Real and Accrual-Based Earnings Management in the Pre- and Post-IFRS Periods: Evidence from China

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Abstract

The purpose of this study is to investigate the prevalence of both accrual- and activities-based earnings management for Chinese A-share firms surrounding the adoption of substantially IFRS-convergent accounting standards. Since 2007, all listed A-share firms in China have been required to comply with a new set of accounting standards that have substantially conformed to IFRS. The new reform also produced a set of new auditing standards and internal control reporting requirements. Based on a sample of 4,050 firm-year observations from 2002 to 2011, we find that Chinese firms in the post-IFRS period (2007–2011) are less likely to engage in accrual-based earnings management. The magnitude of discretionary accruals also declines after IFRS adoption. In response, we see firms turning to real activities manipulation as a substitute for upward earnings management. The reduction in accrual-based earnings management could stem from higher quality accounting standards associated with IFRS adoption and/or concurrent changes in the governance regimes introduced with the IFRS mandate. A further analysis, however, indicates that the benefits of IFRS adoption in curbing upward accrual-based earnings manipulation are not evenly distributed across firms. Specifically, the benefit diminishes for firms that are controlled by Chinese central or local governments, are located in less developed regions, and that have weak financial performance and therefore subject to delisting status. We also find that

the benefit is less pronounced for manufacturing firms than for their non-manufacturing counterparts.

1. Introduction

Beginning in 1992, China implemented a series of accounting regulations with the goal of improving the quality of publicly available financial statements. The most recent reform occurred in 2006, which requires that, effective in January 2007, all listed A-share firms follow a new set of accounting standards that have substantially conformed to International Financial Reporting Standards (IFRS). The new reform also produced 48 new Chinese Auditing Standards that are similar to the international auditing standards issued by the International Auditing and Assurance Standard Board. In addition, a set of new internal control standards were issued in June 2008, which requires Chinese firms that are listed on the Shanghai and Shenzhen stock exchanges to perform systematic evaluations of their internal control systems and issue reports on an annual basis.

The purpose of this study is to investigate the changes in earnings management behavior for Chinese A-share firms surrounding the adoption of substantially IFRS-convergent accounting standards. Our primary motivation for conducting this analysis is threefold. First, we intend to provide further evidence on the intended and unintended consequences of mandatory IFRS adoption. We use a single-country setting because such design helps us better understand and control contemporaneous non-IFRS effects and therefore increases the internal validity of results (see Barth et al., 2008; Brüggemann et al., 2013). We focus on China because, as the largest and fastest growing emerging market as well as the second largest world economy, China is increasingly important to investors and other market participants around the globe. Understanding the effects of IFRS adoption in China is particularly interesting given its unique economic, political, and institutional differences that distinguish it from well-developed countries (Liu et al., 2011).

Second, we choose to focus on earnings management issue when examining the effect of IFRS on financial reporting quality because (1) earnings quality is a fundamental characteristic of the financial reporting process and (2) the extent of earnings management has been a common measure of earnings quality. Managerial propensity to manage earnings is a common business phenomenon in a U.S. setting (e.g.,

Healy and Wahlen, 1999; Graham et al., 2005). The prevalence of earnings management in China has also been well documented in extant studies (e.g., Aharony et al., 2000; Chen and Yuan, 2004; Jian and Wong, 2010). In addition, existing literature shows that earnings management can be achieved through various forms. One common way is to use accounting estimates and judgments to affect accruals, which is known as accrual-based earnings management. An alternative way is referred to as "real" earnings management where managers engage in real activities such as reducing research and development (R&D) and advertising expenditures to improve earnings performance (e.g., Graham et al., 2005; Roychowdhury, 2006).

Third, prior research points to a substitutive relation between real and accrual-based earnings management (e.g., Zang, 2012). Studies by Ewert and Wagenhofer (2005) as well as Cohen et al. (2008) further suggest that more rigorous accounting standards and/or stricter reporting regimes could motivate firms to substitute accrual-based with real earnings management. To the extent that IFRS adoption could lead to changes in the quality of accounting standards and/or the strength of regulatory frameworks in China, we may observe some changes in earnings management behavior surrounding China's 2007 IFRS adoption.

Based on a sample of 4,050 firm-year observations from 2002 to 2011, we find that Chinese firms in the post-IFRS period (2007–2011) are less likely to engage in accrual-based earnings management but are more likely to engage in real earnings management. This evidence is consistent with the view that managers in Chinese firms turn to real earnings management as a substitute mechanism to achieve earnings benchmarks when their ability to manipulate accruals upward is constrained after IFRS adoption. The reduction in accrual-based earnings management could stem from higher quality accounting standards associated with IFRS adoption and/or concurrent changes in the governance regimes (i.e., the audit reform and internal control reporting requirements) introduced with the IFRS mandate.

Prior studies indicate that firms' reporting incentives play a crucial role for reporting outcomes (e.g., Ball et al., 2003). In our second set of empirical tests, we examine the cross-sectional variation in the results documented for the overall sample using a set of institutional factors in China that have been identified to have influences on firms' reporting incentives. These factors include firms' ownership structure, listing status, regional development, industry membership, and degree of marketization. The cross-sectional analysis shows that the benefits

of IFRS adoption in curbing upward accrual-based earnings manipulation are not evenly distributed across firms. In particular, we find that the benefit diminishes for state-owned enterprises (SOEs). To the extent that SOEs receive more government support and rely less on external capital, this evidence is consistent with the view that SOEs may not have strong incentives to be more transparent and therefore the effectiveness of IFRS adoption on constraining accrual-based earnings management is quite limited for SOEs. We also find that the benefit occurs only for firms that are located in provinces with a higher degree of market development, which is in line with the previous research findings that the degree of similarity of economic, legal, and social environments to developed countries could affect the effectiveness and relevance of IFRS adoption in emerging markets. In addition, for the set of underperforming firms with delisting concerns (firms that report losses for two consecutive years), there is no evidence that the extent of upward accrual-based earnings management declines in the post-IFRS period. This evidence is consistent with the argument that the use of bright-line earnings thresholds to determine whether a firm can remain listed in China provides strong incentives for underperforming firms to engage in upward earnings management. Finally, we find that the decline in the extent of accrual-based earnings management is less pronounced for manufacturing firms than for their non-manufacturing counterparts. One possible explanation is that the greater competition among firms in the manufacturing sector increases earnings management incentives of such firms and therefore the benefit of IFRS adoption is not so obvious. Consistent with prior literature, the results of cross-sectional analyses underscore the importance of firms' reporting incentives to assess the effectiveness of IFRS adoption on financial reporting quality.

Although the focus of this study is on the changes in earnings management surrounding IFRS adoption, we also examine the capital market effects of China's IFRS adoption. Two sets of findings are documented. First, using Tobin's Q as a measure of firm value, we find that Chinese A-share firms exhibit a significant increase in firm value in the post-IFRS period. Second, we find that the market perception of the usefulness of accounting numbers has improved in the post-IFRS period. Specifically, our evidence indicates that investors place more weight on the earnings information in firm valuation in the post-IFRS period. We have some evidence that book value of equity and

cash flows from operations become more value relevant; however, the evidence is much weaker relative to that of earnings.

Our study is closely related to one of prior studies that examine the association between IFRS adoption and financial reporting quality in China. Similar to Liu et al. (2011), our study provides evidence regarding the effect of IFRS adoption on the accounting quality of Chinese firms. Our study, however, extends theirs in three important ways. First, Liu et al. (2011) only cover two pre- (2005–2006) and two post-adoption years (i.e., 2007–2008) in their analysis. Brüggemann et al. (2013) argue that using short analysis periods is one weakness of current IFRS studies and therefore call for a re-examination of potential IFRS effects using a longer time series. As a response to their call, our study employs a longer test period (5 years before and 5 years after the IFRS adoption) to enhance the power of the tests and improve the validity of the results. Second, Liu et al. (2011) report the overall impact of 2007 IFRS adoption in China, while our study incorporates a cross-sectional analysis in an attempt to shed light on how the unique institutional factors in China could drive the reporting and other capital market effects of IFRS adoption. Third, by examining the two alternative methods of managing earnings upward, our study shows although the adoption of IFRS reduces the probability and extent of accrual-based earnings management for certain Chinese firms (intended consequences), the overall propensity and magnitude of real activities manipulation in China increase after IFRS adoption (unintended consequences). To our knowledge, this study is the first to document the substitution effect in Chinese market.

Our study also contributes to accounting literature in the following ways. To the extent that local GAAP in China prior to IFRS convergence are largely rules based and IFRS are more principles based, our findings shed light on the debate regarding the merits and drawbacks of principles- versus rules-based system and therefore may have practical implications for policy makers and standard setters. In addition, our findings that the effects of China's IFRS adoption are conditional on provincial-level institutional environments and firm-level factors such as state ownership and listing status highlight the importance of firms' reporting incentives to determine the effectiveness of accounting standards.

The remainder of the article is organized as follows. Section 2 reviews relevant literature and develops our hypotheses. Section 3 discusses the research methodology. Section 4 describes data and sample. Results are presented in section 5, and conclusions are in the final section.

2. Background and Hypothesis Development

2.1. IFRS and Financial Reporting Quality

There are arguments supporting a positive association between IFRS adoption and financial reporting quality. First, the more comprehensive disclosure requirements under IFRS relative to most domestic accounting standards could make the financial reporting process more transparent (Daske and Gebhardt, 2006; Ding et al., 2007; Daske et al., 2008). Second, by tightening accounting choices and reducing the amount of reporting discretion, IFRS can limit opportunistic earnings management and therefore improve accounting quality (Ashbaugh and Pincus, 2001; Barth et al., 2008).

