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The China puzzle: Opportunities for accounting research☆

Suresh Radhakrishnan

Jindal School of Management, University of Texas at Dallas, USA

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ABSTRACT

How can China achieve phenomenal economic growth despite what is considered as "weak" institutions in market-based economies? Xu (2011) provides a framework to understand this puzzle. Specifically, he suggests that China's institutional framework of Regionally Decentralized Authoritarian regime was likely responsible for the phenomenal economic growth despite what is considered "weak" institutions for market-based economies. While recent accounting research provides insights into the relationship between agency issues, and accounting and control systems in the China context, accounting researchers can use the institutional feature of RDAs to provide insights into the role of accounting and control systems in non-market-based settings.

1. Introduction

Accounting research in the context/setting of China has increased in the last decade. This reflects both the importance of China as a global economic force and China being an interesting setting for providing insights into the role of accounting. The call for papers for this symposium nicely summarizes the latter point by stating: "Ownership structure, the incentives of managers and auditors, board monitoring, enforcement, and other institutional features of the economy all have an important impact on financial reporting outcomes. It is also conceivable that accounting standards and these institutional features complement each other in determining accounting quality. Asian-Pacific economies, including China, offer an ideal setting to examine these important issues given the relatively weak legal protection and enforcement in these economies." In

E-mail address: sradhakr@utdallas.edu

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short, China provides an interesting setting because examining its evolution from a presumably "weak" institutional and market-based regime to strong, one can provide important insights into accounting issues. My objective in this article is to broaden this perspective by directing attention to the fact that mechanisms that enabled China to succeed economically, did so despite what we term as "weak" institutions. The institutional features that enabled such phenomenal economic growth would have necessarily relied on accounting and control systems. As such, examining the role of accounting and control systems in the institutional framework prior to and during China's transition to a market-based economy would help expand our insights. For this purpose, I draw on the framework in the economics literature that shows the unique institutional features in China that possibly contributed to its economic success (Xu, 2011).

2. The China puzzle

China's GDP has grown from US$ 1325 Billion in 2001 to US$ 7318 billion in 2011, which represents a year-over-year growth rate of roughly 19%; the stock market capitalization increased from US$ 524 Billion in 2001 to US$ 3389 in 2011, representing a year-over-year growth rate of 21%; the value of stocks traded increased from US$ 449 Billion in 2001 to US$ 7671 in 2011, representing a year-over-year growth rate of 33% (see Table 1). These statistics indicate not only a tremendous growth in economic activity, but also a concerted move toward a market-based economy.

Conventional wisdom in economics suggests that the government should protect private property rights, enforce contracts, and separate itself from business enterprise (North, 1990; Acemoglu and Robinson, 2012). In contrast to this conventional wisdom, the Chinese government conducts and directs business development. Not surprisingly, China ranks below average on its institutional makeup of rule of law and governance quality (Allen et al., 2005). Thus, based on conventional wisdom, China's institutions are weak, so much so that the institutional infrastructure should not have supported the phenomenal economic growth and the move toward a market-based economy. This is a seeming puzzle that is referred to as the China puzzle by Xu (2011) who states, "This incredible contrast between poor institutions and China's spectacular performance challenges our general understanding of the mechanics of institutions and our understanding of institutional quality."

3. The institutional structure of China's economic success

Broadly speaking, institutions refer to mechanisms that coordinate economic activities and thus govern the incentives of agents (Coase, 1992; Stiglitz, 2002; Hurwicz, 2007). North (1990) defines institutions as "rules of the game in a society or, more formally, the humanly devised constraints that shape human interaction." The key aspects embedded in these definitions are that institutions are a set of rules chosen by society, and in an economic sense, these rules facilitate exchange. Coase (1937, 1991, 1992) in his discourse on the boundaries of the firm and markets – where do firms end and markets begin – proposes that institutions act as coordination mechanisms to facilitate exchange; when markets cannot do the job of coordination well enough, then the coordination occurs in firms (see also Williamson, 1985, 2002). As to which coordination mechanism is better suited for a particular activity is referred to, under the omnibus fuzzy terminology of "transactions costs." Under this broad view of institutions, Xu (2011) argues that it would not have been possible for China to achieve such phenomenal growth without effective coordination mechanisms or institutions. What was the institutional structure that enabled China's phenomenal growth? Xu (2011) outlines the salient aspects of China's institutional feature that enabled the phenomenal economic growth.

While institutions in most parts of the world – the Americas, Africa, Australia, South, and Far East Asia – are greatly influenced by the Western governance systems due to colonization, China has a 2000 year-old imperial history that was not directly influenced by the European institutions. The structure that prevailed during the imperial regime provides the pillars of the institutional framework that guided the transition to China's market-based economy. Xu (2011) refers to the institutional structure as the Regionally Decentralized Authoritarian (RDA) regime. The RDA regime features a combination of a highly decentralized decision-making with respect to economic resources; a highly centralized decision-making with respect to policy and personnel.

Table 1
China's economy and stock market. *Source*: The conference board, total economy database.

Year	GDP, Current US $ (Billions)	Number of Domestic Listed Companies	Market Cap Current US $ (Billions)	Stocks traded, Current US $ (Billions)
2001	1325	1160	524	449
2002	1454	1235	463	333
2003	1641	1296	681	477
2004	1932	1384	640	748
2005	2257	1387	781	586
2006	2713	1440	2426	1635
2007	3494	1530	6226	7792
2008	4522	1604	2794	5471
2009	4991	1700	5008	8956
2010	5931	2063	4763	8030
2011	7318	2342	3389	7671
CAGR	19%	7%	21%	33%

CAGR is the compounded annual growth rate from 2001 to 2011.

On the one hand, economic decision rights are decentralized and delegated to sub-national governments. Regional economies – provinces, municipalities, and counties – are responsible for initiating and coordinating economic activity by providing public services and enforcing laws within their jurisdictions. On the other hand, sub-national government officials are appointed, promoted, and rotated by the center, which helps to provide high-powered incentives for regional officials to follow the central government's policies and achieve economic performance. This institutional feature is different from centrally-planned structure such as the erstwhile Soviet Union where decision-making was centralized. This institutional setup is different from federalism as in the U.S., because the regional officials are not accountable to the local constituents and citizens.

The institutional structure makes China similar to a large conglomerate during its move toward a market-based system: referred to in the rest of the paper as China Inc. Similar to the headquarters of a conglomerate, China Inc., provides high-powered incentives for sub-national government leaders, i.e., division managers through personnel decisions. Similar to divisions of a conglomerate, the sub-national governments have decision rights over resources such as land, enterprises, financial resources, energy, and raw materials. They initiate, negotiate, implement, divert, and resist reforms, policies, rules, and laws. They drive or hamper regional/national economic development and macroeconomic conditions. They compete to achieve economic success and initiate experiments with new reforms. The organizational setup of China Inc. follows the general precept espoused in managerial accounting textbooks such as Zimmerman (1997) and accounting theory such as Sunder (1997) that decision-making should be delegated to the locus of information and expertise. Accordingly, it is interesting to examine what control and coordination mechanisms helped achieve China's phenomenal growth, i.e., the success of a conglomerate.

While we have some understanding on the role of accounting in arms-length contracting and equity markets, or at least a framework for understanding the role of accounting in market-based economic settings, China Inc. provides an excellent setting to examine the role of accounting in a different framework of institutions that were effective in achieving China's economic growth? Even though capital markets or labor and product markets may not have existed in China Inc., accounting and control mechanisms should have necessarily existed to help coordinate activities under decentralized decision-making.

4. The focus of China accounting research

As highlighted by the call for papers of the CJAR symposium, research in accounting focuses on China's transition to a market economy wherein regulatory changes that facilitate transition from the traditional Chinese institutions to Western ones that are suited for market economies are examined. Chen and Schipper (2008) highlight the focus of China based accounting research very aptly in the following way: "Recently published Chinese accounting research has addressed the causes and consequences of issues related to auditor

independence, causes and consequences of related-party transactions (for example, the extraction of resources from a listed firm by means of "tunneling"), earnings management and accounting implementations, the governance of listed Chinese firms including ownership structure and executive turnover. Because of the focus on corporate governance, accounting research in China currently has closer ties to corporation finance than does accounting research in the U.S." They then go onto point the potential research questions that State Owned Enterprises (SOEs) and the privatization of these enterprises provide.

China provides an excellent setting to examine the role of accounting and agency issues. Agency issues arise from the separation of ownership and control, referred to as the Type I agency problem) and arise from the conflict between controlling and non-controlling shareholders, referred to as the Type II agency problem (see Ali et al., 2007). The contrast between State Owned Enterprises (SOEs) and non-SOEs provides an excellent setting to examine Type II agency problems. China research has used the differential severity of agency problems to examine its effects on earnings management and accounting quality (for example, see Jian and Wong, 2010; Chen and Yuan, 2004; Chen et al., 2010b, 2011; Fan et al., 2012; Haw et al., 2011; Haw et al., 2005; Kim et al., 2011). China research has used the emerging auditing and public accounting setting to provide interesting insights into the interactions between agency issues and audit quality/auditor independence (see for example, Chen et al., 2010a, 2010c, 2000; DeFond et al., 2000; Wang et al., 2008; Fan and Wong, 2005; Gul et al., 2009; Choi et al., 2010; Yang, forthcoming). Overall, China accounting research provides useful insights into how agency issues are related to financial reporting quality and audit quality.

Even though in the next section, I provide other possible avenues for China accounting research, the focus of examining agency issues is still nascent and has the potential to contribute many more insights. In addition, China provides a setting to examine the development of markets in fast-forward. Specifically, the development of the private audit market where consolidation, scaling-up, and gaining expertise occurred in a relatively short span of time provides an interesting avenue to gain insights into the evolution of the audit services market – specifically the effects of market concentration on audit quality and audit fees (for example, see Chan and Wu, 2011).

5. Further opportunities for accounting research in China

This section outlines research questions that will help us enhance our understanding of the role of accounting in non-market-based settings. In our tradition of research silos, these questions likely belong to the genre of managerial accounting. The questions may not have the same appeal as managerial opportunism, and how better market-based institutions help "prevent" or "stop" such opportunism. The Chinese setting could help us understand forces and empirically test insights from analytical studies. We have considerable insights from game-theory based studies into the role of accounting in market-based versus implicit contract-based institutional settings (see Glover, 2012; Baldenius, 2008; Ederhof et al., 2010; Ewert and Wagenhofer, 2011; Kanodia, 2006; Arya and Mittendorf, 2010; Liang, 2010). Also, as Chen and Schipper (2008) posit, analytical modeling of forces particularly relevant for the China setting could provide us with more insights.

These studies should utilize a combination of methods – archival empirical, field-study empirical, analytical and case study, and/or a combination of methods so as to provide us with insights as well as highlight new areas of management accounting and institutional research.

5.1. Commitment to enforcing contracts without laws[1]

China had no "effective" commercial code for contracting up until the 1990s and no formal private property protection laws up until 2004. Theoretically, during this period, ownership of shares in enterprises would hold little water, and as such, the valuation and stock returns that are used in empirical tests were based on belief that such private property protection laws would be enacted and enforced. Similarly, customers contracted with suppliers without the framework of a uniform commercial code, under the belief that informal institutions were effective in implementing contracts. Did it imply that China had no institutions in the broad sense? The answer is an unequivocal no. Xu (2011) states that RDAs exercised semiformal and informal

[1] These categories are not mutually exclusive. I provide the categories to bring to fore the multifaceted and rich context.

protection of private property and contract enforcement mechanisms that were primarily based either on the rich history of China or by social norms. These informal institutions are generally ignored by accounting research.[2] Examining the role of these institutions can help provide useful insights into commitment, rules, and standards. Some broad research questions are as follows:

1. What were the informal institutions that acted as a commitment device for buyers contracting with suppliers? Did sub-national governments enable such coordination?
2. How was reputation for such commitments formed? If these were effective, what was the need for uniform commercial codes?

5.2. Deviant behavior and commitment issues

Becker (1974) brings economic analysis to crime and punishment and shows that the optimal enforcement depends on cost of catching and convicting the offenders, the punishment meted out and the response of offenders to the changes in enforcement and punishment. These form part of social capital. Putnam (1993, p. 167) defines social capital as "features of social organization, such as trust, norms, and networks, which can improve the efficiency of society by facilitating coordinated actions." Putnam (1993, p. 173) argues, "The denser such networks in a community, the more likely that its citizens will be able to cooperate for mutual benefit." As a thought exercise, one should wonder why it is that we hear about accounting/audit failures only after China has transitioned to using institutions to support the market-based system. Is it because the institutions that mete out punishment are not in sync? Is detecting more accounting failures a hallmark of good institutions? Is detecting more accounting failures indicative of informal or traditional institutions in China being adequate to mitigate agency problems? In Putnam's framework, is it possible that arms-length contracting makes these networks less dense and as such the social norms and cooperation for mutual benefit does not occur? Answers to these questions can provide some key insights into the role of accounting[3].

Sunder (1997) points out that the firm is "an arena in which self-motivated economic agents play by mutually agreed upon or implied rules to achieve their respective objectives." The comparative advantage of a firm over formal institutional arrangements that we observe under arms-length contracting is in enforcing implicit contracts. Considering China Inc. as one behemoth firm, the natural question that arises is that did the informal and implied rules enable enhanced coordination of activities? The existence of informal institutions and the variation across RDAs could provide a rich context of examining the costs and benefits of these setups. For example, informal institutions by their very nature cannot be scaled-up. An interesting question to examine is the following: even though market-based institutions facilitate scaling-up operations and thus enhance economic growth, what is the associated costs – is it the additional failures in market-based systems when compared to informal settings?

5.3. State Owned Enterprises and private small and medium enterprises

Xu and Zhuang (1998) point out that roughly 2000 counties in China had State Owned Enterprises (SOEs) producing agricultural machinery, 300 counties had steel plants. Regional SOEs produced 69% of China's total fertilizer output and 59% of its total cement; and about 20 provinces had SOEs producing automobiles or tractors in the early 1990s. This decentralized production structure and autonomy for decision-making

[2] This malaise is not typical to accounting research. Xu (2011) points out that cross-country studies that include China in the economics literature and states, "according to some "standard" policy advice, these more informal institutions might be regarded as obstacles that should be replaced by "standard" institutions as quickly as possible, even though setting up "standard" institutions may be very difficult, time- consuming, or even counter-productive under certain political conditions." Basu (2012) emphasizes about how accounting research has been influenced by the economics or finance literature. And as such it is not surprising that we are ardent followers of main-stream cross-country economics research as well.

[3] Firth et al., 2012 examine the changing legal liability of auditors and its effect on the way auditors are organized and the accounting quality.

created competition among the SOEs. While the central government lay out the strategic plan and vision, the RDAs are allowed to experiment and be innovative with respect to the transition to the market-based economy. Studying the incentive schemes of promotions and transfers and their relationship to accounting and other performance measures will provide interesting insights. Recent studies provide insights into some of these aspects. For example, Du et al. (2012) examine the evaluations of SOEs and find that the political connections of SOE, CFOs, geography of the SOE, and the political rank of the SOE influence their evaluations. In addition, studying the failed experiments as well as the successful ones could provide us with insights into the institutions that are necessary or sufficient for markets and enterprises. Were CEOs of SOEs rewarded for experimenting or were they rewarded for bottom-line performance?

Sub-national regions developed industry clusters. For example, private small and family enterprises in the town of Datang focus on producing socks, in Shengzhou focus on buttons for clothes, in Songxia focus on producing umbrellas. There are many such industry clusters. Liu (2008) shows how the small enterprises are important for economic growth, and how the regional and national governments helped develop such industry clusters. It will be interesting to examine whether the performance evaluation measures used for regional SOEs are partly driven by their role in helping the infrastructure development and promotion of industry clusters. In essence, are the SOEs a vehicle for supporting regional economic development? And if this question is answered in the affirmative, could this be the reason why their stock performance lags behind the non-SOEs.

5.4. Accounting and control systems in conglomerates

As mentioned earlier, similar to a conglomerate, in China Inc., the personnel decisions for the RDAs were made by the headquarters/central government. The headquarters could provide high-power incentives based on promotions and transfers to other sub-national units so as to transfer knowledge or as a demotion.[4] Given the economic success of China Inc., many interesting questions related to management control systems and incentives can be examined in the following broad categories.[5]

1. What measures of performance are used for performance evaluation and promotion?
    a. Were they measures of infrastructure, i.e., institutions that are necessary for transitioning to market-based economy or were they based on bottom-line measures of profitability?
    b. Were they output, intermediate or input measures?
    c. Given that most of the institution building exercise would have relied heavily on intangibles and human capital, what measures were used for such intangibles?
    d. Were there different measures at different stages or was there an all-encompassing measure such as GDP or bottom-line for SOEs?
    e. For SOEs in particular what type of measures were used? Were they based on the concept of profits for the owners?
    f. Were performance measures more precise at lower levels than at higher levels of the hierarchy?
    g. Were the measures subjective or objective?
    h. Were the measures aggregated or granular?

2. Were disclosures of these performance measures voluntary or mandatory? Were performance measures changed and modified based on the nature of experiments?
3. What commitment mechanism was in place to provide credibility to the relationship between incentives and measures? Was it implicit or explicit?

[4] Of course, given the extent of corruption it will be difficult to disentangle whether the motivating force is monetary or non-monetary. Hung et al. (2012) examine why SOEs with strong political connections are more likely to list overseas than non-politically connected SOEs and find that overseas listing itself appears to be a goal; as such, the bottom-line performance metrics are more poor for politically connected than non-politically connected SOEs.

[5] Recent studies provide insights into these aspects. For example, Du et al. (2012) examine the evaluations of SOEs and find that the political connections of SOE, CFOs, geography of the SOE and the political rank of the SOE influence their evaluations.

4. How were the measures verified? What enforcement mechanisms were in place for deviant behavior?
5. Were principles of transfer pricing and cost allocation used? If yes, how and why?
6. Were performance measures uniform or were they changed to suit local conditions?
7. How were performance targets set? Were they participative, i.e., bottom-up or top-down? How are variances of the actuals from the targets dealt with for incentives?

The premise underlying the questions outlined above may look as if China Inc.'s management control systems were designed so well such that the costs of conglomerates were "fully" overcome; however, this is not likely to be the case. For example, it is well known that conglomerates are more likely to overinvest (Maksimovic and Phillips, 2002); similar to this, casual empiricism suggests that there are considerable overinvestments – for example, there are ghost cities such as Zhengzhou. Studying these costs of conglomerates, i.e., overinvestments, would provide interesting insights for accounting and management control systems.

6. Conclusion

China provides an excellent setting to examine questions on coordination and control mechanisms for conglomerates and provide insights for management accounting. Furthermore, gaining insights into the costs and benefits of informal and formal institutional setup would be important to draw distinctions between aggregation and disaggregation of information for planning and control purposes. While this will be challenging, editors of journals should be proactive in encouraging such inquiry.

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Mandatory IFRS adoption and executive compensation: Evidence from China

Qingchuan Hou, Qinglu Jin *, Lanfang Wang

Shanghai University of Finance and Economics, China

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ABSTRACT

This study investigates how the mandatory adoption of International Financial Reporting Standards (IFRS) affects the contractual benefits of using accounting information to determine executive compensation in China. After controlling for firm and corporate governance characteristics, we find strong evidence supporting the positive role of mandatory IFRS adoption on the accounting-based performance sensitivity of executive compensation. Subsample analysis suggests that improvements in accounting-based performance sensitivity after IFRS adoption differ across regions with various levels of institutional quality and across firms that are affected to a different extent by the adoption. Additional analysis supports the argument that the positive effects of IFRS adoption on the use of accounting performance in executive compensation are driven by the reduction in accounting conservatism associated with IFRS adoption.

1. Introduction

A single set of high quality, globally accepted accounting standards is needed to support the growing globalization of markets. According to Deloitte and Touche, as of the end of 2010, 123 of the world's 154 juris-

* Corresponding author. Address: School of Accountancy, Shanghai University of Finance and Economics, 777 Guoding Road, Shanghai, China. Tel.: +86 21 65908982; fax: +86 21 65106924.
E-mail address: acjql@mail.shufe.edu.cn (Q. Jin).

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dictions where stock markets exist either permit or require domestic listed companies to report according to International Financial Reporting Standards (IFRS). Furthermore, 95 of the world's total of 173 jurisdictions either permit or require unlisted companies to report according to IFRS. A large body of academic studies has been devoted to examine the benefits of IFRS adoption for accounting quality in terms of conservatism, earnings management, value-relevance, market reaction, Tobin's *Q*, analyst forecast accuracy and foreign investments. Although the results of these studies are mixed, many researchers find the effects of IFRS adoption to be mainly positive (Lang et al., 2003; Covrig et al., 2007; Barth et al., 2008; Chen et al., 2010).

Recent studies have started paying attention to the contractual benefits of IFRS adoption for internal information users. As Gjesdal (1981), Watts and Zimmerman (1986), Ball (2001) and O'Connell (2007) point out, the contractual explanation or stewardship perspective is essential for accounting information. If managers' efforts are reflected in accounting performance, then accounting performance will be used more frequently in executive compensation contracts, and this in turn can mitigate agency problems between managers and shareholders (Holmstrom, 1979; Lambert and Larcker, 1987; Bushman and Smith, 2001). Wu and Zhang (2009) analyze the benefits of voluntary IFRS adoption for internal performance evaluation in terms of CEO turnover and employee layoffs. Using a sample of European Union (EU) companies, these authors find that the voluntary adoption of IFRS is associated with an increased sensitivity of CEO turnover and employee layoffs to accounting earnings. Ozkan et al. (2012) investigate how the mandatory adoption of IFRS in the EU affects the use of accounting information in executive compensation. Their results suggest that after mandatory IFRS adoption there are improvements in accounting-based performance sensitivity and the relative performance evaluation of executive compensation based on accounting earnings. We enrich these studies by investigating a single emerging country, China, as this focus allows us to examine factors and tensions that are missing in most EU-based studies. Given the diverse nature of China's economy, this country is also a good setting to explore the variation in incentives across both regions and firms.

As a milestone of international convergence for financial reporting, China formally announced the issuance of its new Chinese Accounting Standards on February 15, 2006. The new standards became effective from January 1, 2007 for all listed firms. Nearly all topics of IFRS are covered in the new standards, which are substantially in line with IFRS, except for a few modifications made for China's unique environment. For simplicity hereafter, we refer to the new standards as "IFRS" and the old standards as "Chinese GAAP". An essential characteristic differentiating IFRS as adopted in China from that adopted in the EU is the import of fair value (Deloitte Touche Tohmatsu, 2006). Fair value accounting involves a fundamental change and a severe challenge for China's accounting practices. Before mandatory IFRS adoption in 2007, accounting information in China was mainly based on historical cost instead of fair value. However, many countries in the EU had already applied fair value accounting even before their mandatory adoption of IFRS in 2005.[1] He et al. (2012) find that fair value accounting has been associated with significant earnings management since mandatory IFRS adoption in China. Further evidence documents a significant reduction in accounting conservatism after IFRS adoption.[2] However, these increases in earnings management and decreases in accounting conservatism can have opposite effects on the use of accounting performance for determining executive compensation. Earnings management can help in window-dressing or decorating managers' effort and conservatism can provide biased accounting information or increase estimation error. On the one hand, if the board of directors can detect earnings management activities when evaluating accounting performance, then increases in earnings management associated with the adoption of IFRS should reduce the role of accounting performance in determining executive compensation. On the other hand, the reduction in accounting conservatism after IFRS adoption should increase the weight of accounting performance in determining executive compensation, because timely recognition of both good news and bad news makes accounting information a better and more natural indicator of managers' effort. In this study, we aim to supply empirical evidence concerning these effects.

[1] Statistics in Muller et al. (2011) show that during the pre-IFRS adoption period in European countries, 111 observations contained fair values of investment properties and only 27 observations did not.

[2] Untabulated results based on both the Basu (1997) model and the Khan and Watts (2009) model suggest a significant reduction in accounting conservatism after IFRS adoption.

Using a sample of 6787 firm-year observations for A-share firms in China from the 2004–2009 period, we investigate the effect of mandatory IFRS adoption on the use of accounting performance in determining executive compensation. Using a change model, we document evidence supporting the following empirical questions: (1) whether mandatory IFRS adoption in China affects the accounting-based performance sensitivity of executive compensation; (2) if so, whether the effect of mandatory IFRS adoption on accounting-based performance sensitivity differs across regions with varying levels of institutional quality; and (3) if so, whether the effect of mandatory IFRS adoption on accounting-based performance sensitivity differs across firms that are affected by the adoption to different degrees.

