The mandatory group includes the sample that ICD audit is mandatory in this fiscal year. The voluntary group includes the sample that ICD audit is voluntary in this fiscal year. The t statistics value is included in parentheses. ***, **, and * denote the1%, 5%, and 10% significant level, respectively.

Panel B: Regression results of the effects of internal control auditing on accrual quality using a sample of firms disclosed internal control deficiency

	(1) ABSDACC	(2) DACC_p	(3) DACC_n
Constants	−0.015	0.172	−0.046
	(−0.11)	(1.11)	(−0.29)
Mandatory	0.020*	0.014	−0.029
	(1.72)	(0.69)	(−1.45)
Segment	−0.005	0.009	−0.000
	(−0.48)	(0.93)	(−0.04)
Growth	0.004	0.004	0.001
	(1.04)	(0.77)	(0.26)
Inventory	−0.016	0.131***	0.092**
	(−0.39)	(2.76)	(2.17)
Restructure	−0.037**	−0.004	0.033
	(−2.37)	(−0.12)	(1.09)
Stdcfo	0.342***	0.093	−0.719***
	(3.06)	(0.86)	(−5.33)
BM	−0.084***	0.005	0.115***
	(−3.14)	(0.21)	(4.29)
Zscore	−0.001	0.001	0.002**
	(−1.21)	(1.34)	(2.27)

(*continued on next page*)

Table 5 (*continued*)

Panel B: Regression results of the effects of internal control auditing on accrual quality using a sample of firms disclosed internal control deficiency			
Big4	−0.002	−0.051*	−0.064**
	(−0.06)	(−1.73)	(−2.11)
Size	0.002	−0.005	0.003
	(0.31)	(−0.77)	(0.48)
Turnover	0.009	−0.018*	−0.033***
	(0.91)	(−1.68)	(−2.72)
Refinance	−0.005	−0.029	−0.002
	(−0.34)	(−0.68)	(−0.10)
Acsize	0.005	−0.019	0.016
	(0.38)	(−0.91)	(0.87)
Acindept	0.020	0.003	−0.009
	(1.22)	(0.12)	(−0.35)
Acfin	−0.031	−0.104**	−0.007
	(−1.40)	(−2.03)	(−0.18)
Industry	Yes	Yes	Yes
Year	Yes	Yes	Yes
Log likelihood	274.284***	149.9354***	149.372***
n	203	82	121

Note: This table presents regression results on the effects of internal control auditing on accrual quality using a sample of firms that report ICD (received non-standard internal control audit report). The dependent variable - ABSDACC (absolute value of discretionary accruals), DACC_p (positive discretionary accruals), DACC_n (negative discretionary accruals) respectively indicates accrual quality of financial statement. The independent variable is Mandatory (ICD audit is mandatory based on internal control policy). The t values are included in the parentheses. ***, **, and * denote the 1%, 5%, and 10% significant level, respectively.

In Panel B of Table 7, we use the SOE subsample (3,963 firm-year observations) and partition the sample based on the level of government ownership – whether the firms are ultimately held by the central government or by a local government – and rerun Model (2) on the subsamples. The results indicate that under mandated ICD audits, the relationship between ICD is more significantly linked to poorer AQ in terms of *ABSDACC* and *DACC_n* in centrally owned SOEs than in local SOEs. Chow tests of the differences in the coefficients show that the relationship between ICD and AQ, proxied by *ABSDACC*, is significantly different in the two subsamples. These results support Hypothesis 2(b), indicating that the association between ICD and AQ increases with the intensity of government control.

