

Comparing the Value-Relevance of Accounting Information in China:
Standards and Factors Effects

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Abstract

This paper is motivated by the debate over the practicality of International Accounting Standards (IAS) in transitional economies as well as improvements in the Chinese capital market infrastructure in recent years. This study explores whether IAS is more value-relevant than PRC GAAP, and whether the value-relevance of IAS and the Chinese GAAP has decreased over time in the Chinese capital market.

This study adopts the Ohlson (1995) valuation model and the Vuong (1989) z-test to compare value-relevance and value-relevance over time in Chinese A-share and B-share markets from 1997 to 2003. The results indicate that IAS does not provide greater explanatory power than Chinese GAAP for A-share investors. The yearly analyses suggest the total explanatory power of IAS earnings and book value has decreased over time in the B-share market due to ineffective enforcement in compliance with IAS. While the explanatory power of PRC earnings and book values has increased from 2001 in the A-share market - due to the improvement of the capital market infrastructure in recent years value-relevance has declined.-The latter is related to inefficient enforcement of full compliance with IAS and PRC GAAP, more firms reporting negative earnings and more firms with intangible-intensity. Small-sized firm and firms reporting negative earnings shift value-relevance to book values.

Keywords: value-relevance; IAS, PRC GAAP accounting information; capital market infrastructure.

1. Introduction

Many accounting academics suggest that International Accounting Standards (IAS) is perceived more value-relevant than other domestic General Accepted Accounting Principles (GAAP), because of its high quality of accounting standards and its considerable predictability (Ashbaugh, 1999; Harris & Muller, 1999; Davis-Friday & Rueschhoff, 1999; Leuz, 2003; Bao & Chow, 1999). However, it is not clear whether IAS accounting information is more value-relevant than the People of Republic China (PRC) GAAP in the Chinese stock market. In addition, whether the combined value-relevance of earnings and book values has declined over time is up for debate in the accounting value-relevant literature.

China provides a unique environment for research in comparative value-relevance between IAS and PRC GAAP. That is, China has not only directly applied IAS in its B-shares market, but has also harmonized its PRC accounting standards with IAS in the A-shares market. There are more than eighty firms that issue both A-shares and B-shares to Chinese domestic and international investors in the Shanghai and Shenzhen stock exchanges. A-shares and B-shares carry the same dividends, voting and liquidation rights. Generally, the B-shares market in China lacks liquidity, has lower trading volumes and lower stock prices compared to the A-shares market (Harding 1998; Eccher & Healy, 2000). Beginning February 2001, Chinese domestic investors were able to trade B-shares,

and would be interested to evaluate whether IAS accounting information is more useful than PRC GAAP for assessing A-share stock prices. For improving the efficiency of capital market infrastructure, China has revised its accounting and auditing systems - as well as legal systems - in recent years in order to improve efficiency in the capital market infrastructure. This may increase the value-relevance of accounting information in China's stock market-. This paper explores whether IAS is more value-relevant than PRC GAAP for Chinese domestic and international investors; and whether the value-relevance of IAS and PRC GAAP accounting information has declined over time. Furthermore, this paper examines the effect of firm factors on the value-relevance of earnings and book values in the A-share and B-share markets. It extends current research, similar to Eccher and Healy (2000) and employs the Vuong (1989) z-test to evaluate which reporting model provides greater explanatory power to stock prices, yet uses Ohlson (1995) valuation models to test the association between accounting information and prices, instead of returns, to evaluate the comparative value-relevance. In addition, this study follows Bao and Chow (1999) and Collins et al (1997) to evaluate the value relevance over time, using different time period.

Our results confirm that IAS accounting information is useful for investors; even though earnings relevance has declined over time, book values carried a greater weight in explaining stock price variance in the Chinese B-share market. The adjusted R-square of

IAS accounting information provides high explanatory power to B-share relative to that of PRC GAAP accounting information to A-share in the Chinese stock market. However, accounting information based on IAS does not provide more explanatory power than PRC GAAP for A-share investors. Ineffective enforcement of IAS may contribute to declining value-relevance of IAS accounting information over time. Meanwhile, the value-relevance of PRC GAAP has increased since 2001; this because of recent improvements to the Chinese capital market infrastructure. Our results confirm the theory of Collins et al (1997) and show that accounting standards based on IAS is value-relevant. While earnings relevance has declined over time, book values have placed a greater weight in explaining stock price variance. In addition, firms with negative earnings or small size shift the value-relevance of accounting information from earnings to book values in the Chinese B-share market (but not firms with high intangible-intensities).

This paper assumes that the Chinese stock market is a weak form efficient market (Sun, Zhang, & Zhou, 1997; Chen, Chen, & Su, 2001). This paper defines the value-relevance of accounting information as if financial accounting numbers were related to stock prices, thus making the accounting information useful to investors (Francis & Schipper, 1999). In the next section, we discuss the infrastructure of the Chinese stock market and research questions related to this study. Research models are discussed in Section 4. Results are presented in Section 5. Conclusion of this study is

detailed in Section 6.

2. The Chinese Capital Market Infrastructure

The Chinese capital market is an emerging capital market; its economy is in transition from a centrally planned economy to a market-oriented economy. Chinese accounting standards were developed in a highly politicized environment. The PRC Ministry of Finance (MOF) establishes the accounting regulations and systems. The China Securities Regulatory Commission (CSRC) issues disclosure requirements for listed companies. Many studies point out that government accounting standards for financial reporting is less value-relevant to investors because less accounting information is disclosed to investors. The credibility of financial reporting and the quality of auditors' reports are questionable¹ (Chen, Su, & Zhao, 2000; Xiao, Zhang, & Xie, 2000; Chen, Sun, & Wang, 2002), because of the weak capital market infrastructure. Financial intermediaries such as professional financial analysts, a financial press, and assets evaluators in China are quite limited.² Qualified accountants with quality audit reporting skills are also limited; the legal system for investors' protection in monitoring managers'

¹ Many accountants in the practice do not want to adopt new accounting standards, and consider detailed disclosure as troublesome and unbeneficial (Tang, 2000). Since there were no notes requiring disclosure in the old Chinese accounting system, the accountant does not have professional habits, or knowledge of techniques to use notes for disclosure on financial statements. They also do not employ internal controls to verify accounts (Ding, 2000).