After controlling for firm and corporate governance characteristics, we find strong evidence that IFRS adoption has a positive role in the accounting-based performance sensitivity of executive compensation. Specifically, compared with the pre-IFRS adoption period, firms have significantly increased the accounting-based performance sensitivity of executive compensation during the post-IFRS adoption period. To answer the second and third questions, we conduct the same analysis, but use subsamples based on cross-regional institutional quality (as measured by levels of marketization) and subsamples based on the influence of IFRS across firms (as measured by IFRS adjustments in 2006). The results suggest that the positive effect of IFRS adoption on accounting-based performance sensitivity occurs only in regions with higher institutional quality and in firms that are more affected by the adoption.

We also provide evidence on the possible channels through which IFRS affects the use of accounting performance in determining executive compensation. We perform additional subsample analyses based on the income from changes in fair value and on changes in accounting conservatism in China. The results indicate that the positive effects of IFRS adoption on the accounting-based performance sensitivity of executive compensation are driven by a reduction in accounting conservatism that is associated with IFRS adoption.

This study contributes to the literature on IFRS adoption in several ways, which distinguish our research from two closely related studies by Wu and Zhang (2009) and Ozkan et al. (2012). First, we comprehensively discuss the mechanism through which IFRS adoption affects the use of accounting performance in determining executive compensation. We also provide direct evidence of the reduction in accounting conservatism after IFRS adoption. Combined with evidence from prior studies indicating increases in earnings management associated with IFRS adoption, our research investigates whether the changes in earnings management and in accounting conservatism play different roles in the weighting of accounting performance in executive compensation. Additional analysis suggests that in China, the positive effect of IFRS adoption on the accounting-based performance sensitivity of executive compensation is driven by the associated reduction in accounting conservatism. The second contribution of this study is to extend the literature on the effect of IFRS adoption on executive compensation to the case of China, which is substantially different from mature markets. As an emerging market, China has relatively immature capital markets, weak legal enforcement, weak auditor independence and more concentrated ownership. All of these factors influence the incentives involved in financial reporting. The lack of efficiently functioning capital markets also means that the process of adopting and implementing fair value accounting is especially challenging, and this situation leads to considerable accounting information noise. So far, there is very little empirical evidence documenting the economic consequences of IFRS adoption in emerging economies. It is widely suggested, however, that emerging markets are substantially different from developed markets in many dimensions, including institutional, organizational and market aspects of the economy and society. Our findings suggest that accounting-based performance sensitivity in China is significantly improved after IFRS adoption. A third contribution of our study is that our exploration of a single country, China, allows us to enrich our understanding on a range of factors that are generally not considered in most EU-based studies. We provide empirical evidence on the significant variation in incentives across both regions and firms. In particular, we find that the positive effect of IFRS adoption on the use of accounting performance information in executive compensation occurs only in regions with higher institutional quality and in firms more affected by IFRS adoption.

The remainder of this paper is organized as follows. Section 2 presents a literature review and raises our research questions. Section 3 describes the data, variables and methodology. Section 4 provides empirical results and analysis. Section 5 applies additional tests. Section 6 conducts extensive robustness checks and Section 7 concludes the paper.

2. Literature review and research questions

2.1. Pay-performance sensitivity

A tremendous amount of research has been devoted to exploring the relationship between executive compensation and firm performance, which is known as pay-performance sensitivity. The essential theoretical linkage between firm performance and executive compensation is proposed in the principal-agent model as developed by Jensen and Meckling (1976), Holmstrom (1979), Shavell (1979) and Fama (1980). This model emphasizes that managers are self-serving and that formal mechanisms, such as monitoring and reward structures, are meant to align the incentives of top managers with the interests of shareholders. Prior studies have implied that accounting and finance regulation can influence pay-performance sensitivity. Perry and Zenner (2001) suggest that pay-performance sensitivity, as measured by total annual compensation or firm-related CEO wealth, has increased for firms that are likely to be affected by section 162(m) of the Internal Revenue Code. Consistent with the rent-extraction hypothesis, Paligorova (2008) shows that pay-performance sensitivity strengthened after the adoption of the Sarbanes–Oxley Act (SOX) in firms whose corporate boards were less independent prior to SOX.

Findings from several studies show that executive compensation in China is positively related to accounting performance (Groves et al., 1995; Mengistae and Xu, 2004), shareholder value (Buck et al., 2008) and sales growth (Kato and Long, 2006). Other studies suggest that a firm's ownership structure also has significant effects on the compensation schemes of Chinese executives (Ding et al., 2006; Firth et al., 2006).

2.2. Role of mandatory IFRS adoption in accounting quality[3]

Armstrong et al. (2010) document a positive market reaction to IFRS in firms with lower pre-adoption information quality and in firms that are domiciled in common law countries. Daske et al. (2008) find that mandatory IFRS adoption is associated with increases in market liquidity, but the effects on cost of capital and Tobin's *Q* are mixed. Chen et al. (2010) suggest that the majority of accounting quality indicators have improved after mandatory IFRS adoption. By investigating 1146 firm-year observations from Australia, France and the UK during 2005 and 2006, Jeanjean and Stolowy (2008) find that earnings management in these countries did not decline significantly after the mandatory adoption of IFRS, and that in France earnings management actually increased. Horton and Serafeim (2010) conduct an event study in the UK to investigate whether there is any market reaction to or value-relevance of the information contained in the transitional report required by IFRS 1, the *First Time Adoption of International Financial Reporting Standards*. Their results show that there are significant negative abnormal returns for firms reporting a negative reconciliation adjustment to UK GAAP earnings. These findings suggest that IFRS is changing investors' beliefs about stock prices.

In general, previous studies of developed market economies have generated mixed results. These diverse results could be due to the different samples, information environments or institutional settings. Results from developed economies, however, cannot be readily extended to the developing and transitional economy of China, because of its unique economic system and its weaker institutions.

By using the uniqueness of the financial reports from B-share companies in China, some studies have shown that the application IFRS has had mixed consequences for accounting quality even prior to 2007 (Zhou et al., 2010; Eccher and Healy, 2003; Chen and Zhang, 2010).[4] After the adoption of mandatory IFRS in 2007, studies of its effects in China have been extended to A-share firms. Xue et al. (2008), Luo et al. (2008) and Zhang

[3] For the effects of voluntary IFRS adoption, please refer to Barth et al. (2008), Hung and Subramanyam (2007), Bartov et al. (2005), Ashbaugh and Pincus (2001) and Covrig et al. (2007). Voluntary IFRS adoption is found to have a positive role in accounting quality and overall comparability according to the existing literature.

[4] In China, some public companies are allowed to issue two kinds of shares simultaneously—A-shares to domestic investors and B-shares to foreign investors. A-share companies are required to prepare financial reports based on Chinese GAAP and B-share companies are required to prepare financial reports based on IFRS. Hence, even before it became mandatory for all listed companies to adopt IFRS in 2007, B-share companies in China were already required to apply IFRS.

and Zhang (2008) find an improvement in the value-relevance of accounting information under IFRS compared to the situation under China GAAP. Zhang and Zhu (2010) suggest that there has been a reduction in accounting conservatism after mandatory IFRS adoption and that this reduction did not arise from increases in earnings management. Evidence of earnings management associated with IFRS adoption is shown by Zhang et al. (2007), Wang et al. (2009), Ye et al. (2009) and He et al. (2012). In general, there is no consistent conclusion about the economic consequences of mandatory IFRS adoption in China.

2.3. Development of research questions

Our study is related to the contractual role of accounting information, which has been recognized as important by researchers such as Gjesdal (1981), Watts and Zimmerman (1986), Ball (2001) and O'Connell (2007). We are interested in the contractual benefit of mandatory IFRS adoption for executive compensation in China, *i.e.*, the effect of mandatory IFRS adoption on the use of accounting performance in determining executive compensation. The two studies by Wu and Zhang (2009) and Ozkan et al. (2012) investigate similar research questions to ours in EU countries. However, Wu and Zhang (2009) emphasize the role of accounting conservatism in CEO turnover, and Ozkan et al. (2012) document the role of general accounting quality in executive compensation.

Wu and Zhang (2009) suggest that voluntary IFRS adoption has affected the role of accounting conservatism in CEO turnover and employee layoffs. These authors find an overall improvement in accounting conservatism following voluntary IFRS adoption in EU countries. IFRS adoption can be a particularly powerful tool in disciplining poor performing managers, because it speeds up the recognition of losses. IFRS adoption provides the board and shareholders with a reason to investigate losses and, if necessary, to dismiss the manager. CEO turnover reflects only the most extreme penalizing aspect of the compensation contract. Executive compensation, however, reflects both the reward and punishment sides of the compensation contract. Ozkan et al. (2012) argue that having high quality accounting information under IFRS increases the weight of accounting performance in executive compensation contracts. Examining executive compensation in EU countries, these authors conclude that there has been incremental use of accounting-based performance sensitivity and relative performance evaluation in executive compensation since mandatory IFRS adoption.

In China, the effect of mandatory IFRS adoption on accounting quality is quite different from that in EU countries. As an emerging market, China has relatively immature capital markets, weaker legal enforcement, less auditor independence and more concentrated ownership. All of these factors influence the incentives concerned in financial reporting. The lack of efficiently functioning capital markets also means that the process of adopting and implementing fair value accounting is especially challenging, which leads to a great deal of noise in accounting information. Fair value outcomes can serve as signals for managerial effort that are not fully captured by stock returns in the period when the effort is exerted. Fair value, therefore, can provide a more timely signal with respect to unobserved effort than traditional historic accounting measures of income and exposure. For example, it can be argued that changes in the market value of investment securities are due to luck. However, managers have some discretion over which securities to purchase, how long to hold them and the timing of trades. In making these choices, managers may be predicting changes in the market value of certain assets.

The recent study by He et al. (2012) examines earnings management activities that are induced by fair value accounting and associated with mandatory IFRS adoption in 2007. The evidence presented in this study suggests that firms are more likely to sell available for sale securities for gains if their fair value changes in trading securities are negative and that such earnings management is more pronounced among firms with extra incentives to avoid reporting losses. He et al. also find that firms take advantage of the new fair value accounting rules for debt restructuring by using the gains on restructuring to cover losses. Further analysis shows that all of these earnings management activities are more severe among firms with poorer corporate governance and among firms in regions with weaker institutions.

As there is still no direct evidence in the literature on the consequences of accounting conservatism after the mandatory IFRS adoption in China, we conduct such an exploration. In particular, we apply the Basu (1997) and Khan and Watts (2009) models. Unreported results from these models suggest that there is a significant decrease in accounting conservatism after IFRS adoption. Results from the Basu (1997) model further indicate

that the reduction in accounting conservatism arises from the increased sensitivity of earnings to good news following IFRS adoption. However, there is no significant change in the sensitivity of earnings to bad news following IFRS adoption. Such findings are consistent with the adoption of fair value accounting. The purpose of fair value accounting is to make accounting information more natural and more in line with market value. Unlike the historical cost rule under Chinese GAAP, the fair value rule is more relaxed toward the verification of good news and permits more recognition of gains. Muller et al. (2011) demonstrate that the mandatory adoption of fair value accounting in reporting values of investment property results in reduced information asymmetry among market participants. As suggested by Wier (2009), there is a potential trade-off between fair value accounting and conservatism in revenue recognition.[5]

However, the increases in earnings management and decreases in accounting conservatism can affect the use of accounting performance in executive compensation in either of two directions. The potentially negative role of earnings management is easy to understand. Managers dress up their performance such that the accounting information does not truly reflect their effort. Peng (2011) provides direct evidence for the effect of accruals quality on the usefulness of earnings in incentive contracting. Her evidence indicates that better accruals quality is associated with a higher weight on company earnings in compensation contracts. The increases in earnings management after IFRS adoption in China imply that accounting performance has greater deviation from manager's effort. All things being equal, performance tends to be noisier with regard to evaluation of the executive's effort choice. Therefore, compensation committees should place less reliance on earnings following IFRS adoption.

The reduction in accounting conservatism could play a positive role in the use of accounting performance in executive compensation. Timely recognition of both good news and bad news is helpful in reflecting managers' effort, and in mitigating the information asymmetry and agency contradiction between executives and shareholders. Watts (2003) argues that accounting conservatism is attributed to the use of accounting statements in compensation contracts. However this argument is based on the view that managers' incentives for overinvestment dominate their incentives for underinvestment, which seems problematic and does not fit well within the economics framework. The literature has documented a tendency of managers with short horizons to either underinvest or overinvest. If losses are not recognized in a timely manner, managers will not be able to discontinue poor performing projects in time (Ball and Shivakumar, 2005). If gains are not recognized in a timely manner, managers will miss opportunities to invest in profit-making projects (Leuz, 2001; Watts, 2003; Guay and Verrecchia, 2006). The recent study by Bushman et al. (2011) indicates that the speed with which managers increase investment flows in response to improved investment opportunities varies as much as the speed with which they decrease investment flows in response to deteriorating investment opportunities. This comparison suggests that providing incentives for managers to invest in positive net present value (NPV) projects is as important as providing incentives for managers to shut down negative NPV projects (Guay and Verrecchia, 2006).

Hence, the accounting information under fair value accounting could be more reflective of an executive's effort than that under historical cost accounting, even though fair value accounting is less conservative. Bandyopadhyay et al. (2010) provide empirical evidence that increasing accounting conservatism over the past 30 years in the U.S. has contributed to the decline in earnings usefulness, due to its divergent effects on the possibility of using current earnings to predict (1) future cash flows and (2) future earnings. More timely recognition of gains and losses could be helpful in reducing the degree of underestimation in firm value, in mitigating the estimation errors from conservatism and in verifying a manager's effort more accurately. Such recognition could in turn increase the use of accounting performance in determining executive compensation.

Considering the effects of IFRS adoption arising from the changes in earnings management and accounting conservatism, and considering the ways these factors influence the use of accounting performance in executive compensation, we now raise the first empirical question about the effect of mandatory IFRS adoption on executive compensation.

[5] Although evidence suggests an overall improvement in accounting conservatism due to voluntary IFRS adoption in European countries (Lang et al., 2003; Barth et al., 2008), recent studies have provided some evidence indicating a reduction in timely loss recognition due to mandatory IFRS adoption in European countries (Sánchez et al., 2009; Chen et al., 2010; Gebhardb and Novotny-Farkas, 2010).

Question 1. Does mandatory IFRS adoption affect the accounting-based performance sensitivity of executive compensation?

It is widely accepted that cross-country institutional factors significantly contribute to the economic consequences of IFRS adoption (Chen et al., 2010; Jeanjean and Stolowy, 2008; Daske et al., 2008; Armstrong et al., 2010). These institutional factors include legal enforcement, government regimes, business environments and regulation implementation. Ball (2006) mentions that "there inevitably will be substantial differences among countries in implementation of IFRS, which now risk being concealed by a veneer of uniformity. The notion that uniform standards alone will produce uniform financial reporting seems naive."

As a large and emerging market, China has great variations in institutional quality compared with other regions, due to its complicated history and policy reasons. Such an uneven institutional development across regions of China allows us to examine the effects of institutions on IFRS implementation within a single country. For example, better investor protection and a stronger legal environment may increase the supply and demand for high quality financial reports. Well-established, market-oriented rules that are associated with better corporate governance practices tend to alleviate expropriation-related transactions and tunneling activities. Also, the development of private business tends to avert severe political burdens and to increase management orientation toward value maximization. We can sense intuitively that a better institutional environment makes performance statistics more important for the compensation and valuation assessment of executives.

If the mandatory IFRS adoption in China increases the accounting-based performance sensitivity of executive compensation, then we predict that such an effect differs across regions with different levels of institutional quality. In particular, the effect of mandatory IFRS adoption on accounting-based performance sensitivity should be greater in areas with higher marketization than in areas with lower marketization. We make use of the marketization index (*MIndex*) provided by Fan et al. (2007) to capture this effect. The *MIndex* is a comprehensive index that proxies for the institutional quality of each province in China. Higher values of this index indicate a better institutional environment.[6] The *MIndex* has been widely accepted as a measure of institutional heterogeneity in China by researchers such as Wang et al. (2009), Jiang et al. (2010) and He et al. (2012). Therefore, our second research question is as follows:

Question 2. Does the effect of mandatory IFRS adoption on accounting-based performance sensitivity differ across regions with different levels of institutional quality?

If IFRS adoption has any effect on accounting-based performance sensitivity, then we can sense intuitively that the degree of this effect will vary for different firms. In other words, firms themselves react differently to the adoption of IFRS due to the heterogeneous properties of their investments, operations or management. After the adoption of IFRS, there might be great changes in some firms' accounting information, but only small changes in other firms' information. Normally, it is difficult to measure such cross-firm differences in the effects of IFRS, because we do not have two sets of accounting information for the same fiscal year (with one set prepared under IFRS and another under local GAAP). However, the China Securities Regulatory Commission (CSRC) required all listed firms to disclose their adjustments in financial information based on IFRS for fiscal 2006. Therefore, for 2006, the year immediately prior to the mandatory adoption of IFRS, each firm did prepare one set of financial reports based on Chinese GAAP and another based on IFRS. The changes in the way each firm reports accounting information directly indicate the influence of IFRS on that firm. As such an influence reflects the internal characteristics of the firm and is external to the implementation of IFRS, we predict that such changes are consistent in the years following IFRS adoption. For each firm, we can measure the influence of IFRS by comparing the net income under Chinese GAAP and under IFRS in 2006.

[6] The index covers many institutional aspects, including (1) the relationship between government and market, such as the role of the market in allocating resources and a firm's policy burden in addition to taxes; (2) development of non-state businesses in terms of the ratio of industrial output by the private sector to total industrial output; (3) development of product markets in terms of the scale of regional trade barriers; (4) development of factor markets captured by foreign direct investment and labor mobility; and (5) development of market intermediaries and the legal environment. Some specific aspects of the index also imply the variance of labor markets across regions in China, such as the levels of labor mobility.

If accounting-based performance sensitivity is affected by the mandatory adoption of IFRS, we predict that such an effect should be greater for the firms more affected by IFRS, as measured by the IFRS adjustments in 2006. Hence, our third research question is as follows:

Question 3. Does the effect of mandatory IFRS adoption on accounting-based performance sensitivity vary across firms that are affected differently by the adoption?

Questions 2 and 3 are based on the prediction of Question 1, and they should provide further evidence of a firm's use of its own accounting performance in executive compensation.

3. Research design

3.1. Sample

Our primary sample consists of A-share companies listed on the Shanghai or Shenzhen stock exchanges from 2004 to 2009, excluding companies in the financial industry. For each firm-year observation, we collect information on executive compensation and corporate governance from the CCER database developed by Sinofin Financial Information Service, and information on financial accounting from the Wind database. Excluding special treatment (ST) companies and observations for which we do not have the data to calculate changes in executive compensation or other variables required in our regressions, we are left with 6787 firm-year observations. Panel A of Table 1 presents the sample selection process.

In Table 1, Panel B reports the sample distribution by year and by industry. The sample is distributed quite evenly across the six years from 2004 to 2009. The sample covers 12 industries based on CSRC's industry classification. The majority of our sample belongs to the manufacturing sector, which constitutes about 59% of firms in our sample. Only 44 observations for the communication and cultural industry are available, constituting about 0.65% of our sample. This industry distribution is quite similar to the population of listed companies in China.

Table 1
Sample selection process and sample distribution.

Process				No. of observations	
Panel A: Sample selection process					
A-share companies, excluding those in the financial industry				8917	
Excluding special treatment (ST) companies				8122	
Excluding observations with no data available for calculating changes in executive compensation				7139	
Excluding observations with no data available on financial accounting, stock exchange or corporate governance				6787	
Year	Observations	Percentage (%)	Industry	Observations	Percentage (%)
Panel B: Sample distribution by year and by industry					
2004	971	14.3	Agriculture, Forestry, Livestock Farming, Fishery	167	2.5
2005	1117	16.5	Mining	122	1.8
2006	1099	16.2	Manufacturing	3972	58.5
2007	1012	14.9	Utilities	320	4.7
2008	1271	18.7	Construction	160	2.4
2009	1317	19.4	Transportation	291	4.3
Total	6787	100	Information Technology	397	5.8
			Wholesale and Retail Trade	448	6.6
			Real Estate	308	4.5
			Social Services	221	3.3
			Communication and Cultural Industry	44	0.6
			Comprehensive	337	5.0
			Total	6787	100

The sample consists of 6787 identifiable firm-year observations for A-share companies in China from 2004 to 2009, for which data are available in the databases. Panel A presents the sample selection process. Panel B presents the sample distribution by year and by industry. The number of observations and the corresponding percentages are given.

3.2. Methodology

We apply an OLS change model to analyze the influence of IFRS adoption on executive compensation.[7] Specifically, the regression model to examine accounting-based performance sensitivity can be stated as follows:

$$\Delta ExeComp_{it}(\Delta DirComp_{it}) = \alpha_0 + \alpha_1 IFRS + \alpha_2 \Delta ROA_{it} + \alpha_3 IFRS * \Delta ROA_{it} + \sum \beta_j Control_j + \varepsilon_{it} \quad (1)$$

The coefficient of interest is α_3, which captures the change in the accounting-based performance sensitivity of executive compensation from the pre- to post-IFRS adoption periods.[8] To rule out the possible influence of outliers, we winsorize the top and bottom five percentiles for each continuous variable in all regression models.

As IFRS adoption affects all Chinese A-share firms, it is not possible to apply a "difference-in-difference" design to distinguish the pure effects of IFRS adoption from those of other general changes during the sample period. Hence, we provide an association analysis rather than a causality test. Even though such analysis is inherently a data problem and is used in many studies on the effects of IFRS on company behavior, we have tried many additional subsample analyses, which mitigate the concern that our findings are driven by contemporaneous changes.[9]

3.3. Variables

3.3.1. Executive compensation, accounting performance and IFRS adoption

We apply an OLS change model to estimate the effect of mandatory IFRS adoption on executive compensation. Considering that many directors are actually executives in China and to be consistent with previous domestic research (Fang, 2009; Tan and Xin, 2009), we choose two alternative measures of executive compensation—the combined compensation of the top three executives ($\Delta ExeComp$), and the combined compensation of the top three directors ($\Delta DirComp$). We take logarithms to measure compensation, so that $\Delta ExeComp$ ($\Delta DirComp$) is the logarithm of the combined compensation of the top three executives (directors) in year t, minus the logarithm of the combined compensation of the top three executives (directors) in year $t-1$. Accounting performance is measured by the change in ROA from the previous year (ΔROA). We use an indicator variable, $IFRS$, to indicate whether IFRS is mandatorily adopted. This variable takes the value 1 for the post-IFRS adoption 2007–2009 period, and 0 for the pre-IFRS adoption 2004–2006 period. Hence, in our primary regression model, the dependent variable is $\Delta ExeComp$ or $\Delta DirComp$, and the independent variables include ΔROA, $IFRS$ and the interaction term $IFRS * \Delta ROA$.

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[7] Compared with the level model, the change model can better mitigate the influence of missing factors and self-selection concerns. Furthermore, as there are some differences in the influence of IFRS adoption on total assets and net income, the levels of accounting performance (ROA) from the pre- to post-IFRS adoption periods lack comparability. These differences should increase the estimation noise in the level model. The change model can mitigate such noise by using the two sets of financial information for 2006 based on Chinese GAAP and IFRS. Specifically, the change in ROA for 2006 is calculated as ROA in 2006 based on Chinese GAAP minus ROA in 2005 based on Chinese GAAP. Similarly, the change in ROA for 2007 is calculated as ROA in 2007 based on IFRS minus ROA in 2006 based on IFRS.

[8] Previous studies by Groves et al. (1995) and Mengistae and Xu (2004) have already provided some evidence that in China executive compensation and retention practices are shaped by accounting outcomes. To alleviate doubt that accounting performance is considered when deciding executive compensation in China, we further collect by hand the compensation contracts voluntarily disclosed by listed firms from the Shanghai Stock Exchange (www.sse.com.cn), the Shenzhen Stock Exchange (www.szse.cn) and the Wind database, among other sources. We obtain a total of 109 compensation contracts corresponding to 104 firms (about 6.5% of all listed companies) during the 2004–2009 period. By thoroughly investigating these 109 compensation contracts, we find that all of them take accounting earnings as a criterion for executive compensation. Some of them use additional accounting information such as sales growth or asset turnover. Yearly distribution and logistics analyses suggest that after the mandatory IFRS adoption, the number of disclosed compensation contracts has significantly increased. As for the compensation structure, most of these contracts (100 out of 109) are combinations of cash and bonus, and only 9 contracts include equity incentives that consist of cash, bonus and equity.

