Accounting reform, institutional environment and timeliness in loss recognition in China

Chen, Liang

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**Accounting Reform, Institutional Environment, and
Timeliness in Loss Recognition in China**

Chen Liang

Nanyang Business School

A thesis submitted to the Nanyang Technological University
in fulfillment of the requirement for the degree of
Ph.D. in Accounting (by Research).

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ABSTRACT

This thesis investigates the effectiveness of accounting reform in improving the timeliness in loss recognition relative to gains, in the context of the unique institutional infrastructures in China. With rapid development in the accounting system and capital market in the past 10 years, China is undergoing fundamental change in the institutional environment. The Chinese GAAP gradually converges to IAS. However, the issuance of these IAS-based standards does not necessarily improve the reported accounting information, given the unique institutional background in China.

The results show that predominance of state ownership and weak legal environment are two key factors that limit the effectiveness of the accounting reform. As state-owned firms are faced with non-profit maximization goals and poor monitoring by shareholders, creditors, and auditors, the state-owned firms incorporate loss in a less timely fashion and the improvement of timeliness in loss recognition along the accounting reform is much less than the non-state-owned firms. However, the results also show that the inefficiency of state ownership could be mitigated by the stricter enforcement of laws. When cross-listed in the markets with more stringent legal environment, the timeliness in loss recognition by state-owned firms is not significantly different from that in non-state-owned firms. In addition, the differences in legal environment within China also influence reporting behavior of state-owned firms. The gap in the timeliness in loss recognition between state-owned firms and non-state-owned firms in regions with stringent legal environment is smaller than that in provinces with poor legal infrastructure.

Chapter 1 Introduction

1.1 Objectives and Motivation of the Study

Since adopting market-oriented economic policy and opening up in 1978, China has been experiencing steady and fast economic growth. By now, China has become the second largest economy in the world on purchasing power basis after the United States.¹ Furthermore, China overtakes the U.S. and becomes the largest foreign direct investment (FDI) in 2002.

Commensurate with economic growth, both the stock market and accounting system have been developing quickly during the past decade. Established in the early 1990s, the stock market has become one of the largest emerging markets in terms of number of firms listed and market capitalization. In fact, at the end of 2002, there are already over 1,200 listed companies in the two domestic markets with tradable market capitalization at RMB 1,360 billion (US\$ 164.25 billion). To keep up with the transition from planned economy to market economy, the Chinese government adopted a radical approach to transform its state plan and control-oriented accounting system into a market-oriented regime in 1992. With major refinements in 1998 and 2001, and publication of 16 detailed accounting standards, Chinese General Accepted Accounting Principles (GAAP) is now in close conformity with International

¹ Allen et al. (2005) compare the GDP of China with other countries. In 2002, China ranks 6th with GDP of US\$1,237 billion, about 12% that of United States. However, when purchasing power parity (PPP) is used to recalculate GDPs, China's economy is the second largest (US\$5,732 Billion), behind only the U.S.

Accounting Standards (IAS).

Despite the increasing economic significance of China and the large volume of literature on accounting information in developed markets, research on accounting information in China stock market is limited. Most of the existing studies on China focus either on the empirical evaluation of accounting information without incorporating the institutional factors (Chen *et al.* 2001; Haw *et al.* 1999) or the descriptive analysis of the impact of institutional factors on accounting (Davidson *et al.* 1996; Xiang, 1998). Ball *et al.* (2000a) suggest that the international differences in institutional context, such as corporate governance structure and legal environment, cause the difference in the property of accounting information between common and code law countries. There are also other studies that document the significant impact of institutional factors on accounting information, including juridical regime (Ali and Hwang 2000), investor protection (Hung 2000; Leuz *et al.* 2003), and legal enforcement (Hope 2003). Thus the evaluation of accounting information could be more interesting if it is assessed within the institutional background.

Furthermore, most of the previous studies on the relation between institution and accounting use a cross-country design. This design may face difficulties in controlling for the potentially offsetting institutional factors such as capital market structure and investor sophistication. As pointed out by

Holthausen (2003), biases might exist in these cross-country studies as the stock returns do not reflect economic events equally quickly and the informativeness of stock prices is not uniform across countries.

This thesis empirically assesses the impact of two key institutional factors in China, namely, ownership structure and legal and regulatory environment, on the timeliness in loss recognition relative to gains, for the sample period from 1990 to 2003. The unique setting in China allows us to conduct a within country study and focus on the effect of the ownership structure and legal environment. Potentially offsetting factors such as capital market structure, legal regime, investor protection are held constant, thus overcoming the difficulties faced by previous cross-country studies.

The focus of this research is on the timeliness in loss recognition because it has significant economic consequence (Bushman et al. 2006). Timely loss recognition promotes the efficient allocation of capital through its impact on project selection decisions and exit decisions. By recognizing losses in a timely manner, it reduces *ex ante* likelihood that managers undertake negative net present value (NPV) projects because early recognition of poor economic performance in earnings decreases the NPV estimation. Furthermore, it prompts managers to exit *ex post* loss-making projects early to minimize the losses. Bushman et al. (2006) empirically examines this issue using a cross-country

setting. They document that managers in countries with relatively quicker loss recognition reduce investment spending more in response to a decline in investment opportunity than managers in countries with slower loss recognition.

1.2 Findings and Contributions

The timeliness of accounting numbers is indicated by the way accounting income incorporates economic income. It is assessed by three measures in this study. The first measure uses stock return to proxy for economic income. This is commonly used in the literature on developed markets. However, in emerging markets like China, stock prices may not reflect firm-specific information, but may be driven by political events and rumors, leading to synchronous stock price movement and irrational herding.² Two other measures employ accounting-based models to investigate the properties of accounting numbers. The first accounting-based measure is from Basu's (1997) time-series model of asymmetric timeliness of income recognition, and the other is an accrual-based method developed by Ball and Shivakumar (2005).

The investigation begins with a general assessment of conservatism practices of listed firms in China. The results show that accounting income incorporates loss in an increasingly timely manner along the development of

² Morck et al. [2000] document that over 80% of the firms in China's stock market move synchronously and nearly 50% of the return variation could be explained by the market.

both stock market and accounting standards. In the years after 2001, the observed timeliness of loss recognition is comparable to other East Asian countries, such as Hong Kong and Singapore. This finding validates the accounting regulator's effort in promoting IAS-based standards in China.

To assess the impact of the accounting reform on different firms, two key institutional factors are incorporated in the analysis, namely, the predominance of state ownership and the weak legal environment. In state-owned firms, agency problem is more severe and contracting is less efficient, as they have non-profit maximization goals and are subject to poor monitoring by shareholders, creditors, and auditors. The results show that state-owned firms incorporate loss relative to gains, in a less timely fashion than non-state-owned firms and accounting reform is less effective in improving their financial reporting. However, further analysis shows that the inefficient contracting in state-owned firms could be mitigated by stricter legal enforcement. When the state-owned firms cross-list into Hong Kong stock market or B-share market, they are subject to higher litigation risk as they are exposed to more sophisticated foreign investors. It enforces the state-owned firms to report more conservatively. The results show that the timeliness of cross-listed state-owned firms incorporating losses relative to gains is not significantly different from that of the non-state-owned firms. Further, regional differences in legal

environment within China are also explored to examine the reporting behavior of firms under different ownership structure. The gap in the timeliness of loss recognition relative to gains, between state-owned firms and non-state-owned firms in regions with stringent legal environment is much smaller than that in provinces with poor legal infrastructure. The results are robust after controlling for size, industry, leverage, growth, and profitability.

This thesis differs from the existing literature in four ways. First of all, the scope and the method used in this study are more comprehensive than the previous studies. This study attempts to evaluate the timeliness in loss recognition in China over the process of accounting reform and capital market development. It covers the period after the establishment of stock market to 2003, and includes all non-financial firms listed in the China domestic stock market. Besides evaluating accounting information using market-based measure, accounting-based models are also employed in this study. Ball *et al.* (2000b) investigate timeliness of accounting income in recognizing economic income in China, using stock return to proxy for economic income. Market-based measures, such as stock price and return, may not be reliable in capturing firm-specific accounting information in emerging markets. Thus, using the two purely accounting-based measures in this study adds robustness to the assessment of timeliness of loss recognition.

Secondly, this study empirically assesses the accounting information within the institutional background in an emerging market. A cross-sectional analysis is performed to compare the variation in timeliness of loss recognition among listed firms and the negative impact of state ownership and weak legal environment is documented.

Thirdly, while many of the previous studies examine the association between institutional environment and accounting using a cross-country design, this thesis exploits the unique institutional environment of China to explore the effect of within country differences in institutional factors on the timeliness in loss recognition.

Last but not least, the findings have practical implications for Chinese regulators with respect to accounting reform, as well as the privatization scheme of the listed firms. The government is currently promoting stock ownership reform in the stock market. The reform aims to further privatize the listed firms by reducing the ownership of the state and allowing the trading of state shares. Therefore, the results, which show the negative impact of state shareholding on timeliness in loss recognition, could help support the government's decision in this stock ownership reform.