Another set of arguments in favor of a positive association between IFRS adoption and financial reporting quality centers on the merits and drawbacks of principles- versus rules-based accounting standards. Proponents of principles-based standards have argued that such an accounting system focuses on the substance rather than form of the transactions. No matter how complex the transactions are, the accounting methods used and financial results reported by managers still have to reflect the economic substance of those transactions. Therefore, managers may find principles-based accounting standards more difficult to circumvent and they are unlikely to structure transactions for a window-dressing purpose (see e.g., AAA Financial Accounting Standards Committee 2003; SEC 2003). In addition, under the principles-based approach, managers are given more flexibility to choose the accounting methods that better reflect firms' underlying activities, which in turn could improve the informativeness/relevance of accounting numbers and therefore financial reporting quality (Schipper, 2003). To the extent that local GAAP in many countries (including China) are largely rules based and IFRS are more principles based, the above arguments support the view that IFRS adoption should have a positive impact on financial reporting quality.

There are also arguments that, even if the quality of accounting standards per se does not improve, it is still possible that financial reporting quality increases because of changes in the institutional structures contemporaneous with firms' adoption of IFRS (Barth et al., 2008). Many countries (including China) engage in auditing and other governance reforms or strengthen their enforcement mechanisms along with the mandatory IFRS adoption. Such institutional changes

could lead to higher accounting quality due to their impacts on managers' reporting incentives (Daske et al., 2008).

However, there are also some reasons to be suspicious of the premise that IFRS reporting is associated with higher accounting quality. Opponents of IFRS often argue that principles-based standards are less specific and therefore require managers and auditors to exercise more judgment when applying the standards. The heavy reliance on judgment could not only reduce the consistency and comparability of financial information, but also create more opportunities for managers to manipulate accounting numbers (FASB 2002; Barth et al., 2008).

Yet another factor that affects the effectiveness of IFRS on accounting quality is the interplay between accounting standards and managers' reporting incentives. As indicated by Ball et al. (2003), higher quality accounting standards alone do not necessarily lead to higher financial reporting quality. It is the interplay between accounting standards and managers' reporting incentives that largely determines the effectiveness of accounting standards. Reporting incentives, in turn, depend on the economic, legal, and political factors that shape up the institutional environment.[1]

Prior empirical evidence on the effects of IFRS adoption on financial reporting quality is also mixed. On one hand, many studies (Leuz et al., 2003; Bartov et al., 2005; Barth et al., 2008; Chen et al., 2010) document that the quality of IFRS is higher than that of domestic accounting standards. For example, Barth et al. (2008) show that firms applying International Accounting Standards (IAS) have higher accounting quality than firms that do not from 1994 through 2003. Specifically, IAS firms exhibit less earnings management, more timely loss recognition, and higher value relevance. Chen et al. (2010) indicate that firms in the European Union countries are associated with lower earnings management and higher accruals quality after the 2005 mandatory adoption of IFRS.

As a related study, Ashbaugh and Pincus (2001) show that IFRS convergence improves analyst forecast accuracy. Daske et al. (2008) examine the capital market effects of mandatory IFRS adoption in 26 countries around the world. They find an increase in market liquidity and equity valuation as well as a decrease in cost of capital after IFRS adoption.

However, there is also evidence in prior studies that points to a limited role of IFRS adoption in affecting financial reporting quality and/ or producing capital market effects. For example, although Daske

et al. (2008) show positive market effects with IFRS adoption in terms of higher market liquidity and lower cost of capital, they also point out that the positive effects occur only in countries where firms have incentives to be transparent and where enforcement mechanisms are strong. Van Tendeloo and Vanstraelen (2005) examine whether voluntary adoption of IFRS reduces earnings management using a set of firms in Germany, a country with relatively weaker investor protection rights. They find no significant differences in earnings management behavior between firms that voluntarily adopted IFRS and those reporting under German GAAP. Hung and Subramanyam (2007) also fail to find that IFRS-based earnings and book values are associated with higher value relevance for German firms. Paananen and Lin (2009) even document a decrease in accounting quality after IFRS adoption in Germany for the period 2000 through 2006.

2.2. Real versus Accrual-Based Earnings Management

Our study is also motivated by the recent literature that documents a substitutive relation between real and accrual-based earnings management. Zang (2012) documents that managers trade off the two earnings management mechanisms based on their relative costs. Specifically, she finds that firms with less accounting flexibility due to excessive accrual manipulation in prior years or shorter operating cycles tend to use real earnings management to a greater extent. On the other hand, firms use more accrual-based earnings management when they are (1) less competitive in the industry, (2) in lower financial health status, (3) subject to higher monitoring from institutional investors, and (4) associated with greater tax expenses. The substitutive relation is further evidenced by the sequential nature of two activities; that is, managers adjust the level of accrual-based management at the fiscal year-end according to the level of real activities manipulation realized during the year.

Cohen et al. (2008) document that managers have shifted away from accrual-based to real earnings management after the passage of SOX, consistent with managers changing their earnings management tactics in response to the increase in litigation risk and outside scrutiny in the post-SOX era. Cohen and Zarowin (2010) examine firms' tendency to trade off real versus accrual-based earnings management around seasoned equity offerings and show that the likelihood of engaging in real earnings management is positively associated with the following factors: the presence of a Big 8 auditor, longer auditor tenure, being in a

litigious industry, and the level of operating assets (as a proxy for the firm's accounting flexibility).

As a related study, Ewert and Wagenhofer (2005) analyze the relation between the tightness of accounting standards and the level of earnings management using a rational expectations equilibrium model. Although their theoretical models predict that tighter accounting standards will increase earnings quality as measured by the variability of reported earnings and value relevance, they show the circumstances where real earnings management will increase with tighter accounting standards due to a substitution effect.

2.3. *China's Accounting Reform*

After experiencing a sustained period of economic reform over the last thirty years, China has become more similar to developed countries in terms of economic and social conditions (Liu et al., 2011). The transition has resulted in a much larger private sector and capital market, which places a stronger demand for higher quality accounting standards. Beginning in 1992, China implemented a series of accounting regulations with the goal of improving the quality of publicly available financial statements. Important milestones include 1992 when the Chinese Ministry of Finance (CMOF) promulgated the Accounting Standards for Enterprises No. 1 – Basic Standards. In 1998, listed A-share firms were required to adopt the Accounting System for Joint Stock Limited Enterprises issued by CMOF. In 2001, another set of new accounting standards that are more convergent with international ones were issued. Finally, in February 2006, CMOF officially announced the introduction of 39 new Chinese Accounting Standards which are substantially in conformance with IFRS. All listed firms were required to follow the 2006 new accounting standards effective in January 2007.

Prior to the 2006 reform, Chinese accounting standards were highly prescriptive and largely rules based. A key change to the accounting regime in China after the reform is the widespread use of fair value as a measurement attribute. According to Peng and Bewley (2010), 25 of 38 new standards require or allow companies to use fair value accounting (FVA) for initial or subsequent measurement of assets and liabilities, asset impairment testing, or disclosure in financial reports.

The 2006 reform also produced a set of new Chinese Auditing Standards that are similar to international auditing standards issued by the International Auditing and Assurance Board. In addition, on June

28, 2008, the CMOF, China Securities Regulatory Commission (CSRC), the National Audit Office, China Banking Regulatory Commission (CBRC), and China Insurance Regulatory Commission (CIRC) jointly announced the adoption of Basic Standard for Enterprise Internal Controls (C-SOX). C-SOX requires that companies listed on either the Shanghai or Shenzhen stock exchanges conduct systematic evaluations of their internal controls, report on an annual basis, and hire qualified auditors to review the effectiveness of their internal control systems.

2.4. Hypotheses

Our first hypothesis examines whether IFRS adoption affects the extent to which Chinese firms use accrual-based manipulation to manage earnings upward. As discussed earlier, there are arguments suggesting either a positive or negative relationship. On one hand, the adoption of IFRS makes Chinese accounting standards more principles based. To the extent that managers may perceive principles-based standards more difficult to circumvent because more emphasis is placed on the substance rather than the form of the underlying transactions, the extent of opportunistic earnings manipulation by choosing accounting methods/estimates (i.e., accrual-based manipulation) could be lessened after IFRS adoption. In addition, the strengthened audit regulation and reforms in other institutional frameworks such as the requirement of internal controls evaluations could also reduce managers' abilities to engage in accrual-based earnings management in the post-IFRS period.

On the other hand, one major criticism of IFRS is its heavy reliance on judgment when applying accounting standards, particularly for fair value measurement. Increased subjectivity on accounting estimates could create more opportunities to engage in upward accrual-based earnings manipulation. Consistent with this notion, He et al. (2012) argue and find that "the lack of active markets for non-financial assets and the prevalence of related-party transactions provide firms with opportunities to employ FVA for earnings management" in China.

Given the competing arguments and mixed empirical evidence discussed above, we formulate the first hypothesis in non-directional form, which is stated as follows:

> *H1*: There is a change in the extent of accrual-based earnings management for Chinese firms after the mandatory adoption of substantially IFRS-convergent accounting standards.

Our second hypothesis considers the impact of China's IFRS adoption on another form of earnings management: real activities-based manipulation. This kind of manipulation represents a departure from optimal business practice; however, it is not a violation of GAAP. It is unlikely to be subject to auditors' scrutiny or on the radar of an audit committee either.