4.4. Market development and mandatory ICD disclosure

In China, regional markets (by province) have different legal and financial regulatory systems, undermining judicial and regulatory independence (Allen et al., 2005; Cull et al., 2017; Démurger, 2001). We further partition the sample based on the level of market development, to determine whether the effects of mandatory ICD disclosure on AQ are different under different market institutions. We adopt the marketization index (MINDEX) compiled by Wang et al. (2017) for each year and region (province). The index has been sponsored by the National Economic Research Institute (NERI) and the China Reform Foundation. Fan et al. (2010) survey and score regional market development from various perspectives such as local legal enforcement, local government intervention, development of non-state business and product market competition in terms of regional trade barriers, etc. Focusing on the variation in China's regions (provinces), they develop an index to measure the strength of market forces in each region each year.[14] The higher the index, the more developed the market in the region.[15]

Based on the MINDEX, we divide the sample into two subsamples. If a firm is located in a province with an index value above the median level of provinces in the year, it is assigned to the highly developed market subsample, and if a firm is located in a province with an index value below the median level of provinces in the year, it is assigned to the undeveloped market subsample. We then rerun Model (2) on the subsamples. Table 8 shows that ICD identified in mandatory audits is significantly related to higher absolute abnormal accruals (*ABSDACC*) and more negative abnormal accruals (*DACC_n*) in the low market development subsample. Chow tests show that the relationship between *ICD* and *ABSDACC* (/or *DACC_n*) in the low MINDEX subsample is significantly more pronounced than in the high MINDEX subsample, but the difference between the two samples is not significant for *DACC_p*. These results imply that mandatory ICD disclosure is a more efficient mechanism for measuring financial reporting quality in less developed markets, which supports Hypothesis 3(b).

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[14] Specifically, based on these province-level data, the index captures (1) the development of market intermediaries based on the ratio of the number of lawyers and registered accountants to the local population; (2) the protection of the legal rights of firms based on a nationwide survey on the frequency of local economic crimes (scaled by local GDP) and managers' ratings of local investor protections; (3) intellectual property rights (IPRs) enforcement based on the total number of patents applied for and approved (adjusted by the number of engineers in the region); and (4) consumer rights protection based on the frequency of consumer complaints received by the Consumer Association of China (adjusted by local GDP).

[15] As the index is national, it is cited by most China-related studies when measuring institutional characteristics or regional market development in China (see, e.g. Fan et al., 2010; Wang et al., 2008; Li et al., 2009).

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Table 6

The effect of government control on the association between mandatory ICD disclosure and accrual quality.