1.3 Organization and Structure of the Thesis

The remainder of the thesis proceeds as follows. Chapter 2 traces recent developments in accounting standards and the institutional environment in China. Chapter 3 discusses the effects of timely loss recognition on firm value, and briefly reviews the relevant literature. Chapter 4 develops the hypotheses. Chapter 5 presents the model to measure the timeliness in loss recognition. The sample and descriptive statistics are described in Chapter 6. Chapter 7 reports the empirical results and Chapter 8 provides the conclusion for this study.

Chapter 2 Institutional Background

2.1 Brief Review of Development in Accounting System in China

Phase I (1949-1978) Before the Economic Reform: Fund-Based Accounting

Prior to 1978, China's economy was dominated by State-Owned Enterprises (hereafter, SOEs) which were essentially production units to fulfill the state's stipulated production quota. The accounting system at that time, imported from the then Soviet Union, was primarily fund-based and macro-oriented in that it primarily assisted the state in economic planning, implementing state economic policies, and controlling the means of production.

Phase II (1979-1992) Pioneer Accounting Reforms on Foreign Investment

After the opening up in 1978, foreign investment began to flow in. To cope with this, the Chinese government issued *Accounting Regulation for Joint Ventures* in March 1985. From an accounting perspective, these regulations introduced market-oriented accounting practice to the firms operating in China, representing a radical departure from the traditional fund-based accounting.

China furthered its accounting reform in 1992 with the enactment by the Ministry of Finance of *Accounting Regulation for Enterprises with Foreign Investment*, which came into effect on July 1st, 1992 to supersede the 1985 regulation.

During this period, China made considerable progress in improving its financial reporting for enterprises with foreign investment, but other firms were still using the traditional fund-based accounting model. Accounting practice varied among enterprises with different types of ownership structure, different industrial sectors and different business purposes. This limited the usefulness of financial reporting as the users must be familiar with the background information of the firms to understand the reported accounting numbers. Therefore, there is a need for a unified accounting framework that could be applied to all types of enterprises in China.

Phase III (1993-present) The Establishment of the Conceptual Framework

China's first comprehensive accounting system, the *Accounting System for Business Enterprises* (ASBE) was issued in November 30th, 1992 by Ministry of Finance and became effective from July 1st, 1993. It transformed the basis of accounting system from fund-based to market-oriented regime to be inline with the transition from planned economy to market economy. ASBE in principle applies to all Chinese business enterprises and it supersedes all previously promulgated "accounting regulations". For the first time, all enterprises of different ownership structures in China are subject to a unified accounting framework. ASBE is the conceptual framework of accounting system and it is

expected to serve as a guide for formulating the detailed standards (Davidson et al. 1996). It is widely regarded as Chinese GAAP.

Within the framework of ASBE, the government stipulates strict accounting regulations on listed firms to deal with the detailed accounting issues from the burgeoning stock market. In 1992, *Accounting Regulation for Experimental Listed Firms* was issued and it was superseded by *Accounting Regulation for Listed Firms* (ARLF) in 1998. It comprises operational standards that are applied to all listed firms in China and is considered as the set of standards closest to IAS, although significant differences still exist in areas such as asset valuation and bad debt estimation.³

To further reduce the gap, specific accounting standards are promulgated to deal with particular issues in accounting practice to supersede the corresponding standards in ARLF from 1997. These accounting standards originate from IAS, with some revisions to adjust for the unique institutional environment in China. For example, because of the difficulty in determining the fair value of assets and lack of professional assurance service, China standards allow only asset impairment but not asset upward revaluation. Thus, it limits managers' discretionary behavior in manipulating earnings. Nevertheless, the issuance of these standards gradually reduces the gap between Chinese

³ For example, bad debt allowance is based on a government-approved percentage from 0.3% to 0.5% in ARLF, whereas in IAS, the estimation of allowance is determined by the company. The valuation of assets are based on historical cost in ARLF and no asset revaluation is allowed.

standards and IAS. Chart 1 shows the important dates of accounting standards issuance in China.

[INSERT CHART 1 HERE]

Among the 16 newly-issued standards, four of them are closely related to timeliness in loss recognition. The four standards, namely Investments (No.6), Intangible Assets (No.11), Inventories (No.15), and Fixed Assets (No.16), encourage lower-of-cost-or-market (LCM) accounting. They require firms to estimate write-downs on eight asset classes: accounts receivables, short-term investments, long-term investments, inventories, intangible assets, fixed assets, construction in progress, and commission loans. Write-down of investment is stipulated in 1998 in standard No. 6. In the same year, estimate of bad debt and LCM accounting for inventory are required in the revision of ASBE. In 2001, the standards become more aligned with IAS in timeliness of loss recognition as the write-down of another four asset classes is required in standard No. 11 and 16. In addition, the requirement for LCM on inventory is revised to be more conservative in standard No. 15.

Besides the above mentioned standards, many other standards are under review and are to be released in the near future, including Presentation of Financial Statements, Segment Reports, Accounting for Government Grants and Disclosure of Government Assistance, Discontinuing Operations, and Earnings Per Share.

2.2 Overview of Stock Market in China

The last decade evidenced an era of rapid development of China's capital markets. Since the opening of Shanghai Stock Exchange (SHSE, <http://www.sse.com.cn>) on November 26, 1990 and Shenzhen Stock Exchange (SZSE, <http://www.sse.org.cn/sse/>) on April 11, 1991, China has become an important emerging market. Table 1 provides an overview of the stock market in China. Panel A shows the increasing number of firms listed on the market. By the end of 2003, there were 1,278 firms listed in SHSE and SZSE with the total market capitalization amounting to 35.29% of GDP in that year. The industrial and conglomerate firms constitute more than 80% of listed firms (Panel B). The remaining 20% of firms are in the service sectors, namely, commerce, finance, utilities, and properties. Panel C is an extract from Allen *et al.* (2005) and it compares the key statistics of major stock markets around the world. Based on the market capitalization as at the end of 2002, the domestic stock market in China ranks 11th in the world with US\$463 billion, about 1/20 of the market capitalization of NYSE. China market is the most speculatively traded among the 11 largest markets with annual turnover rate at 224%, a distant leader to the No. 2, NASDAQ, which houses the many small and medium technology stocks and their well-known volatile trading patterns result in high turnover. The heavy speculation may drive stocks to move together in

China (Morck *et al.* 2000). The concentration measure is calculated as the fraction of combined capitalization of top 5% largest firms in total market capitalization of an exchange. China has the lowest concentration ratio of 29.4%, indicating that the market is less dominated by the large firms.

[INSERT TABLE 1 HERE]

[INSERT TABLE 2 HERE]

Table 2 compares China's domestic A-share market, B-share market, and Hong Kong stock market using a comprehensive set of measures. The measures include the number of listed companies, the proceeds raised through IPO, the P/E ratio, the total tradable market value, the trading value and the market turnover rate for the period 1993 to 2002. A-shares have the highest P/E ratios for all years, with P/E ratio at 53.56 at the end of 2002. The average turnover rate during the 10-year period is also the highest for A-shares, indicating heavy speculation in A-shares. B-share market is very small in terms of tradable market value. It is only about 6% of A-share market and 2% of Hong Kong market as at the end of 2002. It is less over-valued than A-shares with a P/E ratio at 28.06 as at end of 2002 and slightly less heavily traded.⁴ Hong Kong market is the most conservatively valued and traded. The corresponding P/E

⁴ In February 2001, the B-share market was opened up to Chinese domestic investors. Before that, only foreign investors are allowed to invest B-shares. The B-share market turnover rate before 2001 is considerably lower than that in A-share market. However, after its opening up to domestic investors, the speculation suddenly increases as B-shares trades at great discount compared to their A-share counterparties. Thus, B-share market overtook A-share market for the highest turnover rate in 2001 and 2002.

ratio and turnover rate for Hong Kong market are 14.89 and 0.40 in 2002.

Typically there are five types of common shares for a listed company in China as shown in Panel A of Table 3, and they vary in the negotiability of the shares. Both the state-owned and legal-person (LP) shares are not allowed to be publicly traded. On average these nonnegotiable shares comprise about 2/3 of the total shares outstanding for a listed company, making them the majority share ownership. 690 of the 1,278 listed firms are dominated by the state-owned shares and 482 firms are controlled by legal person shares as at the end of 2003.

[INSERT TABLE 3 HERE]

A-Shares are issued to the domestic investors and trade on the nationwide stock exchange – SHSE and SZSE. Foreign shares are issued to foreign investors and investors from Hong Kong, Macao and Taiwan. Based on the trading venues, foreign shares can be divided into several different classes: B-Shares (domestic exchanges), H-Shares (Hong Kong Stock Exchange, <http://www.hkex.com.hk>), and N-Shares (New York Stock Exchange). Firms issuing foreign shares are required to report under IAS to the foreign investors. At the same time, they also need to present Chinese GAAP report to their domestic investors.