As indicated earlier, prior research points to a substitutive relation between real and accrual-based earnings management. In our context, the substitution effect is likely to occur for Chinese firms after the 2007 IFRS adoption. On one hand, as we discussed under H1, IFRS adoption could curb managers' ability to use discretionary accruals to manage earnings upward because (1) the more principles-based accounting standards reduce the opportunistic interpretation of complex rules and force firms to better comply with the intent of the standards and/or (2) the heightened outside scrutiny resulting from the audit reform and other regulations increases the cost of doing accrual-based management. IFRS reporting, however, does not directly affect firms' ability to engage in real earnings management. If managers trade off one mechanism for another, they are likely to trade off upward accrual-based earnings management in favor of real activities manipulation in the post-IFRS period.

On the other hand, if increased reporting discretion allowed by an IFRS framework creates more opportunities for Chinese managers to engage in accrual-based manipulation, then we may find that Chinese firms are less likely to use real activities to achieve their earnings targets. In either scenario, the substitution effect may occur and we could observe a change in the extent of real earnings management after IFRS adoption. Therefore, our second hypothesis, stated in non-directional form, is as follows:

> *H2*: There is a change in the extent of activities-based earnings management for Chinese firms after the mandatory adoption of substantially IFRS-convergent accounting standards.

3. Research Design

3.1. Measurement of Accrual-Based Earnings Management

To test H1, we use both the incidence and magnitude of discretionary accruals as indicators of upward earnings management. To estimate

discretionary accruals, we use the modified Jones (1991) model described in Dechow et al. (1995).

$$\frac{\text{ACCR}_{it}}{\text{TA}_{it-1}} = \alpha_0 \left[\frac{1}{\text{TA}_{it-1}}\right] + \alpha_1 \left[\frac{\Delta \text{REV}_{it} - \Delta \text{REC}_{it}}{\text{TA}_{it-1}}\right] + \alpha_2 \left[\frac{\text{PPE}_{it}}{\text{TA}_{it-1}}\right] + \varepsilon_{it} \quad (1)$$

where ACCR_{it} = total accruals for firm i in year t. It is defined as earnings before extraordinary items (Global Compustat IBC) minus the operating cash flows adjusted for extraordinary items and discontinued operations (Global Compustat OANCF minus XIDOC); TA_{it-1} = total assets for firm i in year t–1 (Global Compustat AT); ΔREV_{it} = change in revenue for firm i in year t (Global Compustat SALE); ΔREC_{it} = change in accounts receivable for firm i in year t (Global Compustat RECT); and PPE_{it} = gross property, plant, and equipment for firm i in year t (Global Compustat PPEGT).

The above model is estimated cross sectionally for each firm-year for each industry (based on two-digit SIC codes) with at least 10 observations. Applying the parameter estimates to the actual values for each firm-year yields an estimate of total accruals. The difference between actual total accruals and this estimate proxies for the discretionary accruals (AB_DA). AB_DA indicates the magnitude of discretionary accruals. We also assign a value of one to the dichotomous variable, POSI_DA, for firm-years with positive AB_DA, to indicate the incidence of upward accrual-based earnings management. POSI_DA is assigned a value of zero otherwise.

3.2. Measurement of Real Earnings Management

Following Roychowdhury (2006), we use a firm's abnormal levels of cash flows, production costs, and discretionary expenditures as proxies for real earnings management. Specifically, we model the normal level of cash flows, production costs, and discretionary expenditures as follows:

$$\frac{\text{CFO}_{it}}{\text{TA}_{it-1}} = \alpha_0 \frac{1}{\text{TA}_{it-1}} + \alpha_1 \frac{\text{SALE}_{it}}{\text{TA}_{it-1}} + \alpha_2 \frac{\Delta \text{SALE}_{it}}{\text{TA}_{it-1}} + \varepsilon_{it} \quad (2)$$

$$\frac{\text{PROD}_{it}}{\text{TA}_{it-1}} = \alpha_0 \frac{1}{\text{TA}_{it-1}} + \alpha_1 \frac{\text{SALE}_{it}}{\text{TA}_{it-1}} + \alpha_2 \frac{\Delta \text{SALE}_{it}}{\text{TA}_{it-1}} + \alpha_3 \frac{\Delta \text{SALE}_{it-1}}{\text{TA}_{it-1}} + \varepsilon_{it} \quad (3)$$

$$\frac{\text{DISX}_{it}}{\text{TA}_{it-1}} = \alpha_0 \frac{1}{\text{TA}_{it-1}} + \alpha_1 \frac{\text{SALE}_{it-1}}{\text{TA}_{it-1}} + \varepsilon_{it} \tag{4}$$

where CFO_{it} = cash flows from operating activities adjusted for extraordinary items and discontinued operations for firm i in year t (Global Compustat OANCF minus XIDOC); TA_{it-1} = total assets for firm i in year t–1 (Global Compustat AT); SALE_{it} = total sales revenue for firm i in year t (Global Compustat SALE); ΔSALE_{it} = change in sales revenue for firm *i* in year t; and PROD_{it} = production costs for firm i in year t. It is defined as the sum of cost of goods sold (Global Compustat COGS) and the change in inventories (Global Compustat INVT); DISX_{it} = discretionary expenditures for firm i in year t, defined as the sum of advertising expenses (Global Compustat XAD), R&D expenses (Global Compustat XRD), and SG&A expenses (Global Compustat XSGA).

For each firm-year, we estimate the cross-sectional regressions of models (2) through (4) for each 2-digit SIC code and require that at least ten firms in a particular industry for model estimation. The abnormal CFO, abnormal PROD, and abnormal DISX are computed as the difference between the actual values and the normal levels estimated from models (2) through (4).

The three variables discussed above measure various aspects of real activities manipulation. When a firm's actual cash flows from operations are lower than the normal level predicted from equation (2), the abnormal CFO is negative, suggesting that the firm has engaged in real earnings management by accelerating sales through price discounts. Similarly, when the abnormal DISX is negative, it is an indication of earnings manipulation by reducing discretionary spending such as advertising, R&D expenses, and SG&A expenses. Finally, if the firm's actual production costs are greater than the normal level predicted from equation (3), then the abnormal PROD is positive, which suggests that the firm has managed earnings by reporting lower cost of goods sold through increased production.

We create three continuous variables, AB_CFO, AB_PROD, and AB_DISX, to measure the magnitude of abnormal operating cash flows, abnormal production costs, and abnormal discretionary expenditures, respectively. To have consistent signs across different measures so that a higher value of each measure indicates a greater magnitude of real earnings management, we first multiply abnormal

CFO and abnormal DISX by negative one. In other words, AB_CFO = (–1)*abnormal CFO and AB_DISX = (–1)*abnormal DISX. AB_PROD is defined as abnormal PROD. We also use an aggregate measure, AB_REM, to capture total effects of real earnings management. AB_REM is defined as AB_CFO + AB_PROD + AB_DISX.

Similar to the analysis of accrual-based earnings management, we create indicator variables to measure the incidence of real earnings management. Specifically, we assign a value of one to POSI_CFO if the firm's abnormal operating cash flows are negative and zero otherwise. POSI_PROD has a value of one if the firm's abnormal production costs are positive, POSI_DISX has a value of one if the firm's abnormal discretionary expenditures are negative, and POSI_REM has a value of one if AB_REM is positive.

3.3. Empirical Models Examining H1 and H2

The following two regression models are used to test H1:

$$\begin{aligned}
\text{Pro(POSI\_DA)}_{it} ={}& \alpha_0 + \alpha_1 \text{POST}_{it} + \alpha_2 \text{MRK\_SHR}_{it-1} + \alpha_3 \text{TOP10}_{it} \\
& + \alpha_4 \text{TENURE}_{it} + \alpha_5 \text{NOA}_{it-1} + \alpha_6 \text{ROA}_{it} \\
& + \alpha_7 \text{ASSETS}_{it} + \alpha_8 \text{MTB}_{it} + \alpha_9 \text{LEV}_{it} \\
& + \alpha_{10k} \text{INDUSTRY}_k + \varepsilon_{it} \qquad\qquad (5)
\end{aligned}$$

$$\begin{aligned}
\text{AB\_DA}_{it} ={}& \beta_0 + \beta_1 \text{POST}_{it} + \beta_2 \text{MRK\_SHR}_{it-1} + \beta_3 \text{TOP10}_{it} \\
& + \beta_4 \text{TENURE}_{it} + \beta_5 \text{NOA}_{it-1} + \beta_6 \text{ROA}_{it} + \beta_7 \text{ASSETS}_{it} \\
& + \beta_8 \text{MTB}_{it} + \beta_9 \text{LEV}_{it} + \beta_{10k} \text{INDUSTRY}_k + \varepsilon_{it} \qquad (6)
\end{aligned}$$

where POST_{it} = indicator variable with the value of one if the observation is for the post-IFRS period (i.e., 2007–2011) and zero otherwise (i.e., 2002–2006); MRK_SHR_{it-1} = ratio of a company's sales (Global Compustat SALE) to the total sales of its industry; TOP10_{it} = indicator variable with the value of one if the firm's auditor is a Top 10 auditor based on total assets audited and zero otherwise; and TENURE_{it} = the number of years an auditor is retained by the firm (calculated from Global Compustat AU). NOA_{it-1} = net operating assets (shareholder's equity less cash and marketable securities plus total debt) at the beginning of the year divided by lagged sales (Global

Compustat (CEQ-CHE+LT)/SALE); ROA_{it} = income before extraordinary items (Global Compustat IB) divided by lagged total assets (Global Compustat AT); $ASSETS_{it}$ = industry-adjusted log value of total assets (Global Compustat AT); MTB_{it} = market-to-book ratio (Global Compustat PRCCD*CSHOC/CEQ); and LEV_{it} = leverage ratio, calculated as short-term debt (Global Compustat DLC) plus long-term debt (Global Compustat DLTT) scaled by total assets (Global Compustat AT) in year t. $INDUSTRY_k$ = an industry indicator variable which equals 1 if the firm belongs to industry k. The subscript k equals 1, 2…or k-1, where k represents the number of unique industries based on the Compustat two-digit industry classification.