	(1)	(2)	(3)	(4)	(5)	(6)
	ABSDACC	DACC_p	DACC_n	ABSDACC	DACC_p	DACC_n
Constants	0.065	0.049	−0.113	0.060***	−0.014	−0.275
	(1.29)	(0.68)	(−1.60)	(3.49)	(−0.06)	(−1.15)
MandatoryICD	0.344***	−0.009	−0.296***	−0.066	−0.034	0.103
	(4.59)	(−0.29)	(−5.10)	(−0.86)	(−0.24)	(1.19)
MandatoryICD *Govreview	0.034*	−0.000	−0.027*			
	(1.73)	(−0.41)	(−1.79)			
Govreview	0.003	0.008	0.002			
	(0.72)	(1.21)	(0.31)			
MandatoryICD *Supervise				0.015**	−0.006	−0.023*
				(2.19)	(−0.25)	(−1.85)
Supervise				0.002	−0.010	−0.036
				(1.27)	(−0.23)	(−0.87)
Segment	0.001	0.002	0.001	−0.000	0.001	0.001
	(0.36)	(0.99)	(0.45)	(−0.27)	(0.79)	(0.88)
Growth	−0.003***	−0.001	0.005***	0.001	0.004***	0.005***
	(−2.94)	(−0.86)	(2.76)	(0.53)	(3.17)	(3.36)
Inventory	0.024***	0.026***	−0.026***	0.012**	0.046***	0.023***
	(3.49)	(2.67)	(−2.72)	(2.18)	(5.76)	(3.03)
Restructure	0.013**	0.017**	−0.006	0.002	0.002	−0.003
	(2.39)	(2.36)	(−0.72)	(0.64)	(0.41)	(−0.66)
Stdcfo	0.218***	0.215***	−0.202***	0.423***	0.388***	−0.452***
	(10.30)	(7.17)	(−6.88)	(24.84)	(16.00)	(−19.65)
BM	−0.011***	−0.009*	0.013***	−0.016***	−0.004	0.022***
	(−3.22)	(−1.81)	(2.59)	(−5.63)	(−1.00)	(5.36)
Zscore	−0.000	0.000	0.000	−0.000***	0.000	0.001***
	(−1.39)	(0.20)	(1.58)	(−3.08)	(1.23)	(4.87)
Size	−0.003***	−0.004***	0.002*	−0.001*	−0.002*	0.001
	(−3.11)	(−2.95)	(1.92)	(−1.83)	(−1.89)	(1.53)
Turnover	0.001	−0.002	−0.004*	−0.000	−0.002	−0.001
	(0.73)	(−0.85)	(−1.68)	(−0.25)	(−1.02)	(−0.28)
Refinance	−0.008	−0.018	−0.002	0.002	0.003	0.000
	(−0.97)	(−1.38)	(−0.16)	(0.31)	(0.46)	(0.03)
Acsize	−0.001	0.000	0.004	0.003*	0.003	−0.004
	(−0.45)	(0.07)	(0.94)	(1.71)	(1.09)	(−1.36)
Acindept	−0.003	−0.009*	−0.002	−0.003	−0.004	0.002
	(−0.94)	(−1.85)	(−0.38)	(−1.01)	(−1.12)	(0.50)
Acfin	−0.009	−0.006	0.015	0.001	0.001	−0.002
	(−1.35)	(−0.69)	(1.64)	(0.22)	(0.09)	(−0.37)
Industry	Yes	Yes	Yes	yes	yes	yes
Year	Yes	Yes	Yes	yes	yes	yes
Log likelihood	6390.97***	3007.65***	3217.88***	9325.44***	4448.81***	4725.35***
n	6511	3092	3419	6511	3092	3419

Note: The dependent variable - ABSDACC (absolute value of discretionary accruals), DACC_p (positive discretionary accruals), DACC_n (negative discretionary accruals) respectively indicates accrual quality of financial statement. The independent variables are MandatoryICD (a dummy variable that takes value of 1 if ICD audit is mandatory and a non-standard report is issued in the fiscal year), Govreview (the length of government annual reports for investigating the implement and compliance of internal control disclosure requirement, measured by the number of words.), Supervise (the number of keywords indicating the severity and attention of government in the annual government inspection report), and interaction terms MandatoryICD *Govreview, MandatoryICD *Supervise. The t statistics value is included in parentheses. ***, **, and * denote the1%, 5%, and 10% significant level, respectively.

5. Alternative tests and robustness

5.1. Alternative tests

Prior studies demonstrate that AQ improves after ICD firms remediate their material weaknesses (Ashbaugh-Skaife et al., 2008). We identify firms that were able to remediate their internal control weaknesses, that is, firms that received an unqualified audit opinion after receiving an adverse audit opinion in the previous year. In our sample, 63 observations reflect remediation (2% of the ICD firms). Table 9 describes the remediation of ICD by year and tests the different effects of government-enforced mandatory and voluntary disclosure. We find that ICD firms under mandatory audit regimes have significantly more ICD corrections in the following period. This finding provides supplementary evidence that in Chinese firms, ICD disclosure under mandatory audit regimes leads to significantly more improvements in internal control weaknesses than voluntary disclosure. The number of firms that experienced remediation is too small a sample for a regression analysis.

Compared with government control, market-based mechanisms may enhance the credibility of disclosure regulation. We treat external audits as a market-based mechanism and examine whether the quality of auditors is associated with the

Table 7
The effects of mandatory ICD disclosure in subsamples partitioned by SOEs versus non-SOEs.