[9] For example, the subsample analysis based on IFRS adjustments (Table 5) suggests that the effects of IFRS adoption on pay-performance sensitivity are stronger among firms that are most likely to be affected by IFRS. Also, the examination of B- and H-share companies (Table 7) provides some evidence on the causality between IFRS adoption and executive compensation.

3.3.2. Control variables

To be consistent with prior research on executive compensation (Leone et al., 2006) and to take China's unique situation into account (Firth et al., 2006; Fang, 2009; Tan and Xin, 2009), we further control for firm and corporate governance characteristics.

(1) *Firm characteristics*. We include nine variables to control for firm characteristics. Specifically, we include lagged year ΔROA (ΔROA_1) to control for previous accounting performance, market-adjusted stock return (*Return*) to control for market performance, the interaction term of *IFRS and Return* (*IFRS* $*$ *Return*) to control for changes in the sensitivity of executive compensation to a firm's market performance from the pre- to post-IFRS adoption periods, total assets (*Assets*) to control for firm size, the ratio of total debt to total assets (*Leverage*) to control for overall financial risk, the growth rate of sales (*Growth*) to control for growth opportunities, stock return volatility (*Volatility*) to control for risks associated with stocks, and other indicators showing whether a firm exhibits a loss in a year (*Loss*) and whether a firm is a SOE (*SOE*).

(2) *Corporate governance*. It is widely suggested that the form of corporate governance has an influence on executive compensation. To account for this influence, we include the size of the board of directors (*BoardSize*) and the ratio of independent directors on the board of directors (*IndDir*) to control for board independence. We also include several variables indicating whether a firm has experienced a CEO turnover (*CEOTurnover*) or a board chairman turnover (*ChairTurnover*) in the given year, and whether a CEO is also the chairman of the board (*Duality*).

3.4. Summary statistics

Table 2 presents the summary statistics for all variables, including quartiles, means, standard deviations and the numbers of observations. As indicated, $\Delta ExeComp$ and $\Delta DirComp$ exhibit similar trends during

Table 2
Summary statistics.

Variable	Obs.	Mean	Std.	0.25	0.50	0.75
ΔExeComp	6787	0.138	0.337	−0.030	0.090	0.307
ΔDirComp	6787	0.116	0.402	−0.064	0.072	0.320
ΔROA	6787	−0.006	0.044	−0.020	−0.002	0.010
Firm characteristics						
ΔROA_1	6787	−0.006	0.040	−0.019	−0.002	0.009
Return	6787	0.034	0.540	−0.245	−0.023	0.222
Assets	6787	21.496	0.959	20.782	21.417	22.135
Leverage	6787	0.504	0.175	0.375	0.514	0.634
Growth	6787	0.163	0.291	−0.013	0.136	0.311
Volatility	6787	0.147	0.053	0.104	0.139	0.183
Loss	6787	0.119	0.324	0	0	0
SOE	6787	0.663	0.473	0	1	1
Corporate governance						
BoardSize	6787	2.219	0.183	2.1972	2.197	2.398
IndDir	6787	0.354	0.038	0.333	0.333	0.364
CEOTurnover	6787	0.174	0.379	0	0	0
ChairTurnover	6787	0.170	0.376	0	0	0
Duality	6787	0.101	0.301	0	0	0

This table presents statistics on 6787 observations for A-share companies in China from 2004 to 2009 for which data are available in the databases, excluding those in the financial industry and ST firms. The number of observations, means, standard deviations and quartiles are reported. $\Delta ExeComp$ ($\Delta DirComp$) is defined as the change in the logarithm of the top three executives' (directors') combined compensation from the previous year. ΔROA is the change in ROA from the previous year. Variables representing firm characteristics include ΔROA_1, *Assets*, *Leverage*, *Growth*, *Return*, *Volatility*, *Loss* and *SOE*. Corporate governance variables include *BoardSize*, *IndDir*, *CEOTurnover*, *ChairTurnover* and *Duality*.

the sample period. The mean of $\Delta ExeComp$ ($\Delta DirComp$) is 0.138 (0.116) with a standard deviation of 0.337 (0.402). On average, there is a 13.8% increase in the combined compensation of a firm's top three executives and an 11.6% increase in the combined compensation of a firm's top three directors over the previous year's compensation levels. The difference between the 0.75 quartile and the 0.25 quartile of $\Delta ExeComp$ ($\Delta DirComp$) is 0.337 (0.384). The means (medians) of ΔROA and ΔROA_1 are −0.0061 (−0.0016) and −0.0060 (−0.0024), respectively, which suggest that the accounting performance of the sample firms decreased slightly during the 2004–2009 sample period.

Concerning the control variables, Table 2 shows that about 12% of the sample firms experienced a loss, 66% were SOEs, 17% (17%) experienced CEO (chairman of the board) turnover, and the CEOs of 10.1% of the sample firms were also the chairmen of the board. As reported in the table, the mean (median) of stock return (*Return*), assets (*Assets*), leverage ratio (*Leverage*), sales growth rate (*Growth*) and stock return volatility (*Volatility*) is 0.034 (−0.023), 21.496 (21.417), 0.504 (0.514), 0.163 (0.136) and 0.147 (0.139), respectively. One third of the directors on the boards are independent, with very slight differences in the variable *IndDir*.

In general, the means and medians of the dependent, control and test variables are similar, and the standard deviations are within an acceptable range, which suggests that the distributions of these variables are not very skewed.

Unreported Pearson correlations among all of the variables show that neither the correlations among the control variables nor those between the test and control variables are strong. These correlations suggest that our regression model does not suffer from serious multicollinearity. Also, there is a positive correlation between $\Delta ExeComp$ (or $\Delta DirComp$) and ΔROA, which hints at the use of the firms' own accounting performance in their executive compensation contracts.

4. Empirical results and analysis

4.1. Accounting-based performance sensitivity in executive compensation

In this section, we investigate the effect of mandatory IFRS adoption on accounting-based performance sensitivity. Table 3 reports the OLS regression results of equation (1). All *t*-statistics (in parentheses) are adjusted for heteroskedasticity (White, 1980) and clustered by firm (Petersen, 2009) to account for time series correlations. We first relate $\Delta ExeComp$ to ΔROA, *IFRS*, $IFRS * \Delta ROA$, ΔROA_1, *Return* and $IFRS * Return$ without controlling for other variables in Model 1. We then add all of the other control variables in Model 2. As shown, the coefficient of ΔROA is positive at a significance level of less than 1%, which suggests that accounting-based performance sensitivity is positive in the pre-IFRS adoption period. This finding is consistent with prior studies by Du and Wang (2007) and Fang (2009). We further find a positive and significant coefficient on the interaction term $IFRS * \Delta ROA$. Specifically, the results in Model 2 suggest that accounting-based performance sensitivity increases after IFRS adoption. In economic terms, a one standard deviation increase in ΔROA is associated with a 2.91% increase in the growth rate of the top three executives' combined compensation in the pre-IFRS adoption period. For the post-IFRS adoption period, a one standard deviation increase in ΔROA is associated with 5.21% increase in the growth rate of the top three executives' combined compensation.[10] We find similar results from Models 3–4, taking $\Delta DirComp$ as the dependent variable. In particular, the growth rate of combined compensation for the top three directors that is associated with a one standard deviation increase in ΔROA improves from 2.76% in the pre-IFRS adoption period to 5.28% in the post-IFRS adoption period.

As expected, we find that a change in executive compensation ($\Delta ExeComp$ or $\Delta DirComp$) is positively associated with a lagged change in accounting performance (ΔROA_1). That is, the higher the previous year's ROA improvement, the higher the rate of growth of executive or director compensation. The coefficient of stock return (*Return*) is very small in all models. When all control variables are included, the variable *Return* is only significant in Model 2, where $\Delta ExeComp$ is the dependent variable, and *Return* is insignificant in Model

[10] The economic magnitudes are calculated as $\exp(0.652 * 0.044) - 1 = 2.91\%$, $\exp((0.652 + 0.502) * 0.044) - 1 = 5.21\%$.

Table 3
Analysis of accounting-based performance sensitivity in executive compensation.

Variable	1		2		3		4	
	Coeff.	*t*-Value	Coeff.	*t*-Value	Coeff.	*t*-Value	Coeff.	*t*-Value
Constant	0.147***	10.82	0.054	0.57	0.133***	7.90	0.228**	1.98
ΔROA	1.081***	6.86	0.652***	3.64	0.998***	5.21	0.619***	2.88
IFRS	0.016**	2.00	0.003	0.36	0.007	0.73	−0.004	−0.33
IFRS ∗ ΔROA	0.389*	1.87	0.502**	2.40	0.472*	1.84	0.552**	2.15
Firm characteristics								
ΔROA_1	1.008***	8.96	0.803***	6.88	1.032***	7.50	0.854***	6.11
Return	0.048***	3.62	0.030**	2.26	0.039**	2.44	0.018	1.11
IFRS ∗ Return	−0.044***	−2.67	−0.031*	−1.91	−0.038**	−1.99	−0.026	−1.37
Assets			0.000	0.09			−0.017***	−3.42
Leverage			−0.050**	−2.28			−0.018	−0.71
Growth			0.086***	5.42			0.092***	4.97
Volatility			0.327***	3.46			0.457***	4.02
Loss			−0.041***	−2.72			−0.037**	−2.02
SOE			0.015**	2.09			−0.007	−0.86
Corporate governance								
BoardSize			0.027	1.35			0.136***	5.36
IndDir			0.018	0.18			−0.244**	−2.07
CEOTurnover			−0.071***	−6.63				
ChairTurnover							−0.055***	−3.90
Duality			0.025**	2.19			0.011	0.87
Industry fixed effects	Present		Present		Present		Present	
Observations	6787		6787		6787		6787	
R-squared	0.041		0.057		0.027		0.042	

The sample consists of 6787 observations for A-share companies in China from 2004 to 2009 for which data are available in the databases, excluding those in the financial industry and ST firms. The table presents OLS regression results based on equation (1). The dependent variable of Models 1–2 (3–4) is Δ*ExeComp* (Δ*DirComp*), which is measured by the change in the logarithm of the top three executives' (directors') combined compensation from the previous year. The explanatory variables include the change in ROA from the previous year (Δ*ROA*), the IFRS adoption indicator (*IFRS*), and their interaction term (*IFRS* ∗ Δ*ROA*). Control variables include factors describing firm characteristics and corporate governance. Industry fixed effects are also included in all regressions (not reported). The *t*-values, adjusted for heteroskedasticity (White, 1980) and clustered by firm (Petersen, 2009), are given in parentheses.
* Significance level at 10%.
** Significance level at 5%.
*** Significance level at 1%.

4, where Δ*DirComp* is the dependent variable.[11] This finding suggests that executives in China are paid much less for market performance than for accounting performance, which is consistent with the limited role of stock returns in executive compensation, as documented by Firth et al. (2006) and Du and Wang (2007). The coefficient of the interaction term (*IFRS* ∗ *Return*) is negative in Models 1–4. In Model 2, the coefficient is just shy of the 10% significance level. In Model 4, which includes all control variables, the coefficient is insignificant. The evidence suggests that after mandatory IFRS adoption there is even some reduction in the sensitivity of executive compensation to stock returns. If the increase in accounting-based performance sensitivity after IFRS adoption is due to a general trend of increasing efficiency in compensation contracts (instead of due to the IFRS adoption itself) we should see a similar increase in the sensitivity of executive compensation to stock returns. Accordingly, the negative coefficient of *IFRS* ∗ *Return* ensures the reliability of our findings. The coefficient of *IFRS* ∗ *Return* is also consistent with our expectation. On the one hand, IFRS adoption, as an accounting standard-based rule, is believed to have more direct influence on accounting performance

[11] In the 109 compensation contracts that we hand-collected, only 1 uses stock price as its reference criterion in addition to accounting earnings. The study by Wu and Wu (2010) also suggests that only 2 out of 82 equity incentive programs take stock price as the assessment indicator.

than on stock returns. On the other hand, stock performance in China moved away from firm fundamentals under the extremely volatile market environment during 2006–2008, so it makes sense to reduce the weight of stock returns in executive compensation.

As shown in Models 2 and 4, the sales growth rate (*Growth*) and stock return volatility (*Volatility*) are positively associated with executive compensation. The higher the sales growth rate and the greater the stock return risk, the higher the growth rate of executive or director compensation. There is a negative relationship between the change in executive compensation ($\Delta ExeComp$ or $\Delta DirComp$) and the loss-making firm indicator (*Loss*) or the CEO or chairman turnover indicator (*CEOTurnover* or *ChairTurnover*), which suggests a smaller increase in executive compensation for a firm experiencing a loss or an executive turnover in that year.

Firm size (*Assets*) is significantly negatively related to changes in the combined compensation of the top three directors, but *Assets* is insignificantly associated with changes in the combined compensation of the top three executives. SOEs generally see more increases in the top three executives' combined compensation than non-SOEs, but they show almost no corresponding change in the top three directors' combined compensation. The coefficients of board size (*BoardSize*) and board independence (*IndDir*) are significant only in Model 4, where $\Delta DirComp$ is the dependent variable. When the CEO of a firm is also the chairman of the board, there is a significant increase in the top three executives' combined compensation, but no significant change in the top three directors' combined compensation.

In summary, our analysis on accounting-based performance sensitivity following the mandatory IFRS adoption in 2007 indicates that executives are increasingly being paid based on accounting performance. That is, accounting performance has become a more powerful predictor of executive compensation since the adoption.

4.2. Subsample analysis based on cross-region institutional quality

In this subsection, we test whether IFRS adoption has different effects across regions of China in terms of the sensitivity of executive compensation to accounting-based performance. We measure differences in institutional quality by the level of marketization by partitioning our full sample into two subsamples, based on the marketization index (*MIndex*) of the region where a firm is registered as of 2006. Specifically, we calculate the median of *MIndex*, pooling all firms by region, and place firms with an *MIndex* less than or equal to the median in the *Low MIndex Sample*, and firms with an *MIndex* greater than the median in the *High MIndex Sample*.

Table 4 reports the subsample regression results using the *Low MIndex Sample* and the *High MIndex Sample*, based on Eq. (1). All of the control variables in Table 4 are included. As shown, the coefficient of $IFRS * \Delta ROA$ has statistical significance only in the *High MIndex Sample*, which suggests that the increase in accounting-based performance sensitivity in the post-IFRS adoption period (compared to the pre-IFRS adoption period) occurs only in regions with higher institutional quality. This result is consistent with our expectation that high institutional quality increases the enforcement quality of IFRS. Hence, the influence of IFRS on the use of accounting-based performance in executive compensation is highest in regions with higher institutional quality. The coefficients of the control variables are quite similar to those in Table 3.

4.3. Subsample analysis based on the influence of IFRS across firms

To analyze whether the effect of IFRS adoption on accounting-based performance sensitivity in executive compensation varies across firms that are affected to different degrees by the adoption itself, we make use of the IFRS adjustments in 2006. We define the variable *IFRS_Adjustment* as the ratio of the absolute value of the difference between the net income based on IFRS and that based on Chinese GAAP in 2006 to the net income based on Chinese GAAP in 2006. Then we split the whole sample into two subsamples, with one subsample being the *Small IFRS_Adjustment Sample* for firms with an *IFRS_Adjustment* less than the industry median, and the other being the *Big IFRS_Adjustment Sample* for firms with an *IFRS_Adjustment* greater than the industry median. Table 5 reports the regression results using the *Small IFRS_Adjustment Sample* and the *Big IFRS_Adjustment Sample*, based on equation (1). As shown, the coefficient of $IFRS * \Delta ROA$ is only significantly positive in the *High IFRS_Adjustment Sample*, which suggests that the increase in accounting-based

Table 4
Subsample regression results based on marketization.

Variable	1		2		3		4	
	Low MIndex sample		High MIndex sample		Low MIndex sample		High MIndex sample	
	Coeff.	*t*-Value	Coeff.	*t*-Value	Coeff.	*t*-Value	Coeff.	*t*-Value
Constant	−0.079	−0.57	0.155	1.17	0.077	0.46	0.357**	2.20
ΔROA	0.695***	2.94	0.565**	2.06	0.698**	2.49	0.479	1.42
IFRS	−0.002	−0.12	0.011	0.82	−0.016	−0.99	0.010	0.65
IFRS ∗ ΔROA	0.373	1.33	0.678**	2.14	0.393	1.16	0.744*	1.87
Firm characteristics								
ΔROA_1	0.747***	4.52	0.859***	5.21	0.869***	4.40	0.814***	4.14
Return	0.009	0.43	0.051***	3.00	−0.019	−0.79	0.056***	2.63
IFRS ∗ Return	−0.010	−0.43	−0.053**	−2.37	0.005	0.17	−0.058**	−2.15
Assets	0.005	0.88	−0.002	−0.30	−0.011*	−1.67	−0.020***	−2.76
Leverage	−0.041	−1.26	−0.074**	−2.45	−0.036	−0.99	−0.011	−0.28
Growth	0.117***	5.08	0.053**	2.40	0.127***	4.74	0.058**	2.23
Volatility	0.309**	2.29	0.340**	2.55	0.642***	3.88	0.251	1.60
Loss	−0.048**	−2.30	−0.035	−1.56	−0.041	−1.61	−0.033	−1.15
SOE	0.015	1.48	0.011	1.13	−0.012	−0.93	−0.001	−0.08
Corporate governance								
BoardSize	0.019	0.70	0.035	1.20	0.116***	3.25	0.151***	4.19
IndDir	0.127	0.88	−0.140	−1.00	−0.163	−0.99	−0.390**	−2.26
CEOTurnover	−0.068***	−4.60	−0.078***	−4.95				
ChairTurnover					−0.054***	−2.78	−0.057***	−2.83
Duality	0.044**	2.51	0.010	0.66	0.015	0.77	0.009	0.54
Industry fixed effects	Present		Present		Present		Present	
Observations	3542		3245		3542		3245	
R-squared	0.064		0.054		0.053		0.038	

The whole sample is partitioned into two subsamples based on the marketization index (*MIndex*) provided by Fan et al. (2007). The firms registered in a province that has *MIndex* less than the median are placed in the *Low MIndex Sample*, and the firms registered in a province that has *MIndex* greater than the median are placed in the *High MIndex Sample*. The dependent variable of Models 1–2 (3–4) is Δ*ExeComp* (Δ*DirComp*), which is measured by the change in the logarithm of the top three executives' (directors') combined compensation from the previous year. The explanatory variables include the change in ROA from the previous year (Δ*ROA*), the IFRS adoption indicator (*IFRS*), and their interaction term (*IFRS* ∗ Δ*ROA*). Control variables include factors describing firm characteristics and corporate governance. Industry fixed effects are also included in all regressions (not reported). The *t*-values, adjusted for heteroskedasticity (White, 1980) and clustered by firm (Petersen, 2009), are given in parentheses.

* Significance level at 10%.
** Significance level at 5%.
*** Significance level at 1%.

performance sensitivity in the post-IFRS adoption period (compared to the pre-IFRS adoption period) occurs only in firms that are more affected by the adoption. Again, the results for the control variables are very similar to those in Table 3.

5. Additional analysis

As argued in Section 2.3, the increase in earnings management and decrease in accounting conservatism after IFRS adoption should have opposite effects on the accounting-based performance sensitivity of executive compensation. We predict that the positive effect of IFRS adoption suggested in the prior section is driven by the reduction in accounting conservatism that is associated with IFRS adoption. In this section, we provide additional evidence for this prediction by conducting subsample analyses based on some key indicators. Table 6 presents the results from using Eq. (1).

First, we consider a fair value-related accounting item, namely income from changes in fair value. As mentioned earlier, the essential characteristic of mandatory IFRS adoption in China is the change from historical

Table 5
Subsample regression results based on IFRS adjustments.

Variable	1		2		3		4	
	Small IFRS_Adjustment sample		Big IFRS_Adjustment sample		Small IFRS_Adjustment sample		Big IFRS_Adjustment sample	
	Coeff.	*t*-Value	Coeff.	*t*-Value	Coeff.	*t*-Value	Coeff.	*t*-Value
Constant	0.185	1.30	−0.177	−1.33	0.482***	2.88	−0.124	−0.75
ΔROA	1.021***	3.32	0.402*	1.83	0.559	1.51	0.698***	2.63
IFRS	0.004	0.28	0.003	0.23	−0.001	−0.07	−0.007	−0.42
IFRS ∗ ΔROA	0.294	0.84	0.664**	2.47	0.672	1.57	0.633*	1.92
Firm characteristics								
ΔROA_1	0.867***	4.98	0.741***	4.34	0.973***	4.50	0.833***	4.15
Return	0.023	1.22	0.026	1.33	0.011	0.46	0.020	0.84
IFRS ∗ Return	−0.031	−1.30	−0.023	−0.95	−0.031	−1.10	−0.024	−0.89
Assets	−0.014**	−2.47	0.018***	3.20	−0.037***	−5.31	0.006	0.86
Leverage	−0.044	−1.30	−0.037	−1.23	0.027	0.70	−0.013	−0.37
Growth	0.114***	4.78	0.052**	2.40	0.132***	4.75	0.049*	1.89
Volatility	0.176	1.19	0.476***	3.65	0.357**	2.13	0.566***	3.46
Loss	−0.044*	−1.71	−0.045**	−2.26	−0.079**	−2.51	−0.012	−0.48
SOE	0.009	0.95	0.027**	2.53	0.000	0.04	−0.006	−0.48
Corporate governance								
BoardSize	3.36	−0.032	−1.14	0.181***	4.77	0.080**	2.37	0.094***
IndDir	1.08	−0.094	−0.66	−0.017	−0.10	−0.312*	−1.86	0.160
CEOTurnover	−3.51	−0.086***	−5.61					−0.055***
ChairTurnover				−0.029	−1.35	−0.079***	−4.14	
Duality	2.13	0.018	1.09	0.010	0.56	0.007	0.34	0.037**
Industry fixed effects	Present		Present		Present		Present	
Observations	3246		3283		3246		3283	
R-squared	0.087		0.060		0.053		0.043	

The whole sample is partitioned into two subsamples based on *IFRS_Adjustment*, which is measured by the absolute value of the difference between the net income based on IFRS and that based on Chinese GAAP, divided by the net income based on Chinese GAAP in 2006. The firms with *IFRS_Adjustment* less than the industry median are placed in the *Small IFRS_Adjustment* sample, and the firms with *IFRS_Adjustment* greater than the industry median are placed in the *Big IFRS_Adjustment Sample*. The dependent variable of Models 1–2 (3–4) is Δ*ExeComp* (Δ*DirComp*), which is measured by the change in the logarithm of the top three executives' (directors') combined compensation from the previous year. The explanatory variables include the change in ROA from the previous year (Δ*ROA*), the IFRS adoption indicator (*IFRS*), and their interaction term (*IFRS* ∗ Δ*ROA*). Control variables include factors describing firm characteristics and corporate governance. Industry fixed effects are also included in all regressions (not reported). The *t*-values, adjusted for heteroskedasticity (White, 1980) and clustering by firm (Petersen, 2009), are given in parentheses.

* Significance level at 10%.

** Significance level at 5%.

*** Significance level at 1%.

cost basis to fair value basis. The import of fair value is expected to be closely associated with the change in earnings management and accounting conservatism after IFRS adoption. Since IFRS adoption, firms are required to report income from changes in fair value. We classify the whole sample into two subsamples, with one subsample being the *Fair Value Sample* (for firms with non-zero income from changes in fair value during the post-IFRS adoption period), and the other being the *Non-Fair Value Sample* (for firms with zero income from changes in fair value during the same period). If our primary results are driven by the reduction in accounting conservatism associated with IFRS adoption, the influence of accounting conservatism should be greater for the *Fair Value Sample* than for the *Non-Fair Value Sample*. As shown in Panel A of Table 6, the coefficient of $IFRS * \Delta ROA$ is only significantly positive in the *Fair Value Sample*, which is consistent with our expectation.