The above share classification is based on the immediate shareholding class of the listed firms. From the ultimate ownership perspective, the state is

the owner of the majority of listed firms in China. The rest of the firms are ultimately owned by non-state entities, such as families, collective firms, and financial institutions. Panel B shows that at the end of 2003, among the 1,241 firms that have data on ultimate owners, the state controls 923 listed firms, while the non-state owners combined control 318 firms. Among the latter group, 262 firms are owned by private entities. The other 56 firms are controlled by foreign firms, collective firms, social groups, and employees.

For firms that issue shares both to the domestic investors (A-shares) and foreign investors (B- or H-shares), they are dominated by the ultimately state-owned firms (Panel C). In 2003, among the 117 cross-listed firms, 98 firms are ultimately owned by the state, whereas for the non-cross-listed firms, the proportion of state-owned firms is much smaller, with 825 out of 1,124 firms owned by the state.

[INSERT TABLE 4 HERE]

To further illustrate the path of development of capital market in China, the statistics on the mean value of assets, net income and market return for each year is presented in Table 4. While the average size of the firm increases over time, the profitability does not increase commensurately with growth in size. With the strong promotion of stock market by the Chinese government, the market enjoyed extremely high yields in the first two years after the

establishment of SHSE and SZSE. Investing in stock market at that time was regarded as a shortcut to making a fortune by Chinese investors. The market experienced a heavy tumble in 1994 and 1995, correcting for the overheated speculative activities in the market and investors learned their first lesson on the risk of stock investment. After this snake bite, investors became more rational and began to emphasize fundamentals of the firm in choice of stock. The market picked up again in 1996, when People's Bank of China cut the benchmark interest rate by 3.51% to encourage investment.⁵ Limited to few investment opportunities, investors kept pumping money into the stock market, which remained bullish and peaked in 2000. However, from 2001, the real estate market began to flourish and became an alternative to stock investment. As the price of real estate rockets,⁶ stock market is depressed, enduring negative returns and decline in trading volume for consecutive years. On average, large stocks under-perform the market since the value-weighted market return is well below the equally-weighted market return in most of the years. It was in 2002 and 2003 that the large stocks begin to outperform as the market becomes more mature.

⁵ People's Bank of China (PBC) functions in a similar way as Federal Reserve in the United State. Under the guidance of the State Council, the PBC formulates and implements monetary policy, prevents and resolves financial risks, and safeguards financial stability in China. In 1996, it lowered the benchmark interest rate from 10.98% to 7.47%. It further cut the interest rates several times in the following years and the one-year deposit rate reached a historical low of 1.98% in 2002.

⁶ Based on a report by National Bureau of Statistics, the average price of real estate in Shanghai increased from 4,312 RMB/ m^2 at end of 2000, to 9,239 RMB/ m^2 at the end of 2004.

To ensure the healthy development of the stock market, the Chinese government has made great efforts in strengthening the legal and capital market infrastructures. Chart 2 shows the promulgation of relevant laws and regulations.

[INSERT CHART 2 HERE]

Both Corporate Law and Accounting Law were issued in 1993 and were recently revised in 2000. The issuance of Accounting Law is designed to legitimize and enforce the implementation of the accounting standards. The Audit Law became effective from 1995 and it aims to improve the auditing quality. The Security Law was promulgated in 1999 to deal with the legal issues on stock market and the Code of Corporate Governance was released in 2001 to improve corporate governance practices of the listed firms.

To summarize, the development of accounting and relevant enforcement mechanisms could be divided into four sub-periods as shown in Chart 3. The impact of the accounting reform and enforcement mechanisms on accounting information is evaluated across these sub-periods in the later chapters.

[INSERT CHART 3 HERE]

Chapter 3 Literature Review

In this chapter, I will briefly review the literature on conservatism and timeliness in loss recognition, followed by the literature on the relations between accounting and the two institutional factors examined in this thesis, namely, ownership structure and legal environment.

3.1 Conservatism and Timeliness in Loss Recognition

To assess the practice of conservatism in China, I elect to use the empirical definition proposed by Basu (1997) that interprets conservatism as resulting in more timely reflection of bad news (compared to good news) in earnings. He argues that a higher degree of verification is required to recognize good news as gains than to recognize bad news as losses. As a result, earnings recognize economic losses more quickly than economic gains. Basu's (1997) (page 4, paragraph 1) defines conservatism as follows:

I interpret conservatism as capturing accountants' tendency to require a higher degree of verification for recognizing good news than bad news in financial statements. Under my interpretation of conservatism, earnings reflect bad news more quickly than good news.

There are alternative definitions of conservatism. Statement of Concepts No. 2 of the FASB defines conservatism to be "a prudent reaction to uncertainty

to try to ensure that uncertainty and risks inherent in business situations are adequately considered". This definition of conservatism is vague and difficult to be operationalized. Basu's (1997) definition of conservatism is conditional conservatism, which emphasizes the asymmetric recognition between gains and losses. Under unconditional conservatism, the book value of net assets is understated due to predetermined aspects of the accounting process. Since this thesis aims to understand the motivations of firms in their asymmetrical timeliness in recognizing gains and losses under different ownership structures and legal environments, the conditional conservatism definition is more appropriate for this research. Specifically, the focus is on the incremental timeliness in loss recognition (relative to gain recognition).

Watts (2003a) discusses four reasons for conservatism, namely contracting, shareholder litigation, taxation, and regulation, and argues that conservatism could enhance firm value. Under the contracting explanation, conservatism could address moral hazard concerns caused by parties with asymmetric information and payoff, limited horizons and liability. It constrains management's opportunistic behavior, such as limiting managers from undertaking *ex ante* negative-NPV projects and encouraging them to abandon *ex post* loss-making investments quickly to minimize the losses. Under the shareholder litigation explanation, conservatism reduces firms' expected

litigation costs because litigation is less likely when firms understate net assets. Conservatism could also enable managers of profitable firms to reduce the present value of tax by delaying recognition of revenues and accelerating the recognition of expenses. Since firms generally benefit from adopting conservative accounting practices, accounting standard setters and regulators have incentives to favor conservative accounting and reporting. Thus they are less likely to be criticized by voters if they promulgate conservative accounting regulations to constrain the opportunistic behavior by firms. By being conservative and recognizing losses in a timely manner, firms could enhance their value as a result of more efficient capital allocation and reduction of litigation cost.

LaFond and Watts (2006) further argues that conservatism reduce information asymmetry between equity investors, which is achieved through two ways. First, as managers have more incentives to overstate unverifiable gains but are reluctant to report less verifiable losses, the requirement for higher degree of verification for recognizing gains than losses could lead to the provision of more information by managers in order to recognize gains. Therefore, conservative accounting could promote more information disclosure on current performance for uninformed investors than an accounting regime that applies equally strong verification standards to both gains and losses.

Second, the outcome of the disclosed information provides a benchmark that makes it possible for investors to generate credible information from alternative softer information sources to verify the financial reports and management disclosures by the firm.

Francis *et al.* (2004) describes conservatism as a desirable earnings attributes. They document that firms with aggressive accounting practices (less desirable attribute) have higher costs of equity than firms with conservative accounting practices (more desirable attribute).

The above studies show that the practice of conservatism has positive economic consequences and is thus a desirable feature of accounting. However, it is acknowledged that conservatism does not necessarily always yield high quality accounting information. In extreme cases, over-conservative behavior, such as big-bath, may even distort accounting information.

Basu (1997) shows the contemporaneous sensitivity of earnings to negative returns is two to six times that of earnings to positive returns in the United States. The greater timeliness of earnings for bad news implies that earnings is contemporaneously more sensitive to negative unexpected returns than to positive unexpected returns, as measured by the slope of the coefficient and R^2 from a “reverse” regression of earnings on returns. Further, Basu (1997) argues that conservatism results in losses being anticipated in earnings

but gains being postponed pending realization, so that negative earnings changes reverse more than positive earnings changes. His empirical findings support this rationale that negative earnings changes are less persistent than positive earnings. In the international setting, Ball *et al.* (2000a) show that code law accounting income is less timely in incorporating economic losses but more aggressive in recognizing economic gains than common law income. This difference in timeliness is because issuers (i.e., managers and auditors) in common law countries are at increased risk of shareholder litigation if losses are not reflected in the financial statements in a timely manner. However, issuers in the code law jurisdiction do not face the equivalent threat.