Panel A: Partition sample by SOEs versus non-SOEs

| | ABSDACC | | DACC_p | | DACC_n | |
	(1)	(2)	(3)	(4)	(5)	(6)
	SOEs	non-SOEs	SOEs	non-SOEs	SOEs	non-SOEs
Constants	0.015	0.067***	−0.010	0.057*	−0.047	−0.095***
	(0.47)	(2.84)	(−0.21)	(1.65)	(−1.10)	(−2.88)
MandatoryICD	0.024***	0.013***	0.009	−0.005	−0.038***	−0.019***
	(3.77)	(2.70)	(0.99)	(−0.69)	(−4.58)	(−3.26)
Segment	−0.000	−0.001	0.001	0.001	0.002	0.002
	(−0.02)	(−0.56)	(0.36)	(0.65)	(0.70)	(1.14)
Growth	−0.001	0.004***	0.002	0.008***	0.007***	0.003
	(−1.05)	(2.89)	(0.93)	(4.76)	(3.67)	(1.36)
Inventory	0.024***	0.006	0.068***	0.027***	0.024**	0.020**
	(2.68)	(0.85)	(5.20)	(2.73)	(2.01)	(2.05)
Restructure	0.001	0.003	−0.002	0.006	−0.011	−0.001
	(0.09)	(0.63)	(−0.30)	(0.89)	(−1.29)	(−0.16)
Stdcfo	0.445***	0.426***	0.407***	0.410***	−0.498***	−0.417***
	(17.33)	(19.42)	(10.78)	(13.33)	(−14.97)	(−13.67)
BM	−0.025***	−0.011***	−0.020**	0.003	0.023***	0.021***
	(−4.14)	(−3.02)	(−2.26)	(0.61)	(3.06)	(4.39)
Zscore	−0.000**	−0.000**	0.000	0.000*	0.001***	0.001***
	(−2.23)	(−2.08)	(0.90)	(1.69)	(3.94)	(3.31)
Big4	−0.002	−0.000	−0.007	−0.000	−0.004	−0.001
	(−0.44)	(−0.03)	(−0.67)	(−0.04)	(−0.65)	(−0.38)
Size	0.001	−0.002***	0.002	−0.004***	0.001	0.002
	(0.65)	(−2.70)	(1.06)	(−2.89)	(0.56)	(1.33)
Turnover	0.001	0.000	−0.006	0.001	−0.005	0.000
	(0.51)	(0.07)	(−1.60)	(0.57)	(−1.64)	(0.20)
Refinance	0.002	−0.003	0.002	0.002	0.000	0.007
	(0.27)	(−0.35)	(0.21)	(0.19)	(0.04)	(0.57)
Acsize	0.007**	0.001	0.010**	−0.002	0.001	−0.003
	(2.09)	(0.46)	(2.13)	(−0.59)	(0.11)	(−1.03)
Acindept	0.002	−0.004	0.003	−0.005	0.000	0.002
	(0.49)	(−1.21)	(0.47)	(−1.10)	(0.05)	(0.52)
Acfin	−0.002	0.003	0.001	0.002	−0.000	−0.003
	(−0.19)	(0.52)	(0.08)	(0.34)	(−0.04)	(−0.42)
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Chow-test	5.99***		1.63		1.54	
Log likelihood	3926.53***	6106.46***	1878.92***	2924.42***	2054.16***	3035.92***
n	3963	2548	1851	1241	2110	1309

Note: The dependent variable - ABSDACC (absolute value of discretionary accruals), DACC_p (positive discretionary accruals), DACC_n (negative discretionary accruals) respectively indicates accrual quality of financial statement. The independent variable is MandatoryICD (a dummy variable that takes value of 1 if ICD audit is mandatory and a non-standard report is issued in the fiscal year). The grouping of CentralSOEs (the firm is owned by the central government) and LocalSOEs (the firm is owned by the local government) aims at distinguishing the strength of government control by different levels. The t statistics value is included in parentheses. ***, **, and * denote the1%, 5%, and 10% significant level, respectively.