The primary variable of interest in the above regressions is POST. Given that H1 is a non-directional hypothesis, we do not predict the sign on the coefficients on POST (i.e., α_1 and β_1). Several control variables are included. First, we use market share (MRK_SHR) to control for firms' leadership position in the market. Zang (2012) argues that "managers in market-leader firms may perceive real activities manipulation as less costly because the erosion to their competitive advantage is relatively small" (p. 680). Second, we include auditor tenure because it has been used as a proxy for audit quality/auditor scrutiny. Prior research (e.g., Myers et al., 2003) finds that auditor tenure is negatively related to the degree of accrual-based earnings management. Zang (2012) further finds that auditor tenure is positively associated with the extent of real earnings management. Third, we consider auditor size as another control variable as prior literature documents that the extent of accrual-based earnings management is lower for firm with large auditors (e.g., Francis et al., 1999). Instead of using Big 4 membership to classify auditors in China, we follow Wang et al. (2008) to identify Top 10 auditors in China using the information published by the CSRC. A dummy variable, TOP10, is created with the value of one if the firm is audited by a Top 10 auditor and zero otherwise. Fourth, we follow Barton and Simko (2002) to use net operating assets relative to sales (NOA) as a proxy for firms' accounting flexibility because it reflects the optimistic bias in the prior periods' accounting choices. Zang (2012) finds that firms with higher NOA tend to engage in less (more) accrual-based (real) earnings management.

In addition, we include ROA to control for firm performance, ASSETS to control for firms' relative size in the industry, MTB to control for firms' growth potential, and LEV to control for firms' capital structure. These variables have been identified in prior research

(e.g., Cohen and Zarowin, 2010; Zang, 2012) to be related to managerial incentives to engage in earnings management. Finally, we include industry dummy variables (INDUSTRY) to control for industry effects.

To test H2, we employ the following two regression models:

$$
\begin{aligned}
\text{Pro}(\text{POSI\_REM})_{it} = {} & \gamma_0 + \gamma_1 \text{POST}_{it} + \gamma_2 \text{MRK\_SHR}_{it-1} + \gamma_3 \text{TOP 10}_{it} \\
& + \gamma_4 \text{TENURE}_{it} + \gamma_5 \text{NOA}_{it-1} + \gamma_6 \text{ROA}_{it} \\
& + \gamma_7 \text{ASSETS}_{it} + \gamma_8 \text{MTB}_{it} + \gamma_9 \text{LEV}_{it} \\
& + \gamma_{10k} \text{INDUSTRY}_k + \varepsilon_{it}
\end{aligned}
\tag{7}
$$

$$
\begin{aligned}
\text{AB\_REM}_{it} = {} & \delta_0 + \delta_1 \text{POST}_{it} + \delta_2 \text{MRK\_SHR}_{it-1} + \delta_3 \text{TOP10}_{it} \\
& + \delta_4 \text{TENURE}_{it} + \delta_5 \text{NOA}_{it-1} + \delta_6 \text{ROA}_{it} + \delta_7 \text{ASSETS}_{it} \\
& + \delta_8 \text{MTB}_{it} + \delta_9 \text{LEV}_{it} + \delta_{10k} \text{INDUSTRY}_k \\
& + \varepsilon_{it}
\end{aligned}
\tag{8}
$$

If IFRS adoption decreases accrual-based earnings management and if the substitution effect occurs, then we would expect that real earnings management increases with the IFRS adoption. In other words, the coefficients on POST for regression models (7) and (8) would be positive. On the other hand, if IFRS adoption increases accrual-based earnings management and if the substitution effect occurs, then the coefficients on POST for regression models (7) and (8) would be negative.

4. Sample, Data, and Descriptive Statistics

Our sample consists of all Chinese A-share firms in Global Compustat for the period 2002–2011. The pre-IFRS period is from 2002 to 2006 and the post-IFRS period is from 2007 to 2011. We exclude firms in regulated industries, that is, financial firms (SIC 6000-6999) and utilities (SIC 4900-4999). Next, we exclude observations with non-positive total assets and book values because ROA for these firms cannot be interpreted in economic terms. We also require each firm-year observation to have necessary data to calculate all dependent and independent variables. Finally, to minimize the confounding influence that can arise when using a sample of observations pertaining to different firms, we restrict our sample to firm-years with complete data for both the pre- and post-adoption periods. Our final sample includes 4,050 firm-years (597 unique firms) spanning the ten-year period, 2002–2011. Panel A of Table 1 provides a summary of the sample selection process.

Table 1. *Sample Description*

Panel A: Sample selection	No. of firm-years	No. of firms
Initial sample in the COMPUSTAT from 2002 to 2011	12,205	2,184
Excluding firm fiscal years:		
Financial services (SIC 6000-6999) and utilities (SIC 4900-4999)	(556)	(75)
Non-positive total assets and book value	(291)	(15)
With insufficient data to calculate accrual and real earnings management proxies	(4,697)	(700)
With insufficient data to present in both pre- and post-period	(2,611)	(797)
Final sample	4,050	597

Panel B: Distribution of firm-year observations					
Year	Firm-year Obs.	No. of positive AB_DA	% of positive AB_DA	No. of positive AB_REM	% of positive AB_REM
2002	62	34	54.84%	19	30.65%
2003	107	53	49.53%	41	38.32%
2004	178	86	48.31%	61	34.27%
2005	396	209	52.78%	133	33.59%
2006	559	320	57.25%	202	36.14%
2007	506	261	51.58%	201	39.72%
2008	558	278	49.82%	225	40.32%
2009	554	273	49.28%	187	33.75%
2010	571	239	41.86%	209	36.60%
2011	559	242	43.29%	220	39.36%
2002–2006	1,302	702	53.92%	456	35.02%
2007–2011	2,748	1,293	47.05%	1,042	37.92%
Overall	4,050	1,995	49.26%	1,498	36.99%

Panel B of Table 1 shows the distribution of sample observations by year. It also presents the proportion of positive AB_DA and positive AB_REM by year and across both reporting periods. As shown, for the entire sample period, about 49 (37) per cent of firm-year observations are associated with a positive AB_DA (AB_REM), an indication of using accrual-based (real) earnings management. Nearly 54 per cent of firm-years report positive AB_DA for the pre-adoption period (2002–2006) and the percentage declines to 47.05 per cent for the post-adoption period (2007–2011). Regarding the real earnings management behavior, we find 35 per cent of firm-years report positive AB_REM

for the pre-adoption period and the percentage increases to 37.92 per cent for the post-adoption period. Thus, the initial evidence is consistent with the substitution effect occurring after China's IFRS adoption.

Table 2 provides descriptive statistics for the test variables used in regressions (5) through (8). The mean value of discretionary accruals (AB_DA) is –0.003, and the mean value of the aggregate real earnings management measure (AB_REM) is –0.056. Mean POSI_DA indicates that 49.3 per cent of firm-years report positive discretionary accruals, and mean POSI_REM indicates that upward real earnings management occurs in 37 per cent of all firm-year observations. The mean value of POST is 0.679, indicating that there are more firm-year observations in the post-adoption period. This is not surprising given the increasing coverage of Chinese firms in Global Compustat in recent years.

With respect to control variables, Table 2 shows that about 46 per cent of firm-year observations are audited by a Top 10 auditor. In addition, the mean market share (MRK_SHR) is 0.031, the mean auditor tenure (TENURE) is 5.752 years, and the mean value of a firm's accounting flexibility (NOA) is 0.879. Finally, the average firm has a logarithm industry-adjusted total assets (ASSETS) of 0.467 and is associated with return on assets ratio (ROA) of 0.042, market-to-book ratio (MTB) of 3.886, and leverage ratio (LEV) of 0.232.

Table 2. *Descriptive Statistics*

Variable	N	Mean	Std. Dev.	25%	Median	75%
POSI_DA	4,050	0.493	0.500	0.000	0.000	1.000
AB_DA	4,050	−0.003	0.061	−0.046	−0.001	0.043
POSI_REM	4,050	0.370	0.483	0.000	0.000	1.000
AB_REM	4,050	−0.056	0.204	−0.151	−0.047	0.050
POST	4,050	0.679	0.467	0.000	1.000	1.000
Control Variable						
MRK_SHR	4,050	0.031	0.046	0.004	0.012	0.038
TOP10	4,050	0.459	0.050	0.000	0.000	1.000
TENURE	4,050	5.752	2.641	4.000	6.000	8.000
NOA	4,050	0.879	0.445	0.426	0.653	0.780
ROA	4,050	0.042	0.067	0.010	0.033	0.068
ASSETS	4,050	0.467	0.963	−0.181	0.431	1.075
MTB	4,050	3.886	3.323	1.860	2.889	4.639
LEV	4,050	0.232	0.161	0.095	0.225	0.355

Variables are defined in Appendix A.

5. Results

5.1. Baseline Results

Table 3 presents the results of the pooled multivariate regressions (5) and (6) that examine the accrual-based hypothesis (i.e., H1). To mitigate the influence of potential outliers, we winsorize all continuous variables at their respective 1st and 99th percentiles. The results reported are based on the Huber–White heteroskedastic robust statistics.