We also consider a direct accounting conservatism-related indicator, the C-Score, based on the Khan and Watts (2009) model (*CSCORE*). We first calculate *CSCORE_Change* for each firm as the average value of *CSCORE* during the post-IFRS adoption 2007–2009 period, minus the average value of *CSCORE* during the pre-IFRS adoption 2004–2006 period. Then we place those firms with a negative *CSCORE_Change* in the *CSCORE_Decreasing Sample*, and those firms with a non-negative *CSCORE_Change* in the *CSCORE_Increasing Sample*. If our primary results are driven by the reduction in accounting conservatism that is associated with IFRS adoption, then the influence of accounting conservatism should be greater for the *CSCORE_Decreasing Sample* than for the *CSCORE_Increasing Sample*. As shown in Panel B of Table 6, the coefficient of $IFRS * \Delta ROA$ is only significantly positive in the *CSCORE_Decreasing Sample*, which is consistent with our argument. All of the results in Table 6 support our argument that the positive effects of IFRS adoption on the use of accounting performance in executive compensation are largely determined by the reduction in accounting conservatism associated with IFRS adoption.

6. Robustness tests

In this section, we conduct a series of robustness tests to check the reliability of our results. For brevity, we only report the results of the tests that were designed to rule out the influence of the non-tradable share reform on changes in the top three executives' combined compensation ($\Delta ExeComp$) as shown in Table 7. All of the other regression results are qualitatively the same as previous results. The regression results are available on request.

6.1. Influence of the non-tradable share reform

Our sample period of 2004–2009 largely overlaps with another milestone event for the Chinese stock market, namely, the non-tradable share reform, which started in 2005 and was almost finished by 2008. This reform aimed to unlock non-tradable shares, allowing them to be freely traded in exchange markets. Prior studies have provided empirical evidence that the non-tradable share reform played a role in corporate governance and stock market valuation.

In this section, we conduct three robustness tests to control for the possible influence of the non-tradable share reform on our findings. First, we include a dummy variable indicating whether the plan of the non-tradable share reform was approved by the holders of tradable shares in the given year (*Reform*), and an interaction term ($Reform * \Delta ROA$) to control for the effect of the non-tradable share reform on accounting-based performance sensitivity. Models 1 and 2 in Table 7 suggest that the coefficient of $Reform * \Delta ROA$ is insignificant. Also, we still find a significant positive coefficient of $IFRS * \Delta ROA$. For the second robustness test, we re-run all our regressions in the pre-IFRS adoption period of 2004–2006. We exclude *IFRS* and the interaction term $IFRS * \Delta ROA$, but include *Reform* and the interaction term $Reform * \Delta ROA$. As suggested by Model 3 in Table 7, the coefficient of $Reform * \Delta ROA$ is completely insignificant, which indicates that the non-tradable share reform had no significant effect on accounting-based performance sensitivity even before the IFRS adoption. Lastly, we re-run all of our regressions using a subsample of firms issuing B- or H-shares, which had already adopted IFRS before 2007. If the non-tradable share reform played a role in accounting-based performance sensitivity, we should see an even stronger association between executive compensation and accounting performance in the post-reform period compared to the pre-reform period. As shown by Model

Table 6
Additional subsample analysis.

Variable	1		2		3		4	
	Fair value sample		Non-fair value sample		Fair value sample		Non-fair value sample	
	Coeff.	*t*-Value	Coeff.	*t*-Value	Coeff.	*t*-Value	Coeff.	*t*-Value
Panel A. Subsample regression results based on the income from changes in fair value								
Constant	0.079	0.55	0.033	0.26	0.278*	1.76	0.203	1.22
ΔROA	0.300	1.05	0.849***	3.71	0.602*	1.84	0.629**	2.23
IFRS	0.013	0.86	−0.003	−0.28	0.011	0.60	−0.012	−0.86
IFRS ∗ ΔROA	0.907***	2.65	0.282	1.06	0.825**	2.11	0.378	1.13
Other controls	Present		Present		Present		Present	
Industry fixed effects	Present		Present		Present		Present	
Observations	2603		4184		2603		4184	
R-squared	0.054		0.062		0.053		0.041	
	1		2		3		4	
	CSCORE-Decreasing sample		CSCORE-Increasing sample		CSCORE-Decreasing sample		CSCORE-Increasing sample	
	Coeff.	*t*-Value	Coeff.	*t*-Value	Coeff.	*t*-Value	Coeff.	*t*-Value
Panel B. Subsample regression results based on CSCORE_Change								
Constant	−0.196	−1.58	0.234	1.33	−0.074	−0.50	0.464**	2.28
ΔROA	0.821***	3.63	0.975**	2.54	0.760***	2.83	0.931**	2.05
IFRS	−0.000	−0.01	−0.005	−0.26	−0.011	−0.80	−0.006	−0.26
IFRS ∗ ΔROA	0.466*	1.75	0.425	0.93	0.686**	2.10	0.422	0.78
Other controls	Present		Present		Present		Present	
Industry fixed effects	Present		Present		Present		Present	
Observations	4490		1687		4490		1687	
R-squared	0.064		0.053		0.045		0.046	

The whole sample is partitioned into two subsamples based on the income from changes in fair value, and *CSCORE_Change* in Panels A and B, respectively. The firms with non-zero income from changes in fair value during the post-IFRS adoption 2007–2009 period are placed in the *Fair Value Sample*, and the firms with zero income from changes in fair value during the same period are placed in the *Non-Fair Value Sample*. The firms with a negative *CSCORE_Change* are placed in the *CSCORE-Decreasing Sample*, and the firms with a non-negative *CSCORE_Change* are placed in the *CSCORE-Increasing Sample*. The dependent variable of Models 1–2 (3–4) in each panel is Δ*ExeComp* (Δ*DirComp*), which is measured by the change in the logarithm of the top three executives' (directors') combined compensation from the previous year. The explanatory variables include the change in ROA from the previous year (Δ*ROA*), the IFRS adoption indicator (*IFRS*), and their interaction term (*IFRS* ∗ Δ*ROA*). In all models, we further control for variables describing firm characteristics and corporate governance (not reported). Industry fixed effects are also included in all regressions (not reported). The *t*-values, adjusted for heteroskedasticity (White, 1980) and clustered by firm (Petersen, 2009), are given in parentheses.

* Significance level at 10%.

** Significance level at 5%.

*** Significance level at 1%.

Table 7
Robustness tests.

Variable	1		2		3		4		5	
	Coeff.	*t*-Value	Coeff.	*t*-Value	Coeff.	*t*-Value	Coeff.	*t*-Value	Coeff.	*t*-Value
Constant	0.029	0.30	0.029	0.30	−0.131	−0.81	0.048	0.17	−0.008	−0.03
ΔROA	0.724***	3.98	0.762***	3.83	0.763***	3.27	0.997**	2.04	0.960*	1.67
IFRS	0.013	1.23	0.013	1.24					−0.037	−1.04
IFRS *ΔROA	0.462**	2.21	0.538**	2.13					0.578	0.88
Reform	−0.026***	−2.65	−0.027***	−2.69	−0.024*	−1.73	−0.036	−1.18		
Reform *ΔROA			−0.128	−0.50	−0.184	−0.52	0.570	0.83		
Other Controls	Present		Present		Present		Present		Present	
Industry fixed effects	Present		Present		Present		Present		Present	
Observations	6787		6787		3187		564		564	
R-squared	0.057		0.057		0.050		0.101		0.101	

The sample used in Models 1–2 consists of 6787 observations for A-share companies in China from 2004 to 2009 for which data are available in the databases, excluding those in the financial industry and ST firms. Observations excluding those in the post-IFRS adoption period are used in Model 3. In Models 4 and 5, we only include the firms issuing additional B- or H-shares. The dependent variable is Δ*ExeComp*, which is measured by the change in the logarithm of the top three executives' combined compensation from the previous year. In all models, we further control for variables describing firm characteristics and corporate governance (not reported). Industry fixed effects are also included in all regressions (not reported). The *t*-values, adjusted for heteroskedasticity (White, 1980) and clustered by firm (Petersen, 2009), are given in parentheses.

* Significance level at 10%.

** Significance level at 5%.

*** Significance level at 1%.

4 in Table 7, the coefficient of the interaction term $Reform * \Delta ROA$ is not statistically significant, which suggests that our results are not driven by the influence of the non-tradable share reform. Model 5 indicates that the coefficient of $IFRS * \Delta ROA$ is insignificant for B- and H-share companies, as these companies are not likely to be influenced by IFRS adoption. The results for B- and H-share companies make our findings more convincing and provide informative evidence concerning the causality between IFRS adoption and executive compensation.

6.2. Other robustness checks

We also conduct several other robustness tests.

First, we conduct a similar analysis using an alternative measure of executive compensation, namely CEO compensation, and two alternative measures of accounting performance, namely return on equity (ROE) and return on sales (ROS). The results are similar to those from prior estimations.

Second, we test another alternative explanation of our findings, the learning effect. If the learning effect is a factor in previous results, then the increase in accounting-based performance sensitivity would be simply the effect of time trends. To rule out this explanation, we expand the sample to 2002, and limit our analysis to the pre-IFRS adoption 2002–2006 period. We set a variable, *Post*, to indicate the time trend, which takes the value 1 for 2005–2006, and 0 otherwise. Then we re-run all our regressions, taking *Post*, ΔROA and the interaction term $Post * \Delta ROA$ as explanatory variables. The coefficient of the interaction term $Post * \Delta ROA$ shows no significance, which suggests that our main findings are not due to the learning effect. If we set the variable *Post* to 1 during 2004–2006, and 0 otherwise, we obtain very similar findings.

Third, to consider the possible influence of the recent financial crisis, we re-run all our regressions using a subsample excluding 2008, which is the year when the influence of the financial crisis was most serious in China. As the influence of this business cycle could be generally reflected by industry trends, we also try to remove the influence of the recent crisis using the alternative measure of the change in industry-adjusted ROA. Our findings remain unaltered. Also, we include each year's GDP growth rate as an additional controlling factor of the macroeconomic conditions in all of the regressions. We find results very similar to the previous results.

Fourth, to avoid the effects of noise at the firm-year level, we conduct another test at the industry level. We identify IFRS influence in each industry as the median value of the firms' *IFRS_Adjustment* within the industry. Untabulated results suggest that the relative increase in accounting-based performance sensitivity in the post-IFRS adoption period occurs only in industries with IFRS influence greater than the median, which is quite consistent with Table 5.

Finally, we re-run all our regressions after winsorizing the top and bottom 1%, 2.5%, 7.5% and 10% for each continuous variable. The results are still highly significant at winsorization levels of 2.5%, 7.5% and 10%, and close to being significant at the 1% winsorization level.

7. Conclusion

As a principle-based standard, IFRS, and in particular fair value accounting, brings challenges to less-developed emerging markets. Since IFRS adoption in China, managers' incentives to make use of discretion and respond to the more symmetric reflection of both good news and bad news have given rise to an increase in earnings management and a decrease in accounting conservatism. Increased earnings management polishes accounting performance, which makes managers' effort more opaque to investors and boards, and reduces the weight of accounting performance in executive compensation. However, decreasing accounting conservatism makes accounting earnings more natural and timely, recognizing both good news and bad news, which can improve internal evaluation based on accounting performance. This study provides evidence on these joint effects of IFRS adoption concerning the sensitivity of executive compensation to accounting performance.

Using a sample of 6787 firm-year observations for A-share firms in China from 2004 to 2009, we find strong evidence supporting the positive effects of IFRS adoption on accounting-based performance sensitivity, after controlling for firm and corporate governance characteristics. Furthermore, based on subsample analysis, we find that the positive effects of IFRS adoption on the accounting-based performance sensitivity of executive compensation occur only in regions with higher institutional quality (as measured by the level of marketization) and in firms that are more affected by the adoption (as measured by IFRS adjustments in 2006). Through subsample analyses based on income from changes in fair value and on changes in C-Score, we find that the positive effect of IFRS adoption on the accounting-based performance sensitivity of executive compensation is significant only for firms with non-zero income from changes in fair value during the post-IFRS adoption period and for firms with negative changes in C-Score after IFRS adoption. These findings support our argument that in China, the positive effect of IFRS adoption on the use of accounting performance in executive compensation is driven by the reduction in accounting conservatism associated with IFRS adoption.

This study enriches our understanding of how mandatory adoption of IFRS affects executive compensation in emerging markets. The findings have policy implications, especially in terms of internal contract benefits. We provide a thorough examination of the factors influencing the effects of IFRS adoption within a single country, China, which is generally missing in EU-based studies.

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IPO initial returns in China: Underpricing or overvaluation?

Shunlin Song [a,*], JinSong Tan [b,c], Yang Yi [b,c]

[a] School of Accountancy, Central University of Finance and Economics, China
[b] School of Business, Sun Yat-sen University, China
[c] Center for Accounting, Finance and Institutions, Sun Yat-sen University, China

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ABSTRACT

This paper separates the amount of IPO underpricing (primary market underpricing) and overvaluation (secondary market overvaluation) from the value of an IPO's initial return to evaluate the relative importance of these two factors and their main determinants. Using data on the IPOs of 948 Chinese firms, we find that average initial returns are 66% and that underpricing and overvaluation are between 14–22% and 44–53%, respectively, depending on the method used to assess firms' intrinsic values. In addition, while both the value of the initial return and the extent of overvaluation are significantly negatively related to post-IPO long-run stock performance, overvaluation can predict post-IPO performance better than the value of the initial return. Value uncertainty in IPOs is positively related to both underpricing and overvaluation, and both the underwriter's reputation and the existence of pricing regulation are positively related to underpricing. Investor sentiment has a positive effect on overvaluation but has no effect or a negative effect on underpricing. Overall, our results suggest that in China overvaluation accounts for a larger proportion of the initial return than underpricing, and that underpricing and overvaluation have different determinants.

1. Introduction

On November 5, 2007, PetroChina (601857), the most profitable company in Asia, returned to the A-share market at the peak of a bull market. The initial return (also called the first-day return) of PetroChina peaked

* Corresponding author.
E-mail address: dalin507@163.com (S. Song).

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at 163%, making it the world's most valuable company by market capitalization at that moment. However, the stock price of PetroChina gradually dropped after its IPO, depreciating by 76% over the next three years. Consequently, countless holders of A-shares in PetroChina lost a great deal of money. However, in China's IPO market, stories like that of PetroChina are common. While IPO initial returns are extremely high, the post-IPO stock performance of many companies is very poor. In theory, there are only two cases in which IPOs would experience an abnormally high initial return: the offer price of the IPO is too low, indicating that there is underpricing in the primary market, or the first-day closing price is too high, indicating that there is overvaluation in the secondary market (Han and Wu, 2007).

Therefore, a crucial question is which of these two cases is relatively more important in explaining the phenomena of extremely high initial returns in China: underpricing in the primary market or overvaluation in the secondary market? We believe that the answer to this question is not only vital to studies of IPO pricing but also has important implications for the regulators who must decide whether and how to reform IPO pricing in China. Unfortunately, when discussing initial returns in China, the media seldom distinguish between IPO initial returns and underpricing. Moreover, the literature usually measures IPO underpricing with IPO initial returns and does not differentiate between the extent of underpricing and the extent of overvaluation (e.g., Wang et al., 2009; Zhang and Liao, 2011).

However in the Chinese stock market, first-day closing prices are often significantly overpriced and thus the initial return and the underpricing are two totally different concepts. If the extent of underpricing and overvaluation is not separated from the value of the initial return, we not only cannot evaluate the relative importance of these two parts, but also cannot precisely examine the main determinants of underpricing and overvaluation.

Motivated by this problem and gap in the literature, this paper clarifies the two concepts of IPO initial return and IPO underpricing, separates IPO underpricing and IPO overvaluation from the value of the initial return, investigates the relative importance of these two parts, and then examines their main determinants. Estimating IPO firms' intrinsic values is the key to measuring the extent of underpricing and overvaluation. Two methods for assessing intrinsic value are used and compared in this paper: analyst forecasts and comparisons to similar firms (we explain these two methods in detail in Section 4).

Using data from the IPOs of 948 Chinese firms between 2006 and 2011, our results show that, during the sample period, when a firm's intrinsic value is measured by analyst forecasts, underpricing is about 22.2% and overvaluation is about 44.1% (twice as much as underpricing). However, when intrinsic value is assessed through comparable firms, underpricing is about 13.6% and overpricing is about 52.7% (three times as much as underpricing). These results consistently show that overvaluation accounts for the largest proportion of the value of the IPO initial return, suggesting that the first-day closing price being overvalued by investors is more important in explaining the high initial return of Chinese IPOs than the offer price being underpriced by the issuer.

In addition, both the value of the initial return and the extent of overvaluation are found to be significantly negatively associated with post-IPO long-run stock performance. According to the regression coefficients of the initial return and the overvaluation, the extent of overvaluation, as measured by analyst forecasts, predicts post-IPO long-run stock performance better than the value of the initial return, suggesting that extracting the overvaluation from the initial return has value in terms of forecasting post-IPO stock performance. Additionally, the overvaluation measured by analyst forecasts predicts post-IPO long-run stock performance better than the overvaluation measured by comparison to similar firms, suggesting that analyst forecasts are a more accurate way to measure the extent of overvaluation than using comparable firms.

We also find that the value uncertainty of IPOs is positively related to both underpricing and overvaluation. Both underwriter reputation and pricing regulation are positively related to underpricing. Investor sentiment has a positive effect on overvaluation but has no effect or a negative effect on underpricing. Overall, our results suggest that overvaluation accounts for the largest proportion of the value of initial returns in China, and that underpricing and overvaluation have different determinants.

These findings contribute to the literature in two ways. First, while prior studies imply that IPO initial returns consist of two parts, underpricing and overvaluation (e.g., Cao and Dong, 2006; Han and

Wu, 2007), there has been little empirical work that attempts to quantify the relative importance of these two parts. This paper shows that overvaluation accounts for the majority of an IPO's initial return. This finding contributes to studies of IPO pricing by pointing out which parts of the initial return deserve more attention. It also has implications for regulators who need to consider how to reform IPO pricing structures, by showing that it is more important to control first-day overvaluation than to reduce primary market underpricing. Moreover, decomposing the initial return can also help to evaluate more comprehensively the potential effects of IPO pricing reform.

A second way that this paper contributes to the literature is that we split the initial return into underpricing and overvaluation, and investigate the main determinants of these aspects separately, which can help us further understand the determinants of the value of IPO initial returns and provides a reference for further studies that examine the determinants of these two aspects.

This paper is divided into five sections. In Section 2, we introduce the institutional background of China's IPO market. Section 3 provides a theoretical analysis. Section 4 presents our methodology. Section 5 reports our empirical results and Section 6 concludes the paper.

2. Institutional background

During the process of an IPO, the behavior of listed companies, underwriters and investors are influenced by both the institutional environment and institutional arrangements. Therefore, before we analyze the composition of IPO initial returns and their determinants in China, it is necessary to briefly introduce the institutional environment and institutional arrangements in China's IPO market.

2.1. IPO institutional environment

IPO initial returns can be explained by both rational and non-rational theories. Given that the market efficiency in China is relative low and the primary market is not a competitive one, non-rational explanations may be more appropriate (Han and Wu, 2007). First, the extent of the market efficiency of China's stock market is lower than that of a developed market. While the efficiency of the U.S. stock market has been recognized by both academics and practitioners, Chinese scholars generally believe that China's stock market has not yet reached a level of semi-strong form market efficiency. For example, many studies, such as Lu and Zhou (2007) and Xu et al. (2011) have found evidence against China having semi-strong form market efficiency. China's stock market is an emerging market with a very short history, characterized by inexperienced investors and intense speculation. As Su (2008) and Tian (2010) point out, most participants in China's stock market are individual investors (retail investors), who prefer speculation rather than value investment. This means that stock prices in China's stock market are easily influenced by investor sentiment.

Second, the primary market in China is not yet competitive. In a competitive primary market, underwriters have an incentive to underprice offer prices intentionally to avoid the risk of IPO failure. However, there are very few examples of IPO failures in China because investors in China have a very strong interest in subscribing to new shares (because of the high initial returns in China).[1] Due to the low risk of IPO failure, firms and underwriters have lower incentives to undervalue offer prices compared to those in a developed market. This means that rational theories may be relatively less important in explaining the value of initial returns in Chinese IPOs.

2.2. IPO institutional arrangements

In China, the government regulates many different aspects of IPOs and thus the evolution of IPO institutional arrangements goes hand in hand with changes in laws and regulations. The regulator controls the IPO process in two main ways: IPO qualifications and IPO pricing. In relation to IPO qualifications, the CRSC

[1] In June 2011, Baling Technology (002592) was forced to cease its IPO because the number of book building participants (mostly institutional investors) did not reach the quota of 20. It became the first failed IPO in China (Baling Technology IPO later succeeded in November 2011). The second failed IPO (Longmaster Information & Technology, 300288) did not appear until January 2012. The company succeeded in holding an IPO in February 2012). The fact that there are very few failed IPO cases suggests that there is a low risk of IPO failure in China.

Table 1
The evolution of China's IPO system since 2006.

Time period	September 2006–June 2009	June 2009–May 2012	May 2012 onward
Verification system	Approval system and sponsor system	Approval system and sponsor system	Approval system and sponsor system
IPO pricing system	Book building approach with "Window Guidance," IPO firm's PE multiple should not exceed 30	Book building approach without "Window Guidance"	Book building approach with "Window Guidance," IPO firm's PE Multiple should not exceed 25% of the average PE of industry peers
Book building system	(1) Preliminarily Inquiry: institutions must provide at least 20 valid bidders (50 if the firm will issue more than 400 million in shares) (2) All eligible allotment subjects who have participated in the preliminary inquiry can subscribe for new shares off-line and can change their bidding price and bidding number in the subscribing stage	(1) Preliminarily Inquiry: institutions must provide at least 20 valid bidders (50 if the firm will issue more than 400 million in shares) (2) Only eligible allotment subjects who have participated in the preliminary inquiry can and must participate in off-line subscription; only valid bidders (with a bidding price no less than the minimum of the range of offering prices) can participate in the subscription	(1) Preliminarily Inquiry: institutions must provide at least 20 valid bidders (50 if the firm will issue more than 400 million in shares) (2) Those who did not participate in the preliminary inquiry, or did not provide a valid bid are not eligible to participate in the accumulated bidding inquiry and the off-line allotment
Share allocation and lock-in system	(1) The amount of the off-line allotment should not exceed 20% (or 50% for firms issuing more than 400 million in shares) of total issued shares (2) Strategic investors are locked in for 12 months, and investors who obtain shares from off-line allotments are locked in for three months	(1) The amount of the off-line allotment should not exceed 20% (or 50% for firms issuing more than 400 million in shares) of total issued shares (2) Strategic investors are locked in for 12 months, and investors who obtain shares from off-line allotments are locked in for three months	(1) The amount of the off-line allotment should not be less than 50% of the total issued shares (2) Investors who obtain shares from off-line allotments are not subject to lockup
Related laws and regulations	"The Measures for the Administrations of Securities Issuance and Underwriting (September 19, 2006)"	"The Guidance for the Further Reform and Improvement of the IPO System (June 11, 2009)"	"The Guidance for the Further Deepening of Reform of the IPO System (April 28, 2012)" and "The Measures for the Administrations of Securities Issuance and Underwriting (May 18, 2012)"

(China Securities Regulatory Commission) implemented an approval system[2] in 2001, under which the Issuance Examination Committee of the CSRC examines whether the applicant meets the regulator's listing criteria. Complementing the approval system, a sponsor system was adopted in 2004, under which an underwriter conducts due diligence and verifies the truth, accuracy and completeness of the issuer's materials.

In relation to the second aspect of IPO pricing, China introduced the book building approach in 2005, which is the dominant method of issuing in most countries.[3] Under the book building approach, the

[2] The approval system means that when new stocks are issued, the issuer should not only completely disclose financial and non-financial information but also meet the regulator's listing criteria. The Issuance Examination Committee of the CSRC determines whether the applicant meets the listing criteria. The difference between an approval system and a registration system is whether the regulator judges the value of IPO firms. The sponsor system means that the underwriter and representative of the sponsor is responsible for recommending and guiding the issuer; conducting due diligence; verifying the truth, accuracy and completeness of the issuer's materials; and assisting the issuer in building a strict information disclosure system.

[3] The book building approach can be divided into two stages: the preliminary inquiry and the accumulated bidding inquiry. The issuer and the lead underwriter first determine the range of offering prices through a preliminary inquiry and then confirm the offering price through the accumulated bidding inquiry. Whether an accumulated bidding inquiry is required depends on the firm's size and the time of the IPO. Before 2012, small firms could choose whether to conduct an accumulated bidding inquiry and this has been voluntary for all firms since 2012.

underwriter seeks demand information from institutional investors and determines the offer price with the issuer according to the demand information received. IPO pricing reform in June 2009 further improved the book building approach. However, China's regulator has not yet thoroughly adopted the market-based IPO pricing approach used in developed markets and still controls IPO pricing through "Window Guidance."[4] Although "Window Guidance" was given up in the IPO reform of June 2009, it was restarted under the IPO reforms of May 2012. The history of IPO reform in China shows that the CSRC is still hesitant in deciding whether it is necessary to regulate IPO pricing. Thus research that discusses the pros and cons of IPO pricing regulation is still highly relevant in a Chinese context.