² There are few professional financial analysts in China. The role of the Chinese press is quite limited in monitoring the management of listed firms due to the policy of government. Asset valuation is also related to political issues, the government does not want stocks to be under-priced. Firms receive the assets at a planned price instead of at market value (Eccher & Healy, 2000; Chang, Khanna, & Palepu, 2000).

accounting decisions is insufficient; disclosures required by are not enforced (Eccher & Healy, 2000; Chen et al, 2002; Chen & Wang, 2002).

The China Ministry of Finance (MOF) requires firms to issue A-shares (B-shares) to prepare its financial statement with PRC GAAP (IAS), and be audited by local (international) CPA firms. China has harmonized its accounting standards with IAS since 1985, and has revised them in 1992, 1998 and 2001. However, several significant differences in accounting measurements still exist between the International Financial Reporting Standards (IFRS) and the Chinese GAAP. Namely, the are the valuation of fixed assets, the amortization of intangible assets, the methods of income tax accounting, measurement of goodwill and intangible assets, research and development costs, the amortization of goodwill and intangible assets, mineral rights as well as expenditures to explore, develop and extract minerals (Deloitte Touch Tohmatsu, 2002). Chinese accounting standards tend to be less conservative. The Chinese GAAP adhered to historical cost or value inventory at planned prices, while IAS valued assets per the fair value oriented valuation. In general, based on the PRC GAAP, firms' assets were slightly understated while revenues and earnings were substantially overstated compared to IAS (Lin, Chen, & Tang, 2001). Despite significant discrepancies between Chinese GAAP and IAS (Eccher and Healy, 2000) correlation coefficients between the financial ratios, such as earnings, book values, revenues, and assets are very high, in the 77% to 98%

range. This may be related to Chinese managers trying to manipulate the figures and avoid large disparities between two accounting systems.

An independent auditing standard issued in 1995, and revised in 1997 and 1999, is similar to the international standards and guidelines. The Chinese auditing market is formed by local CPA firms, state auditors and the big four international CPA firms. They are organized as joint ventures with local firms or representative offices. Auditors' primary problems are related to their independence³, qualifications and training, misconceptions and corruption. To improve the independence of CPAs, China needs to clarify the relationship between state, auditor and client; limits on the disclosure of information raises questions of performance (Xiao, Zhang, & Xie, 2000).

China has updated and revised laws, regulations and the capital market infrastructure in recent years to improve the practicality of accounting information, e.g. the new accounting system⁴ in 2001; additional disclosure requirements issued in 2001⁵

³ The reasons of the auditing problems are associated with Chinese government involves in setting auditing standards, as well as most auditing firms in China either belongs to state audit bureaus or state-owned auditing firms. In addition, the audits of these listed firms conducted by the state, which may lack economic incentive and mechanisms for auditors to preserve their independence (Xiang, 1998).

⁴ The new comprehensive accounting system for business enterprises, which brought the Chinese GAAP more closely aligned with IAS. The new comprehensive accounting systems, bring the PRC GAAP more closely aligned with IAS, included three new standards; 1) intangible assets, 2) borrowing costs, and 3) leases. It also revised standards relating to debt restructuring, non-monetary transactions, accounting policies, cash flow statements, and investments.

⁵ The listed firms' management, assets, and finance and treasury functions need to be independent from its major shareholders. All listed firms also need to disclose details related to party transaction information related of intangible assets. In addition, all listed firms are required to post their annual reports

and revised in 2003; new requirements for auditing firms in a five-year auditor rotation; and a new regulation for preventing insider trading issued at the end of 2002⁶.

3. Research Questions

This study addresses three research questions. First, this study investigates the comparable value-relevance of PRC GAAP and IAS. Many studies suggest that the IAS fair values orientation is highly correlated to and comparable with U.S. GAAP, and more value-relevant than other countries' GAAP, since IAS has high disclosure requirements and is more restrictive of the choice of accounting measurements than with the choice of other countries' GAAP (Harris & Muller, 1999; Ashbaugh, 1999; Davis-Friday & Rueschhoff, 1999; Leuz, 2003). Several studies examine and compare the usefulness of IAS and PRC GAAP in the early age of Chinese capital markets, from 1992 to 1997 (Bao & Chow, 1999; Eccher & Healy, 2000; Chen, Chen & Su, 2001; Chen, Firth & Kim, 2002). Bao and Chow (1999) report that both earnings and book values of equity are more highly associated with B-share prices when based on IAS than when based on Chinese GAAP. Earnings based on IAS are significantly associated with stock prices, while book values based on IAS is not.

Accounting information based on IAS provides explanatory power in returns and

on certain designated websites.

⁶ As long as companies that are prepared to issue 300,000 or more shares, are required to have an additional audit in accordance with international accounting standards. In addition, the Chinese Supreme Court established procedures for investors to sue corporate directors and managers for missing or false information (Pottinger, 2003).

prices for the B-share market, but not for the A-share market; this is consistent with Bao and Chow (1999) and with Chen, Firth, and Kim (2002). Further, PRC GAAP and IAS earnings are associated with A-share and B-share prices respectively; however, they indicate that book values are only highly related to B-share prices, not to A-share prices. They also argue that A-share investors may use IAS earnings to assess stock prices.