As shown in column (3), the coefficient on POST is negative and significant at the 1% level, indicating that the listed A-share firms in China are less likely to report positive discretionary accruals in the

Table 3. *Results for Testing H1*

Variable (1)	Predicted Sign (2)	POSI_DA Coefficient (3)	POSI_DA Marginal Effects (4)	AB_DA Coefficient (5)
POST	?	−0.236*** (−2.831)	−0.059	−0.005** (−2.298)
MRK_SHR	−	−1.869** (−1.991)	−0.467	−0.031 (−1.242)
TOP10	−	−0.075 (−1.097)	−0.019	−0.004** (−2.316)
TENURE	−	−0.035** (−2.477)	−0.009	−0.001** (−2.286)
NOA	−	−0.086 (−1.550)	−0.021	−0.002 (−1.220)
ROA	?	7.277*** (11.914)	0.181	0.291*** (17.210)
ASSETS	?	−0.081* (−1.809)	−0.02	−0.004*** (−3.028)
MTB	?	−0.017 (−1.453)	−0.004	−0.001*** (−3.671)
LEV	?	1.220*** (4.993)	0.304	0.055*** (8.026)
Intercept		0.405* (1.952)		0.003 (0.518)
Industry fixed effects		Yes		Yes
No. of observations		4,050		4,050
Pseudo-R^2 (R^2)		0.041		0.095

Variables are defined in Appendix A.
The z-statistics (t-statistics) reported in parentheses are computed using standard errors corrected for serial correlation and heteroskedasticity.
*, **, *** indicates statistical significance at the 10%, 5%, and 1% level, respectively.

post-IFRS period. We also report marginal effects to measure the economic significance of the explanatory variables. As shown in column (4), the marginal effect on POST is -0.059, which suggests that the probability of reporting positive discretionary accruals for Chinese firms decreases by 5.9% after the adoption of substantially IFRS-conformed accounting standards. For the regression testing whether the magnitude of discretionary accruals declines post-IFRS, the result in column (5) also indicates a significantly negative coefficient on POST. This result provides reinforcing evidence that the extent of accrual-based earnings management is lessened after IFRS adoption.

Table 3 also shows several significant control variables. Under column (3), the coefficients on MRK_SHR, TENURE, and ASSETS are significantly negative, indicating that the likelihood of engaging in upward accrual-based earnings management is lower for firms with (1) higher market share (MRK_SHR), (2) longer auditor tenure (TEN-URE), and (3) larger size (ASSETS). In addition, the likelihood is significantly and positively associated with firm performance (ROA) and capital structure (LEV). Column (5) further indicates that the magnitude of accrual-based earnings management is significantly and negatively related to auditor size (TOP10), auditor tenure (TENURE), firm size (ASSETS), and growth potential (MTB). However, its relationship with firm performance (ROA) and capital structure (LEV) is significantly positive.

Table 4 shows the results of the pooled multivariate regressions (7) and (8) for testing H2. Based on the aggregate measures, columns (3) and (4) indicate that Chinese firms are more likely to engage in upward real earnings management in the post-IFRS period. Specifically, the probability increases by 9.3%. Column (5) shows a significantly positive coefficient on POST, indicating that the magnitude of upward real earnings management has increased post-IFRS. Together with the results reported in Table 3, our evidence suggests that the trade-off between real and accrual-based earnings management occurs in the post-IFRS period.[2]

Regarding control variables, Table 4 shows that both the likelihood and magnitude of real earnings management are higher for firms with (1) higher market share, and (2) higher leverage ratio, but lower for firms with (1) better firm performance, (2) larger size, and (3) higher growth potential[3].

5.2. Additional Analyses

5.2.1. Cross-Sectional Subsample Analysis. Ownership Structure—One distinctive feature of Chinese stock market is the dominance of SOEs. In 2008, SOEs accounted for 65 per cent of listed firms and 89 per cent of market capitalization in China. As pointed by prior studies (e.g., Piotroski and Wong, 2011; He et al., 2012), such ownership structure could affect managers' reporting incentives. For example, the government support (e.g., favorable bank loans and tax treatments as well as direct subsidies) received by SOEs reduce their reliance on external capital, which could reduce their incentives to be more transparent in the financial reporting process. In addition, the prevalence of related-party transactions as well as the use of political connections and social

Table 4. *Results for Testing H2*

Variable (1)	Predicted Sign (2)	POSI_REM Coefficient (3)	POSI_REM Marginal Effects (4)	AB_REM Coefficient (5)
POST	?	0.406***	0.093	0.033***
		(4.552)		(4.499)
MRK_SHR	+	2.763***	0.634	0.352***
		(2.824)		(4.426)
TOP10	+	0.083	0.019	−0.005
		(1.154)		(−0.877)
TENURE	+	−0.001	0.000	−0.000
		(−0.037)		(−0.021)
NOA	+	−0.100*	−0.023	−0.006
		(−1.732)		(−1.302)
ROA	?	−7.911***	−0.181	−1.028***
		(−10.460)		(−14.606)
ASSETS	?	−0.321***	−0.074	−0.028***
		(−6.700)		(−6.810)
MTB	?	−0.022*	−0.005	−0.005***
		(−1.856)		(−4.035)
LEV	?	0.522**	0.120	0.090***
		(2.023)		(3.921)
Intercept		−0.477**		−0.050**
		(−2.171)		(−2.047)
Industry fixed effects		Yes		Yes
No. of observations		4,050		4,050
Pseudo-R^2 (R^2)		0.075		0.175

Variables are defined in Appendix A.
The z-statistics (t-statistics) reported in parentheses are computed using standard errors corrected for serial correlation and heteroskedasticity.
*, **, *** indicates statistical significance at the 10%, 5%, and 1% level, respectively.

networks to conduct business transactions would reduce SOEs' incentives to supply accounting information to outside investors.

To the extent that SOEs and non-SOEs have different reporting incentives, we in this section examine whether the effect of IFRS adoption on earnings management behavior is conditional on a firm's ownership structure. In particular, we partition sample firms into three groups: non-SOEs (1,302 observations), central SOEs (755 observations), and local SOEs (1,993 observations). The results are summarized in panels A.1 and A.2 in Table 5.

As reported in panel A.1, non-SOEs are less likely to engage in accrual-based earnings management in the post-IFRS period. In addition, the magnitude of discretionary accruals declines after IFRS adoption. For both central and local SOEs, however, the coefficients on POSI_DA and AB_DA are not significantly different from zero, suggesting that IFRS adoption has no significant impact on managers' tendency to use accrual-based manipulation to increase earnings. Thus, the reduction in accrual-based earnings management observed for the overall sample appears to be largely confined to the non-SOE setting where these firms likely have higher incentives for better financial reporting than their SOE counterparts because they receive less government support and rely more on external capital. Consistent with prior studies (e.g., Ball, 2006; Soderstrom and Sun, 2007; Daske et al., 2008), these results underscore the importance of firms' reporting incentives to assess the effectiveness of IFRS adoption on financial reporting quality.

Panel A.2 of Table 5 shows the results of testing H2 for SOEs and non-SOEs. The coefficients on POSI_REM and AB_REM for non-SOEs are positive but not significant at the conventional level. On the contrary, both central and local SOEs are significantly associated with an increase in both the likelihood and magnitude of using activities-based earnings manipulation. Thus, the unintended consequences of IFRS adoption documented for the overall sample primarily pertain to SOEs.

Listing Status—Since 1998, Chinese regulators have implemented a mechanism that changes the listing status of an underperforming firm to the "special treatment" (ST) category if the firm reports losses for two consecutive years. All ST firms are under more vigorous supervision and control. For example, the rise and fall range of an ST firm's share price per trading day is to be limited to five per cent instead of ten per cent for a normal listed firm. In addition, if a ST firm

Table 5. *Cross-Sectional Analysis*

Panel A.1: Ownership structure—Results for testing H1

Variable (1)	Predicted Sign (2)	Non-SOEs		Central SOEs		Local SOEs	
		POSI_DA (3)	AB_DA (4)	POSI_DA (5)	AB_DA (6)	POSI_DA (7)	AB_DA (8)
POST	?	−0.395***	−0.011***	−0.010	0.002	−0.183	−0.003
		(−2.609)	(−2.796)	(−0.052)	(0.331)	(−1.486)	(−0.795)
Intercept		0.380	0.004	1.391***	0.026	0.131	−0.003
		(0.834)	(0.286)	(2.620)	(1.569)	(0.494)	(−0.376)
Controls		Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes	Yes	Yes
No. of observations		1,302	1,302	755	755	1,993	1,993
Pseudo-R^2 (R^2)		0.064	0.129	0.068	0.134	0.052	0.108

Panel A.2: Ownership structure—Results for testing H2

Variable (1)	Predicted Sign (2)	Non-SOEs		Central SOEs		Local SOEs	
		POSI_REM (3)	AB_REM (4)	POSI_REM (5)	AB_REM (6)	POSI_REM (7)	AB_REM (8)
POST	?	0.173	0.010	0.497**	0.051***	0.584***	0.039***
		(1.046)	(0.678)	(2.319)	(3.120)	(4.384)	(4.205)
Intercept		−0.483	0.041	−0.482	0.006	−0.391	−0.091***
		(−0.929)	(0.700)	(−0.815)	(0.131)	(−1.397)	(−2.990)
Controls		Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes	Yes	Yes
No. of observations		1,302	1,302	755	755	1,993	1,993
Pseudo-R^2 (R^2)		0.11	0.279	0.128	0.232	0.125	0.217

Table 5. (*Continued*)

Panel B.1: Listing status—Results for testing H1

Variable (1)	Predicted Sign (2)	With delisting concerns		Without delisting concerns	
		POSI_DA (3)	AB_DA (4)	POSI_DA (5)	AB_DA (6)
POST	?	−0.048	−0.004	−0.298***	−0.006**
		(−0.191)	(−0.525)	(−2.996)	(−2.147)
Intercept		0.951**	0.010	0.329	0.002
		(2.109)	(0.811)	(1.345)	(0.284)
Controls		Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes
No. of observations		818	818	3,232	3,232
Pseudo-R^2 (R^2)		0.078	0.141	0.041	0.092