Table 1 summarizes the history of China's IPO system since the split share reform in 2006.

3. Theoretical analysis and predictions

3.1. IPO initial returns: underpricing or overvaluation

Many theories have been proposed to explain the puzzle of IPO initial returns. These theories can be categorized by whether they assume investors are rational or not (Han and Wu, 2007). Although current studies mainly explain IPO initial returns in the United States using theories based on asymmetric information, Ritter and Welch (2002) argue that information asymmetry cannot fully explain initial returns in the United States, which can be as high as 18%, and call for more explanations based on non-rational (or semi-rational) investors or issuers. Purnanandam and Swaminathan (2004) find that the median IPO offer price is overvalued by 14–50% relative to industry peers, depending on the peer-matching criteria, which suggests that initial returns may be a result of optimistic investor sentiment. Other studies such as those of Ljungqvist et al. (2006), Derrien (2005) and Dorn (2009) show that an overvalued first day closing price is a result of irrational investor sentiment.

In China, some studies use information asymmetry theory to explain initial returns (e.g., Guo and Zhao, 2006; Wang et al., 2009; Zhang and Liao, 2011), while others use investor sentiment theory to explain initial returns (e.g., Cao and Dong, 2006; Jiang, 2007; Han and Wu, 2007). We believe that extremely high initial returns in China (up to 66.3% in the period from 2006 to 2011) are unlikely to be able to be explained under the assumption of rational investors. In China, the real question is perhaps not whether the first-day closing price of IPOs is overvalued or not, but the extent of this overvaluation. The extent of the overvaluation is an unanswered question that must be answered with empirical evidence.

Studies have shown that the first-day closing price of IPOs usually reverses after the IPO, which raises the question of post-IPO long-run underperformance (Ritter and Welch, 2002; Jiang, 2007). This question is related to whether the high initial returns of IPOs are due to underpricing or overvaluation. If the initial return mainly results from underpricing, then it would be expected that initial returns would either not be related or positively related to post-IPO long-run performance. Intuitively, IPO underpricing should not be related to the long-run aftermarket performance. However, signaling theory in finance suggests that IPO underpricing is positively related to post-IPO long-run performance. According to the signaling model, high-quality IPO firms are more likely to set a lower offer price in an IPO, which deters lower quality firms from imitating the firm and recoups their up-front sacrifice post-IPO through future issuing activity (Welch, 1989; Grinblatt and Hwang, 1989). The signaling model has received some support from empirical evidence (e.g., Su and Fleisher, 1999). However, if initial returns are mainly a result of the overvaluation of the first-day closing price, we would expect the initial returns to be negatively related to post-IPO long-run performance because the overpriced first-day closing price will be corrected gradually by the secondary market.

In sum, according to this argument, if we split the initial return into underpricing and overvaluation, we predict that underpricing will not be related to or will be positively related to post-IPO long-run performance, and that overvaluation will be negatively related to post-IPO long-run performance.

[4] "Window Guidance" is a kind of regulation with Chinese characteristics. According to "The Measures for the Administrations of Securities Issuance and Underwriting (September 19, 2006)," the PE multiple used to determine the offering price, generally, cannot exceed 30. In China, the regulator's "Window Guidance" can substantially reduce the offering price.

3.2. Determinants of underpricing and overvaluation

In a developed market, the main participants in an IPO are the issuer, the underwriter and the investors. What is special in China is that the regulator is also an important participant in IPOs. Under the book building approach, the issuer and the underwriter negotiate over the result of the preliminary inquiry and determine the offer price, but the regulator can cap the maximum PE multiple of the offer price. We expect that, in China, a firm's IPO offer price will be mainly determined by the characteristics of the issuer and the underwriter, and whether there is IPO pricing regulation. Additionally, the first-day closing price will be mainly influenced by investor sentiment, and the characteristics of IPO firms may influence the effects of investor sentiment on the first-day closing price. Thus, we expect a firm's first-day closing price to be mainly affected by investor sentiment and the issuing firm's characteristics. Due to space limitations, we only consider the most important characteristics of the issuer and the underwriter, namely, the value uncertainty of IPOs and the underwriter's reputation.

3.2.1. The value uncertainty of IPOs

The value uncertainty of IPOs contributes to underpricing because there is asymmetric information between the issuer and the investors in that the true value of the IPO firm is known by the issuer but not by the investors. Therefore, investors require a lower offer price to compensate for their information uncertainty risk and the issuer needs to set a lower offer price to attract these uninformed investors (Beatty and Ritter, 1986). According to this argument, we predict that a higher value uncertainty of IPOs will be associated with greater IPO underpricing.

The value uncertainty of IPOs can also affect overvaluation. Existing studies suggest that the stock prices of firms with a higher value uncertainty are more likely to be affected by investor sentiment and speculative behavior (e.g., Baker and Wurgler, 2007). According to Miller (1977), under the assumption of a short-sale constraint and heterogeneous expectations, stock prices only reflect the most optimistic investors' expectations. Given that a higher value uncertainty is often related to higher heterogeneous expectations, the stock prices of firms with a higher value uncertainty are more susceptible to optimistic investor sentiment. Additionally, higher value uncertainty is also related to speculative behavior, and thus can lead to the overvaluation of stock prices. Given that investor sentiment and speculative behavior are common in China's stock market, we predict that a higher value uncertainty for IPO firms is positively related to the overpricing of the first-day closing price.

3.2.2. The underwriter's reputation

To reduce the risk of value uncertainty facing outside investors, the issuer can signal its fundamental value in many ways, including by increasing the retained proportion of outstanding shares (Brealey et al., 1977) and employing a reputed underwriter (Beatty and Ritter, 1986). Researchers in China have found evidence that the reputation of the auditor and venture capital companies have an effect on the extent of IPO underpricing (Wang et al., 2009; Zhang and Liao, 2011), but these studies fail to find evidence that the underwriter's reputation affects underpricing (Guo and Zhao, 2006; Song et al., 2011).

Theoretically, the reputation of the underwriter could either increase or decrease the extent of underpricing. On the one hand, according to the signaling hypothesis, underwriters with a higher reputation could send a positive signal to outside investors and mitigate the value uncertainty of IPOs, thus reducing underpricing (Beatty and Ritter, 1986). On the other hand, according to the conflict of interest hypothesis, there is a conflict of interest between the underwriter and the issuer. Underwriters have an incentive to set a lower offer price to reduce the risk of IPO failure and to cater to their customers (institutional investors) (Beatty and Welch, 1996; Guo and Zhao, 2006). Compared with underwriters with a low reputation, those with high reputations have stronger bargaining power in setting the offer price and are thus more capable of increasing IPO underpricing. Furthermore, compared with large firms, small firms have weaker bargaining power in setting the offer price and thus their shares are more likely to be underpriced by their underwriters. According to this analysis, we therefore do not have a clear prediction of the direction of the effect of an underwriter's reputation on the extent of underpricing.

3.2.3. IPO pricing regulation

As mentioned in the institutional background section, during some periods in our sample, the regulator stipulated that the offer prices of IPO firms were not allowed to exceed a certain PE multiple (for example, 30). In this situation, IPO pricing regulation would have decreased the offer price and thus increased IPO underpricing. Liu et al. (2011) have shown that deregulating IPO pricing indeed reduces the level of underpricing (as measured by IPO initial returns). We therefore predict that IPO pricing regulation is positively related to underpricing.

3.2.4. Investor sentiment

Investor sentiment affects underpricing. The puzzle of the hot market is well documented in academia. The initial returns and issue volume of IPOs fluctuate periodically. The initial returns of IPOs during some periods are much higher than the average level and there are more firms going public in some periods than in others (e.g., Ritter, 1984). The puzzle of the hot market suggests that IPO firms take advantage of investors' optimistic sentiment. Under the charge mode of underwriting in China,[5] we believe that underwriters have an incentive to exploit the optimistic sentiment of investors to increase an IPO firm's offer price, thus increasing their underwriting fee. Therefore, we predict that there will be a negative relationship between investor sentiment and underpricing.

Investor sentiment also affects overvaluation. According to the hypothesis of heterogeneous expectations proposed by Miller (1977), in a market without short-selling, when investors have divergent opinions about a firm's fundamental value, the stock price of this stock will only reflect the expectations of the most optimistic investors, leading to an overvalued stock price. Past studies, such as those by Ritter and Welch (2002) and Ljungqvist et al. (2006), have shown that investor sentiment can explain the high initial returns of IPOs in the United States. In China, short-selling is not available, and there is often a very high divergence of opinions among investors (as shown by the high turnover in the first-day trading of IPOs). So the closing prices of Chinese IPO firms are very likely to be subject to optimistic investor sentiment. Studies from China, such as Jiang (2007) and Han and Wu (2007), have also found evidence that investor sentiment is related to the overvaluation of first-day closing prices. We thus predict that investor sentiment will be positively related to overvaluation. Additionally, according to the previous analysis, we predict that the higher the value uncertainty of IPOs, the larger the effect of investor sentiment on the overvaluation.

Overall, we predict that the value uncertainty of IPOs will be positively related to both underpricing and overvaluation, the underwriter's reputation will be either be positively or negatively related to underpricing, IPO pricing regulation will have a positive influence on underpricing, investor sentiment will be positively related to overvaluation, and the value uncertainty of IPOs and investor sentiment will have an interactive effect on overvaluation. Table 2 summarizes these predictions.

4. Sample and methodology

4.1. Sample and data sources

To test our predictions, we initially collected data from the IPOs of 994 firms for the period from September 19, 2006 to December 31, 2011. We selected September 19, 2006 as the start time because this was the date when the CSRC enacted the "Measures for the Administrations of Securities Issuance and Underwriting." It was also at this time that the split share reform ended. By selecting IPOs that occurred after the new regulations were enacted in September 2006, we avoid potential discrepancies in the data caused by changes to regulations and institutions. Our sample period ends on December 31, 2011 because we want to ensure that there was at least one year of post-IPO stock performance data for each examined firm. Based on the initial sample, we exclude firms without sufficient data on analyst forecasts, stock prices and other firm characteristics, which left a sample of 948 IPO firms. The process of sample selection is reported in Table 3.

[5] It is reported that underwriters generally charge underwriting by segment. Within the range of the issuer's expected financing amount, the underwriter can usually obtain an underwriting fee of about 3% (which is rather low) but for the part exceeding the expected amount of financing the underwriting can charge as much as 10%.

Table 2
Predictions of the determinants of IPO underpricing and overvaluation.

	Value uncertainty	Underwriter reputation	IPO pricing regulation	Investor sentiment
IPO underpricing	Positive	Positive/negative	Positive	Negative
IPO overvaluation	Positive, interactive with investor sentiment	No prediction	No prediction	Positive, interactive with value uncertainty

Table 3
Sample selection process.

Year	2006	2007	2008	2009	2010	2011	Total
Initial sample	65	125	76	99	347	282	994
(Exclude: observations without sufficient data)	(5)	(16)	(3)	(4)	(11)	(7)	(46)
Final sample	60	109	73	95	336	275	948

Analyst forecast data was collected from the WIND and CSMAR (China Securities Market and Accounting Research) databases, and all other data, including IPO initial returns, post-IPO stock performance and firm characteristics, were obtained from the CSMAR database. It is important to note that WIND collects analyst forecasts from many securities companies but not all of them, so we collected additional data on analyst forecasts from CSMAR to complement the omission of some of these forecasts in the WIND database.

4.2. Model construction and variable definitions

4.2.1. Model construction

We use the following models to examine the effects of IPO initial returns, IPO underpricing and IPO overvaluation on post-IPO long-run stock performance:

$$BHAR = a + \beta_1 \times IR + \beta_2 \times Underwriter + \beta_3 \times Topone + \beta_4 \times EPS + \beta_5 \times Age + \beta_6 \times Size + I.Board + I.Indu + I.Year + +\varepsilon \quad (1)$$

$$BHAR = a + \beta_1 \times IRUP + \beta_2 \times IROP + \beta_3 \times Underwriter + \beta_4 \times Topone + \beta_5 \times EPS + \beta_6 \times Age + \beta_7 \times Size + I.Board + I.Indu + I.Year + +\varepsilon \quad (2)$$

In Model 1, the dependent variable is *BHAR* (Buy and Hold Abnormal Return), which represents the post-IPO long-run stock performance. This can be expressed as *BHAR240*, *BHAR480* and *BHAR720*, representing the one-year, two-year, and three-year post-IPO BHAR, respectively. The main independent variable is *IR*, which is a proxy for IPO initial returns. In addition, drawing on the literature (e.g., Zhang and Liao, 2011; Song et al., 2011), we include *Underwriter* (underwriter reputation), *Topone* (shareholding proportion of the largest shareholder), *EPS* (earnings per share), *Age* (firm age), *Size* (firm size), *I.Board* (dummy variables for listing board effects), *I.Year* (dummy variables for year effects) and *I.Indu* (dummy variables for industry effects) as control variables in our model. Based on our theoretical analysis, we predict that *IR* is negatively related to *BHAR*. The variables used in Model 1 are defined in detail in Table 4.

In Model 2, the main independent variables are *IRUP* (IPO underpricing) and *IROP* (IPO overvaluation), instead of *IR*. The control variables are the same as those in Model 1. According to our theoretical analysis, we predict that *IROP* will have a negative relationship with *BHAR*, and that *IRUP* will not be related to or will be positively related to *BHAR*.

We use the following model to investigate the determinants of IPO initial returns, IPO underpricing and IPO overvaluation:

$$IR \setminus IRUP \setminus IROP = a + \beta_1 \times Uncer + \beta_2 \times Underwriter + \beta_3 \times PEcontrol + \beta_4 \times Sent + \beta_5 \times Topone + \beta_6 \times EPS + \beta_7 \times Age + \beta_8 \times Size + I.Board + I.Indu + I.Year + \varepsilon \quad (3)$$

In Model 3, the dependent variable can either be *IR* (IPO initial return), *IRUP* (IPO underpricing) or *IROP* (IPO overvaluation). Based on our theoretical analysis, we include the following four variables as the main independent variables: *Uncer* (value uncertainty of the IPO), *Underwriter* (underwriter reputation), *PEcontrol* (whether IPO pricing is regulated) and *Sent* (investor sentiment). Referring to the literature, such as Zhang and Liao (2011) and Song et al. (2011), we control for the following variables in Model 3: *Topone* (shareholding proportion of the largest shareholder), *EPS* (earnings per share), *Age* (firm age), *Size* (firm size), *I.Board* (dummy variables for listing board effects), *I.Year* (dummy variables for year effects) and *I.Indu* (dummy variables for industry effects). We predict that *Uncer*, *Sent* and *PEcontrol* are positively related to *IR*; that *Uncer* and *PEcontrol* are positively related to *IRUP*; that *Uncer* and *Sent* are positively related to *IROP*; and that *Underwriter* is either positively or negatively related to *IRUP*.

4.2.2. Variable definitions

4.2.2.1. IPO underpricing and IPO overvaluation. Estimating an IPO firm's intrinsic value (or fundamental value) is the key to measuring IPO underpricing and overvaluation. Two methods for estimating intrinsic value are used and compared in our study: the method of analyst forecasts and the method of comparison to similar firms.

4.2.2.1.1. The method of analyst forecasts. Taking advantage of unique data from analyst forecasts, we measure the intrinsic value of IPO firms based on analyst forecast prices.[6] We first compute the mean of each analyst's forecast prices (analysts usually forecast a range of intrinsic values for each IPO firm), and then calculate the mean of all analyst forecast prices that were released before the IPO.[7] We exclude observations in which forecast prices are provided by analysts affiliated to the underwriters and observations that are not the analyst's last forecast price released before the IPO.[8] In our dataset, 92% of IPO firms have at least three analysts providing forecast prices and 74% of IPO firms have at least five analysts providing forecast prices. Given this large number of analyst forecasts, we can avoid the subjectivity and randomness that would result if forecast prices from a single analyst were used.

4.2.2.1.2. The method of comparable firms. Following Purnanandam and Swaminathan (2004), we use the product of the IPO firm's industry peers' PEs and the IPO firm's EPS to measure the firm's intrinsic value. For each IPO in our sample, we find a non-IPO industry peer with comparable sales and net income that did not go public in the previous three years. Specifically, we select comparable firms using three steps: (1) to obtain appropriate comparable firms, we first consider all firms in the CSMAR database for the fiscal year before the IPO and then exclude firms with negative PE ratios or with PE ratios exceeding 100[9] and firms that went public in the previous three years; (2) we group firms in each industry into 4 ($2 * 2$) portfolios based on sales and net income, and also group the IPO firms (our sample firms) into 4 ($2 * 2$) portfolios in the same way; (3) each IPO firm is then matched to the appropriate industry-sales-income bracket. Using this portfolio, we select a comparable firm that is closest in sales size to the IPO firm.

We believe that compared with this method of selecting comparable firms, using analyst forecasts may have some advantages in predicting an IPO firm's intrinsic value. First, given that analysts are experts in their industry, they may be able to choose more appropriate comparable firms (most of the analysts use comparable firms' PEs to estimate an IPO firm's PE). Additionally, analysts generally adjust the estimated PE of IPO firms according to firm-specific information, such as the extent of industry competition and growth potential, so their estimation of an IPO firm's PE ratio may more accurate.

4.2.2.2. Post-IPO long-run stock performance

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[6] By reading the abstracts of analyst reports, we find that analysts forecast the intrinsic value (reasonable price) of an IPO firm rather than the first-day closing price. Therefore, it makes sense to use analyst forecast prices to measure intrinsic value.

[7] For instance, an IPO firm receives a price forecast from three analysts, and their forecast prices are 11–13, 12–14 and 13–15, respectively. The mean forecast prices for each analyst are 12 ((11 + 13)/2), 13 and 14 respectively, and the overall mean forecast price is 13 ((12 + 13 + 14/3)). We would then use this mean forecast price (13) to measure the intrinsic value of the firm.

[8] During the entire process of sample selection, we obtained 11,471 analyst forecasts. After deleting 136 forecasts from analysts who were affiliated with underwriters and 532 repeated forecasts, we had a final total of 10,957 analyst forecasts for all of the sample firms.

[9] Generally, firms with a PE of more than 100 are rare and are thus not suitable as matching firms.

Table 4
Definition of variables.

Variable name	Definition of variables
Dependent variables	
IR	IPO initial return = (first-day closing price − offer price)/offer price
IRUP1	IPO underpricing = (intrinsic value − offer price)/offer price; intrinsic value = the mean of analyst forecast prices
IROP1	IPO overvaluation = (first-day closing price − intrinsic value)/offer price; intrinsic value = the mean of analyst forecast prices
IRUP2	IPO underpricing = (intrinsic value − offer price)/offer price; intrinsic value = the comparable firm's PE ∗ the IPO firm's EPS
IROP2	IPO overvaluation = (first-day closing price − intrinsic value)/offer price; intrinsic value = the comparable firm's PE ∗ the IPO firm's EPS
BHAR240	Post-IPO long-run stock performance = the 240-day (approximately one year) buy and hold abnormal return following the IPO
BHAR480	Post-IPO long-run stock performance = the 480 days (approximately two years) buy and hold abnormal return following the IPO
BHAR720	Post-IPO long-run stock performance = the 720 days (approximately three years) buy and hold abnormal return following the IPO
Independent variables	
Uncer	Value Uncertainty for the IPO as measured by the divergence of analyst forecast prices (variance of analyst forecast prices/mean of analyst forecast prices)
PEcontrol	Whether the CSRC regulated IPO pricing (dummy variable) at the time of the IPO, 1 for yes and 0 for no; during our sample period from 2006 to 2011, offer prices were regulated by the CSRC before June 2009
Sent	Index of investor sentiment, computed using principle component analysis of four sentiment related variables
Underwriter	Underwriter reputation, equal to 1 for the top 10 underwriters, and 0 otherwise
Topone	Shareholding proportion of the largest shareholder
EPS	Earnings per share = net income/total equity
Age	Firm age = the year of IPO − the year of firm establishment
Size	Natural logarithm of issuance size = Ln(number of issued shares ∗ offer price)
I.Board	Dummy variables for listing board effects. We have the main board, SME board and GEM board, and thus create two dummy variables to control for board effects
I.Indu	Dummy variables for industry effects. We have 13 industries, according to the classification of industries by the CSRC, and thus create 12 dummy variables to control for industry effects
I.Year	Dummy variables for year effects. We have six years in our sample period and thus create five dummy variables to control for year effects

$$BHAR(2,n) = \prod_{1}^{n}(1+R_{it}) - \prod_{1}^{n}(1+R_{mt})$$

Post-IPO long-run stock performance is measured by BHAR. In the above formula, BHAR (2, n) is the buy and hold abnormal return of IPO firms from the second day to the *n*th day after the IPO (this does not include the first day of the IPO); R_{mt} is the market return for day t, where t belongs to the range from 2 to n. According to the requirements of different stock performance periods, we set n to be equal to 240 days, 480 days and 720 days, which results in measurements for *BHAR240*, *BHAR480* and *BHAR720*, as reported in Table 4.[10]

4.2.2.3. Investor sentiment. There is no standard way in academia to measure investor sentiment, and scholars usually use principle component analysis to integrate several variables into a comprehensive factor for investor sentiment. In the spirit of Baker and Wurgler (2007) and Wu et al. (2012), we use the following four variables to create an overall investor sentiment index: (1) market turnover (monthly data); (2) discounts of closed-end funds (monthly data); (3) the number of shareholders that open new stock accounts (monthly data); (4) and the three-month stock return of the Shanghai Composite Index.

4.2.2.4. Value uncertainty and underwriter reputation. In previous studies, the divergence of analyst earnings forecasts is often used to measure a firm's information uncertainty (e.g., Barron et al., 1998; Zhang, 2006).

[10] Because of the limitations of the dataset, the number of observations for *BHAR720* and *BHAR480* is smaller than for *BHAR240* and thus when we use *BHAR720* and *BHAR480* as dependent variables the sample is smaller than when the full sample is used.

Table 5
Descriptive statistics.

	N	Mean	p50	Max.	Min.	SD
IR	948	0.663	0.405	5.381	−0.232	0.806
IRUP1	948	0.222	0.122	2.663	−0.233	0.346
IROP1	948	0.441	0.311	4.668	−0.517	0.600
IRUP2	948	0.136	−0.031	3.147	−0.778	0.597
IROP2	948	0.527	0.448	4.403	−2.542	0.663
BHAR240	948	−0.144	−0.142	4.041	−3.216	0.533
BHAR480	782	−0.073	−0.177	3.975	−2.979	0.520
BHAR720	439	0.041	−0.079	5.984	−5.389	0.861
Uncer	948	0.167	0.160	0.572	0.025	0.068
PEcontrol	948	0.745	1.000	1.000	0.000	0.436
Sent	948	−0.143	−0.230	1.939	−1.093	0.412
Underwriter	948	0.399	0.000	1.000	0.000	0.490
Topone	948	0.391	0.382	0.865	0.052	0.151
EPS	948	0.554	0.498	3.158	0.058	0.301
Age	948	1.715	1.946	3.258	0.000	0.777
Size	948	11.115	11.035	15.715	9.110	0.878

Note: The variables are defined in Table 4.

Thus, we use the divergence of analyst forecast prices to measure an IPO firm's value uncertainty. Intuitively, the reputation of the underwriter will also be associated with their underwriting income (e.g., Megginson and Weiss, 1991; Liu et al., 2011), thus we use the rank of underwriting income to measure underwriter reputation and create a variable that equals 1 if the underwriter is in the top 10, and 0 otherwise.[11]

4.3. Descriptive statistics and correlation analysis

Table 5 presents the descriptive statistics for the main variables. The results in Table 5 show that (1) during our sample period (2006–2011), the mean IPO initial returns in China were 66.3%; (2) when intrinsic value was measured using analyst forecast prices, the mean IPO underpricing and overvaluation were 22.2% and 44.1%, respectively, but when the intrinsic value was measured using a comparable firm's PE and the IPO firm's EPS, the mean underpricing and overvaluation were 13.6% and 52.7%, respectively; (3) compared with those estimated using analyst forecasts, the underpricing and overvaluation estimated using comparable firms have larger minimums, maximums and standard errors, suggesting that using analyst forecasts is a more precise way to predict intrinsic value (because it is less likely to produce extreme values); (4) the mean BHAR 240 days, 480 days and 720 days after the IPO were −14.4%, −7.3% and 4.1%, respectively, and the medians were −14.2%, −17.7% and −7.9%, respectively, suggesting that more than half of IPO firms underperform the market and confirming that there is a phenomenon of post-IPO long-run underperformance in China.