The concept of conservatism is well accepted in the western countries. However, this idea is still new in China as the new accounting standards were only introduced there in the last two decades. Under the communist ideological influences in China, conservatism was slated as a tool to manipulate accounting numbers and to maximize the profit of capitalists in exploiting workers (Lin and Chen, 1999). Before accounting reform in the 1990s, the accounting system followed the Soviet planned model where the conservatism principle is non-existent. The Soviet accounting system is fund-based and macro-oriented. Its primary goal is to assist the state in economic planning, implementing state economic policies, and controlling the means of production. Firms under this

accounting system are simply production units to fulfill the state's stipulated production quota. All the employees in the firms are stipulated by the government to be the owners although they do not directly possess any stock in the firm as the state holds ownership on behalf of them. Profit is claimed to be ultimately shared among employees and there is no incentive to be conservative in accounting. Thus, the conservatism convention is non-existent in China for almost a half century since 1949. The situation has changed as the plan-oriented Soviet model was replaced by market-oriented accounting system in 1993. Conservatism in accounting, for the first time, becomes important to the accounting practice in China. The survey conducted by Lin and Chen (1999) show the majority of the accounting practitioners hold no negative attitude against the accounting convention of conservatism. In fact, they are inclined to support an expanded adoption of conservative accounting standards in IAS.

However, even with the full acceptance of IAS in China, the institutional infrastructures, such as the predominance of state ownership and the weak legal enforcement, may not result in the practice of conservatism among all firms. Ball *et al.* (2003) illustrate that in the four East Asian countries where IAS has long been in use, the earnings are much less conservative than the other common law countries due to the lack of institutional infrastructures to ensure the quality. Based on a sample of Chinese firms that issue both A-share and

B-shares from 1993 to 1997, Eccher and Healy (2000) fail to conclude that IAS outperform Chinese GAAP in usefulness of accounting information produced. The B-share IAS report are not significantly more relevant to stock return than the A-share Chinese GAAP reports issued by the same firm. They attribute their findings to the poor monitoring of the additional reporting judgment available to managers under IAS due to the absence of effective controls and infrastructures. Ball *et al.* (2000b) investigate the accounting practices in China. Based on their sample from 1992 to 1998 and using stock return to proxy for economic income, they observe that firms do not recognize economic loss in a timely fashion because they lack the incentive to do so. All these studies suggest the weak institutional infrastructure limits the effectiveness of adopting high quality accounting standards.

This study focuses on two key institutional factors that could impair the reported accounting information of the firms and the effectiveness of accounting reform in China. One factor is the predominance of the state ownership, and the other is the weak legal environment. The following section briefly reviews the literature on the impact of ownership structure and legal environment on the reported accounting information.

3.2 State Ownership, Firm Performance, and Accounting Information

Property rights theory indicates the irrelevance of ownership structure to the economic outcome of the firm if contracting mechanism is complete and effective (Grossman and Hart, 1986). Under incomplete contracts, the different incentives of owners and other contracting parties result in different economic outcomes. Both state-owned firms and non-state-owned firms suffer from this contractual incompleteness. However, it is likely that this problem is more severe in state-owned firms. Boycko *et al.* (1996) explain the inefficiency of state-owned firms arising from the agency problem for politicians. When the state controls the firm, managerial discretion problems are usually minor relative to political discretion problems. The government may directly send ex- or current government bureaucrats to manage the firm. Instead of pursuing economic goal of profit-maximization for the firm, these government officials may pay more attention to the political targets.

Empirical studies support the detrimental effect of state ownership to firm value and financial transparency. Dewenter and Malatesta (2001) find that government-owned firms are significantly less efficient compared to privately owned firms for their sample of 147 government-owned firms around the world.⁷ Bushman *et al.* (2004) document that the heavy involvement of

⁷ Dewenter and Malatesta (2001)'s data is collected from Fortune magazine. They use the data published for 1975, 1985, and 1995. For 1975 and 1985, Fortune reports on the 500 largest industrial companies

government in the economy undermines financial transparency. Bushman and Piotroski (2006) further show that firms in countries with high political involvement, such as high risk of expropriation and high state ownership of enterprises, report less conservative accounting information as they speed up the recognition of good news and slow down the recognition of bad news relative to firms in countries with low political involvement. In countries with high state ownership of enterprises and high state ownership of banks, government could exert great influence through its controlled firms to achieve non-profit maximization goals, such as the provision of employment, subsidies, and other benefits to supporters, who in return provide votes, political contributions, and bribes. These non-profit maximization goals may adversely impact the financial performance of the firm. To avoid reporting these negative impacts, state controlled firms have to delay bad news or aggressively recognize good news. Thus, the reported accounting information of these state controlled firms is adversely affected.

The negative impact of state ownership on accounting information has been established internationally. However, there is no direct empirical evidence to support this relationship in China. Most existing studies on ownership structure in China investigate its impact on performance and suggest the

outside the United States. For 1995, the information is given for the 500 largest corporations worldwide, including U.S. firms.

magnitude of state ownership is negatively associated with financial performance of the firm (Qi *et al.* 2000; Sun and Tong, 2003; Wei *et al.* 2003). By dividing shareholding into state and legal person holding using immediate ownership, they all document that legal person ownership is more beneficial than state shareholding. Sun and Tong (2003) provide a comprehensive study on the share-issue privatization (SIP) in China during 1994 to 1998. They document that the proportion of state shares are negatively associated with their performance measures, namely, market-to-book ratios, return on sales, and earnings before interest and tax. Contrary to the detrimental effect of state shareholding, the fraction of legal person shares are positively correlated with all three performance measures after SIP. Allen *et al.* (2005) directly compare the state and private sector of Chinese economy. They find that the state sector has been inefficient and shrinking with the ongoing privatization process. In contrast, the private sector is becoming increasingly active in the economy. The private firms have relatively better management and corporate governance, largely driven by fierce product market competition.

3.3 Legal Environment, Cross-Listing, and Accounting Information

External legal enforcement and exposure to litigation risk influence the reporting behavior of the firms. Firms are more likely to face litigation if they

overstate than understate the assets. Thus, by understating net assets, conservatism reduces the firm's expected litigation costs. This benefit of conservative reporting is more significant in countries with stricter regulation and higher litigation risk.

The effect of international differences in legal environment on the properties of accounting information is documented in Ball *et al.* (2000a). In their study, the properties of accounting information are compared between common law countries and code law countries. Code law countries are characterized by a relatively lax legal environment, with comparatively strong political influence on accounting. Firm governance is based on the "stakeholder" governance model where firms contract directly with major stakeholders. Therefore, accounting information is conveyed more effectively through insider communication. The demand for public disclosure is low in these countries. In contrast, firm governance in common law countries follows the "shareholder" governance model in which shareholders play an active role in firm governance and demand for higher quality public disclosure of accounting information. The difference in demand for public disclosure of accounting information between code and common law countries leads to the demand for more conservative reporting in common law countries, where managers and auditors are faced with higher litigation risk from shareholders if

they do not recognize economic losses in accounting income in a timely manner. Therefore, firms in common law countries have higher incentives to report more conservatively than firms in code law countries. Ball *et al.* (2000a) show that firms in common law countries are more timely in incorporating economic losses than firms in code law countries.

Another stream of literature explores the effect of legal environment on accounting information around the event of international cross-listing. Lang *et al.* (2003) investigate the changes in the accounting quality when firms from 21 other countries cross-list into the relatively more demanding U.S. market. Once cross-listed, these firms are subject to a more stringent legal environment than their respective domestic markets. The time-series analysis implies that after cross-listing, firms become less aggressive in earnings management and report more conservative accounting data than before. Furthermore, in the cross-sectional comparison with a matched sample of non-cross-listed firms, the cross-listed firms are less likely to manipulate earnings and are quicker in recognizing economic losses. They attribute these differences between cross-listed firms and non-cross-listed firms to two sources. One is the change in legal and regulatory environment which improves the reporting quality for cross-listed firms. The other source is the inherent differences in accounting quality between the non-cross-listed firms and cross-listed firms before

cross-listing.

Lang *et al.* (2003) provide a good understanding of the accounting and economic consequences of cross-listing from other countries to the markets in the United States, but the cross-listing decisions by Chinese firms are very different arising from the unique institutional environment in China. Most studies on overseas listing decisions emphasize the importance of the benefits from a lower cost of capital, an expanded global shareholder base, greater liquidity in the trading of shares, more prestigious company name, convenient foreign takeovers and lower political risk. However, none of these factors can satisfactorily explain the cross listing decisions of Chinese firms. First, previous empirical research using U.S. data have documented that there are generally positive effects on the domestic shares if the firm is cross-listed on the overseas market. However, in contrast to most cross-listing activities, most Chinese cross-listed firms conduct their IPOs in the foreign markets before listing on domestic market. Therefore, there is no immediate benefit from overseas listing on the domestic shares in China's case. Second, contrary to gaining premium on foreign listed shares, China cross-listed foreign shares suffer huge discount relative to its domestic listed shares. Wang and Jiang (2004) report an astonishing 75 percent average H-share discount in 2000. Thirdly, the trading of cross-listed foreign shares is much thinner than domestic listed shares. The

average turnover in domestic A-share market is about twice that of B-share market and four times that of H-share market. Thus, the liquidity is much better in A-share market than the cross-listed market. Finally, the main cross-listing venues are B-share market and Hong Kong, and these two markets are essentially under the same administration (by central government of China) as domestic A-share market. Therefore, the political risk explanation could not be applied to Chinese cross-listed firms.