Eccher and Healy (2000) suggest that accounting information based on IAS does not provide material benefits to investors over PRC GAAP. Yet, they argue that neither the IAS nor the PRC standards are enforced appropriately in China. This is because of inefficient accounting and the capital market infrastructure, such as auditing, the legal system, the business press and financial analyst communities. Chen, Chen and Su (2001) argue that Chinese domestic investors perceive PRC GAAP accounting information reflected in the balance sheet and income statement as useful in evaluating A-share stocks. Investors perceive this despite the young and insufficient capital market; the authors cited argue that Chinese investors may be irrational and ambivalent to inadequacies of accounting information.

That was researched before 1997 during the early age of the Chinese capital market. However, China has recently revised its accounting standards, and has innovated its capital market infrastructure. As such, the results of comparative value-relevance and value-relevance over time may be impacted. In addition, after Chinese domestic investors

were allowed to trade B-shares in February 2001 it is not clear whether they perceive IAS as more value-relevant than PRC GAAP. Our tests try to fill the gap in previous inclusive results by examining comparative value-relevance between IAS and PRC GAAP in the A-share and B-share markets from 1997 to 2003.

The second topic of this study is whether the combined value-relevance of earnings and book values has increased over time in the Chinese stock markets because of capital market infrastructure innovations. Bao and Chow (1999) point out that the explanatory power of earnings and book values for stock prices in China has increased over time from 1992 to 1996. On the contrary, some studies show that the combined value-relevance of earnings and book values has declined over time in many countries because of increased intangible assets in industries with intensive-intangible assets (Lev, 1997; Ramesh & Thiagarajan, 1995; Chang, 1998). Other studies argue that the combined value-relevance of earnings and book values has not declined over time (Collins, Maydew & Weiss, 1997; Jermakowicz & Gomik-Tomaszewski, 1998; Bao & Chow, 1999). More and more in recent years technology-based and service industries invest in intangibles such as research, development, and human capital are developing. Since those intangible assets are limited in accounting recognition, accounting information is less value-relevant in valuing the firms with high-tech, communication and service-oriented industries (Amire & Lev, 1996; Lev, 1997; Collins et al, 1997). Collins, et al, (1997)

refute the assumption of that increased intangibility lowers the value relevance of financial statement information; they and argue that while earnings relevance has declined over time, book values have carried a greater weight in explaining stock price variance.

The third topic of this study is whether the value-relevance of PRC GAAP and IAS earnings and book values can be influenced by factors in the A-share and B-share markets. Many studies document that firm size could be a factor, which impacts the degree of value-relevance. It is an important variable for explaining cross-sectional variations of accounting choices. It also could be a proxy for risk, growth or political costs (Freeman, 1987; Collins, Kothari, & Rayburn, 1987; Lang & Lundholm, 1993; Collins et al, 1997).

Collins et al (1997) suggest that using book values of equity to evaluate firms with small-sizes, intangible-intensities and reporting negative earnings is more appropriate than using earnings in light of investors' points of view that small firms may be more likely to face financial distress than large firms. Firms reporting negative earnings, have smaller earnings response coefficients (ERC) to stock returns than firms who report positive earnings (Hayn, 1995). Chen et al, (2001) suggest that earnings are value-relevant for firms with positive earnings, and that value-relevance shifts to book values for firms with negative earnings. In addition, both earnings and book values are

value-relevant for large and small firms, while earnings coefficients are larger than book values coefficients for small firms. In recent years, more and more Chinese firms have reported negative earnings in the Shanghai and Shenzhen Securities Exchanges (Hu, 2001).

Eichensher (2000) considers that securities values could be influenced by trading liquidity in the Chinese capital market. Normally, an A-share is referred to as large trading volumes, while B-shares have small trading volumes. However, the trading volume of B-shares changed, after Chinese domestic investors were able to trade them. Some studies and financial practitioners suggest that trading volume may provide valuable information about stocks. Low-volume stocks generally earn higher stock returns than high volume stocks (Datar, Naik, & Radcliffe, 1998; Lee & Swaminathan, 1998).

4. Research Models and Data

4.1 Models

Following value-relevance literature⁷, we use the Ohlson (1995) model. It is related to earnings and book values, and can examine whether the balance sheet and income information are associated with stock prices (Barth 1996; Burgstaher & Dichev 1997). If PRC GAAP or IAS accounting information is related to A-share or B-share

⁷ Collins et al (1997) suggest that the balance sheet and income statement are useful in measuring value-relevance accounting information.

stock prices, it is presumed that accounting information is value-relevant. For testing the comparative value-relevance in Model 1, the Vuong (1989) z-test⁸, a non-nested model, is used to evaluate whether IAS measure of earnings and book values provides greater explanatory power over PRC GAAP for A-share and B-share stock prices⁹. If IAS provides greater accounting information content than PRC GAAP, the z-score would be large and positive, while a large and negative z-score suggests the opposite. Cross-sectional and yearly cross-sectional regressions are employed, and adjusted-R² and regression coefficients are used to evaluate and compare the value-relevance of accounting information developed on the two sets of accounting standards in China¹⁰.

$$\text{Model 1: } P_{Ait} = \alpha_0 + \sum_{m=1}^6 \alpha_m \text{YEAR}_m + \alpha_1 [E_{Kit}] + \alpha_2 [BV_{Kit}] + \varepsilon_{it} \quad K = \text{PRC}; \text{IAS} \quad (1)$$

$$P_{Bit} = \alpha_0 + \sum_{m=1}^6 \alpha_m \text{YEAR}_m + \alpha_1 [E_{Kit}] + \alpha_2 [BV_{kit}] + \varepsilon_{it} \quad (2)$$

For exploring value-relevant accounting information over time, we follow Collins

⁸ The Vuong z-test is a likelihood-ratio test. The z-statistics standardizes the ratio of likelihood functions of two models. It follows a standard normal distribution, which tests the null hypothesis that there is no difference in explanatory power of two-nested regressions using E_{IASit} BV_{IASi} and E_{PRCit} BV_{PRCit} as independent variables in the Chinese GAAP model. A large and negative z-score suggests that this model does not provide greater explanatory power than the other model.