Panel B.2: Listing status—Results for testing H2

Variable (1)	Predicted Sign (2)	With delisting concerns		Without delisting concerns	
		POSI_REM (3)	AB_REM (4)	POSI_REM (5)	AB_REM (6)
POST	?	0.665***	0.046**	0.398***	0.034***
		(2.627)	(1.957)	(3.648)	(3.893)
Intercept		−0.539	−0.002	−0.466*	−0.063**
		(−1.169)	(−0.034)	(−1.788)	(−2.187)
Controls		Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes
No. of observations		818	818	3,232	3,232
Pseudo-R^2 (R^2)		0.072	0.119	0.088	0.205

Table 5. (*Continued*)

Panel C.1: Degree of marketization—Results for testing H1

Variable (1)	Predicted Sign (2)	High marketization		Low marketization	
		POSI_DA (3)	AB_DA (4)	POSI_DA (5)	AB_DA (6)
POST	?	−0.322***	−0.008**	−0.136	−0.002
		(−2.700)	(−2.573)	(−1.138)	(−0.463)
Intercept		0.374	0.001	0.346	0.003
		(1.143)	(0.051)	(1.233)	(0.354)
Controls		Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes
No. of observations		2,000	2,000	2,050	2,050
Pseudo-R^2 (R^2)		0.045	0.094	0.049	0.112

Panel C.2: Degree of marketization—Results for testing H2

Variable (1)	Predicted Sign (2)	High marketization		Low marketization	
		POSI_REM (3)	AB_REM (4)	POSI_REM (5)	AB_REM (6)
POST	?	0.276**	0.028***	0.575***	0.038***
		(2.164)	(2.599)	(4.449)	(3.899)
Intercept		−0.967***	−0.134***	−0.197	0.000
		(−2.809)	(−3.198)	(−0.642)	(0.017)
Controls		Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes
No. of observations		2,000	2,000	2,050	2,050
Pseudo-R^2 (R^2)		0.077	0.204	0.107	0.194

Table 5. (*Continued*)

Panel D.1: Degree of regional development—Results for testing H1

		Eastern		Central		Western	
Variable (1)	Predicted Sign (2)	POSI_DA (3)	AB_DA (4)	POSI_DA (5)	AB_DA (6)	POSI_DA (7)	AB_DA (8)
POST	?	−0.344***	−0.009***	0.086	0.002	−0.189	0.004
		(−3.378)	(−3.333)	(0.370)	(0.247)	(−0.850)	(0.740)
Intercept		0.311	0.006	−0.557	−0.035**	1.384***	0.023**
		(1.086)	(0.703)	(−0.882)	(−2.176)	(2.879)	(2.001)
Controls		Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes	Yes	Yes
No. of observations		2,693	2,693	684	684	673	673
Pseudo-R^2 (R^2)		0.043	0.094	0.061	0.130	0.091	0.158

Panel D.2: Degree of regional development—Results for testing H2

		Eastern		Central		Western	
Variable (1)	Predicted Sign (2)	POSI_REM (3)	AB_REM (4)	POSI_REM (5)	AB_REM (6)	POSI_REM (7)	AB_REM (8)
POST	?	0.350***	0.031***	0.437*	0.038**	0.901***	0.037**
		(3.170)	(3.510)	(1.789)	(2.196)	(3.603)	(2.050)
Intercept		−1.371***	−0.134***	3.567**	0.211***	0.131	0.051
		(−4.425)	(−4.117)	(2.315)	(3.206)	(0.257)	(1.282)
Controls		Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes	Yes	Yes
No. of observations		2,693	2,693	684	684	673	673
Pseudo-R^2 (R^2)		0.089	0.207	0.153	0.340	0.168	0.233

Table 5. *(Continued)*

Panel E.1: Industry membership—Results for testing H1

		Manufacturing		Non-manufacturing	
Variable (1)	Predicted Sign (2)	POSI_DA (3)	AB_DA (4)	POSI_DA (5)	AB_DA (6)
POST	?	−0.165* (−1.715)	−0.003 (−1.071)	−0.547*** (−3.020)	−0.016*** (−3.210)
Intercept		0.241 (1.002)	−0.003 (−0.394)	0.648 (1.529)	0.013 (1.094)
Controls		Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes
No. of observations		3,044	3,044	1,006	1,006
Pseudo-R^2 (R^2)		0.048	0.114	0.034	0.061

Panel E.2: Industry membership—Results for testing H2

		Manufacturing		Non-manufacturing	
Variable (1)	Predicted Sign (2)	POSI_REM (3)	AB_REM (4)	POSI_REM (5)	AB_REM (6)
POST	?	0.346*** (3.404)	0.028*** (3.224)	0.516*** (2.594)	0.040*** (2.867)
Intercept		−0.251 (−0.969)	−0.036 (−1.135)	−1.135** (−2.485)	−0.087*** (−2.808)
Controls		Yes	Yes	Yes	Yes

Table 5 (*Continued*)

Panel E.2: Industry membership—Results for testing H2

Variable (1)	Predicted Sign (2)	Manufacturing		Non-manufacturing	
		POSI_REM (3)	AB_REM (4)	POSI_REM (5)	AB_REM (6)
Industry fixed effects		Yes	Yes	Yes	Yes
No. of observations		3,044	3,044	1,006	1,006
Pseudo-R^2 (R^2)		0.075	0.178	0.107	0.194

Variables are defined in Appendix A.
Details for the control variables are suppressed to conserve space. They are available from the authors upon request.
The z-statistics (t-statistics) reported in parentheses are computed using standard errors corrected for serial correlation and heteroskedasticity.
*, **, *** indicates statistical significance at the 10%, 5%, and 1% level, respectively.

continues to have losses for the third year, then it will be labeled as "particular transfer" (PT), and it can only be traded on Fridays with its share prices having a five per cent upper limit but no lower limit. As indicated in prior studies (e.g., Jian and Wong, 2010; He et al., 2012), such delisting mechanism has created strong incentives for Chinese firms with poor financial performance to engage in earnings management to avoid being delisted. Thus, in this section we examine whether the overall result is conditional on a firm's listing status. We divide the entire sample into two groups: firms that report losses for two consecutive years (i.e., firms that are subject to ST status) and firms without such delisting concerns. The results are summarized in panels B.1 and B.2 of Table 5.

As seen in panel B.1, firms without delisting concerns are associated with a lower likelihood and smaller magnitude of upward accrual-based earnings manipulation after IFRS adoption. Such effects, however, do not appear to occur for firms with delisting concerns. The evidence is consistent with the argument that firms that sustain losses for two consecutive years and therefore will receive a ST status have stronger incentives to manage earnings upward to avoid being delisted. Therefore, the effectiveness of IFRS reporting in reducing accrual-based earnings management for ST firms is quite limited.

Turning to panel B.2 of Table 5, we find both ST and non-ST firms are associated with higher degrees of upward real earnings management (in terms of both probability and magnitude), suggesting that the unintended consequences of IFRS adoption occur regardless of a firm's listing status.

Regional Differences—Prior research shows that the level of market and institutional development varies across different regions in China. The regional differences affect earnings quality and auditor choices. For example, Wang et al. (2008) find that in regions where institutions are less developed, SOEs (for both central and local SOEs) have a stronger tendency than non-SOEs to hire small local auditors, but this tendency is significantly reduced in regions with more developed institutions. Lee et al. (2013) indicate that firms in less developed regions of China are associated with a greater increase in financial reporting quality in the post-IFRS period.

Following the aforementioned prior studies, we examine whether the change in earnings management behavior varies across different regions in China, depending on the level of market and institutional

development. We first partition sample firms into two groups using the index scores developed by Fan et al. (2006): high versus low marketization firms.[4] A firm is classified as a high (low) marketization firm if it is located in a province with the market development index score being above (below) the median of the sample.[5] As a second way to examine a firm's regional development status, we partition sample firms into three different regions using the classification scheme adopted by National Bureau of Statistics of China (NBSC): eastern, central, and western regions.[6] The results are summarized in panels C.1 and C.2 of Table 5.

As reported in panel C.1, the high marketization firms are less likely to engage in accrual-based earnings management in the post-IFRS period. In addition, the magnitude of discretionary accruals declines after IFRS adoption. For the low marketization firms, however, the coefficients on POST for both POSI_DA and AB_DA are not significantly different from zero, suggesting that IFRS adoption has no significant impact on the likelihood and magnitude of using accrual-based manipulation to increase earnings. Thus, the effect of IFRS adoption on the reduction in accrual-based earnings manipulation appears to be stronger for the high marketization firms, which is consistent with the argument that firms in regions with higher degrees of market and institutional development are likely to have stronger incentives to improve accounting quality This is also in line with the notion that, in the case of emerging markets, the degree of similarity of economic and social environments to developed countries could affect the effectiveness and relevance of IFRS adoption (e.g., Tyrrall et al., 2007; Liu et al., 2011).

Panel C.2 of Table 5 shows the results of testing H2. For both high and low marketization firms, the coefficients on POST for both POSI_REM and AB_REM are significantly positive at the 5 per cent or better level, suggesting that the unintended consequences of IFRS adoption occur for both types of firms.

The results reported in panels D.1 and D.2 provide a consistent picture. As shown, firms located in the more developed eastern coastal regions are associated with a significant reduction in the likelihood and magnitude of accrual-based earnings management. For the firms located in the less developed inland regions (i.e., central and western regions), however, the coefficients on POST for both POSI_DA and AB_DA are not significantly different from zero. In terms of real earnings management, in panel D.2 we find significantly positive

coefficients on POST across three different regions, suggesting that the unintended consequences of IFRS adoption occur regardless of the firm's regional development status.