Chapter 4 Hypothesis Development

This chapter develops hypotheses regarding the impact of two institutional factors, namely, ownership structure and legal environment, on the timeliness in loss recognition in China.

4.1 Ownership Structure and the Timeliness in Loss Recognition

Unlike the developed countries, the ownership structure in China is characterized by the predominance of state owners. In state-owned firms, many contracting mechanisms that could limit managers' opportunistic behaviors are not effectively implemented. For example, executive compensation contracts, which could align the interests of managers with shareholders, seldom exist.⁸ Debt contracts are not effective as major banks are state-owned. The lending decision is sometimes made based on the relationship between the borrowing firm and the bank, instead of a fair assessment of the financial condition of the borrowing firm.

To examine the impact of state ownership on the timeliness in loss reporting in China, the incentives of shareholders, managers, creditors, and auditors are analyzed. The inefficient contracting in state firms are shown through the poor monitoring of shareholders, politically-related managers, state-owned creditors, and government-associated auditors.

⁸ One recent regulation on the compensation in state owned enterprises limits the annual compensation of CEO to be less than 12 times over the average annual compensation of all employees within the firm.

4.1.1 Monitoring by Shareholders

Agency problems exist in both privately-owned firms and state-owned ones whose owners cannot operate the firm themselves and have to delegate control to non-owner managers (Jensen and Meckling, 1976). However, agency problems are likely to be more severe in state-owned firms. With state shares, it is very difficult or impossible to identify who the principal or residual risk bearer is. Fama and Jensen (1983) argue that residual claims is an efficient approach to control for agency problems in the privately-owned firms. Since the private owners ultimately get the residual claims, they are motivated to protect their benefits by composing an efficient contract with managers to reduce agency problems. In contrast, state-owned shares are ultimately held by the government, and under communist principle, the government holds it on behalf of “all people”, which means all citizens in the country. This “all people” concept is virtually abstract and empty. In effect, the state share has no principal. Furthermore, as state shares are non-tradable, managers face no pressure from the external takeover market even when they perform poorly. Therefore, managers in state-owned firms are poorly monitored by the shareholders and the market.

Compared to the state owners, non-state owners have clear asset claims on the listed firms. The strong economic incentives encourage them to actively

participate and monitor the firm's activities. They are more likely to use contracts to align the interests of managers with theirs and may take up management role themselves. As managers in non-state-owned firms are better monitored by shareholders and are better motivated to act in the interest of shareholders, they have less need to choose aggressive accounting practices to conceal firm performance compared to managers in state-controlled firms.

4.1.2 Incentives of Managers

State-owned firms bear greater social responsibilities than privately-owned firms. For example, in the provision of welfare to people in the respective region, state-owned firms always share the responsibility with local government. Managers of the state-owned firms also have their own non-profit maximization goals. They are directly appointed by the government and most of them are actually ex-officials in the government. Without a performance-based compensation contract, there is little incentive for managers to pursue profit-maximization goals for the firm. Instead, they pursue various political and social objectives, such as promotion to move upward in the political hierarchy, and may even divert firms' resource to their own benefit. This impairs the performance of the firm. Fan and Wong (2004) find that firms with politically-connected CEO underperform the market average by 20% in the

three-year post-IPO stock returns, and their stock performance is much worse than similar firms without politically-connected CEOs.

To achieve these non-profit maximization goals, they may manipulate accounting information to assist their implementation. In the absence of shareholder monitoring and effective compensation contracts to limit the managers' discretionary behavior, this deviation from economic goal may adversely affect firm efficiency. To avoid reporting adverse economic performance, they tend to report more aggressively and the reliability of accounting information is compromised. This phenomenon is termed as "grabbing hand" of state ownership (Shelifer and Vishny, 1994).

In contrast to the state appointed managers, managers in non-state-owned firms are voted by shareholders and are professionals who have more experience in managing the firm than the politically related managers in the state-owned firm. They are better motivated to create value for the firm. Kato and Long (2005) show that state ownership in China is negatively associated with the pay-performance link for top management, which indicates that the pay-performance link is weaker in state-owned firms than non-state-owned firms. In the latter group, better compensation contracts that align the interests of managers with shareholders are used, and profit-maximization is the clear goal. However, compensation contracts usually use reported accounting

numbers to measure managers' performance. If compensation is closely linked to performance measured by earnings, managers have stronger incentive to report aggressively to reach the earnings threshold than to recognize loss in a timely manner. This may lead managers in non-state-owned firm to report aggressively. However, with better monitoring mechanisms in non-state-owned firms, there is less room for managers to manipulate. Overall, I predict managers in non-state-owned firms are better motivated by the contacts and less likely to recognize loss in an untimely fashion than managers in state-owned firms.

4.1.3 Debt Covenants by Creditors

Efficient debt contracting could protect creditors in the agency conflicts among shareholders, managers, and creditors. To resolve the moral hazard problems in the agency conflicts, creditors set tight debt covenants that are based heavily on accounting numbers. If the borrowing firms do not recognize losses in a timely manner, creditors would face high default risk as borrowers aggressively report accounting numbers to avoid violation of debt covenants. Consequently, creditors set stringent debt covenants to reduce the default risk. Dichev and Skinner (2002) argue that creditors monitor firms by setting tight debt covenants. In this way, creditors could be actively involved in firm

governance because the tight covenants trigger more frequent violation of debt covenants. Through the involvement in firm governance, creditors could impose conservative accounting practices. Therefore, the demand for conservative accounting is effectively enforced on the borrowing firms.

Most of the banks in China are state-owned and favor lending to state-owned firms. Under fund-based accounting in the early years, borrowing from state bank is viewed as a transfer of funds from one division of the state to the other. Even now, close ties continue to exist between state-owned firms and banks. When lending to state-owned firms, banks are more likely to set loose debt covenants for the borrowing firms.

The ties between non-state-owned firms and banks are not as close as that between state-owned firms and banks. Therefore, non-state-owned firms are subject to more stringent covenants and increased monitoring from the banks. As suggested by Allen *et al.* (2005), private firms prefer to borrow through private channels, such as family and friends, and private debt. All these lenders are likely to be more active monitors of the performance of the borrowing firm because of economic incentives. Therefore, firms ultimately controlled by non-state owners are likely to be more conservative because of the more stringent debt covenants and the increased monitoring from the lenders.

4.1.4 Role of Auditors

Auditors provide assurance service on the accounting information reported by the firms. The quality of auditors is an important determinant of the reported accounting information of the auditee firms. However, the lack of professional and independent auditing in China impairs the monitoring role of auditors. Well qualified auditors are in great shortage and audit independence is impaired by “guanxi” (relationship between the audit firm and the audited company). Defond *et al.* (2000) show that after the promulgation of Chinese Independent Auditing Standards (CIAS) in 1995, which aims to improve audit quality, the market share of top 10 Chinese domestic auditors drops drastically. These top 10 Chinese domestic auditors are more likely to issue modified opinions. This “flight from audit quality” is interpreted as the result of low incentives to engage independent auditors.

State firms are less likely to hire high quality auditors to provide assurance service because they enjoy the support of the government. In the event of financial problems with the firm, investors could always look to the government for compensation. Wang *et al.* (2005) find that the state-owned firms are more likely to choose small local auditors than non-state-owned firms in China because the small local auditors are likely to provide more favorable audit opinions for them. Most of the local audit firms in China are affiliated with the

government, in that the audit firms used to belong to the finance or audit bureaus of local governments. Actually, many of the firms' partners are ex-officials of local government, and are acquiescent with the managers of state firms in that region. Auditor independence is likely to be undermined as the auditors are under significant influence from the government who owns the state firms.

In contrast, non-state firms are ultimately owned by families and collective groups.⁹ They rely on independent auditors to verify their accounting information. When applying for IPO, firms with less association with government have more difficulties in getting approval for listing (Aharony *et al.*, 2000). Non-state firms need to show better performance and the assurance from a larger auditor in order to compete with state-owned firms when applying for IPOs and rights issues. The same scenario occurs when non-state firms borrow from state banks. Therefore, the incentive to hire high quality auditors is stronger for non-state-owned firms.

4.1.5 Immediate Ownership and Ultimate Ownership

Most of the previous studies use immediate shareholding information when analyzing the ownership structure in China. This stream of literature

⁹ Examples are township and village enterprises, which are collectively owned by a group of people in the same town or village.

divides shareholding according to the official classification of shares.¹⁰ The state share is usually controlled by a provincial branch of the state asset management bureau. The legal person share is owned by a separate enterprise. Most of the legal persons are state firms from which the listed firms are carved out to raise capital on stock market. Therefore, these legal persons themselves are also ultimately controlled by the government, but the involvement of government into the activities of the listed firms is likely to be lower as the state only indirectly controls the firm through the legal person. Due to the relatively better monitoring and greater demand for accounting information from legal persons, firms owned directly by legal person are more likely to recognize loss in a more timely fashion than firms owned directly by the state.