⁹ Price is per share of market value in the year following the end of April, as provided by the TEJ database. Because B-share stock prices are denominated and reported in U.S. dollars in the SSE, and in Hong Kong dollars in SZSE on the TEJ database, the paper translated the price of Hong Kong dollars into U.S. dollars, and then translated from U.S. dollars into Renminbi using the average April exchange rate. Since many firms report their financial porting between April 1 to April 30. The paper used the translated rate published by the U.S.A. Federal Reserve Board.

¹⁰ Eichenseher (2000) states that a high value of R² predicts that accounting information is highly related to investors' decision making.

et al (1997) in using R^2 decomposition to measure the value-relevance of earnings and book values in Model 2. The coefficients of determination from equations (1), (2) and (3) are denoted R^2_T , R^2_E , R^2_{BV} respectively. $R^2_T - R^2_E = R^2_{BV}$ if book values increased each year, it would indicate that book values have provided the incremental explanatory power over time. $R^2_T - R^2_{BV} = R^2_E$ if R^2_E increases each year, then earnings provide incremental explanatory power.

$$\text{Model 2: } P_{Jit} = a_0 + a_1 [E_{kit}] + a_2 [BV_{kit}] + \varepsilon_{it} \quad (3)$$

$$P_{Jit} = b_0 + b_1 [E_{kit}] + \varepsilon_{it} \quad (4)$$

$$P_{Jit} = c_0 + c_2 [BV_{kit}] + \varepsilon_{it} \quad (5)$$

J= A; B-share market, K= PRC; IAS

Model 3 is used to test the effects of firm size, positive vs. negative earnings, large vs. small trading volumes, and firms with intangible-intensity on the value-relevance of PRC GAAP and IAS earnings and book values. This paper divides the sample into two groups based on each of these factors, and uses a dummy variable to test and to assess the impact of each factor on value-relevance of accounting information on A-shares and B-shares. Firm size is measured by the logarithm of total assets; positive (negative) earnings are measured by whether firms' net income is greater (less) than zero. The trading volume is annual trading volume (in “000” million share) of A-shares or B-shares up to the end of the fourth month after the end of the fiscal year (on the annual

report announcement date of April 30.). Following Collins et al (1997), intangible-intensity is measured by industry, depending on if the industry belongs to R&D or management services, accounting, business services, engineering, communications, computer and office equipment, electronic components and accessories, drugs, plastics and synthetic materials.

$$\text{Model 3: } P_{Jit} = \beta_0 + \beta_1 D + \sum_{m=1}^6 \beta_m \text{YEAR}_m + \beta_2 [E_{Kit}] + \beta_3 [D * E_{Kit}] + \beta_4 [BV_{Kjt}] + \beta_5 [D * BV_{Kjt}] + \varepsilon_{it} \quad J=A; \text{ B-share market, } K=\text{PRC GAAP; IAS} \quad (6)$$

where D is a dummy variable for firm size, positive and negative income, trading volume and degree of intangible-intensity.

4.2 Samples and Data Collection

The sample firms were selected from firms listed in the Chinese Shanghai stock exchange (SHSE) and Shenzhen stock exchange (SSE) that issue both A-shares and B-shares from 1997 to 2003. The accounting data are distilled from the Taiwan Economic Journal's Great China Database (TEJ). The TEJ Great China Database is a CD-ROM database, which specializes in stock market data and financial statements.

Fifty-five firms are selected for their data over seven years from TEJ Database. Only firms with complete data are included.

5. Results and discussion

5-1. Comparative Value-Relevance

Descriptive statistics of the variables used in the study are presented in Table 1.

Over all, B-share stock prices are lower than A-share stock prices; but the discrepancy between A-share and B-share prices has decreased beginning in 2001. The annual earnings per share based on PRC GAAP is higher than that based on IAS, while IAS book values were slightly lower than PRC GAAP book values. The IAS and PRC GAAP earnings and book values are highly correlated, with correlation coefficients ranging from 91-99%. These statistics indicate that International Accounting Standards (IAS) are more conservative than Chinese GAAP. However, the high correlation of earnings and book values between the two sets of accounting standards presents the ineffectiveness of enforcement mechanisms in compliance with accounting standards. In addition, arbitrage may have occurred in the dual share market because Chinese domestic investors can sell high-priced A-shares, and trade B-shares at a lower price.

Regression results are shown in Table 2. The estimated coefficients for PRC GAAP and IAS earnings and book values are positively and statistically significant for A-share and B-share regressions. The PRC GAAP earnings coefficient (1.69) is highly significant relative to the IAS earnings coefficient (0.34). While the IAS book values coefficient (0.40) is statistically significant relative to the PRC GAAP book values coefficient (0.23). The findings indicate that Chinese domestic investors heavily rely on earnings, while B-share investors place more weight on book values of equity accounting information in evaluating stock. The adjusted R^2 for A-shares (38.43 %) is lower than the

adjusted R^2 for B-shares (62.65 %). That indicates that international B-share investors rely heavily on financial reporting relative to Chinese domestic A-share investors. This may relate to the limitations of language barriers for international investors to access reliable information on local firms and the local economy (Chakravarty, Sarkar, & Wu, 1998). The lower R^2 in the A-share market relates to Chinese domestic investors who may assess other alternative competing information on local firms instead of relying on financial reporting (Chen et al, 2001). Most Chinese domestic investors focus on trade with short-term gains; there is a high level of speculation and insider trade transactions in the Chinese stock market (Hu, 2002). The year effect was at 1% statistically significant in 1999, 2000 and 2001 in the A-share market and was at 1% significant during the years 2000-2003 in the B-share market. The findings indicate factors other than financial data and unexpected events strongly impact stock prices in the Chinese stock markets. The events may relate to Chinese domestic investors are allowed to trade B-share, and China enters to WTO in 2001.