Industry Membership—China has been growing manufacturing output enormously for the past 30 years, overtaking the U.S.A. as the world's top manufacturing nation in 2010. Given its unique importance in China's economy[7] , we in this section examine whether the effects of IFRS adoption on earnings management behavior differs between manufacturing and non-manufacturing sectors. Using the industry classification of Global Compustat, we partition the sample observations into manufacturing (3,044 observations) and non-manufacturing (1,006 observations) groups. As expected, the manufacturing sector dominates the entire sample. Results are reported in panels E.1 and E.2 of Table 5.

As shown in panel E.1, the coefficient on POST for the regression with POSI_DA as the dependent variable is significantly negative at the 1 per cent (10 per cent) for non-manufacturing (manufacturing) firms, indicating that both types of firms are less likely to report positive discretionary accruals. For the regression with AB_DA as the dependent variable, the coefficient on POST is significantly negative at the 1 per cent level for the non-manufacturing group. The coefficient for the manufacturing group is also negative; however, it is not significant at the conventional level. Overall, the evidence suggests that the reduction of accrual-based earnings management is less pronounced for manufacturing firms possibly because the greater competition among firms in the manufacturing sector increases earnings management incentives of such firms and therefore the benefit of IFRS adoption is smaller.

Turning to panel E.2 of Table 5, we find that, for both likelihood and magnitude tests, the coefficient on POST is significantly positive at the 1 per cent level for both groups. This result indicates that both manufacturing and non-manufacturing firms are more likely to engage in upward real earnings management in the post-IFRS period. In addition, the magnitude of upward real earnings management also increases after IFRS adoption.

In a further analysis (not tabulated due to brevity), we find that, within the manufacturing sector, high-tech firms are associated with a significant decline in both the likelihood and magnitude of accrual-based earnings management.[8] Such decline, however, does not occur for non-high-tech manufacturing firms. To the extent that high-tech firms might face greater growth potential and rely more on external

capital, this result is consistent with the view that high-tech firms have stronger incentives to improve accounting quality and therefore the benefit of IFRS on curbing accrual-based earnings management is more pronounced for such firms. In addition, we find no significant evidence that high-tech manufacturing firms are associated with an increase in real earnings management after IFRS adoption. On the other hand, for non-high-tech manufacturing firms, there is a significant increase in real earnings management in the post-IFRS period.

5.2.2. Analysis of Capital Market Effects. While our earlier results document a change in earnings management behavior for Chinese firms in the post-IFRS period, in this section we intend to provide evidence on whether the adoption can produce direct capital market effects. Two sets of questions are addressed. First, Does IFRS adoption affect firm valuation? Second, Does IFRS reporting improve the market perception of the usefulness of accounting numbers? The details are provided below.

Does IFRS adoption affect firm value of Chinese firms?—It has been argued that IFRS reporting would be associated with positive capital market effects because, with higher quality reporting and better disclosure, IFRS can increase market liquidity and reduce cost of capital, which in turn will improve firm valuation (e.g., Daske et al., 2008). Consistent with this argument, prior research has documented increasing market liquidity (Daske et al., 2008), decreasing bid-ask spread (Muller et al., 2011), lower cost of equity capital (Li, 2010) and public debt (Florou and Kosi, 2011), and higher equity valuation (Daske et al., 2008). Prior evidence, however, also indicates that many of those positive effects are confined to countries/settings where a strong regulatory framework and/or enforcement mechanism is placed. Given that China has been typically argued to be associated with weaker legal institutions and limited reporting incentives, it would be an open empirical question whether the adoption of IFRS in China can improve firm valuation.

Following Daske et al. (2008), we use Tobin's Q as a measure of firm value and perform the following regression analysis:

$$
\begin{aligned}
\text{Tobin's Q}_{it} = {} & A_0 + A_1 \text{POST}_{it} + A_2 \text{SIZE}_{it} + A_3 \text{ASSETS GROWTH}_{it} \\
& + A_4 \text{INDUSTRY Q}_{it} + A_5 \text{LEV}_{it} + \varepsilon_{it}
\end{aligned}
\tag{9}
$$

where Tobin's Q = (total assets – book value of equity + market value of equity)/total assets; SIZE = industry-adjusted log value of total assets; ASSETS GROWTH = (total assets in year t - total assets in year t–1)/total assets in year t–1; INDUSTRY Q = yearly median Tobin's Q in a given 2-digit SIC code industry; and LEV = leverage ratio, calculated as short-term debt plus long-term debt scaled by total assets.

In Table 6, we report the Tobin's Q results for the overall sample where we find the coefficient on POST is significantly positive at the 1 per cent level, indicating that Chinese firms exhibit a significant increase in firm value after IFRS adoption. For the cross-sectional tests, the results show that the coefficient on POST is significantly positive for all subsamples except for the firms in the less developed western region[9]. Overall, our evidence appears to suggest that China's 2007 IFRS adoption is associated with an increase in firm value. The increase could be attributed to the higher quality reporting and the more comprehensive disclosure requirements associated with IFRS adoption and/or concurrent changes in the governance regimes that support the introduction of IFRS.

Table 6. *Capital Market Effects—Firm Valuation (Tobin's Q)*

Variable (1)	Predicted Sign (2)	Coefficient (3)
POST	?	0.190*** (5.118)
ASSETS	?	−0.414*** (−19.086)
ASSETS GROWTH	?	0.000 (0.472)
INDUSTRY Q	?	1.014*** (26.048)
LEV	?	−1.320*** (−11.730)
Intercept		0.671*** (9.504)
No. of observations		4,050
R^2		0.351

Variables are defined in Appendix A.
The z-statistics (t-statistics) reported in parentheses are computed using standard errors corrected for serial correlation and heteroskedasticity.
*** indicates statistical significance at the 1% level.

Does IFRS reporting improve the market perception of the usefulness of accounting numbers?—Value relevance of earnings versus book value of equity—Using the framework developed by Ohlson (1995) and Feltham and Ohlson (1995), we first use the relative value relevance of earnings and book value of equity as a measure of the market perception of the usefulness of accounting numbers. We perform the following regression analysis to investigate whether earnings and book value of equity have become more useful to investors for firm valuation since China's adoption of IFRS in 2007.

$$P_{it} = B_0 + B_1 BVE_{it} + B_2 EPS_{it} + B_3 POST + B_4 BVE_{it} * POST_{it} + B_5 EPS_{it} * POST_{it} + \varepsilon_{it} \tag{10}$$

where P_{it} is price per share for firm i three months after fiscal year-end t, EPS_{it} is net income per share of firm i during the year t, and BVE_{it} is book value of equity per share of firm i at the end of year t. POST = 0 for the pre-IFRS period (2002–2006) and POST = 1 for the post-IFRS period (2007–2011). B_1 and B_2 are valuation coefficients for book value of equity and earnings in the pre-IFRS period, and B_4 and B_5 capture their incremental effects in the post-IFRS period. If both accounting earnings and book value of equity become more important in the valuation of Chinese firms after IFRS adoption, then both B_4 and B_5 would be significantly positive.

The results for the overall sample are reported in panel A of Table 7. As shown, the estimated incremental valuation coefficient on earnings in the post-IFRS period (i.e., EPS*POST) is 5.536, which is significantly positive at the 1 per cent level. The estimated incremental valuation coefficient on book value of equity for the post-IFRS period (i.e., BVE*POST) is also positive, but it is only marginally significant at the 11 per cent level. These results suggest that investors place more weight on the earnings information for Chinese A-share firms after IFRS adoption. There is also weak evidence that book value of equity becomes more value relevant in the post-IFRS era.

Results for various subsamples (not tabulated due to brevity) show that the sign on EPS*POST is significantly positive for all subsamples except for firms with delisting concerns and firms that are located in the central region. The coefficient on BVE*POST is insignificantly different from zero for most of subsamples except for central SOEs, firms without delisting concerns, high marketization firms, and firms that

Table 7. *Capital Market Effects—Value Relevance*

Variable (1)	Predicted sign (2)	Coefficient (3)
Panel A: Value Relevance of Earnings versus Book Values		
BVE	+	0.748***
		(3.649)
EPS	+	8.029***
		(13.367)
POST	?	3.782***
		(18.550)
BVE*POST	?	0.883
		(1.629)
EPS*POST	?	5.536***
		(3.323)
Intercept		1.909***
		(3.192)
No. of observations		3,619
R^2		0.255
Panel B: Value Relevance of Earnings versus Cash Flows		
CASH	+	2.125***
		(2.977)
EPS	+	8.189***
		(13.583)
POST	?	4.294***
		(17.397)
CASH*POST	?	1.538*
		(1.794)
EPS*POST	?	5.994***
		(3.889)
Intercept		3.077***
		(9.205)
No. of observations		3,619
R^2		0.291

Variables are defined in Appendix A.
The z-statistics (t-statistics) reported in parentheses are computed using standard errors corrected for serial correlation and heteroskedasticity.
* and *** indicate statistical significance at the 10% and 1% level, respectively.

are located in eastern and central regions, where the sign of the coefficient is significantly positive.[10]

Value Relevance of Earnings versus Cash Flows from Operations—We also compare the relative value relevance of earnings and cash flows before versus after IFRS adoption. Barth et al. (1999) provide empirical evidence that accruals and cash flows each have significant incremental explanatory power in equity valuation. Cheng et al. (1996) argue and find that the relative value relevance of cash flows from

operations improves as the transitory components of earnings increase. Ho et al. (2001) show that cash flows become more value relevant around the 1997 Asian financial crisis. The following regression analysis is performed to assess the incremental explanatory power of earnings versus cash flows.

$$
\begin{aligned}
P_{it} = F_0 + F_1 CASH_{it} + F_2 EPS_{it} + F_3 POST + F_4 CASH_{it} * POST_{it} \\
+ F_5 EPS_{it} * POST_{it} + \varepsilon_{it}
\end{aligned} \tag{14}
$$

where P_{it} is price per share for firm i three months after fiscal year-end t, EPS_{it} is net income per share of firm i during year t, and $CASH_{it}$ is operating cash flows per share of firm i during year t. POST has the value of one if the observation is in the post-IFRS period and zero otherwise.