La Porta *et al.* (1999) and Classens *et al.* (2000) use the ultimate ownership approach to analyze the ownership and control of firms around the world and in East Asian countries, respectively. However, both studies exclude China from their sample as the information on ultimate owners in China is not available until 2001. More recent studies related to ownership structure in China begin to adopt this latter approach (Liu and Sun, 2004, Fan et al. 2005).

From the perspective of ultimate ownership, the state is the owner of the majority of listed firms in China. The rest of the firms are ultimately owned by

¹⁰ See Panel A of Table 3 for the classification.

non-state entities, such as families, collective firms, and financial institutions. Contrary to the abstract concept of “all people” ownership, which states that every people in China holds a nominal share in the state firms, the ultimate owners of the private entities and other groups are all unambiguously attributable to specific people. Therefore, private entities and other groups are classified as non-state owners. As discussed in the previous sections, non-state-owned firms are likely to have higher incentives to report more conservative accounting information because the contracting mechanisms are more efficient in non-state firms than in state firms.

The above discussion on the relation between ownership structure and timeliness in loss recognition (relative to gain recognition) can be summarized in the following hypotheses:

Hypothesis 1.1: Firms directly owned by the state are less timely in loss recognition (relative to gain recognition) than firms owned by the legal-persons.

Hypothesis 1.2: Firms ultimately owned by the state are less timely in loss recognition (relative to gain recognition) than firms owned by non-state owners.

4.2 Effectiveness of Accounting Reform across Ownership Structures

Accounting information is likely to be more conservative in recent years with the adoption of more IAS-based accounting standards, especially the ones that relate to LCM and impairment of long-term assets. However, the improvement in accounting conservatism may vary depending on the ownership structure of the firm. For example, the lack of efficient contracting mechanisms in state-owned firms may lead to poor compliance with the high quality accounting standards. Since the newly released standards allow more management judgment in evaluating asset impairments, it could lead to more opportunities for manipulative behaviors by managers. In contrast, in non-state-owned firms, better compliance with the new accounting standards is more likely through better monitoring from shareholders, creditors, and auditors. Therefore, accounting reform might affect state-owned and non-state-owned firms differently. While it is likely to lead to more timely recognition of losses over time in non-state-owned firms, it is not likely to have a similar effect on state-owned firms. The following hypothesis is proposed to examine the effectiveness of accounting reform on state-owned firms and non-state-owned firms.

Hypothesis 2: The gap in the timeliness in loss recognition (relative to gain recognition) between state and non-state owned firms increases with the development of accounting standards.

4.3 Impact of Cross-Listing on TLR across Ownership Structures

When cross-listed in a market with more stringent legal environment, firms are faced with increased litigation risk due to the presence of sophisticated foreign investors. In the domestic A-share stock market, shareholder litigation is rare because the judicial system is rudimentary and individual investor is unsophisticated. There are not many legal cases that have been successfully brought against firms and auditors by individual shareholders, although the number has been increasing in recent years.¹¹ Li (2004) documents considerable progress in terms of regulations on shareholder protection from 1998. However, the effectiveness of these regulations is limited by two major problems. One is the difficulty in obtaining cooperation between shareholders across regions to file law suits because of the limited shareholding of each individual investor and the physical location requirement for investors to file law suit.¹² The other problem is the unwillingness of local courts to accept these cases because of the protection of the local firms by the local government, especially in regions with less stringent legal environment.

With the involvement of sophisticated foreign investors and more

¹¹ The first successful shareholder litigation attempt on listed firms occurred on December 4th, 1998. An investor filed a suit at Shanghai Pudong New District People's Court against the directors of Hongguang Industries for its false financial disclosure. Hongguang was found to have overstated its 1996 and 1997 earnings by US\$ 19 million and US\$ 3.8 million respectively.

¹² Each individual investor is only allowed to own maximum of 0.5% of the total share outstanding of a listed firm. Investors are required to file law suits in their respective resident cities if they want to sue listed firms.

stringent legal enforcement, cross-listed firms are likely to recognize losses in a more timely fashion. However, the impact of cross-listing on the timeliness in loss recognition is likely to be dependent on the ownership structure. For non-state-owned firms, exposure to stringent legal environment may not significantly improve their timeliness in loss recognition as these firms already have existing mechanisms to ensure the practice of conservatism. On the other hand, state-owned firms are subject to lax monitoring and do not have efficient contracting mechanisms to promote conservative accounting practices. Therefore, I propose in the following hypothesis, that cross-listing in a stringent legal environment with higher litigation risk may act as a substitute enforcement mechanism and lead to better compliance with high quality accounting standards and lead to more timely loss reporting.

Hypothesis 3: The gap in the timeliness in loss recognition (relative to gain recognition) between state and non-state-owned firms for cross-listed firms (Hong Kong or B-share market) is smaller than that of purely domestic listed firms (A-share market).

4.4 Impact of Regional Differences in Legal Environment on TLR across Ownership Structures

China is a big country with great variations in market development and economic growth across regions.¹³ The market infrastructure such as the maturity of credit market and enforcement of legal system, is also dissimilar across regions. According to National Economic Research Institute (NERI) indexes of marketization of China's provinces, developed by Fan and Wang (2003), the coastal areas are far more developed than the inland regions in terms of market infrastructure, legal environment and market intermediaries.

In areas with more stringent legal environment and better developed market intermediaries, firms are likely to be more conservative in loss recognition because they are faced with higher litigation risk and stricter scrutiny by lawyers and auditors. Similar to the cross-listing hypothesis, it is likely that the impact of legal environment on timeliness in loss recognition depends on the ownership structure. Since the inherent contracting mechanism is less efficient in state-owned firms, external legal enforcement and litigation may act as a substitute mechanism to enforce the practice of conservative accounting. However, for non-state-owned firms, with the relatively more efficient contracting mechanism, the increased exposure to litigation risk could be less important than that for state-owned firms.

¹³ For example, GDP per capita in Shanghai, the most developed area in China, is USD5,692 in year 2003, and this is about 10 times of that in Guizhou, one of the least industrialized inland provinces.

Therefore, the following hypothesis proposes a substitution effect of stricter legal enforcement to inefficient state ownership.

Hypothesis 4: The gap in the timeliness in loss recognition (relative to gain recognition) between state and non-state-owned firms in regions with stringent legal environment is smaller than that in regions with relatively weak legal environment.

Chapter 5 Measurement and Models for TLR

To examine the timeliness in loss recognition, three models are employed. They are the basic models for the assessment of the overall timeliness in loss recognition in China stock market. Then these three basic models are used to compare the timeliness in loss recognition across different ownership structure and legal environment. The first basic model is a market-based model developed by Basu (1997) to explore the asymmetric earnings-return association. The other two are both accounting-based models – persistence of change in earnings model (Basu, 1997; Ball et al. 2003) and accrual-cash flow model (Ball and Shivakumar, 2005). By exploring the persistence in changes of accounting income and the relationship between accrual and cash flow, timely loss recognition is assessed through pure accounting numbers.

The market-based model assumes efficient market which reflects all available information in a timely manner. If the reported accounting information only poorly captures the underlying economic performance of the firm, the market may mislead investors by efficiently reflecting this poor information. Furthermore, the information set reflected in stock price is not freely available. Grossman and Stiglitz (1980) suggest price cannot be fully revealing where private information collection and processing activities are costly. This implies that investors cannot extract the underlying information

from price and thus would be interested in accounting numbers. Therefore, accounting plays an essential role in the efficient capital market and accounting reform is important in improving the reported accounting information.

The emerging stock market in China is not as efficient as those in developed countries. However, accounting information still plays a role in this semi-efficient market. Prior evidence shows that accounting information is value relevant in China stock market (Chen *et al.* 2001; Haw *et al.* 1999), although the market captures accounting information in a less timely and accurate fashion than the developed markets. Thus the use of market-based model is still appropriate in this setting. I further use two accounting-based models to reinforce the validity of the results from the market-based model.

5.1 Market-Based Model

Basu's (1997) earnings-return model is the first model in this study to examine the timeliness in loss recognition. It captures the asymmetric earnings-return relation.

$$NI_t = \alpha + \beta_1 DR_t + \beta_2 R_t + \beta_3 DR_t * R_t + \zeta_t \quad (1)$$

where

R_t : Inter-reporting period (from May 1st to April 30th of next year) annual abnormal return. It is calculated as raw return minus value-weighted market return. The return in IPO year is excluded in the analysis;

NI_t : Annual income per share deflated by the beginning stock price of period t ;

ΔNI_t : Change in annual income per share deflated by the beginning stock price of period t ;

DR_t : Dummy variable that equals 1 if the return during year t is negative, and 0 otherwise.

Market return R_{it} is used as the proxy for economic income. β_2 measures the timeliness of good news recognition, and β_3 measures the incremental timeliness to incorporate bad news into accounting income. The chart below shows the predictions of coefficients under timely and untimely recognition.