The Vuong z-test of the difference in explanatory power for IAS and PRC GAAP in the A-share price regression model is statistically significant and negative (-2.02), suggesting that IAS does not provide higher information content than PRC GAAP for A-share stock prices. And the Vuong z-test in the B-share price regression model is insignificant, indicating that PRC GAAP is not useful in evaluating B-share stocks.

Consistent with Chen, Firth, and Kim (2002), our finding suggests that IAS accounting information is value-relevant to B-share stock prices, and not to A-share stock prices, and book values are highly correlated to B-share stock prices. We do find that the adjusted R^2 for the IAS model is greater than that for the PRC model, as suggested by Bao and Chow (1999).

5.2 Value-relevance of accounting information over time

Regression results for value-relevance over time are presented in Table 3. The adjusted R^2 for combined IAS earnings and book values has decreased annually until 2003. Figure 1 demonstrates that while the adjusted R^2 for incremental IAS earnings has declined, an increase in the adjusted R^2 for incremental IAS book values has replaced instead, which is consistent with the theory of Collins et al (1997). Indicating IAS accounting information is useful for stock valuation. Possible reasons for the decline of IAS value-relevance over time may relate to the lack of legal enforcement mechanisms and insufficient financial intermediaries (Eccher & Healy, 2000).

The PRC GAAP yearly regression model in Figure 2 demonstrates that the adjusted R^2 of combined PRC GAAP earnings and book values did not increase until 2001. The adjusted R^2 are very small and estimated coefficients for earnings and book values are statistically insignificant during the years of 1998 to 2000. That may relate to incomparability between the forms of accounting regulation and the realities of the

accounting environment. It takes time to become accustomed to complying with new accounting standards and to build a support infrastructure. The possible reasons for the combined value-relevance of PRC GAAP earnings and book values increasing since 2001 may relate to recent renovations of the Chinese capital market infrastructure. Such as greater requirements for disclosure, guarantees in writing of accurate and complete financial reports, and regulations which prevent insider trading as regulated by CSRC, as well as regulations for independent auditing rotated over five-years. Similarly for Model 1, the adjusted R^2 of the IAS model is greater than that on PRC GAAP model each year. Our results for value-relevance over time in the Chinese stock markets, in contrast to Bao and Chow (1999), may relate to different periods of observation.

5.3 Factors affecting of the degree of value relevance

Table 4 presents the analysis of the impact of firm factors on the value-relevance in the B-share market. Consistent with Collins, et al (1997), the value-relevance shifts to book values for firms with small trading volumes, firms reporting negative earnings and firms of small size. However, we do find that earnings are relevant to stock prices for firms with intangible-intensities and reporting positive earnings. Generally, book values is useful in evaluating firms reporting negative earnings and small-sized firms since those firms are more likely to face financial distress (Collins, Pincus, & Xie, 1997; Burgstahler & Dichev, 1997). Table 5 presents the factor effect on the value-relevance in the A-share

market. Earnings information is significantly value-relevant for firms of large size, firms with large trading volumes and firms with intangible-intensities. Both earnings and book values are value-relevant for firms of small size and firms with less intangible-intensity, while earnings coefficients are more relevant to A-share prices than book values coefficients. Those differences between the two markets may be related to different perspectives between the IAS and PRC GAAP models; Chinese domestic investors heavily rely on earnings instead of book values in stock valuation, while B-share investors perceive the opposite.

6. Conclusions

China has shifted to a market-oriented economy to increase the credibility of financial reporting and attract foreign investors. She has developed accounting and financial infrastructures and institutions, professional intermediaries and a legal system over more than a decade. Previous studies present mixed results on the comparative value-relevance between IAS and PRC GAAP, and question weak enforcement of accounting standards during the early age of institutional developments. It is not clear whether IAS or PRC GAAP accounting information is more relevant to stock prices after years of renovations of the Chinese capital market infrastructure; or whether firm factors, such as firm size, trading volume, positive vs. negative earnings and intangible-intensities, have an impact on value-relevance of earnings and book values in A-share and B-share

markets.

Consistent with Bao and Chow (1999), our results suggest that B-share (international) investors strongly rely on financial information in decision making as compared to A-share investors. Generally, Chinese domestic investors focus on short term capital gains, and trend to be speculative or irrational for unusual events, instead of using financial data in stock valuation. Our results indicate that IAS accounting information does not provide additional explanatory power over PRC GAAP accounting information for A-share stock prices. Consistent with Chen, Firth, and Kim (2002), we do find that B-share (international) investors generally put more weight on book values than earnings information in evaluating stocks. In addition, our findings suggest that IAS earnings information is useful in evaluating firms with positive earnings and intangible-intensities. And the value-relevance shifts to book values while firms of small size, reporting negative earnings, having less intangible-intensities and small trading volumes in the B-share market. In contrast, A-share investors perceive that earnings are more useful than book values as suggested by Haw, Qi, and Wu (1998). But book values are value-relevant in evaluating firms of small-size and less intangible-intensity in the A-share market. As suggested by our findings, we argue that the explanatory power of earnings and book values for A-share and B-share prices has declined over time, while the value-relevance of PRC GAAP stops declining in 2001, and IAS increases in 2003.

There are several plausible reasons for the findings. First, it takes time to build an effective capital infrastructure to support and train to accounting practices in full compliance with new accounting standards. For example, the rapid growth of the Chinese capital market creates strong demand for independent and competent auditors, yet there were only 58,000 CPAs by year end 2001 (Haw, Park, Qi, & Wu, 2003). Second, accounting standards' enforcement difficulties may be related to Chinese government governs accounting and auditing standards, and to CPA activities. Further, government is also the controlling shareholder in most of listed firms. The auditor-government association may play key roles for managers' and auditors' incentives to engage in aggressive earnings management, and protect firms from the threat of litigation. We find a high correlation between coefficients for IAS and PRC GAAP earnings and book values. This may relate to managers' attempts to reduce disparities between financial reports based on IAS compared to PRC. It is critical to build effective legal controls to monitor opportunistic reporting for shareholders' protection.