Panel B: Partition sample by central SOEs versus local SOEs

| | ABSDACC | | DACC_p | | DACC_n | |
	(1)	(2)	(3)	(4)	(5)	(6)
	CentralSOEs	LocalSOEs	CentralSOEs	LocalSOEs	CentralSOEs	LocalSOEs
Constants	0.066**	0.094**	0.028	0.118**	−0.116***	−0.063
	(2.10)	(2.44)	(0.59)	(2.20)	(−2.80)	(−1.16)
MandatoryICD	0.013**	0.010	−0.002	−0.011	−0.019***	−0.018
	(2.26)	(1.07)	(−0.18)	(−0.69)	(−2.89)	(−1.52)
Segment	−0.002	−0.002	−0.001	0.003	0.001	0.006
	(−0.93)	(−0.67)	(−0.33)	(0.82)	(0.31)	(1.46)
Growth	0.004**	0.006**	0.008***	0.011***	0.000	0.005
	(2.37)	(2.46)	(3.44)	(3.62)	(0.03)	(1.09)
Inventory	0.011	−0.007	0.030**	0.010	0.018	0.032
	(1.26)	(−0.47)	(2.42)	(0.53)	(1.55)	(1.57)
Restructure	−0.002	0.018**	0.005	0.010	0.008	−0.030**
	(−0.26)	(2.09)	(0.49)	(0.93)	(0.97)	(−2.19)
Stdcfo	0.403***	0.477***	0.380***	0.433***	−0.397***	−0.429***
	(14.18)	(12.08)	(9.51)	(7.22)	(−9.97)	(−8.26)
BM	−0.014***	−0.001	−0.006	0.010	0.020***	0.012
	(−3.16)	(−0.10)	(−0.82)	(1.25)	(3.46)	(1.37)
Zscore	−0.000	−0.000	0.000	0.000	0.001**	0.001
	(−1.09)	(−1.59)	(1.56)	(0.28)	(2.41)	(1.63)

Table 7 (*continued*)

Panel B: Partition sample by central SOEs versus local SOEs						
	ABSDACC		DACC_p		DACC_n	
	(1)	(2)	(3)	(4)	(5)	(6)
Big4	−0.009**	0.010**	−0.012*	0.016**	0.007	−0.004
	(−2.29)	(2.19)	(−1.79)	(2.43)	(1.39)	(−0.52)
Size	−0.001	−0.005***	−0.002	−0.007***	0.001	0.002
	(−1.08)	(−3.31)	(−0.96)	(−3.78)	(0.90)	(0.96)
Turnover	−0.000	0.002	−0.000	0.006	0.001	−0.000
	(−0.20)	(0.79)	(−0.04)	(1.52)	(0.29)	(−0.01)
Refinance	0.003	−0.015	−0.001	−0.006	−0.006	0.031
	(0.28)	(−1.32)	(−0.11)	(−0.46)	(−0.44)	(1.59)
Acsize	−0.003	0.004	−0.002	−0.005	0.005	−0.013**
	(−0.90)	(0.90)	(−0.38)	(−0.85)	(1.17)	(−2.20)
Acindept	0.000	−0.015**	0.003	−0.023***	0.003	0.004
	(0.08)	(−2.50)	(0.48)	(−2.88)	(0.58)	(0.45)
Acfin	0.007	−0.002	0.007	−0.007	−0.005	−0.005
	(1.13)	(−0.21)	(0.73)	(−0.58)	(−0.51)	(−0.37)
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Chow-test	8.33***		1.21		1.15	
Log likelihood	6466.10***	3063.63***	1527.09***	3016.50***	3664.86***	1660.44***
n	873	3090	355	1273	811	1524

Note: The dependent variable - ABSDACC (absolute value of discretionary accruals), DACC_p (positive discretionary accruals), DACC_n (negative discretionary accruals) respectively indicates accrual quality of financial statement. The independent variable is MandatoryICD (a dummy variable that takes value of 1 if ICD audit is mandatory and a non-standard report is issued in the fiscal year). The grouping of SOEs (state-owned enterprises) and Non-SOEs (non-state-owned enterprises) aims at distinguishing the strength of government control by ownership. The t statistics value is included in parentheses. ***, **, and * denote the1%, 5%, and 10% significant level, respectively.