The results for the overall sample are reported in panel B of Table 7, which show that the sign on EPS*POST is significantly positive at the 1 per cent level. The sign on CASH*POST is also positive but with smaller magnitude and less significance level (at the 10 per cent level). In addition, the sign on EPS*POST is significantly positive for all subsamples except for firms with delisting concerns and firms that are located in the central region. The sign on CASH*POST is significantly positive for non-SOEs, firms without listing concerns, high marketization firms, firms in the central region, and manufacturing firms[11] .

6. Conclusions

In this study, we investigate the prevalence of both accrual-based and real earnings management activities for a set of Chinese firms surrounding the adoption of substantially IFRS-convergent accounting standards. Since 2007, all listed A-share firms in China have been required to comply with a new set of accounting standards that have substantially conformed to IFRS. As a set of principles-based accounting standards, IFRS intends to enhance the comparability of accounting information, increase corporate transparency, improve the quality of financial reporting, and hence benefit investors. The new reform also produced a set of new auditing standards and internal control reporting requirements. To the extent that IFRS adoption may lead to a change in the quality of accounting standards and the strength of regulatory frameworks in China, we examine the association between

IFRS adoption and earnings quality by focusing on the changes (if any) in earnings management behavior (accrual- versus activities-based manipulation) in the post-IFRS period.

We identify a sample of Chinese A-share firms that are listed on the Shanghai and Shenzhen stock exchanges over the period of 2002–2011. The entire sample consists of 4,050 firm-year observations. Our evidence for this entire sample indicates that Chinese firms in the post-IFRS period (2007–2011) are associated with a lower likelihood of reporting positive discretionary accruals. The magnitude of discretionary accruals also declines after IFRS adoption. In response, we see firms turning to real activities manipulation as a substitute for upward earnings management.

A cross-sectional analysis, however, reveals that the benefits of IFRS adoption in curbing upward accrual-based earnings manipulation are not evenly distributed across firms. Specifically, the benefit diminishes for firms that are controlled by Chinese central or local governments, located in less developed regions, and with weak financial performance and therefore subject to delisting status. We also find that the benefit is less pronounced for manufacturing firms than for their non-manufacturing counterparts.

In the final set of empirical tests, we go beyond the earnings management issue and examine whether China's IFRS adoption is associated with any positive or negative capital market effects. Our findings show that Chinese A-share firms exhibit a significant increase in firm value (in terms of Tobin's Q) in the post-IFRS period. We also find that the market perception of the usefulness of accounting numbers has improved in the post-IFRS period. Specifically, investors appear to place more weight on the earnings information in firm valuation in the post-IFRS period. We have some evidence that book value of equity and cash flows from operations become more value relevant; however, the evidence is much weaker relative to that of earnings.

Notes

1. These factors include, for example, the strength of equity market and private sector that affect the demand for high-quality accounting standards, the extent of government involvement and institutional support in formulating and enforcing accounting standards, the effectiveness of audit regulation and other monitoring infrastructures, and in the case of emerging markets, the degree of similarity of economic and social environments to developed countries.

2. We also test H2 using the three individual measures. Regarding the abnormal cash flows (POSI_CFO and AB_CFO), we find the coefficients on POST are significantly positive at the 1% level, suggesting that the likelihood and magnitude of accelerating sales through price discounts to increase earnings has increased in the post-IFRS period. For the abnormal production costs (POSI_PROD and AB_PROD), the coefficients on POST are positive but not significant at the conventional level. Finally, the analysis containing POSI_DISX and AB_DISX indicates that firms in the post-IFRS period are more likely to engage in real earnings management by reducing discretionary expenditures and that the magnitude of such manipulation also increases after IFRS adoption.

3. Following prior research (e.g., Roychowdhury, 2006; Zang, 2012), we also use a sample of earnings management suspect firms to create a potentially more powerful test. This sample is limited to firm-year observations that just beat/meet important earnings benchmarks. More specifically, we follow Zang (2012) and define "suspects" as firm-year observations that either meet/slightly beat zero earnings benchmark (with earnings before extraordinary items over lagged assets between 0 and 0.005), meet/slightly beat last-year earnings (with change in basic EPS excluding extraordinary items from last year between 0 and 2 cents), or meet/beat analysts' earnings forecasts. The suspect-firm sample contains 1,271 firm-year observations for the 2002–2011 period. The results for both H1 and H2 are similar to those of the overall sample.

4. This approach has been used by Wang et al. (2008) and He et al. (2012).

5. See table 1–2 of Fan et al. (2006) for the market development index.

6. According to NBSC, "eastern" includes the following provinces: Beijing, Fujian, Guangdong, Hainan, Hebei, Jiangsu, Shandong, Shanghai, Tianjin, Zhejiang, Heilongjiang, Jilin and Liaoning. "Central" includes Anhui, Henan, Hubei, Hunan, Jiangxi and Shanxi, and "western" consists of Chongqing, Gansu, Guangxi, Guizhou, Inner Mongolia, Ningxia, Qinghai, Shanxi, Sichuan, Tibet, Xinjiang and Yunnan.

7. As the central pillar of China's economy, the manufacturing sector produced 44.1 per cent of GDP in 2004 and supported 11.3 per cent of total employment in 2006. It also accounted for nearly 89 per cent of China's exports (Hanson and Robertson, 2008) and around 50 per cent of the market capitalization of China's stock market (Lee et al., 2013) over the period 2000 to 2005.

8. Following Francis and Schipper (1999), we classify firms as high-tech manufacturing firms if their first three digits of the SIC codes are 283, 357, and 360–368.

9. The results are not tabulated due to brevity. They are available from the authors upon request.

10. We also conduct a R^2 decomposition analysis to assess the value relevance of earnings and book value of equity. Specifically, we compare the R^2 of the following regression models for both pre- and post-IFRS periods to assess whether the explanatory power of earnings and book value of equity with respect to security prices has changed surrounding IFRS adoption.

$$P_{it} = C_0 + C_1 EPS_{it} + C_2 BVE_{it} + \varepsilon_{it} \tag{11}$$

$$P_{it} = D_0 + D_1 EPS_{it} + \varepsilon_{it} \tag{12}$$

$$P_{it} = E_0 + E_1 BVE_{it} + \varepsilon_{it} \tag{13}$$

The R^2 of regression (11) measures the combined value relevance of earnings and book value of equity. A comparison of the R^2 for regressions (11) and (13) indicates the

incremental value relevance of earnings over that of book value, and the comparison of the R^2 for regressions (11) and (12) indicates the incremental value relevance of book value over that of earnings. The results show that, for the overall sample, the incremental explanatory power of earnings over that of book value increases from 3.2 to 17.5 per cent, while the incremental explanatory power of book value over that of earnings is nearly identical (0.9 versus 0.1 per cent) for both periods. The subsample results are also similar to those of the overall sample.

11. Details for the subsamples are not tabulated to conserve space. They are available upon request.

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Appendix A

Variables in Regressions (5) through (8)

AB_DA	A firm's signed discretionary accruals calculated from modified Jones model (1991)
AB_REM	A firm's signed real earnings management measure which equals (-1)*abnormal_CFO + abnormal_PROD + (−1)*abnormal_DISX
POSI_DA	An indicator variable which equals 1 if the firm's discretionary accruals (AB_DA) are positive and 0 otherwise
POSI_REM	An indicator variable which equals 1 if the firm's AB_REM is positive and 0 otherwise
POST	An indicator variable with the value of one if the observation is for the post-IFRS period (i.e., 2007–2011) and zero otherwise (i.e., 2002–2006)
MRK_SHR	Ratio of a company's sales to the total sales of its industry (based on two-digit SIC codes)
TOP10	An indicator variable which equals 1 if a firm is audited by a Chinese Top 10 auditor and 0 otherwise.
TENURE	Number of years an auditor is retained by the firm
NOA	Net operating assets scaled by sales at the beginning of year
ROA	Income before extraordinary items divided by lagged total assets
ASSETS	Industry-adjusted log value of total assets
MTB	Market-to-book ratio
LEV	Leverage ratio, calculated as short-term debt plus long-term debt scaled by total assets
INDUSTRY$_k$	An industry indicator variable which equals 1 if the firm belongs to industry k. The subscript k equals 1, 2... or k−1, where k represents the number of unique industries based on two-digit industry classification

Variables in Regressions (9) through (14)

Tobin's Q	Tobin's Q measured as total market equity plus total assets and minus common equity
POST	An indicator variable with the value of one if the observation is for the post-IFRS period (i.e., 2007–2011) and zero otherwise (i.e., 2002–2006)
SIZE	Industry-adjusted log value of total assets
ASSETS GROWTH	Total assets in year t minus total assets in year t−1 scaled by total assets in year t−1
INDUSTRY Q	Industry year median Tobin's Q
LEV	Leverage ratio, calculated as short-term debt plus long-term debt scaled by total assets
RET	Stock return calculated as the natural logarithm of the ratio of the stock price 3 months after fiscal year-end to the stock price 9 months before fiscal year-end, adjusted for dividends and stock splits
P	Stock price three months after fiscal year-end
EPS	Net income per share
BVE	Book value per share
CASH	Cash flows from operations per share

Data Source: GLOBAL COMPUSTAT.