Based on our findings, we argue that adopting and implementing IAS would not force financial statements to achieve a high degree of transparency without an effective capital market infrastructure to enforce full compliance. Finally, the reporting incentives could be affected drastically by economic, political, legal and cultural institutions in a country with a transitional economy.

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Table 1

.Descriptive statistics earnings, book values and prices on A- and B-share for the years 1997-2003

Year	Price _A vs. Price _B			Earn _{PRC} vs. Earn _{IAS}			BV _{PRC} vs. BV _{IAS}		
	A-share	B-share	Correlation coefficient	PRC	IAS	Correlation coefficient	PRC	IAS	Correlation coefficient
1997	9.85	1.41	0.714*	0.16	0.13	0.939***	2.59	2.46	0.975*
1998	7.84	0.83	0.441*	0.04	0.02	0.936***	2.45	2.29	0.982*
1999	12.91	1.28	0.227	0.10	0.08	0.902***	2.35	2.29	0.993*
2000	15.26	4.78	-0.101	0.12	0.12	0.970***	2.30	2.38	0.976*
2001	12.78	3.05	-0.226	-0.18	-0.21	0.962***	2.08	2.11	0.997*
2002	9.33	2.26	-0.081	-0.05	-0.08	0.955***	1.97	2.00	0.997*
2003	8.20	2.37	0.362*	0.07	0.10	0.915***	2.04	1.91	0.966*

Note: Variable Definitions:

***: significant at 1% level; ** : significant at 5% level; *: significant at 10% level.

Price_A (Price_B): stock price of A-share (B-share) for the firm at the end of the fourth month after the fiscal year t-1

(The B-share prices, from TEJ database, are converted from US\$ in SHSE and HK\$ in SSE to RMB).

Earn_{PRC}(Eearn_{IAS}): earnings per share of A (B) share for the firm for the fiscal year t.

BV_{PRC} (BV_{IAS}): A-share (B-share) book value per share for the fiscal year t.

Table 2

Relation Between A-share (B-share) Stock Prices and Earnings and Book values reported under IAS and PRC GAAP. The Sample is 55 Firms That Trade A-share and B-share in the Period 1997 to 2003.

Intercept and year effects	A-share regression model		B-share regression model	
	Estimated Coefficients		Estimated Coefficients	
	(t statistics)		(t statistics)	
	IAS Model	PRC Model	IAS Model	PRC Model
E_{IASit}	0.002*** (3.17)		0.3379** (1.79)	
BV_{IASit}	0.006*** (2.75)		0.4035*** (6.15)	
E_{CASit}		1.6904*** (3.79)		0.012(2.52)** (4.91)***
BV_{CASit}		0.2261* (166)		
Adjusted R ²	0.3776	0.3843	0.6265	0.6252
Vuong z-test ^a	-2.02*** ^a		- 0.33	

Model 1:

$$\text{A-share price regression: } P_{Ait} = \alpha_0 + \sum_{m=1}^6 \alpha_m \text{YEAR}_m + \beta_1 [E_{PRCit}] + \beta_2 [BV_{PRCit}] + \varepsilon_{it} \quad (\text{PRC Model})$$

$$P_{Ait} = \alpha_0 + \sum_{m=1}^6 \alpha_m \text{YEAR}_m + \beta_1 [E_{IASit}] + \beta_2 [BV_{IASit}] + \varepsilon_{it} \quad (\text{IAS Model})$$

$$\text{B-share price regression: } P_{Bit} = \alpha_0 + \sum_{m=1}^6 \alpha_m \text{YEAR}_m + \beta_1 [E_{IASit}] + \beta_2 [BV_{IASit}] + \varepsilon_{it} \quad (\text{IAS Model})$$

$$P_{Bit} = \alpha_0 + \sum_{m=1}^6 \alpha_m \text{YEAR}_m + \beta_1 [E_{PRCit}] + \beta_2 [BV_{PRCit}] + \varepsilon_{it} \quad (\text{PRC Model})$$

Variable Definitions:

***: significant at 1% level; **: significant at 5% level; *: significant at 10% level.

E_{PRCit} (E_{IASit}) is earnings per share of A-share (B-share) for the firm for the fiscal year t.

BV_{PRC} (BV_{IAS}) is A-share book values per share for the firm for the fiscal year t.

^a the Vuong z-test tests that the null hypothesis that there is no difference in explanatory power of two-nested regressions using E_{IASit} BV_{IASit} and E_{PRCit} BV_{PRCit} as independent variables in A-share regression: IAS model / PRC model and B-share regression: PRC model / IAS model.

Table 3
 Yearly Regressions of B-share (A-share) Prices on IAS (CAS) Earnings and Book values in the Period
 1997 to 2003