effectiveness of ICD disclosure regulation. We define high quality auditors as the Big Ten auditors (*BigTen*) based on their domestic market shares. The coefficient of interest is the interaction term *MandatoryICD * BigTen*, which is added to the basic model. The untabulated results show that based on the three measures of AQ, the coefficient of interaction *MandatoryICD * BigTen* is not significant, suggesting that the effectiveness of mandatory ICD disclosure does not vary with the quality of the market-based mechanism. These results provide indirect evidence that government control may play a more critical role in regulating disclosure than market-based mechanisms.

5.2. Robustness checks

We conduct the following robustness tests in unreported results. i) We adopt another measure of AQ – abnormal working capital accruals (*AB_WCA*) (Doyle et al., 2007a; Doyle et al., 2007b; Ashbaugh-Skaife et al., 2008).[16] All of the other variables in the model are as defined in Model (1). We rerun Model (2) using this measure of AQ in four dimensions. ii) We use a sample consisting of A-share firms listed on the main board, excluding the Small and Medium Enterprise (SME); iii) We test our sample year by year to separate the possible effects of different ICD regulations. The results are consistent in all of these tests (not tabulated).

We further address potential endogeneity bias and reverse causality in some of the model specifications used in the study. We replace the dependent variables in Model (2) with the change in the amount of abnormal accruals as proxied by *ABSDAAC*, *DAAC_p* and *DAAC_n*. However, we do not find any significant results, because the magnitude and variation of discretionary accruals is too small to obtain a significant change in the amounts used in the regression. We also use the propensity score matching method to match each firm under the mandatory ICD disclosure regime with a firm engaging in voluntary ICD disclosure based on their observable characteristics in the year prior to disclosure (i.e. when $ICD_t = 1$). We then re-estimate the logit regression using the matched sample. The main results (not tabulated) are consistent.

6. Conclusion

To improve firms' internal control systems, countries around the world have adopted ICD disclosure regulations (e.g. SOX in the U.S.) requiring the external audit of internal control systems. However, studies using data from developed markets (e.g. the U.S.) cannot explain the effects in a weak institutional environment such as China.

Using China's progressive implementation of regulations on firms' internal control, this paper identifies the effectiveness of ICD disclosure in AQ, and how market institutional factors in emerging markets moderate the effectiveness of ICD disclosure. Unlike SOX 404, China's mandatory policy of ICD disclosure was introduced sequentially to subsets of firms, and most

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[16] The method for estimating *AB_WCA* is elaborated at footnote 8.

Table 8
The effects of mandatory ICD disclosure in subsamples partitioned by the level of market development.