	Positive R_{it} (Economic gain)	Negative R_{it} (Economic loss)
Timely recognition	$\beta_2 > 0$	$\beta_2 + \beta_3 > 0$
Untimely recognition	$\beta_2 < 0$	$\beta_2 + \beta_3 < 0$

If accounting income recognizes economic loss in a more timely fashion, the coefficient of economic loss ($\beta_2 + \beta_3$) would exceed that of economic gain (β_2). In other words, $\beta_3 > 0$ indicates more timely loss recognition than gain recognition.

As discussed in the previous chapters, market-based measure, such as stock price and return, may not be a reliable proxy for economic income in emerging markets like China. Two accounting-based models are employed to further assess the timeliness and conservatism of accounting information, namely, Basu's (1997) time-series model of asymmetric persistence in earnings changes and Ball and Shivakumar's (2005) accrual-cash flow model.

5.2 Earnings Change Persistence Model

The idea in Basu's (1997) model is to use the persistence in change of accounting income to identify the transitory gain and loss component of accounting income, and detect the timeliness of recognition of economic income. Economic income incorporates both current period cash flows and any revision in present value of the expected future cash flows. If accounting recognizes economic income in an untimely manner, the revisions of expectations is ignored in the current period and only recognized at the realization of revised cash flow themselves. For a multi-period investment, revisions in expected cash flow for any one future period are likely to be associated with revisions for other future periods, so deferred recognition incorporates economic gains and losses in accounting income over its entire life. Therefore, this amortization of economic income results in the persistence of change in accounting income. In other words, untimely recognition would result in positive correlation between the change of annual earnings this year and change of earnings for last year for both economic gains and losses. On the contrary, if economic gains and losses are recognized timely, the increases and decreases in accounting income tend to reverse, leading to negative autocorrelation in changes in income.

Following Basu (1997), this study identifies transitory gain and loss

components in accounting income by estimating the following regression. In this model, the correlation between changes in accounting income across years is used to capture whether economic income is recognized timely.

$$\Delta NI_t = \beta_0 + \beta_1 NID_{t-1} + \beta_2 \Delta NI_{t-1} + \beta_3 NID_{t-1} * \Delta NI_{t-1} + \varepsilon_t \tag{2}$$

where

ΔNI_t : Change in annual net income per share deflated by the beginning stock price of period t ;

NID_{t-1} : Dummy variable that equals 1 if ΔNI_{t-1} is negative, and 0 otherwise.

β_2 measures the persistence or otherwise of positive income changes, and β_3 measures the incremental persistence or otherwise of negative income changes. The predictions of coefficients under both timely and untimely recognition are shown in the following table.

	Positive ΔNI_{t-1}	Negative ΔNI_{t-1}
Timely recognition	$\beta_2 < 0$	$\beta_2 + \beta_3 < 0$
Untimely recognition	$\beta_2 > 0$	$\beta_2 + \beta_3 > 0$

Timely recognition of economic losses implies they are recognized as transitory income decreases that tend to reverse in the future. The implication is $\beta_2 + \beta_3 < 0$. Alternatively, deferred recognition of economic losses implies they are recognized as “persistent”, the implication being $\beta_2 + \beta_3 > 0$. Similarly, timely recognition of economic gains indicates gains are regarded as “transitory” increases in income components that tend to reverse, suggesting $\beta_2 < 0$. Correspondingly, for untimely recognition of economic gains,

the implication is $\beta_2 > 0$.

If economic losses are recognized in a more timely fashion than gains, this implies that the economic loss is less persistent (or more transitory) than economic gains, i.e., $\beta_2 + \beta_3 < \beta_2$ (or $\beta_3 < 0$).

5.3 Accrual-Cash Flow Model

The second accounting-based measure is the accrual measure developed by Ball and Shivakumar (2005), who suggest that accruals may be positively but asymmetrically correlated with contemporaneous cash flows. Accounting earnings comprises accruals and cash flow from operations, and the common understanding is that accruals and cash flows from operations are negatively correlated (Dechow, 1994). However, Ball and Shivakumar (2005) argue that accruals and cash flows may be positively correlated, due to the timely recognition of economic gains and losses. Timely gain and loss recognition is based on expected but not realized cash flows, and therefore is accomplished through accruals, which accounts for the revisions in expected future cash flows. Cash flows from an individual long-term asset tend to be correlated over time, suggesting that revisions in current-period cash flow are positively correlated with current revisions in expected future cash flows. For example, an investment experiencing increased current-period cash flow is likely to be

experiencing an upward revision in its future expected cash flows. Hence, if the transitory gains and losses are recognized in a timely fashion, accruals and current-period cash flows would be positively correlated, thereby attenuating their negative association.

If economic losses are more likely to be recognized on a timely basis in the form of accrual, whereas economic gains are more likely to be recognized when realized on cash basis, it is likely that the positive relation is greater in the case of losses. This relation is investigated by estimating the regression below:

$$ACC_t = \beta_0 + \beta_1 DCFO_t + \beta_2 CFO_t + \beta_3 DCFO_t * CFO_t + \varepsilon_t \quad (3)$$

where

CFO_t : Cash flow from operations per share deflated by the beginning stock price of period t ;

$DCFO_t$: Dummy variable that equals 1 if CFO_t is negative, and 0 otherwise;

ACC_t : Accruals per share deflated by the beginning stock price of period t .

If gains are recognized in a deferred manner, then the negative relation is expected to dominate the association between accruals and cash flows for economic gains. Thus, β_2 is predicted to be negative. Since accrued losses are more likely in periods of negative cash flows, timely recognition of this loss would result in a negative accrual and a positive accrual-cash flow relation. The predicted sign for the incremental coefficient β_3 is positive if loss is recognized in a more timely manner than gains.

5.4 Timeliness and Conservatism Measures

This section summarizes the three basic models in this study and develops the detailed measures for timeliness in loss recognition. Model 1 is the market-based model, using stock return as proxy for economic income. Models 2 and 3 are purely accounting-based models, relying on the persistence of earnings and accrual-cash flow relation to test the asymmetric timeliness in economic income recognition.

$$(1) \quad NI_t = \alpha + \beta_1 DR_t + \beta_2 R_t + \beta_3 DR_t * R_t + \zeta_t$$

$$(2) \quad \Delta NI_t = \beta_0 + \beta_1 NID_{t-1} + \beta_2 \Delta NI_{t-1} + \beta_3 NID_{t-1} * \Delta NI_{t-1} + \varepsilon_t$$

$$(3) \quad ACC_t = \beta_0 + \beta_1 DCFO_t + \beta_2 CFO_t + \beta_3 DCFO_t * CFO_t + \varepsilon_t$$

Net income is the measure for accounting income in the first and second regressions. In the accrual-cash flow regression, following Hribar and Collins (2002), Accrual is estimated as follows:

$$Accrual = -(\Delta AR + \Delta INV + \Delta AP + \Delta TAX + \Delta OTH + DEP + AMOR) \quad (4)$$

where

ΔAR : Decrease (increase) in accounts receivable from prior year;

ΔINV : Decrease (increase) in inventory from prior year;

ΔAP : Increase (decrease) in accounts payable from prior year;

ΔTAX : Increase (decrease) in taxes payable from prior year;

ΔOTH : Net change in other current assets from prior year;

DEP : Depreciation expense for the year;

$AMOR$: Amortization expense for the year.

Cash flow from operating activities (CFO) is then calculated as the difference between income and accruals. Hribar and Collins (2002) employ

earnings before abnormal and extraordinary items to measure accounting income and use it to calculate CFO. In the context of China, the recurring income is the best approximation for earnings before abnormal and extraordinary items, as recurring income excludes income from non-operating activities.

The focus in this study is to examine the incremental loss recognition relative to gain recognition in accounting income. The timeliness in loss recognition is evaluated using three measures developed from the above three model. The first measure is the value of the incremental coefficient for bad news firms (β_3) in equation (1). A positive β_3 indicates the loss is recognized in a more timely fashion than gains. This measure is the most commonly used in the conservatism literature (e.g., Basu, 1997; Pope and Walker, 1999; Ball *et al.* 2000a). The second measure is β_3 from (2). A negative β_3 implies greater timeliness in loss recognition. The last measure is derived from the cash flow-accrual relation in (3). In periods of negative cash flows, timely recognition of loss would record negative accrual and result in positive accrual-cash flow relation. Coefficient β_3 is positive if loss is recognized in a more timely manner than gains. Chart 4 summarizes the measures for timeliness of loss recognition in this study.

[INSERT CHART 4 HERE]

Chapter 6 Sample Description and Sample Statistics

6.1 Sample Selection and Data Description

The sample for this study consists of all firms listed in China's stock market as at the end 2003, except for the exclusion of eight firms in the financial industry. Altogether, there are 1,270 firms and 8,422 firm-year observation from 1990 to 2003. The data in this study is mainly retrieved from China Stock Market and Accounting Research (CSMAR) database, a popular database for China stock market. It is jointly developed by Guo Tai An Information Technology Co., Ltd, Hong Kong Polytechnic University, and the University of Hong Kong. It integrates thirteen separate databases that virtually cover all aspects of China stock market. Three of the databases are used in this study, namely, trading, financial, and corporate governance.