Panel A: B-share regressions									
Years	(E _i)	(BV _{it})	Adj-R ²	(E _i)	Adj-R ²	(BV _{it})	Adj-R ²	Incr BV	Incr E
			(T)	(E)	(E)	(BV)	(BV)	(T)-(E)	(T)-(BV)
1997	2.51 (3.29) ^{***}	0.50 (1.68)	.498	3.51 (7.15) ^{***}	.4811	1.27 (6.15) ^{***1}	.4056	.0169	.0924
1998	0.474 (1.64)	0.50 (4.56) ^{***}	.612	1.49 (6.95) ^{***}	.4668	0.64 (9.05) ^{***}	.5995	.1452	.0125
1999	0.604 (1.41)	0.50 (4.46) ^{***}	.532	1.97 (5.66) ^{***}	.3648	0.61 (7.76) ^{***}	.5230	.1669	.0087
2000	2.976 (1.81) [*]	0.191 (0.73)	.205	3.93 (3.95) ^{***}	.2125	0.57 (3.49) ^{***}	.1714	-.0071	.034
2001	.067 (0.36)	0.26 (2.22) ^{**}	.156	0.36 (2.56) ^{**}	.0935	0.287 (3.47) ^{***}	.1699	.0625	-.0139
2002	0.991 (0.93)	0.217 (0.80)	.02	1.43 (1.57)	.0264	.345 (1.50)	.0224	-.0066	-.0026
2003	0.809 (1.78)	0.42 (5.54) ^{***}	.426	1.48 (2.70) ^{***}	.1042	0.456 (6.12) ^{***}	.4026	.3219	.0235
Panel B: A-share regressions									
1997	5.96 (2.54) ^{**}	1.084 (1.17)	324	8.01 (5.13) ^{***}	.3190	2.851 (4.41) ^{***}	.2543	.0046	.0693
1998	1.21 (1.15)	0.720 (1.57)	.247	2.57 (4.10) ^{***}	.2262	1.148 (4.28) ^{***}	.2425	.0207	.0044
1999	0.381 (0.17)	0.726 (1.21)	.05	2.542 (1.82) [*]	.0409	0.805 (2.21) ^{**}	.0668	.0085	-.0174
2000	5.40 (1.23)	-0.565 (-0.81)	-.008	2.675 (0.96)	-.0014	0.099 (.22)	-.0179	-.0065	.01
2001	1.68 (2.80) ^{***}	-.392 (-1.24)	.125	1.12 (2.84) ^{****}	.1161	0.281 1.28	.0117	.0087	.1131
2002	2.157 (1.96) [*]	0.054 (0.22)	.081	2.30 (2.61) ^{**}	.0975	0.337 (1.67)	.0320	-.0164	.0491
2003	2.34 (2.84) ^{***}	0.465 (3.15) ^{***}	.351	3.44 (4.26) ^{***}	.2413	0.642 (4.52) ^{***}	.2642	.1095	.0866

Model 2:

$$P_{Jit} = a_0 + a_1 [E_{kit}] + a_2 [BV_{kit}] + \varepsilon_{it} \quad (T)$$

$$P_{Jit} = b_0 + b_1 [E_{kit}] + \varepsilon_{it} \quad (E)$$

$$P_{Jit} = c_0 + c_2 [BV_{kit}] + \varepsilon_{it} \quad J = A; \text{ B-share market, } K = \text{PRC; IAS} \quad (BV)$$

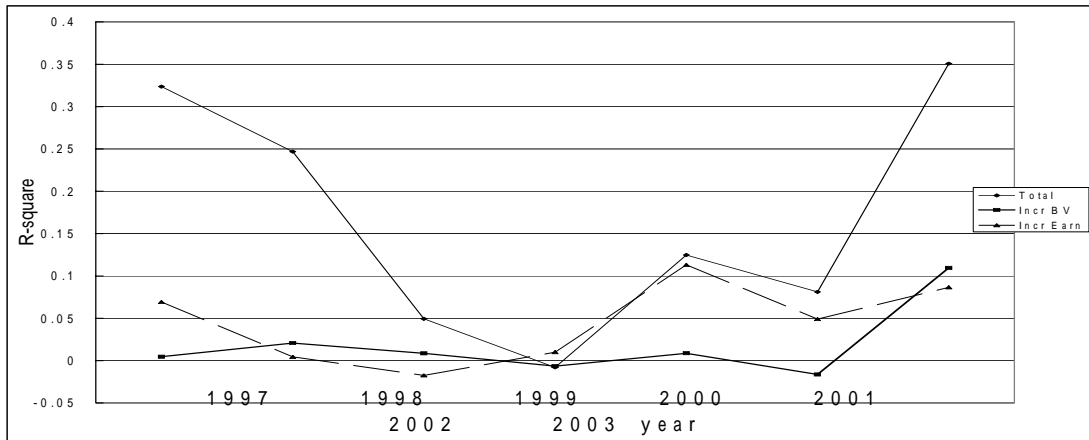
$E_{PRCt} (E_{IASit})$ is earnings per share of A-share (B-share) for the firm for the fiscal year t.

$BV_{PRC} (BV_{IAS})$ is A-share book values per share for the firm for the fiscal year t.

Incr BV (Earn) is the incremental explanatory power of book values (Earnings) if the explanatory power R-square from regression (2) less than the R-square from regression (1).

Figure 1

B-share Adjusted R² from Estimating Model 2



$$P_{Bit} = a_0 + a_1 [E_{IASit}] + a_2 [BV_{IASit}] + \varepsilon_{it} \quad (1)$$

$$P_{Bit} = b_0 + b_1 [E_{IASit}] + \varepsilon_{it} \quad (2)$$

$$P_{Bit} = c_0 + c_2 [BV_{IASit}] + \varepsilon_{it} \quad (3)$$

Total is the total explanatory power is the R-square from regression (1), the yearly cross-sectional regression of prices on earnings and book values.