	ABSDACC		DACC_p		DACC_n	
	(1)	(2)	(3)	(4)	(5)	(6)
	High_Market	Low_Market	High_Market	Low_Market	High_Market	Low_Market
Constants	0.055	0.053**	0.087	0.043	−0.023	−0.080***
	(1.25)	(2.53)	(1.35)	(1.42)	(−0.35)	(−2.86)
MandatoryICD	0.009	0.020***	−0.010	0.002	−0.013	−0.031***
	(1.35)	(4.21)	(−0.97)	(0.32)	(−1.58)	(−5.47)
Segment	−0.005*	0.001	0.000	0.002	0.010***	−0.001
	(−1.91)	(0.99)	(0.14)	(1.17)	(2.88)	(−0.52)
Growth	−0.003*	0.003***	−0.001	0.009***	0.008**	0.004***
	(−1.93)	(2.91)	(−0.58)	(5.59)	(2.13)	(2.89)
Inventory	0.026*	0.010	0.072***	0.039***	0.019	0.023***
	(1.94)	(1.62)	(3.91)	(4.43)	(1.01)	(2.84)
Restructure	0.006	−0.001	0.011	−0.004	−0.007	−0.002
	(0.88)	(−0.16)	(1.20)	(−0.72)	(−0.67)	(−0.35)
Stdcfo	0.340***	0.449***	0.258***	0.430***	−0.442***	−0.457***
	(9.21)	(24.51)	(5.22)	(16.23)	(−8.20)	(−18.74)
BM	−0.018***	−0.014***	0.001	−0.004	0.032***	0.020***
	(−2.68)	(−4.09)	(0.09)	(−0.88)	(3.44)	(4.48)
Zscore	−0.001***	−0.000**	−0.000	0.000*	0.001***	0.001***
	(−2.75)	(−2.26)	(−1.09)	(1.93)	(2.70)	(4.60)
Big4	0.000	−0.002	−0.000	−0.004	−0.005	−0.001
	(0.02)	(−0.70)	(−0.03)	(−0.85)	(−0.49)	(−0.26)
Size	−0.004***	−0.001	−0.006***	−0.001	0.003	0.001
	(−2.68)	(−0.88)	(−3.03)	(−0.97)	(1.21)	(1.04)
Turnover	0.001	0.000	−0.002	−0.001	−0.005	−0.000
	(0.38)	(0.05)	(−0.49)	(−0.49)	(−1.32)	(−0.01)
Refinance	0.006	−0.002	0.009	−0.000	0.003	0.003
	(0.47)	(−0.29)	(0.62)	(−0.04)	(0.16)	(0.28)
Acsize	0.003	0.003	0.009	0.001	0.005	−0.005
	(0.71)	(1.46)	(1.58)	(0.28)	(0.84)	(−1.64)
Acindept	−0.002	−0.001	0.005	−0.002	0.012	−0.000
	(−0.35)	(−0.51)	(0.70)	(−0.54)	(1.49)	(−0.07)
Acfin	0.003	−0.001	−0.001	−0.001	0.001	−0.003
	(0.26)	(−0.15)	(−0.06)	(−0.19)	(0.09)	(−0.47)
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Chow-test	5.37***		0.127 6.22***			
Log likelihood	8098.82***	2078.64***	3802.94***	1075.20***	4182.28***	980.58***
n	4908	1603	2374	718	2561	858

Note: The dependent variable - ABSDACC (absolute value of discretionary accruals), DACC_p (positive discretionary accruals), DACC_n (negative discretionary accruals) respectively indicates accrual quality of financial statement. The independent variable is MandatoryICD (a dummy variable that takes value of 1 if ICD audit is mandatory and a non-standard report is issued in the fiscal year). The grouping of High_Market (the firms that are located in a province with the index above median level of provinces in the year) and Low_Market (the firms that are located in a province with the index below median level of provinces in the year) aims at distinguishing the strength of market monitoring. The t statistics value is included in parentheses. ***, **, and * denote the 1%, 5%, and 10% significant level, respectively.

firms obtain reports from external auditors indicating no weakness in their internal control disclosure. The market institutions in China, including government inspections, legal enforcement and regional variations, offer a good opportunity to explore the mechanism of ICD disclosure in China.

Our evidence strongly confirms that ICDs disclosed in mandatory audits are more strongly related to poorer AQ than ICDs disclosed in voluntary audits. This insight enriches the literature on the relationship between ICD and AQ in emerging markets. Specifically, we find that ICD under mandatory audit regimes is significantly associated with a higher absolute value of abnormal accruals, particularly negative abnormal accruals. Second, we document that in regions with undeveloped market environments, intensive government control of ICD disclosure strengthens the relationship between ICD disclosure in mandatory audits and AQ. Our results indicate that despite the weak institutional environments in emerging markets such as China, mandated regulation may enhance the credibility of disclosures about internal control systems and improve AQ.

Funding

Table 9
The proportion of remediation for ICD.