Table 6 reports the correlation analysis of the main variables. The results in Table 6 show that (1) the correlation coefficient between *IR* (IPO initial returns) and *IROP* (IPO overvaluation) is larger than the coefficient between *IR* and *IRUP* (IPO underpricing), which indicates that the size of the initial return is more related to overvaluation than overpricing (we thus conclude that overvaluation accounts for a larger part of the initial return); (2) *IRUP1* and *IRUP2*, and *IROP1* and *IROP2* are positively and significantly related, suggesting that the two methods we use to estimate intrinsic value are at least somewhat consistent; (3) *IR*, *IROP1* and *IRUP2* are negatively and significantly related to *BHAR240* (the one year post-IPO abnormal return), suggesting that higher initial returns, higher overvaluation (as estimated by analyst forecasts) and higher underpricing (as estimated using comparable firms) are associated with poorer post-IPO long-run stock performance; (4) *IR*, *IRUP1*, *IRUP2*, *IROP1* and *IROP2* are positively and significantly correlated with *Uncer* (the value uncertainty of the IPO), *Sent* (investor sentiment) and *PEcontrol* (whether there is regulation of IPO pricing); (5) *IRUP1* is positively and significantly related to *Underwriter* (underwriter reputation); (6) and

[11] Using the top 10 as the cut-off point is common in the literature. Our empirical results are not affected if the top eight is used as the cut-off instead of the top 10.

Table 6
Correlation analysis.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. *IR*	1.000													
2. *IRUP1*	0.734*	1.000												
3. *IROP1*	0.920*	0.410*	1.000											
4. *IRUP2*	0.589*	0.645*	0.419*	1.000										
5. *IROP2*	0.686*	0.311*	0.742*	−0.185*	1.000									
6. *BHAR240*	−0.121*	0.031	−0.180*	−0.145*	−0.017	1.000								
7. *Uncer*	0.332*	0.329*	0.256*	0.193*	0.230*	0.037	1.000							
8. *Underwriter*	0.044	0.147*	−0.026	−0.006	0.058	0.108*	0.013	1.000						
9. *PEcontrol*	−0.601*	−0.688*	−0.411*	−0.641*	−0.154*	0.211*	−0.213*	−0.081	1.000					
10. *Sent*	0.412*	0.248*	0.410*	0.340*	0.194*	−0.275*	0.167*	−0.017	−0.414*	1.000				
11. *Topone*	0.026	0.058	0.001	0.012	0.021	0.015	−0.035	0.045	−0.112*	0.066	1.000			
12. *EPS*	−0.251*	−0.096*	−0.282*	−0.077	−0.236*	0.130*	−0.098*	0.029	0.192*	−0.175*	−0.047	1.000		
13. *Age*	−0.152*	−0.147*	−0.119*	−0.087*	−0.106*	−0.028	−0.040	−0.009	0.193*	−0.017	−0.083	0.121*	1.000	
14. *Size*	−0.402*	−0.309*	−0.362*	−0.543*	0.001	0.157*	−0.138*	0.048	0.298*	−0.128*	0.230*	0.255*	−0.066	1.000

Note: The variables are defined in Table 4.
* $P < 0.01$.

PEcontrol and *Sent* are positively and significantly related because a period of bullish investor sentiment coincided with a period of IPO pricing regulation. However, it is important to note that the results from the correlation coefficients only provide preliminary conclusions and further regression analysis based on theory is needed.

5. Empirical results

5.1. IPO initial returns: underpricing or overvaluation

Fig. 1 plots IPO underpricing and overvaluation as measured by analyst forecast prices for the sample firms from 2006 to 2011. It shows that, from 2006 to 2011, although the value of initial returns first increases and then decreases substantially, overvaluation consistently accounts for a larger proportion of the initial return than underpricing. We believe that the huge fluctuation in the value of initial returns is the result of variation in the firm characteristics, changes in the IPO pricing regulation and the stock market environment during the sample period. We thus categorize our sample into groups by listing board, market environment and IPO pricing regulation, and then compare the initial return, underpricing and overvaluation within these different groups. We also compare the difference between the underpricing and the overvaluation in each group.

Table 7 presents the results based on this group comparison. The results in the first row of Table 7 show that the average initial return was 66% during the sample period. When intrinsic value is measured by analyst forecasts, underpricing is about 22% and overvaluation is about 44% (twice as large as underpricing). When intrinsic value is measured using comparable firms, underpricing is about 14% and overvaluation is about 53% (more than three times as large as underpricing). The results for the grouping by listing board show that, when intrinsic value is measured by analyst forecasts, the initial return, underpricing and overvaluation in the main board are lower than those in the SME board and GEM board. When intrinsic value is measured using comparable firms, underpricing in the main board is lower than in the other boards, but overvaluation in the main board is almost the same as in the other boards. Third, the results for the grouping by investor sentiment show that, in periods of high investor investment, the initial return, underpricing and overvaluation are significantly higher than during periods with weak investor sentiment. The difference between underpricing and overvaluation is also larger in periods with strong investor sentiment. Fourth, the results for the grouping by IPO pricing regulation show that, compared with the period in which the CSRC regulated IPO pricing, the initial return, underpricing and overvaluation are significantly lower in the period when the CSRC deregulated IPO pricing. In summary, the results from both the full sample and the sub-samples show that overvaluation accounts for a significantly larger part

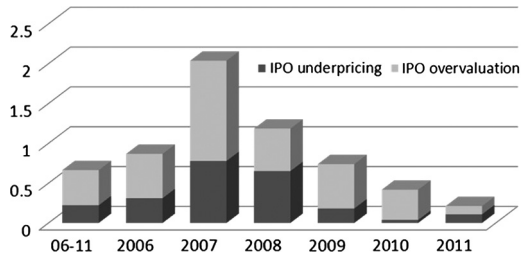

Figure 1. IPO underpricing and IPO overvaluation from 2006 to 2011.

of the initial return than underpricing and is thus more important than underpricing in explaining the value of initial returns in China.

It is worth mentioning that the IPO firms' intrinsic values estimated both by analyst forecasts and using comparable firms are likely to be affected by investor sentiment. However, we find that overvaluation is significant larger than underpricing both in periods of high and low investor sentiment, suggesting that measurement bias resulting from investor sentiment does not affect our conclusion. Furthermore, because China's stock market lacks a short-selling mechanism, stock prices are more often overvalued rather than undervalued, which leads to the possibility that our methods may overestimate the intrinsic value of IPO firms. Therefore, if it were possible to remove this kind of positive deviation in estimating intrinsic value, overvaluation would be likely to account for an even larger part of the initial return, supporting the conclusion that IPO overvaluation accounts for a larger part of the IPO initial return than underpricing. Therefore, we can confidently conclude that an overvalued first closing price is a much more important issue than the underpricing of offers in China's IPO market.

5.2. IPO initial return and post-IPO long-run stock performance

In this subsection, we further investigate the effects of IPO initial returns, underpricing and overvaluation on the post-IPO long-run stock performance. This subsection has two main purposes: to examine the relationship between these variables and to evaluate and compare the two methods we used to measure underpricing and overvaluation.

The results in Table 8 show that (1) controlling for other variables, *IR* (IPO initial return) is significantly negatively related to *BHAR* (post-IPO long-run stock performance), suggesting that the initial return contains at least some component of overvaluation; (2) *IROP* (IPO overvaluation) is significantly negatively related to *BHAR*, which is consistent with our prediction that the overvalued first-day closing price of IPO firms reverts to its intrinsic value; (3) when intrinsic value is measured by analyst forecasts, underpricing (*IRUP1*) is positively related to post-IPO long-run performance, whereas when intrinsic value is measured using comparable firms, underpricing (*IRUP2*) is negatively related to post-IPO long-run performance. Our theoretical analysis predicts that underpricing would either not be related to or would be positively related to post-IPO long-run performance. We thus believe that the method of analyst forecasts measures underpricing and overvaluation better than the method of using comparable firms.

We can also compare the difference in the coefficients of *IR* and *IROP1*, *IR* and *IROP2, IROP1* and *IROP2* using the SUEST test. The results in Table 8 show that, no matter whether *BHAR240*, *BHAR480* or *BHAR720* is used as the dependent variable, the coefficients of *IROP1* are significantly larger in their absolute value than those of *IR* and *IROP2*, and the coefficients of *IR* and *IROP2* are not significantly different. These results imply that overvaluation estimated by using analyst forecasts is better at predicting post-IPO long-run performance than overvaluation estimated using comparable firms. This result further supports the conclusion that the method of using analyst forecasts is better at measuring underpricing and overvaluation.

In addition, the results in Table 8 show that the regression coefficients of *IR*, *IROP1* and *IROP2* increase as the timescale of the dependent variables increases from *BHAR240* to *BHAR480* and *BHAR720*. This suggests that the first-day closing price of IPO firms reverts gradually to its intrinsic value. Lastly, the results in Table 8 show that firm performance (*EPS*) is positively related to post-IPO long-run stock performance, and firm size

Table 7
IPO underpricing and overvaluation: group comparison.

N	*IR*	*IRUP1*	*IROP1*	Diff1^{sig}	*IRUP2*	*IROP2*	Diff2^{sig}
Full sample ($N = 948$)	0.66	0.22	0.44	-0.22^{***}	0.14	0.53	-0.39^{***}
Group by listing board: 1 for main board, 0 for others							
0 ($N = 855$)	0.68	0.23	0.46	-0.23^{***}	0.15	0.53	-0.37^{***}
1 ($N = 93$)	0.49	0.19	0.30	−0.11	−0.03	0.52	-0.55^{***}
Diff2^{sig}	0.20^{**}	0.04	0.16^{**}		0.19^{***}	0.01	
Group by investor sentiment: 1 for high sentiment, 0 for others							
0 ($N = 474$)	0.49	0.21	0.28	-0.08^{***}	0.09	0.40	-0.31^{***}
1 ($N = 474$)	0.84	0.24	0.60	-0.36^{***}	0.18	0.65	-0.47^{***}
Diff2^{sig}	-0.35^{***}	−0.03	-0.32^{***}		-0.10^{***}	-0.25^{***}	
Group by IPO pricing regulation:1 for yes, 0 for others							
0 ($N = 430$)	0.38	0.07	0.31	-0.24^{***}	−0.10	0.48	-0.58^{***}
1 ($N = 242$)	1.49	0.63	0.86	-0.23^{***}	0.79	0.70	0.09
Diff2^{fsig}	-1.11^{***}	-0.56^{***}	-0.55^{***}		-0.89^{***}	-0.22^{***}	

Note: *IR*, *IRUP* and *IROP* are proxies for the IPO initial return, IPO underpricing and IPO overvaluation, respectively. *IRUP1* and *IROP1* are the underpricing and overvaluation as estimated by analyst forecasts. *IRUP2* and *IROP2* are the underpricing and overvaluation as estimated from comparable firms. Diff1 is the difference of *IRUP* and *IROP* within the group and Diff2 is the difference of *IRUP* and *IROP* between groups.
$^{*}P < 0.1$.
$^{**}P < 0.05$.
$^{***}P < 0.01$.

(*Size*) is negatively related to post-IPO long-run stock performance. This suggests that more profitable firms and smaller firms have better post-IPO long-run performance.

5.3. Determinants of IPO initial returns, underpricing and overvaluation

The results for the determinants of IPO initial returns, overpricing and overvaluation are presented in Table 9. In the foregoing subsection, we show that the method of using analyst forecasts is better at measuring underpricing and overvaluation than that of using comparable firms. In this subsection, we thus only report the results for the determinants of underpricing and overvaluation as measured by analyst forecasts.

The results in Column 1 of Table 9 show that after controlling for other factors, the value uncertainty of IPOs (*Uncer*), investor sentiment (*Sent*) and whether IPO pricing is regulated (*PEcontrol*) are significantly positively related to IPO initial returns (*IR*). This suggests that firms with high value uncertainty and firms with IPOs in periods of high investor sentiment have higher initial returns. IPO pricing regulation by the CSRC significantly increases initial returns. The results in Column 2 shows that the value uncertainty of IPOs, whether IPO pricing is regulated, and the underwriter's reputation (*Underwriter*) are all significantly positively related to IPO underpricing (*IRUP1*). The results in Column 3 show that the value uncertainty of IPOs (*Uncer*), investor sentiment (*Sent*) and whether IPO pricing is regulated (*PEcontrol*) are significantly positively related to IPO overvaluation (*IROP1*). Additionally, the results in Columns 1 to 3 show that firm performance (EPS) is positively related to underpricing but negatively related to overvaluation, and that firm age (*Age*) is significantly negatively related to overvaluation but insignificantly related to underpricing. This suggests that firm characteristics may have different impacts on underpricing and overvaluation. Given that most of these results are consistent with our predictions, we do not further elaborate on them in this section.

These results show that *Uncer* and *PEcontrol* affect both *IPUP1* and *IPOP1*. We thus further examine the difference in the effects of these two variables on *IPUP1* and *IPOP1*. The results in Table 9 show that the coefficients of *Uncer* do not differ between Column 2 and Column 3 (SUEST test: chi2 (1) = 0.28). However, the coefficients of *PEcontrol* differ significantly between Column 2 and Column 3 (chi2 (1) = 51.25), suggesting that whether the CRSC regulates IPO pricing has different impacts on underpricing and overvaluation. We use the sample period adjacent to the IPO pricing regulation (2008 and 2009) to further examine the effects

Table 8
IPO Initial return, IPO underpricing, IPO overvaluation and post-IPO long run stock performance.

Dependent variables	(1) BHAR240	(2) BHAR240	(3) BHAR240	(4) BHAR480	(5) BHAR480	(6) BHAR480	(7) BHAR720	(8) BHAR720	(9) BHAR720
IR	−0.088***			−0.17***			−0.20***		
	(−2.89)			(−5.30)			(−4.12)		
IROP1		−0.19***			−0.24***			−0.34***	
		(−5.71)			(−6.27)			(−4.87)	
IRUP1		0.30***			0.089			0.24**	
		(4.15)			(1.12)			(1.97)	
IROP2			−0.083**			−0.16***			−0.18***
			(−2.58)			(−5.30)			(−3.58)
IRUP2			−0.12**			−0.22***			−0.37***
			(−2.43)			(−3.31)			(−3.38)
Underwriter	0.043	0.030	0.044	−0.0013	−0.014	−0.0018	−0.032	−0.072	−0.033
	(1.43)	(1.01)	(1.44)	(−0.04)	(−0.43)	(−0.06)	(−0.44)	(−0.97)	(−0.46)
Topone	0.039	0.029	0.043	0.062	0.058	0.066	0.049	0.048	0.034
	(0.42)	(0.32)	(0.46)	(0.65)	(0.62)	(0.69)	(0.21)	(0.20)	(0.14)
EPS	0.14**	0.097	0.16**	0.24***	0.22***	0.26***	0.65***	0.61***	0.73***
	(2.07)	(1.44)	(1.97)	(3.15)	(2.92)	(3.27)	(3.29)	(3.25)	(3.67)
Age	−0.0094	−0.0072	−0.011	−0.026	−0.025	−0.027	−0.066	−0.067	−0.077
	(−0.61)	(−0.47)	(−0.68)	(−1.11)	(−1.08)	(−1.18)	(−1.26)	(−1.30)	(−1.47)
Size	−0.033	−0.036	−0.049	−0.13***	−0.14***	−0.15***	−0.32***	−0.34***	−0.39***
	(−1.20)	(−1.32)	(−1.35)	(−4.76)	(−5.05)	(−4.22)	(−4.69)	(−4.91)	(−4.38)
_cons	−0.68	−0.72*	−0.48	1.07***	1.12***	1.32***	3.37***	3.46***	4.34***
	(−1.61)	(−1.71)	(−0.90)	(2.78)	(2.91)	(2.74)	(3.46)	(3.55)	(3.43)
I.Board	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
I.Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
I.Indu	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Coefficients difference test (SUEST test)	*IR* = *IROP1* (28.39***)	*IROP1* = *IROP2* (29.03**)	*IR* = *IROP2* (0.39)	*IR* = *IROP1* (10.52***)	*IROP1* = *IROP2* (12.58***)	*IR* = *IROP2* (0.59)	*IR* = *IROP1* (10.09***)	*IROP1* = *IROP2* (12.79***)	*IR* = *IROP2* (2.43)
Adj. R^2	0.286	0.316	0.286	0.220	0.235	0.220	0.196	0.224	0.204
N	948	948	948	782	782	782	439	439	439

Notes: BHAR (the dependent variable) is a proxy for the post-IPO long run stock performance. *IR*, *IRUP* and *IROP* are proxies for IPO initial returns, IPO underpricing and IPO overvaluation, respectively. The variables are defined in Table 4. The numbers in parentheses are heteroskedasticity consistent *t*-statistics.
* $P < 0.1$.
** $P < 0.05$.
*** $P < 0.01$.

of IPO pricing regulations on underpricing and overvaluation. Because the market environment changes quickly in China, limiting our sample to a narrower window will help us to evaluate more precisely the consequence of the deregulation of IPO pricing. The results in Columns 4 and 5 show that, during the sample period of 2008–2009 (there are 73 observations before and 95 observations after the regulation), *PEcontrol* is significantly positively related to *IRUP1* but not significantly related to *IROP1*. This indicates that deregulating IPO pricing reduces underpricing but not overvaluation, which is consistent with our predictions.

The results in Column 2 show that the underwriter's reputation is positively related to underpricing, supporting the conflict of interest hypothesis but not the signaling hypothesis. To further provide evidence for the conflict of interest hypothesis, we classify the full sample into two groups by firm size (issuance size) and find that a positive relationship between the underwriter's reputation and underpricing only exists in the IPOs of smaller firms (these results are reported in Columns 6 and 7). According to our theoretical analysis, these results are consistent with the conflict of interest hypothesis. The results in Columns 6 and 7 also show that investor sentiment (*Sent*) is significantly negatively related to underpricing in small firms, suggesting that underwriters take advantage of investor sentiment toward small firms to benefit themselves.

Our theoretical analysis suggests that value uncertainty in IPOs and investor sentiment may have an interaction effect in overvaluation, but our regressions in Columns 1 to 3 only examine the main effect. In view of this consideration, we further add an interaction term *Uncer* ∗ *Sent* in Columns 8 and 9. The results in Col-

Table 9
Determinants of IPO initial return, IPO underpricing and IPO overvaluation.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Dependent variables	*IR*	*IRUP1*	*IROP1*	*IRUP1*	*IROP1*	*IRUP1*	*IRUP1*	*IROP1*	IROP1
Sample	All	All	All	Year = 2008/2009	Year = 2008/2009	Small Size	Large Size	All	All
Uncer	2.21***	0.98***	1.23***	1.36***	0.73	1.11***	0.45***	0.074***	0.11***
	(7.10)	(5.51)	(4.16)	(3.27)	(0.95)	(5.43)	(4.04)	(4.03)	(2.78)
Underwriter	0.027	0.038**	−0.011	0.047	−0.10	0.066**	0.0065	0.032**	−0.0052
	(0.68)	(2.19)	(−0.36)	(0.75)	(−1.53)	(2.52)	(0.47)	(1.98)	(−0.18)
PEcontrol	0.62***	0.50***	0.13**	0.35***	0.080	0.22***	0.14***	0.16***	−0.30***
	(9.93)	(17.69)	(2.54)	(4.13)	(0.57)	(3.28)	(2.92)	(5.43)	(−3.50)
Sent	0.35***	−0.042	0.39***	−0.13	0.35*	−0.088**	−0.025	−0.079***	0.28***
	(4.73)	(−1.38)	(6.71)	(−1.21)	(1.97)	(−2.22)	(−0.86)	(−2.85)	(4.93)
Topone	0.032	0.047	−0.014	0.14	−0.072	0.062	0.0084	0.028	−0.0029
	(0.26)	(0.81)	(−0.14)	(0.76)	(−0.29)	(0.65)	(0.19)	(0.53)	(−0.03)
EPS	−0.11**	0.094***	−0.21***	0.034	−0.12	0.11*	0.057***	0.078***	−0.16***
	(−2.22)	(3.02)	(−4.41)	(0.41)	(−1.56)	(1.86)	(2.64)	(2.82)	(−3.35)
Age	−0.085***	−0.016	−0.069***	−0.00071	−0.036	−0.025	−0.0028	−0.017*	−0.026
	(−3.30)	(−1.53)	(−3.08)	(−0.02)	(−0.70)	(−1.45)	(−0.30)	(−1.72)	(−1.21)
Size	−0.27***	−0.060***	−0.21***	−0.11*	−0.29***	−0.13***	0.014	−0.051***	−0.23***
	(−8.05)	(−3.73)	(−7.76)	(−1.69)	(−5.12)	(−3.21)	(1.09)	(−3.26)	(−9.09)
Sent ∗ *Uncer*								0.078	0.23**
								(1.41)	(2.24)
_cons	3.62***	0.66***	2.96***	1.55*	4.38***	1.24**	−0.041	0.77***	3.39***
	(8.41)	(3.23)	(8.25)	(1.91)	(5.59)	(2.53)	(−0.24)	(3.97)	(10.32)
I.Board	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
I.Year						Yes	Yes	Yes	Yes
I.Indu	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.492	0.529	0.344	0.356	0.238	0.578	0.560	0.592	0.446
N	948	948	948	168	168	474	474	948	948

Notes: *IR*, *IRUP* and *IROP* (the dependent variables) are proxies for IPO initial returns, IPO underpricing and IPO overvaluation, respectively. *Uncer*, *Underwriter*, *PEcontrol* and *Sent* are proxies for value uncertainty of IPOs, underwriter reputation, whether IPO pricing is regulated and investor sentiment. The variables are defined in Table 4. The numbers in parentheses are heteroskedasticity consistent *t*-statistics.

* $P < 0.1$.

** $P < 0.05$.

*** $P < 0.01$.

umns 8 and 9 show that the coefficient of *Uncer* ∗ *Sent* in Columns 9 is significantly positive, suggesting that the higher the value uncertainty of IPOs, the larger the effect of investor sentiment on overvaluation.

Overall, the results in this subsection are consistent with our theoretical analysis, indicating that distinguishing between underpricing and overvaluation is vital when investigating their determinants.

5.4. Robustness tests

To check the robustness of our results, we conducted a series of sensitivity analyses related to aspects of sample selection, model construction and variable measurement. Due to space limitations, the results of these tests are not reported but are available on request.

5.4.1. Sensitivity analysis on sample selection

(1) During the sample period, there was an important reform in IPO pricing. The CSRC deregulated IPO pricing in June 2009. As a robustness check, we divided the full sample into two sub-samples before and after this reform and then repeat our regressions. The results show that the main conclusions from the full sample apply to these sub-samples.
(2) According to the definitions of IPO underpricing and overvaluation, underpricing and overvaluation should, in general, be positive. Therefore, we exclude observations with negative underpricing or negative overvaluation (346 observations) and repeat our analysis. The results from this reduced sample do not change our main conclusions.
(3) Firm characteristics may differ between listing boards, so we divide the sample into two sub-samples: main boards and other boards (SMEs board and GEM board) and repeat our results. Again, the main conclusions from the full sample apply to these sub-samples.

5.4.2. Sensitivity analysis on model construction and variable measurement

(1) We measure IPO firms' intrinsic values by using analyst forecasts and comparison to similar firms. To reduce the optimistic bias of analyst forecasts, we used the median and minimum instead of the mean of analyst forecast prices to measure intrinsic value and repeat our analysis. We also use all of the firm's industry peers as comparable firms rather than selecting a comparable firm to measure intrinsic value and repeat our analysis. We also use the rank of underwriter size (by total asset) instead of underwriter income to measure underwriter reputation and repeat our analysis. Overall, the results show that these changes in variable measurement do not affect our main results.
(2) In the analysis in Table 8, we include the variables *IRUP1* and *IROP1*, and *IRUP2* and *IROP2* into the regression model at the same time. As a sensitivity test, we add *IRUP1*, *IROP1*, *IRUP2* and *IROP2*, one by one into the model. The results show that, although the size and significance of the coefficient of *IRUP2* decrease somewhat, the main conclusions of our analysis remain the same.