Incr BV is the incremental explanatory power of book values

Incr Earn is the incremental explanatory power of earnings

Figure 2

A-share Adjusted R² from Estimating Model 2

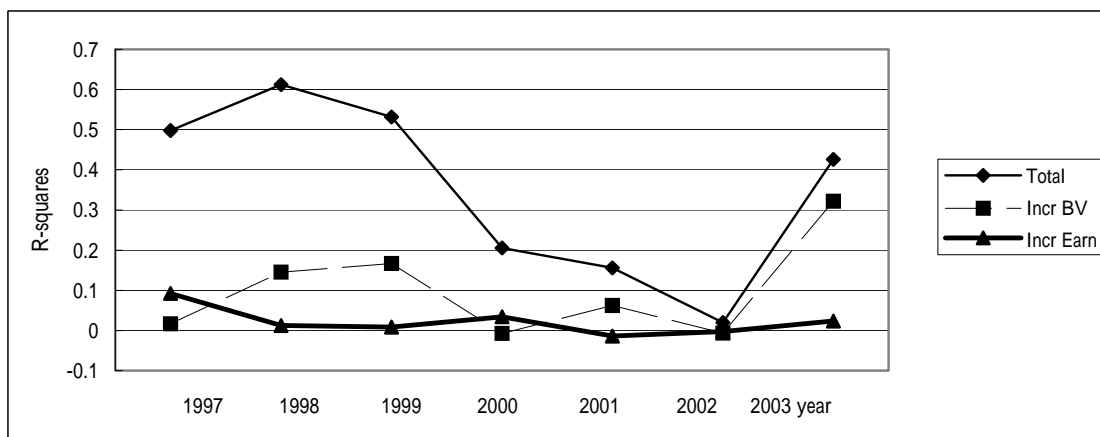


Table 4

B-share Price Regression for Factors

Factors		Coefficient	(t-statistics)	Joint F-test	Adjusted R ²
Intercept and year effect				$\beta_3^+ \beta_4=0$ $\beta_5^+ \beta_6=0$	
Large vs. small Firms	$\beta_3(E_{IAS})$	0.678**	(2.27)		
	$\beta_4(D^* E_{IAS})$	-0.602	(-1.62)	0.05	62.64%
	$\beta_5(BV_{IAS})$	0.301***	(3.37)		
	$\beta_6(D * BV_{IAS})$	0.228*	(1.69)	27.37***	
Large vs. small Trading volume	$\beta_3(E_{IAS})$	0.3061	(1.45)		
	$\beta_4(D^* E_{IAS})$	0.3090	(0.68)	5.190**	63%
	$\beta_5(BV_{IAS})$	0.3877***	(5.11)		
	$\beta_6(D * BV_{IAS})$	0.0451	(-0.30)	2.144	
Positive vs. negative Earnings	$\beta_3(E_{IAS})$	0.0561	(0.24)		
	$\beta_4(D^* E_{IAS})$	2.2098***	(3.66)	3.313*	65%
	$\beta_5(BV_{IAS})$	0.1858*	(1.66)		
	$\beta_6(D * BV_{IAS})$	0.2030	(1.47)	14.104***	
Intangible-intensity vs. less intangible-Intensity firms	$\beta_3(E_{IAS})$	0.1858	(0.93)		
	$\beta_4(D^* E_{IAS})$	1.6763***	(2.73)	3.327*	63.33%
	$\beta_5(BV_{IAS})$	0.4161***	(5.91)		
	$\beta_6(D * BV_{IAS})$	-0.0888	(-0.47)	10.986***	

$$\text{Model 3: } P_{Bit} = \beta_0 + \beta_1 D + \sum_{m=1}^6 \beta_m \text{YEAR}_m + \beta_2 [E_{IASit}] + \beta_3 [D^* E_{IASit}] + \beta_4 [BV_{IASit}] + \beta_5 [D * BV_{IASit}] + \varepsilon_{it}$$

P_B is stock price of B-share for the firm at the end of the fourth month after the fiscal year t-1.

E_{IAS} is earnings per share of B-share for the firm for the fiscal year t.

BV_{IAS} is B-share book values per share for the fiscal year t.

Large (small) firm is the firm's logarithm of asset is greater (smaller) than median logarithm of firm's asset.

Positive earnings (negative earnings) is the firm's net income greater (smaller) than 0.

Large (small) trading volume is the firm's annual trading volume greater (smaller) than median trading volume (cumulative of 12 months trading volume on A (B) share for firm over annual report announcements at 30 April between t and t-1).

Intangible-intensity (non-intangible-intensity) industry is the firm with intangible-intensive (non-intangible-intensity) industry. Intangible-intensive industries are defined as R & D and management related services, accounting, business services, engineering, communications, computer and office equipment, electronic components and accessories, drugs, plastics and synthetic materials.

Table 5
A-share Price Regression for Factors

Factors	Variables	Coefficient	Joint F-test	Adjusted R ²
Intercept			$\beta_3 + \beta_4 = 0$	
and year effect		(t-statistics)	$\beta_5 + \beta_6 = 0$	
Large vs. small Firm	$\beta_3 (E_{PRCt})$	1.1452** (2.27)		
	$\beta_4 (D * E_{PRC})$	1.8546** (1.97)	0.061	39%
	$\beta_5 (BV_{PRC})$	0.3969** (2.22)		
	$\beta_6 (D * BV_{PRC})$	-0.2137 (-0.69)	4.912**	
Large vs. small trading volume	$\beta_3 (E_{PRC})$	2.0755*** (3.30)		
	$\beta_4 (D * E_{PRC})$	-0.9964 (-1.2)	1.160	41.78%
	$\beta_5 (BV_{PRC})$	0.1326 (0.59)		
	$\beta_6 (D * BV_{PRC})$	0.3058 (1.1)	0.793	
Positive vs. negative Earnings	$\beta_3 (E_{PRC})$	1.2021*** (2.22)		
	$\beta_4 (D * E_{PRC})$	6.2895*** (4.54)	0.017	41.66%
	$\beta_5 (BV_{PRC})$	0.1986 (0.92)		
	$\beta_6 (D * BV_{PRC})$	-0.3831 (-1.33)	20.08***	
Intangible-intensity vs. less intangible-Intensity firms	$\beta_3 (E_{PRC})$	1.2174*** (2.61)		
	$\beta_4 (D * E_{PRC})$	3.0186*** (2.62)	0.002	39.75%
	$\beta_5 (BV_{PRC})$	0.2345*** (2.15)		
	$\beta_6 (D * BV_{PRC})$	-0.4764 (-1.30)	7.730***	

Variable Definitions:

$$\text{Model 3: } P_{Ait} = \beta_0 + \beta_1 D + \sum_{m=1}^6 \beta_m \text{YEAR}_m + \beta_2 [E_{CASit}] + \beta_3 [D * E_{CASit}] + \beta_4 [BV_{CASjt}] + \beta_5 [D * BV_{CASit}] + \varepsilon_{it}$$

P values < 0.01 are significant***, P values < 0.05 are significant **, P values < 0.1 are significant *.