	MandatoryICD				VoluntaryICD				Difference of the proportion of remediation
	The number of internal reviews	The number of internal control deficiencies	The number of remediations	The proportion of remediation	The number of internal reviews	The number of internal control deficiencies	The number of remediations	The proportion of remediation	
2011	44	1	1	100%	489	4	3	75%	25% (1.212)
2012	765	19	12	63.16%	263	2	1	50%	13.16% (1.478)
2013	943	42	20	47.62%	398	4	1	25%	22.62%** (2.496)
2014	1203	62	24	38.71%	318	4	1	25%	0.018%** (2.096)
Total	2955	124	57	45.97%	1468	14	6	42.86%	3.11%*** (4.075)

Note: This table presents remediation of ICD between MandatoryICD (the firms that ICD audit is mandatory and a non-standard report is issued in the fiscal year) and VoluntaryICD (the firms that ICD audit is voluntary and a non-standard report is issued in the fiscal year). The t values are included in the parentheses; ***, **, and * denote the 1%, 5%, and 10% significant level, respectively.

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.

Appendix:. Variable definitions

Variables	Definitions
ABSDACC	Absolute value of discretionary accruals
DACC_p	Positive discretionary accruals
DACC_n	Negative discretionary accruals
ICD	If the firm takes an external audit on internal control and the auditor issues a non-standard report on internal control
MandatoryICD	A dummy variable that takes value of 1 if ICD audit is mandatory and a non-standard report is issued based on the regulatory principle in the fiscal year. Since we have 3 staggering regulation changes, Mandatory dummy incorporate all these changes happened in different years.
VoluntaryICD	A dummy variable that takes value of 1 if ICD audit is voluntary and a non-standard report is issued based on the regulatory principle in the fiscal year. Since we have 3 staggering regulation changes, Mandatory dummy incorporate all these changes happened in different years.
Segment	Number of operating segments of a given observation.
Growth	The average growth ratio of per capita income in last three years
Inventory	The ratio of Inventory to total asset at the end of year
Restructure	If firm restructured its major assets in past three years, Restructure = 1, else 0
Stdcfo	Standard deviation of operating cash flow in last three year
Loss_p	Ratio of loss year(s) in the near three years. It equals the number of loss year(s) divided by 3.
Zscore	The Z value of Altman (1968)

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Variable definitions (continued)

Variables	Definitions
BM	Book value scaled by market value at the end of year
Big4	Dummy. If the financial statements are audited by the Big 4 accounting firms, it equals 1, else 0.
Size	Log value of total asset at the end of last year.
Turnover	the dummy variable whether a firm underwent executive turnover in the year
Refinance	If the firm involve in seasoned equity offering (SEOs) in the fiscal year, Refinance = 1 and 0 otherwise.
Acsize	Natural logarithm of the number of members in audit committee
Acindept	The proportion of independent directors in audit committee
Acfin	The proportion of members with financial expertise in audit committee
OC_5	Shares ratio of the top five shareholders
EPS	Per-share earnings at the end of year
Gfinal	Dummy. It equal one for state-owned firms, and zero for other firms.
BigTen	Dummy. If the financial statements are audited by the Big Ten accounting firms, it equals 1, else 0.
Govreview	The length of government annual reports for investigating the implement and compliance of internal control disclosure requirement, measured by the number of words.
Supervise	The number of keywords indicating the severity and attention of government in the annual government inspection report. These keywords are based on a bag of words such as "problems", "improve", "facilitate", and "enhance".
SOE	Dummy. If the firm is owned by the government units, it equals 1, else 0.
Central / local SOE	Dummy. If the firm is owned by the central (/local) government, it equals 1, else 0
High / Low_Market	Based on the marketization index (MINDEX), if a firm is located in a province with the index above median level of provinces in the year, it is categorized into a sample in the highly developed market (High_Market), and if a firm is located in a province with the index below median level of provinces in the year, it is categorized into a sample in the undeveloped market (Low_Market).
Year	Dummies of 2007–2015.
Industry	Dummies of industries.

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