6. Conclusions and implications

Our main results can be summarized as follows. First, average IPO initial returns are 66%, with underpricing and overvaluation between 14–22% and 44–53%, respectively, depending on the measure used. Second, while both the initial return and overvaluation are significantly and negatively related to post-IPO long-run stock performance, overvaluation predicts post-IPO performance better than the initial return. Third, the value uncertainty of IPOs is positively related to both underpricing and overvaluation. Both underwriter reputation and pricing regulation are positively related to underpricing. Investor sentiment has a positive effect on overvaluation but has no effect or a negative effect on underpricing. Overall, our results suggest that the main reason for extremely high IPO initial returns in China is that first-day closing prices are overvalued, and that underpricing and overvaluation have different determinants.

Our findings have important implications for both academics and regulators. First, as we have shown that overvaluation is more important than underpricing, future studies should pay more attention to the causes of overvaluation and to measures to control overvaluation in IPOs. When deciding the path of IPO reform, regulators should consider not only how to reduce underpricing and increase pricing efficiency in the primary market, but also how to reduce overvaluation in the secondary market. Second, as we show that separating underpricing and overvaluation from the initial return is necessary, future studies could use the methods described here to measure underpricing and overvaluation, and then investigate their determinants more precisely and explore the potential effects of IPO reform more comprehensively. Finally, our results also serve as a reminder for scholars that using IPO initial returns to measure IPO underpricing in China is likely to be inaccurate.

This study is subject to some limitations. The most important is that the intrinsic value of IPO firms is hard to measure. Although the methods used here have some advantages, bias remains. We expect that improved measures could be put forward to evaluate more precisely the relative importance of IPO underpricing and overvaluation, investigate their determinants more accurately, and evaluate the consequences of IPO pricing reform more efficiently.

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Institutions and accounting standard transformation: Observations from Japan

Naohiro Urasaki *

Faculty of Business Administration, Kinki University, Japan

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ABSTRACT

This paper describes the transformation of Japan's accounting standards over the past 2 decades and the driving forces behind this transformation. It also analyzes the current state of Japan's accounting standards, which are characterized by the dichotomy of accounting systems inherited from the country's political, economic and legal institutions. The discussion in this paper emphasizes that a single set of accounting standards is not always effective for every entity.

1. Introduction

The economic downturn that began in 1991 after the collapse of the Japanese Asset Price Bubble is referred to as the Lost 10 years, a period that has also been thought to extend to the recent decade (2001–2010). During these 2 decades, Japanese accounting systems drastically changed to help restart the Japanese economy based on government policy. The necessity of the financial system reform is emphasized in the *Financial System Reform* (Ministry of Finance, 1997) report as follows.

* Tel.: +81 6 6721 2332; fax: +81 6 6729 2493.
E-mail address: naohiro.urasaki@hotmail.co.jp

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> "In the 'aging' society of the 21st century, in order to ensure the continuation of Japan's economic vitality, it is necessary to find a more efficient way of investing private assets which reach up to 1200 trillion yen. It is important to provide funds for the developing industries that carry the coming era on their shoulders. Further, to make a contribution to international society commensurate with its economic strength, it is imperative that Japan provides a smooth supply of funds for the world."[1]

With a view to reconstructing Japan's financial markets to make them internationally competitive and comparable with those in New York and London, the financial system was rapidly reformed according to three principles: "free" to ensure a free market that implemented market principles, "fair" to ensure a transparent, trustworthy market and "global" to ensure an international market that was ahead of its time (Ministry of Finance, 1997). Transforming the accounting standards was a reform effort made to regenerate the vitality of Japan's financial markets. Due to this effort, Japan's accounting standards are currently considered to be at a level similar to those of the West (Saito, 2011).

This paper describes the transformation of Japan's accounting standards over the past 2 decades and the driving forces behind this transformation. It also analyzes the current state of Japan's accounting standards, which are characterized by the dichotomy of accounting systems inherited from the country's political, economic and legal institutions. The discussion in this paper emphasizes that a single set of accounting standards is not always effective for every entity.

2. Effects of financial liberalization and globalization on the equity finance of Japanese listed companies

The progress of financial liberalization and globalization since the 1980s has caused the financial service sector to develop rapidly and, as a result, the performance of the financial economy began to drive economic fluctuations that were previously driven by the real economy (Ogawa and Kitasaka, 1998). Due to the circumstances characterizing the last 20 years of the 20th century, deregulation of the Japanese financial system changed the financing method of Japanese listed companies from indirect to direct. The deregulation policy previously described is cited as the Japanese version of the "Big Bang," which was successfully conducted a decade earlier in the United Kingdom. The change that Japanese accounting systems have undergone since 1997 is commonly referred to as the "Accounting Big Bang."

Fig. 1 depicts the trends of the financial assets, financial liabilities and equity ratios of companies across 33 industries, excluding banks listed on the Tokyo Stock Exchange and the Osaka Stock Exchange from 1985 to 2001.[2] The equity ratio increased from 28.5% in 1985 to 42.2% in 2001. Consistent with this trend, the financial liabilities ratio decreased from 57.2% in 1985 to 45.9% in 2001. The upward change in the equity ratio reflects that management chose equity finance instead of debt finance by considering the merits of capital costs according to the circumstances of financial liberalization and globalization.

In addition to these trends, the financial assets ratio did not change significantly from 1985 to 2001. However, the ratio was higher than 56% during the period and reached 61.8% in 1990 during the bubble economy. According to the relatively high ratio of financial assets to total assets of Japanese listed companies, the valuation of financial assets was considered an important issue for investors to make informed economic decisions. The data did not include information on the appreciation of marketable securities for trading purposes and investments in mutual-holding securities among business partners. The more important issues

[1] The financial system reform was initiated by Prime Minister Hashimoto in November 1996. The Securities and Exchange Council, the Business Accounting Council (BAC), the Financial System Research Council, the Insurance Council and the Committee on Foreign Exchange and Other Transactions began formulating a plan for reform measures to be completed by 2001. To promote the reform process as a unified scheme, a "Financial System Reform Consultative Committee" consisting of representatives from each of the councils was set up to discuss the issues crossing each council's scope (Ministry of Finance, 1997).

[2] The reporting periods for the companies in the sample end in March of each year. The sample includes the following figures (year, sample/total number of listed companies, sample %): 1985, 961/1,864, 51.6%; 1986, 993/1,922, 51,7%; 1987, 1,089/2,015, 54.0%; 1988, 1,257/1,961, 64.1%; 1989, 1,431/2,004, 71.4%; 1990, 1,525/2,049, 74.4%; 1991, 1,589/2,093, 75.9%; 1992, 1,639/2,125, 77.1%; 1993, 1,677/2,160, 77.6%; 1994, 1,701/2,187, 77.8%; 1995, 1,743/2,225, 78.3%; 1996, 1,767/2,250, 78.5%; 1997, 1,792/2,253, 79.5%; 1998, 1,800/2,254, 79.8%; 1999, 1,804/2,254, 80.0%; 2000, 1,804/2,254, 80.0%; 2001, 1,807/2,255, 80.1%.

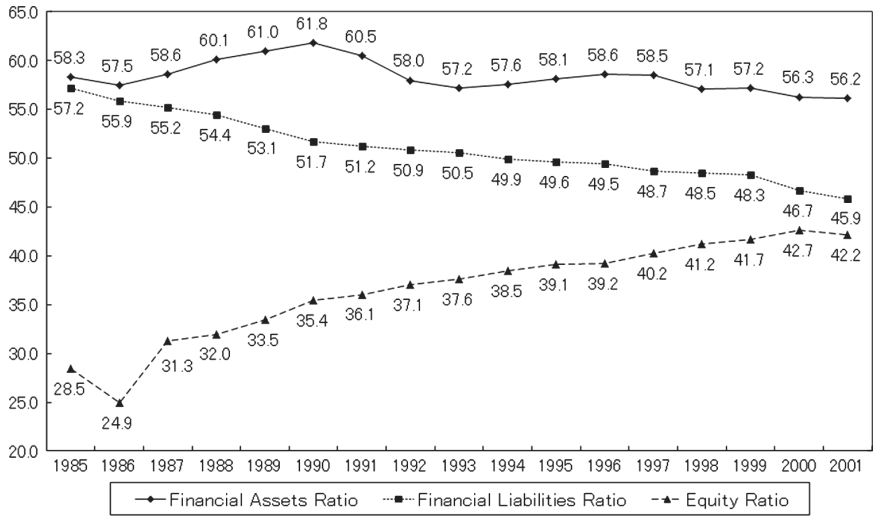

Figure 1. Trends of financial assets, financial liabilities and equity ratios. *Source:* Urasaki, 2002, cf. Chapter 2.

were the recognition and measurement of financial derivatives,[3] which financial performance did not cover in the data due to a lack of accounting standards. Hence, investors did not have enough information related to the results of Japanese listed companies' financial risk management.

Table 1 shows the financial ratios relevant to the financial assets of Japanese listed companies in 1998 and 2001.[4] The Business Accounting Council[5] (BAC) issued accounting standards for financial instruments in 1999. These standards require companies to make mark-to-mark valuations of certain securities and hedge accounting to indicate their financial risk management performance for the reporting period ending March 2001.

The securities held for trading purposes are classified as current assets and require mark-to-market valuations with immediate profit recognition. The securities-held-for-trading ratio refers to the ratio of securities to total assets. This ratio indicates a remarkable change from 1998 to 2001. The ratios of every industry except for the communication industry decreased due to several factors. Management might have simply chosen not to indicate the appreciation of their securities. Further, they could have been making an effort to avoid increases in their taxable income or control their reporting earnings. The pulp and paper, rubber, steel, non-ferrous metals, shipbuilding and marine transportation industries showed rate decreases of over 70% in 2001. To the contrary, investment securities classified as non-current assets increase in most industries. This change means that management intentionally transferred securities classified as current assets to non-current assets because the investment securities did not require appreciation by mark-to-market valuation.

In addition to the management behavior related to holding securities, the average rate of the financial assets ratio of the 33 industries is 56.2%, and nearly 60% if real estate, gas, railway/bus and electricity rates are excluded. By comparing the average rate of the depreciable tangible assets ratio (17.1%) among the industries, the relative significance of the financial assets to total assets can be recognized. The financial assets ratios of

[3] The turning point in the transformation of Japanese accounting standards into those relying on the substance-over-form principle was the issuance of accounting standards for financial instruments set by the BAC in 1999. The standards introduced mark-to-market valuation with immediate profit recognition for securities held for trading, valuation without immediate profit recognition for those not held for trading, devaluation for loans receivables and hedge accounting procedures (Saito, 2011, p. 191).

[4] The 1998 ratios were calculated based on the financial data of 1,800 listed companies reported from April 1997 to March 1998. The ratios in 2001 were calculated based on the data of 1807 listed companies reported from April 2000 to March 2001. Industries were classified according to the Nikkei Economic Electronic Databank System (NEEDS).

[5] The BAC is one of the councils set by the Financial Service Agency. It consists of a Planning and Coordination Committee, an Internal Control Committee and an Audit Committee. Before organizing the Accounting Standards Board of Japan in 2001, the council played a major role in setting accounting standards. The council currently issues auditing and internal control standards.

Table 1
Relevant financial ratios of Japanese listed companies in 1998 and 2001. *Source:* Urasaki, 2002, cf. Chapter 2.

	Financial assets ratio		Securities held for trading ratio		Investment securities ratio		Depreciable tangible assets ratio	
	1998	2001	1998	2001	1998	2001	1998	2001
1. Fisheries	60.3	58.9	8.2	7.4	15.0	15.9	7.2	11.5
2. Mining	52.4	56.1	4.9	1.5	7.7	16.4	13.6	12.8
3. Construction	60.4	60.5	4.7	1.8	5.4	8.9	6.7	6.3
4. Foods	54.0	54.3	6.2	2.6	11.9	17.3	21.2	19.8
5. Textile	58.8	57.2	7.2	2.5	12.9	19.2	19.5	19.5
6. Pulp and paper	39.4	41.7	5.3	0.2	7.1	10.9	22.3	36.5
7. Chemical	57.2	56.8	6.6	2.2	12.9	17.1	22.3	20.9
8. Medical and pharmaceutical	66.4	66.2	9.8	7.7	8.7	15.6	15.6	13.2
9. Petroleum	59.2	58.4	5.0	2.5	10.1	12.0	16.0	14.1
10. Rubber	57.9	58.4	3.1	0.1	13.8	17.9	26.1	23.1
11. Ceramic	55.0	56.6	5.4	2.1	13.1	18.1	24.5	22.9
12. Steel	44.8	43.2	7.3	2.0	7.5	13.2	32.4	29.5
13. Nonferrous metals	57.7	53.4	7.3	1.2	11.3	15.6	19.1	18.4
14. Machineries	62.1	60.4	8.5	2.5	11.6	16.5	13.9	13.1
15. Electronic equipment	67.1	65.9	7.6	3.5	13.1	17.0	13.9	12.7
16. Ship building	45.5	43.1	10.2	2.5	6.6	12.9	14.5	14.7
17. Motors	55.7	56.3	6.4	3.1	15.6	20.5	25.8	23.4
18. Other transportation machines	57.1	58.1	7.6	2.4	6.6	12.8	19.9	18.6
19. Precision machineries	61.5	59.5	6.5	2.9	12.7	14.6	14.5	12.1
20. Other manufacturing	58.3	58.3	3.1	2.4	11.6	12.1	18.8	15.7
21. Trading	73.1	71.9	5.6	2.0	8.3	12.4	7.4	7.2
22. Retailing	50.6	48.9	5.2	2.1	5.5	6.6	17.0	15.9
23. Other financing service	79.4	80.6	1.0	0.8	1.5	3.5	11.3	14.1
24. Real estate	27.4	27.0	2.5	0.9	5.1	8.1	23.2	22.2
25. Railway and bus	17.2	17.9	1.7	0.5	6.9	10.5	44.5	43.3
26. Land transportation	49.5	45.5	7.8	3.0	8.0	11.4	27.9	24.9
27. Marine transportation	53.6	63.0	7.5	1.2	17.9	21.7	34.2	24.7
28. Air transportation	47.7	47.2	3.0	1.9	11.6	10.9	27.0	29.4
29. Warehouse	42.8	44.8	3.7	1.3	8.0	17.6	37.6	35.1
30. Communication	36.6	54.1	5.1	7.1	6.2	22.4	38.8	26.4
31. Electricity	6.5	8.2	0.1	0.0	2.4	4.2	68.7	67.7
32. Gas	21.4	24.5	0.6	0.0	5.7	11.5	49.7	50.3
33. Services	61.1	61.2	8.0	4.1	12.3	14.4	18.1	14.3

almost one third of industries reaches over 60%. Even in the manufacturing industry, some companies such as Sony Corporation and Panasonic have rates over 80%. For example, among the 137 companies in the electronic equipment industry, the rates of 48 companies (51.8% of 137) are over 70%, and the rates of 13 companies (9.5% of 137) are over 80%.

In accordance with the financial statement data taken from Japanese listed companies, financial asset valuation is becoming a major issue for modern corporate accounting practices to recognize an entity's economic substance. As previously described, the core principles involved in recognizing and measuring traditional accounting standards[6] are historical cost, realization and conservatism. In other words, the revenue and expense views of income determination underpin traditional corporate accounting practices in Japan.

[6] The accounting principles for business enterprises were established in 1949. These accounting standards were amended several times upon promulgations of the development of the Japanese economy. However, the core concepts related to income determination have not changed due to the consistency and durability of the logic upon which the accounting principles are based. Takeda (2008) demonstrates systematically that these accounting principles were built up as an accounting theory to determine a periodic income based on revenues and expenses, known as the revenue and expense approach. He also clarifies that the accounting postulates underpinning the accounting principles could be constructed in three ways.

3. International convergence of Japanese GAAP

Saito (2011, p. 191) points out that the historical cost method made dubious accounting practices possible, including the much-criticized arbitrary realization of capital gains on securities, which were intended to camouflage business results. In the 1990s, a lot of criticism was directed toward the inadequacy of the principles involved in recognizing and measuring the financial instruments used in active financial risk management. In addition to this debate, two other direct factors stimulated the standard setters to fix new rules for financial instruments:

(1) The deregulation policy of the Japanese government related to the financial system since 1997.
(2) The external pressure of harmonizing Japanese accounting standards with International Financial Reporting Standards (IFRSs) for cross-border financing.

In January 1999, the BAC issued accounting standards for financial instruments. These standards became operative for financial statements covering periods beginning on or after April 1, 2000. The standards for financial instruments require that securities held for trading purposes and derivatives should be measured at their fair values and that gains and losses should be recognized in financial statements. Reviewing the recognition and measurement of financial instruments, the standards introduced asset and liability views of income determination into Japanese accounting practice. The milestones in the progress toward reporting financial instruments at fair value are indicated as follows. Table 2 summarizes the measurement bases of the financial instruments.

- 1985 JICPA, Accounting for Futures.
- 1990 BAC, Opinion on Accounting Standards for Futures and Options Contracts.
- 1996 Amendments of Banking Law and Securities and Exchange Law, Requirements of fair value accounting for trading securities held by financial institutions.
- 1997 BAC, Issues on Accounting Standards for Financial Instruments.
- 1998 BAC, Opinion on Setting of Accounting Standards for Financial Instruments, ED.
- 1999 BAC, Accounting Standards for Financial Instruments.
- 2000 JICPA, Guidelines on Accounting for Financial Instruments.

Japanese GAAP currently consists of accounting standards and implementation guidance on the accounting standards or practical solutions issued by the Accounting Standards Board of Japan (ASBJ).

Table 2
Measurement bases of financial instruments.

Types of financial assets		Measures	Presentation of gains
Securities	Trading securities	Market value[a]	Income Statement
	Held-to-maturity debt securities	Amortized cost[b]	N/A
	Equity investments in subsidiaries and associates	Historical cost	N/A
	Other securities	Market value	Shareholder's Equity
Receivables		Amortized cost	N/A
Monetary trust funds held for investment purposes		Market value	Income statement
Derivatives		Market value	Income statement

[a] Market value signifies fair value, which represents amounts that are based on prices, quotes and indices formed in the marketplace. If market prices are not available, fair value should be the amount that is reasonably calculated.

[b] The amortized cost method is a method by which, if receivables or debt securities are acquired at lower or higher prices than the contractual or face amount, the differences are allocated over the periods of settlement or maturity on a predetermined basis, with the allocated amounts adjusted to the carrying amounts on the balance sheet. When this method is applied, the allocated amounts are included in the interest income.

Table 3
List of Accounting Standards of the Accounting Standards Board of Japan. *Source:* Koga and Yao, 2011, pp. 7–8, the ASBJ website (https://www.asb.or.jp/asb/top.do).

ASBJ Accounting standards		Date of issue or revision
No. 1	Treasury stock and appropriation of legal reserve	11 August 2006
No. 2	Earnings per share	30 June 2010
No. 3	Retirement benefits (Part 1)	3 March 2005
No. 4	Director's bonus	29 November 2005
No. 5	Presentation of net assets in the balance sheet	27 March 2009
No. 6	Statement of changes in net assets	30 June 2010
No. 7	Business divestures and similar transactions	26 December 2008
No. 8	Stock option and other share-based payment	26 December 2008
No. 9	Measurement of inventories	26 September 2008
No. 10	Financial instruments	10 March 2008
No. 11	Related party disclosures	26 December 2008
No. 12	Quarterly financial statements	25 March 2011
No. 13	Lease transactions	30 March 2007
No. 14	Retirement benefits (Part 2)	15 May 2007
No. 15	Construction contracts	27 December 2007
No. 16	Equity method of accounting	26 December 2008
No. 17	Disclosure about segments of an enterprise and related information	30 June 2010
No. 18	Assets retirement obligations	31 March 2008
No. 19	Retirement benefits (Part 3)	31 July 2008
No. 20	Investment and rental property	25 March 2011
No. 21	Business combinations and related matters	26 December 2008
No. 22	Consolidated financial statements	25 March 2011
No. 23	Research and development costs	26 December 2008
No. 24	Accounting changes and error corrections	4 December 2009
No. 25	Presentation of comprehensive income	30 June 2010
No. 26	Retirement benefits (Part 4)	17 May 2012

The accounting and reporting standards also include the accounting standards set by the BAC (cf. footnote 5) and practical guidelines issued by the Japanese Institute of Certified Public Accountants (Koga and Yao, 2011, p. 3). The ASBJ is organized as a private institution to make Japanese accounting standards more consistent with those of other major countries and thereby facilitate Japan's participation in the IASB (Saito, 2011, p. 194).

In the 1990s, the Committee of European Securities Regulators completed its equivalence assessment of the Japanese GAAP with IFRSs in accordance with the mandate of the European Commission. The committee proposed that the commission consider that Japanese GAAP could be assessed as equivalent to IFRS, subject to the remedies of additional disclosures (Koga and Yao, 2011, p. 6). In August 2007, the ASBJ and IASB jointly announced the Tokyo Agreement to accelerate convergence between Japanese GAAP and IFRS. The agreement stated that the remaining differences would be removed on or before June 30, 2011 (Koga and Yao, 2011, p. 6).

In December 2009, the Japanese Financial Service Agency revised the ordinances to allow Japanese listed companies satisfying certain criteria to prepare consolidated financial statements according to IFRS from their fiscal years ending 31 March 2010. The ASBJ and IASB agreed that they should continue the convergence effort and establish a closer relationship. Hence, Japanese GAAP will continue being developing (Koga and Yao, 2011, p. 6). Table 3 presents a list of accounting standards released by the ASBJ. The accounting standard for financial instruments issued by the BAC in 1999 has been amended to the ASBJ accounting standard No. 10. Table 4 shows a list of the implementation guidance on ASBJ accounting standards.

Table 4
List of implementation guidance on Accounting Standards from the Accounting Standards Board of Japan. *Source:* Koga and Yao, 2011, pp. 8–10, the ASBJ website (https://www.asb.or.jp/asb/top.do).

ASBJ implementation guidance		Date of issue or revision
No. 1	Accounting for the Transfer between Retirement Benefit Plans	11 August 2002
No. 2	Treasury Stock and Appropriation of Legal Reserve	11 August 2006
No. 3	Accounting for Shareholders who Received Dividends Resulting from the Distribution of Other Capital Surplus	27 December 2005
No. 4	Earnings Per Share	25 March 2011
No. 5	[Deleted]	
No. 6	Impairment of Fixed Assets	27 March 2009
No. 7	Retirement Benefits (Part 1)	16 March 2009
No. 8	Presentation of Net Assets in the Balance Sheet	27 March 2009
No. 9	Statement of Changes in Net Assets	30 June 2010
No. 10	Business Combinations and Business Divestures	26 December 2008
No. 11	Stock Option and Other Share-based Payment	31 May 2006
No. 12	Accounting for Other Compound Financial Instruments	30 March 2006
No. 13	Related Party Disclosures	30 March 2007
No. 14	Quarterly Financial Statements	25 March 2011
No. 15	Disclosure about Certain Special Purpose Entities	25 March 2011
No. 16	Lease Transactions	26 December 2008
No. 17	Accounting for Compound Financial Instruments with an Option to Increase Paid-in Capital	25 April 2007
No. 18	Construction Contracts	27 December 2007
No. 19	Disclosure of Fair Value of Financial Instruments	25 March 2011
No. 20	Disclosure of Segment Information and Other Related Information	21 March 2008
No. 21	Assets Retirement Obligation	26 December 2008
No. 22	Determination of the Scope of Consolidated Subsidiaries and Associates	25 March 2007
No. 23	Disclosure of Fair Value of Investment and Rental Party	28 November 2008
No. 24	Accounting Changes and Error Corrections	4 December 2009
No. 25	Retirement Benefits (Part 4)	17 May 2012

4. Financial reporting and regulations

Government and bureaucratic dominance and statutory control are primary features of Japan's corporate disclosure regulations.[7] The responsibility for regulations vests in governmental departments, including the Ministry of Justice, the Ministry of Finance and the Financial Service Agency, which separated from the Ministry of Finance in 1998. The Ministry of Justice regulates the disclosures of Japanese corporations through the 2005 Corporate Law, which was reformed from the Commercial Code 1899 as amended. The Ministry of Finance regulates disclosures through the 2001 Financial Instruments and Exchange Act that was promulgated by revising the Securities and Exchange Law 1947 as amended. The Act applies to every listed corporation. The Corporate Law and the Financial Instruments and Exchange Act are accompanied by ministerial ordinances that specify disclosure requirements in detail. Through the Financial Instruments and Exchange Act, the Financial Service Agency also closely controls the operations of the Japanese stock exchanges and licensed securities companies.

[7] Bureaucratic dominance and statutory control over the regulation system are entirely consistent with and illustrative of the cultural characteristics of high power distance and high uncertainty avoidance. These characteristics are designed to remove ambiguity and uncertainty from the regulation system. Hofstede (1984, p. 159; 2001, p. 152) classifies Japan as a low individualist nation with moderate to high levels of power distance and high uncertainty avoidance. Japan's ranking as a low individualist country is consistent with the widely recognized "group consciousness" of Japanese society. Its moderate to high power distance is consistent with the importance of relative rank related to Japan's fixed social positions and with the Japanese belief in the moral basis of government. These norms and values are realized in a greater level of active involvement of the Diet (the Japanese Parliament) and bureaucracy in every area of social and economic policy formulation and administration in Japan compared with Anglo-American nations (Harrison and McKinnon. 1986. p. 243). Its high uncertainty avoidance ranking is also broadly consistent with the pattern of interpersonal relations in Japan. Social order is clearly established and defined through group membership and rank. The country places an emphasis on particularistic relations rather than universal ethics, producing a very detailed set of situational codes of conduct that are meticulously observed (McKinnon, 1986, p. 88).

As already mentioned, corporate accounting and reporting in Japan are tightly regulated by the Corporate Law, the Financial Instruments and Exchange Act and the Corporate Income Tax Law. Each Law has its own purpose. The Corporate Law aims to protect the interests of creditors due to shareholders' limited liability, and the Financial Instruments and Exchange Act seeks to protect the interests of investors. The Corporate Income Tax Law purports to compute a fair taxation base in conjunction with national fiscal policies.

The following three corporate accounting objectives are commonly accepted in light of the purposes of the Act and Laws:

(1) to ascertain the degree to which the stewardship function of management is performed for business entities;
(2) to compute the disposable income of business entities (an amount available for dividends and corporate income tax) and
(3) to provide useful information for investment decision making by shareholders and creditors.

The Corporate Law prescribes objectives (1) and (2) for the purpose of creditor protection. The Financial Instruments and Exchange Act considers objectives (1) and (3) important for investors. The Corporate Income Tax Law follows objective (2). The Act and Laws implement specific corporate accounting requirements to achieve their objectives.

Objective (2) is of primary concern to shareholders and management in view of the growth and development of business entities. However, the percentage of individual shareholders in the Japanese stock market has been relatively low due to the cross-ownership of corporations and the power of institutional investors. Hence, management attitudes toward disclosure have related to large institutional investors. Consequently, the interests or informational needs of investors, who do not have the authority to require business entities to obtain necessary information, are not always satisfied by these entities' disclosures.

Needless to say, one of the basic concepts behind accounting objectives is the influence of accounting on the national economy. This concept exists implicitly and persistently. It is specified in the Financial Instruments and Exchange Act and the original 1949 proposal for setting the Business Accounting Principles, which state that accounting standards and laws should eventually contribute to the development of Japan's national economy as a whole. In the future, corporate accounting and reporting in Japan will be developed to provide useful information for the microeconomic investment decisions made by shareholders and creditors.

Standard setting in Japan has also been dominated by the government. Accounting standards are formulated by the BAC, which is a deliberative council attached to the Financial Service Agency. Representation on the BAC is broad, mainly comprising representatives from Japanese academia, the Japanese Institute of Certified Public Accountants (JICPA),[8] the Japanese Stock Exchange and Keidanren (the representative body of large corporations). However, as noted, the responsibility for setting accounting standards has been moved from a government body to a private sector organization. Although some of the old accounting standards not shown in Table 3 are still effective,[9] the ASBJ has advanced many new accounting standards to replace the old standards or amended some of the existing standards to deal with new accounting events and converge with IFRS (Koga and Yao, 2011, p. 5).

As the managers of listed and unlisted stock companies, directors are required to make accounting records of business transactions and prepare financial statements (referred to in the Law as "accounts," i.e., single financial statements, and "consolidated accounts," i.e., consolidated financial statements) in accordance with relevant provisions of the Law. Article 431 of the Corporate Law prescribes that the accounting of a stock company shall be subject to business accounting practices generally accepted as fair and appropriate. Further, Article 432 of the Law adds the following provision on accounting records: "a stock company must prepare accurate accounting books in a timely manner as prescribed by the applicable Ordinance of the Ministry of

[8] The profession is relatively small (25,083 CPAs for a population of 126 million in Japan, January 2013) and primarily engaged in audit, taxation and management consulting. The CPA Law grants the Ministry of Finance jurisdiction over the examination, registration, deregistration and suspension of CPAs.

[9] For example, some of the standards include the Accounting Principles for Business Enterprises and Working Rules for Financial Statements, Foreign Currency Transactions, Impairment of Fixed Assets, Cash Flow Statements and Tax Effect Accounting.

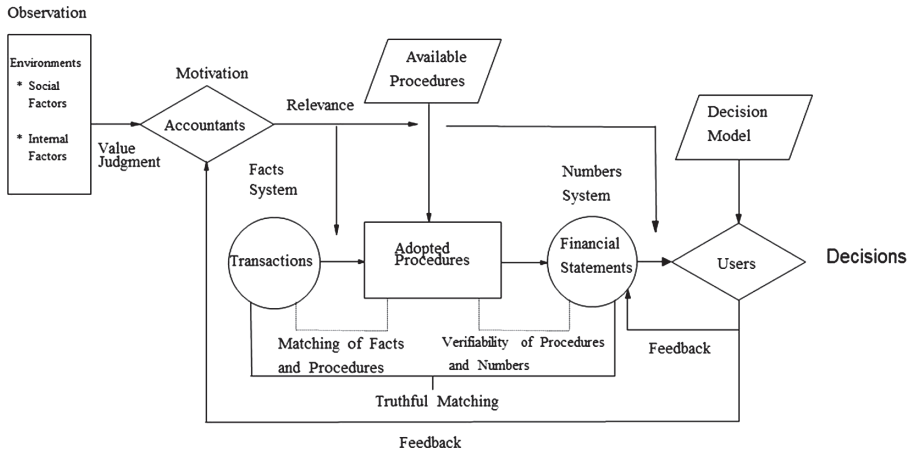

Figure 2. Accounting communication and accountants' judgments. *Source:* Takeda (1982), cited from Fig. 11.1, a framework of accounting measurement and communication.

Justice." Article 3 of the Ordinance on Company Accounting also prescribes the following: "With regard to the interpretation of terms and the application of provisions set forth in the Ordinance, generally accepted corporate accounting standards and other accounting practices shall be taken into consideration."

Fig. 2 depicts a framework of accounting communication and accountants' judgments. A change in environment for an entity would influence an accountant's motivation for choosing accounting policies. Once an accountant decides to adopt a policy on certain accounting issues that accords with the relevance of available procedures, they must continue to use reasonable and appropriate accounting methods for the issues until the next certain change occurs due to emerging environmental obstacles. The available procedures are included in the business accounting practices generally accepted as fair and appropriate, the generally accepted corporate accounting standards and other accounting practices consisting of accounting standards and guidance released by the BAC and ASBJ as indicated in the preceding section.

As the managers of listed and unlisted stock companies, directors must prepare balance sheets, income statements, business reports and supplementary schedules every financial year in accordance with the applicable ordinance of the Ministry of Justice (Article 435 of the Corporate Law). These financial statements must be audited by internal auditors in cases where the company has such auditors (Article 436 of the Corporate Law), and must also be audited by external auditors in cases where the company has such auditors (Article 436–2 of the Corporate Law). Further, they must be lodged at an annual general meeting to be held within 3 months following the balance sheet date (Article 437 of the Corporate Law), and made publicly available immediately following the meeting by newspapers and/or the company's website.

5. Dichotomy of accounting systems

Along with the progress of accounting standards converging with IFRS,[10] the necessity of accounting standards for small and medium-sized entities (SMEs), including auditing matters, has been discussed since the late 1990s. The interests related to most SME management commonly focus on how to compute taxable income to as little an amount as possible within the applicable provisions of the Japanese Corporate Income Tax Law. Because owner-managers usually lack the sufficient business accounting expertise and ability to calculate taxable income, Japanese tax accountants consult for SMEs and play an inevitable role in preparing and lodging their tax returns to the Japanese tax authorities. Further, owner-managers do not have much incentive for general purpose financial reporting due to their debt financing. In addition to these features, SMEs have no rigid internal control systems, and managers can easily override the systems.

[10] Saito (2012, pp. 192–194) briefly summarizes the backgrounds and objectives related to several accounting standards issued in the 1990s and 2000s, such as consolidated financial statements, financial instruments, impairment of long-term assets, employee retirement benefits and business combinations.

In a sense, the owner-managers of SMEs do not have much need to apply Big GAAP, as described in Table 3, which apply to general purpose financial reporting and emphasize the transparency and comparability of the accounting information to influence investors' economic decisions. Focusing on the differences among such attributes, it is necessary to institutionalize the accounting standards that correspond with SME characteristics. Hence, it would be better to promulgate accounting standards for SMEs than to apply the accounting standards to larger entities to improve the social reliability of the financial statements prepared by SMEs. Such a philosophy underpins the institutionalization of accounting for SMEs (Kawasaki, 2012, p. 10). Table 5 shows the progress of the institutionalization of accounting for SMEs in Japan.

At an early stage in the discussion, each professional body had its own political intent to expand its business opportunity, and each differed in its recognition of how to establish accounting standards for SMEs. These differences brought disorder to the discussion of accounting institutionalization (Kawasaki, 2012, p. 9). To resolve the confusion, the four interested groups (the Japanese Institute of Certified Public Accountants, the Japan Federation of Certified Public Tax Accountants' Association, the Japan Chamber of Commerce and Industry and the Accounting Standards Board of Japan) published the Accounting Guidance for SMEs in August 2005 (JICPA/JFCPTAA/JCCI/ASBJ 2005, Takeda, 2006). However, this "guidance" is not generally adopted by Japanese SMEs (Kawasaki, 2012, p. 9.).

Kawasaki (2012) points out that the Small and Medium Enterprise Agency examined this situation and reorganized the Study Group of Accounting for SMEs in February 2010, and that the Accounting Standards Board of Japan installed the Conference for the Accounting Standards for Unlisted Companies in March 2010. The former agency released a report entitled "*The Interim Report of the Study Group for Accounting for SMEs*" in September 2010, and the latter issued a report entitled "*The Report of the Conference for the Accounting Standards for Unlisted Companies*" in August 2010. Both reports conclude that new accounting rules should be established for SMEs in Japan (the Small and Medium Enterprise Agency, 2010, pp. 34–38).

In February 2011, the Small and Medium Enterprise Agency and the Financial Services Agency jointly installed the Review Committee for Accounting for SMEs and its Working Group. The Review Committee released the exposure draft entitled "*The Basic Accounting Guidelines for SMEs*" and collected public feedback (The Review Committee for Accounting for SMEs, 2011). After reviewing comments on the draft, the committee released "*The Basic Accounting Guidelines for SMEs*" in January 2012.

Fig. 3 presents the probable dichotomy of Japanese corporate accounting systems that has occurred during the current decade-long period of accounting standard development.[11] Listed firms and large entities are required to apply Japanese GAAP and may choose to apply U.S. GAAP, Pure-IFRS and Japanese-IFRS to be issued in coming years. SMEs are able to choose the Accounting Guidance for SMEs or the Basic Accounting Guidelines for SMEs. The former is mainly useful for companies with accounting advisors. Those companies are relatively larger than other companies in terms of revenue and capital size. Therefore, the companies with accounting advisors have an incentive to apply the Accounting Guidance for SMEs, which are the standards simplified from Big GAAP.

On the contrary, the Basic Accounting Guidelines for SMEs are mainly useful for comparatively smaller SMEs such as micro entities. The premise of these guidelines can be summarized into four points (Small and Medium Enterprise Agency, 2010, pp. 22–23).

(1) The "Basic Guidelines" shall provide SME managers with understandable rules to properly control their businesses (i.e., accounting useful for management).
(2) The "Basic Guidelines" shall produce accounting information that has necessary and sufficient content to inform the credit decisions made by financial institutions and the business trade (i.e., accounting that offers business opportunities with stakeholders).
(3) The "Basic Guidelines" shall sustain the accounting that is compatible with the tax accounting practices that are common among Japanese SMEs (i.e., accounting that reflects practices).

[11] The discussion in this section largely depends on a series of papers by T. Kawasaki (Professor, Konan University). The author acknowledges his helpful comments and permission to use his quotations.

Table 5
Progress of the Institutionalization of Accounting for SMEs in Japan. *Source:* Kawasaki, 2012, p. 8.

Year/month	Event
2002.3.	The Small and Medium Enterprise Agency of Japan (SMEAJ) installed the Study Group for Accounting for SMEs
2002.6.	The SMEAJ released "The Study Group Report."
2002.12.	The Japan Federation of Certified Public Tax Accountants' Associations (JFCPTA) released a report entitled "About a Setup of Accounting Standards for SMEs."
2003.6.	The Japan Institute of Certified Public Accountants (JICPA) released a report entitled "The Research Report for the State of Accounting for SMEs" (Research Report No. 8, Accounting System Committee).
2005.8.	The JICPA, JFCPTA, Japan Chamber of Commerce and Industry and Accounting Standards Board of Japan (ASBJ) released *The Accounting Guidance for SMEs* as amended. The 2012 version is currently available.
2010.2.	The SMEAJ restarted the Study Group for Accounting for SMEs.
2010.3.	The ASBJ installed the Conference for the Accounting Standards for Unlisted Companies.
2010.8.	The ASBJ released a report entitled "The Report of the Conference for the Accounting Standards for Unlisted Companies."
2010.9.	The SMEAJ released a report entitled "The Interim Report of the Study Group for Accounting for SMEs."
2011.2.	The SMEAJ and the Financial Services Agency of Japan installed the Review Committee for Accounting for SMEs and its Working Group.
2011.11.	The Review Committee for Accounting for SMEs issued an exposure draft entitled "The Basic Accounting Guidelines for SMEs," and collected public comments.
2012.1	The Review Committee for Accounting for SMEs released "*The Basic Accounting Guidelines for SMEs*."

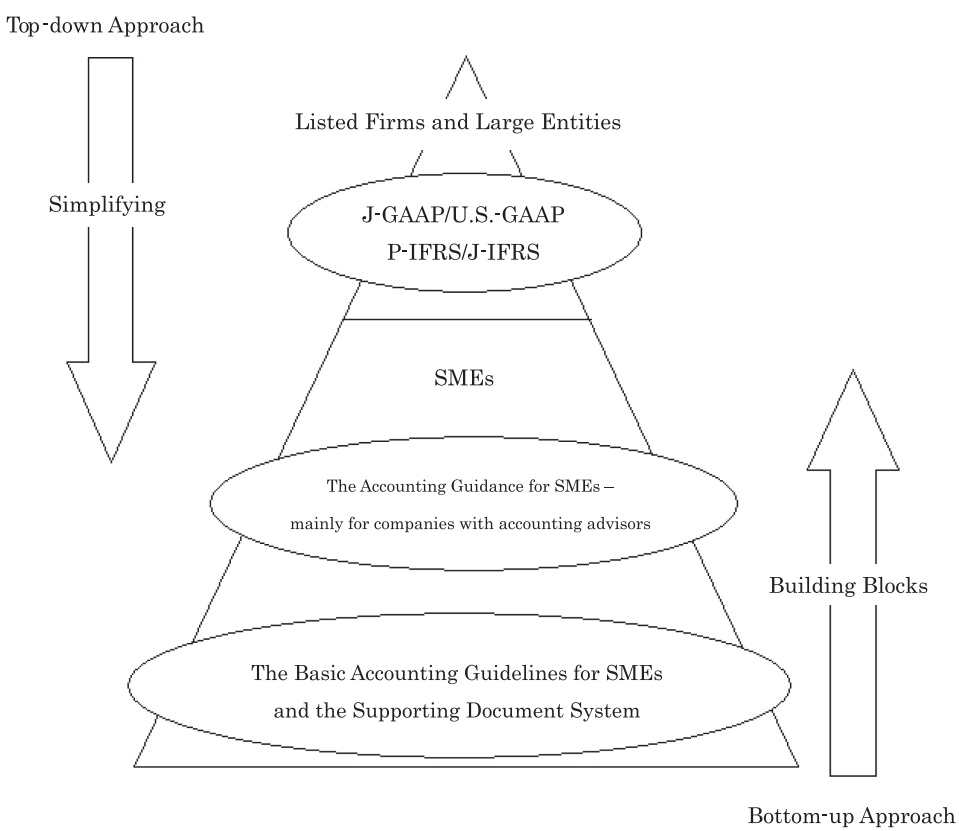

Figure 3. Dichotomy of Japanese corporate accounting systems. *Source:* Kawasaki, 2012, cf. Fig. 1, future shape of the Accounting Institution in Japan, p. 19.

(4) The "Basic Guidelines" shall lead appropriate accounting that does not require undue costs from the SMEs (i.e., accounting that is feasible for SMEs).

According to these premises, the Small and Medium Enterprise Agency presented four basic policies for creating accounting rules for SMEs (Small and Medium Enterprise Agency, 2010, pp. 35–36).

(1) The accounting rules shall reflect accounting treatments made in the SMEs' accounting practices as conventions that include Corporate Income Tax Law and the BAC's Accounting Principles for Business Enterprises.
(2) The accounting rules shall include accounting standards that reflect the broad differences in the SMEs' currently accounting practices.
(3) The accounting rules shall be easy to understand and simplified for SME managers.
(4) The accounting rules shall require SMEs to keep accounting records.

Such a dichotomy of accounting systems can also be observed in China, Korea, U.K. and the U.S. in terms of the appropriateness of Big GAAP for SMEs, the cost/benefit of adopting the standards and the lack of managers' need for the standards according to the attributes of their businesses.

The Chinese Ministry of Finance issued accounting standards for small entities in 2011 and the standards are effective for financial years starting January 1, 2013. The KASB developed the Korean Accounting Standards for Non-Public Entities based on Korean GAAP with some modifications. Korean Accounting Standards for Non-Public Entities were published in 2009. The KASB expects to converge its standards for non-public entities with IFRS for SMEs over the long term. Unlisted companies (with the exception of financial institutions and state-owned companies) can choose between full IFRS and the Korean Accounting Standards for Non-Public Entities.[12]

In the U.K., the ASB published an updated version of the Financial Reporting Standard for Smaller Entities (FRSSE) in June 2008 to reflect the changes in company law arising from the Companies Act 2006. No changes were made to the GAAP-based requirements. The updated FRSSE (effective April 2008) applies to accounting periods beginning on or after April 6, 2008, the date from which the accounting and reporting regimes for smaller companies in the Companies Act 2006 became effective. Because early adoption is not permitted, smaller companies should continue to use the FRSSE (effective January 2007) to cover their earlier accounting periods.[13]

In the U.S., the FASB issued the discussion paper entitled "*Private Company Decision-Making Framework*" in July 2012. It intended to develop a framework for evaluating the financial accounting and reporting guidance issued by the FASB and Private Company Council for private companies (FASB, 2012, cf. The purpose of this invitation to comment). The AICPA issued the exposure draft entitled "*Proposed Financial Reporting Framework for Small- and Medium-Sized Entities*" in November 2012. According to the draft (AICPA, 2012, p. 4., cf. the official version of the framework AICPA, 2013), the FRF for SMEs is a self-contained, special purpose framework intended for use by privately held SMEs in preparing their financial statements. The FRF for SMEs draws on a blend of traditional accounting and accrual income tax accounting methods. It is a less complicated and less costly accounting framework for SMEs that do not require financial statements based on U.S. GAAP.

As Fig. 3 shows, a company's accounting practices are considered to comprise a system of knowledge formed by management judgments on business transactions. Management judgments depend on corporate cultures[14] created through personal interactions within organizations. The most influential factor within an

[12] http://www.iasplus.com/en/jurisdictions/asia/country12.
[13] http://www.frc.org.uk/Our-Work/Codes-Standards/Accounting-and-Reporting-Policy/FRSSE.aspx.
[14] Hofstede defines culture as "the collective programming of the mind which distinguishes the member of one human group from another" (1984, p. 21). He described the content of mental programs as values, where a value is "a broad tendency to prefer certain states of affairs over others" (1984, p. 14). Therefore, corporate culture can be considered as the collective programming of the business mind that distinguishes a member of one business entity from another. An institution is a kind of balanced and stable value system (Takeda 1982).

organization is the owner-manager's personality. In a sense, the corporate cultures of SMEs heavily depend on manager behavior. The owner-managers of SMEs ordinarily believe it unnecessary to account for external factors such as financial reporting. In the accounting sense, they tend to focus on the calculation of taxable income.

The preceding draft (AICPA, 2012, p. 4) emphasizes the following points. Special purpose frameworks must be constructed to account for the needs, sizes and types of entities in diverse economic settings. These frameworks, with the exception of the contractual basis of accounting, are commonly referred to as other comprehensive bases of accounting (OCBOA) in the United States. Special purpose frameworks include cash-, modified-cash-, tax-, regulatory- and contractual-based accounting frameworks among others, and use a definite set of logical, reasonable criteria that applies to every material item appearing in the financial statements.

There have been movements to set nationally unique accounting standards for SMEs. National accounting standards have been converged with IFRS to form single sets of high quality, understandable, enforceable and globally accepted financial reporting standards with clearly articulated principles (IFRS Foundation, 2013, para. 2); however, they are not required by SMEs in every country.[15] There are two types of SMEs: those that adopt higher levels of accounting standards drawn from local accounting standards and converged with IFRS for listed and larger companies, and those that choose smaller GAAP consisting of principles that faithfully reflect the needs of smaller or micro entities.

6. Concluding remarks

In this paper, we describe the transformation of the accounting standards in Japan over the past 2 decades and review the driving forces of this transformation according to the circumstances of financial liberalization and globalization. We also analyze the current situation of accounting standards and discover a dichotomy of accounting systems resulting from the Japanese political, economic and legal institutions. Establishing the leading criteria (Takeda, 2006) for constructing accounting systems and standards is helpful for understanding the differences between local and global corporate accounting. These leading criteria include the following five conditions.

(1) Entity of business activities: the entity is listed or unlisted.
(2) Field of business activities: the entity's field of business activities is local or global.
(3) Stakeholders in the entity: stakeholders in the entity are limited to a certain number of interested parties or diversified unlimited and potential investors.
(4) Function of the entity's financing: the entity has direct- or indirect-oriented financing.
(5) Reporting objective of the entity: the entity's reporting objective is to provide useful information that determines its value or to prepare reliable information based on accounting records.

Each of these criteria forms a corporate culture, which is a collective programming of business minds that distinguishes the member of one business entity from another. The content of mental programs is defined as values, where a value is a broad tendency to prefer certain states of business affairs over others (cf. footnote 14). As already noted in Fig. 2 (Accounting Communication and Accountants' Judgments), a company's accounting practices comprise a system of knowledge formed by management judgments made in relation

[15] Ball (2006, pp. 15–17) insists that uniform accounting standards do not always produce uniform accounting practices among countries. He gives examples of the relevant obstacles, such as the extent and nature of government involvement in the economy; the politics behind government involvement in financial reporting practices (e.g., the political influence of managers, corporations, labor unions and banks); the legal systems (e.g., common versus code law; shareholder litigation rules); the securities regulation and regulatory bodies; the depth and structure of the financial markets (e.g., the closeness of the relationship between banks and client companies); the roles of the press, financial analysts and rating agencies; the size of the corporate sector; the structure of the corporate governance (e.g., relative roles of labor, management and capital); the extent of private versus public ownership of corporations; the extent of family-controlled businesses; the extent of corporate membership in related company groups (e.g., Japanese keiretsu or Korean chaebol); the extent of financial intermediation; the role of small shareholders versus institutions and corporate insiders; the use of financial statement information such as earnings in management compensation and the status, independence, training and compensation of auditors.

to business transactions. Management judgments depend on corporate cultures that have been created through personal interactions within organizations.

One of the objectives of the IFRS Foundation (IFRS Foundation, 2013, para. 2) is to promote and facilitate the adoption of IFRS through the convergence of national accounting standards and IFRS. Behind this objective is the drive to apply IFRS to the same transactions regardless of the context and in conjunction with the social, political, economic and cultural factors of each country. The accounting standards used to evaluate a firm's value based on the principle of substance over form are difficult to apply to SMEs in Japan due to the country's corporate cultures.

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