The trading database is similar to the renowned international database CRSP, and provides market price and return information. The financial database resembles Compustat in providing accounting data of all listed companies in China's stock market. The corporate governance database supplies ownership structure and corporate governance variables.

The data on ultimate ownership is from Sinofin database, which is developed by China Center for Economic Research in Peking University. It is a similar large-scale database as CSMAR that covers China stock market. Since

the information on ultimate ownership is not available in CSMAR, Sinofin is used to obtain data on ultimate owners after the mandatory disclosure of this information by listed firms in 2001.

6.2 Sample Statistics

[INSERT TABLE 5 HERE]

Table 5 reports the descriptive statistics of accounting numbers and stock returns. Panel A shows the statistics on accounting variables, namely, total assets, shareholders' equity and accounting income. Income is measured in four specifications: income from main operations, recurring income, total income, and net income. The detailed explanations of the income measures are described below:

- Income from main operations

In China, firms need to state their main areas of operation when applying for an operating license. Therefore, main operating activities by the firm are clearly defined in the operating license and they are the main source of income. There is a major change in the definition of income from main operation in 1998. Before 1998, $\text{Income from main operations} = \text{net revenue from main operations} - \text{costs of main operations} - \text{tax and additional fees of main operations} - \text{selling expenses} - \text{general and administrative expenses} - \text{finance}$

expenses - foreign exchange loss - purchase expenses. Since 1998, Income from main operation = net revenue from main operations – cost of main operations – tax and additional fees of main operations.

- Recurring income

Recurring income includes income from both main operations and other operations which are not defined as the main operating activities in the operating license.¹⁴ Before 1998, it is defined as income from main operations + income from other operations; after 1998, it equals income from main operation + income from other operations - general and administration expenses¹⁵ – finance expenses – operating expenses. The definition of recurring income before and after 1998 is actually the same, as the general and administration expenses, finance expenses, and other operating expenses are deducted from income from main operations before 1998.

- Total income

Total income is net income before tax. It is measured as recurring income + investment gains/losses + non-operating gains/losses.¹⁶

- Net income

In Chinese accounting standards, net income is the bottom line income which is measured as the gross income minus incurred expenses from all

¹⁴ Examples of other operations include sales of materials, technology transfer, procurement and sales services, and rental of packaging materials.

¹⁵ All of the general and administration expense is deducted from the recurring income.

¹⁶ Non-operating activities are the operations that have no direct connections with its business operations, which include gain from fixed assets inventory surplus or loss from fixed asset inventory short, fixed assets disposal, debt restructuring, donations, depreciation in asset value due to revaluation, fines, and payables that cannot be paid and hence being transferred to non-operating gains or losses in accordance with stipulated regulations and procedures.

activities by the firm, net of income tax. It is calculated as total income minus tax expenses.

The sample consists of 8,422 firm-year observations. The average size defined as the total assets of the firms is 1.85 billion RMB (223.58 million USD) and the mean net income is 64.51 million RMB (7.80 million USD). There is large variation in the size of the firms for the sample. Among all firm-year observations, the largest firm China Petroleum (Listing code: 600028) is 400,000 times the size of the smallest firm Shanghai Ace Co. (Listing code: 600652). All four measures of income are right-skewed (means greater than medians). The means of net income and total income exceed their respective medians by nearly 90%, while the means for the other two income specifications reach the third quartile of their respective medians, indicating strong positive skewness of earnings.

Panel B from Table 5 describes the distribution of annual stock market returns, which is accumulated in calendar year and inter-announcement period, respectively.¹⁷ Raw return is the buy-and-hold return of a firm during the year. Abnormal return is calculated by subtracting either equally-weighted or value-weighted market return from raw return for the same period. The mean buy-and-hold raw return for the pooled sample is 10.53% and 9.82% for

¹⁷ Listed firms in China are required to issue financial reports within four months of fiscal year end. All the firms have the same fiscal year-end on December 31. The inter-announcement period is defined from May 1 to April 30 of the next year.

calendar year and inter-announcement period respectively. The minimum value-weighted abnormal return is lower than -100% since in 1991 and 1992 the market return is well over 100% due to extremely heavy speculation in the first two years after the establishment of stock market. Therefore, some stocks earning a raw return of about 50% can still have -100% abnormal return when adjusted for the market average. The statistics hints of the volatility of the market, with maximum returns at nearly 1,000% and approximately half of the firms had annual stock returns that either exceeds 25% or is below -25%. To mitigate the impact of outliers on the results, return observations within 1% in both tails are excluded from the analysis.

[INSERT TABLE 6 HERE]

Table 6 provides the correlation matrix of both stock returns and accounting variables. All four income variables except income from main operations are well correlated with raw returns. On average, incomes are more correlated with abnormal returns than raw returns. This is consistent with the findings in Morck *et al.* (2000) that show that stocks move together in emerging markets. Raw return in these markets is more likely to be driven by political events and rumors and is less associated with firm-specific information. Therefore, abnormal return, which takes out the impact of market comovement, is a better measure of performance in these markets. The measure for return in

the regression analysis is the inter-reporting period abnormal return, calculated as the raw return minus value-weighted market return.

For the correlations among income variables, income from main operations is less associated with the other three income measures because its definition was changed in 1998. Before 1998, it included all overhead expenses (general and administration expenses, finance expenses, operating expenses, etc.) and thus is a rather noisy measure of income. The other three income measures are highly correlated. The correlation coefficient between total income and net income is 0.9744, and 0.9198 between total income and recurring income. The correlation between recurring income and net income is a little weaker than the previous two, but it is still as high as 0.8780. Because of the high correlation of the three variables, only net income is used as the income measure in the subsequent regression analyses unless stated otherwise. For the period from 1990 to 1993, net income is not reported under the fund-based accounting system. Thus total income is employed as the proxy for net income during that period.

Chapter 7: Empirical Results

This chapter presents the empirical results based on the methodology described in Chapter 5 to test the hypotheses established in Chapter 4. Section 7.1 provides an overview of the timeliness in loss recognition in China. Section 7.2 tests hypothesis 1 and 2. Section 7.3 analyzes the results on hypothesis 3 and 4. Robustness tests are performed in section 7.4.

7.1 Overall Assessment of Timeliness in Loss Recognition

The timeliness of loss recognition for the whole sample of listed firms is assessed first.

[INSERT TABLE 7 HERE]

The results in Table 7 show that firms generally recognize loss in a timely manner and the timeliness improves over time. In the return-based model (1), the incremental coefficient of bad news recognition to good news recognition β_3 is significantly positive (0.017 with t-value 4.85), indicating that accounting income incorporates bad news more quickly than good news. The coefficient for good news (β_2) is also significantly positive (0.016 with t-value 8.64), suggesting that the recognition of economic gains is also timely. The aggregate coefficient ($\beta_2 + \beta_3$) in recognition of economic loss into accounting income is 0.033, significant at 1% level. This finding of both timely recognition of

economic gain and loss in China is somewhat consistent with the findings in Ball *et al.*'s (2003) study on four East Asian countries over 1984-1996. The incremental bad news recognition coefficient β_3 in their return model is insignificant in the four East Asian countries except Hong Kong, where it is marginally significantly positive. In contrast, the good news recognition variable β_2 is significantly positive. The overall measure for bad news recognition $\beta_2 + \beta_3$ is positive for all four countries.

The timeliness of loss recognition is then assessed for each sub-period. Following the cutoff in Chart 1, the sample period is decomposed into three sub-periods: 1994-1997, 1998-2000, and 2001-2003. For the cash flow model, since the depreciation data is not available before 1995 and during 1998-1999, only two periods are assessed, namely, 1995-1997 and 2000-2003.

The return model show incremental improvement in timeliness in loss recognition over the sub-periods. β_3 is not significantly different from zero from 1991 to 1993 which marks the period before the accounting reform (-0.005 with t-value -0.26). It becomes significantly positive in the sub-periods after the IAS-based conceptual framework was set up. The coefficient is highest in the final sub-period from 2001 to 2003, with a value of 0.057. R^2 is also highest in this sub-period at 0.1280.

This finding is slightly different from Ball *et al.* (2000b), which

documents that economic loss is not recognized in a timely manner during 1992 to 1998 in China, while in this study I find evidence of timely loss recognition in period from 1994 to 1997 (β_3 is 0.029 with t-value 4.72). One possible explanation is that this study employs inter-reporting period return instead of calendar year return used in both Ball *et al.* (2000b) and Ball *et al.* (2003).¹⁸ Inter-reporting period return is used to better match the return with financial reporting period. All firms in China have the same fiscal year end on Dec 31st and they must report annual results before Apr 30th of the next year. In untabulated results, calendar year return is used to rerun the regression, and the results are consistent with Ball *et al.* (2000b) in that β_3 is insignificant for period from 1994 to 1998.

Results from the two accounting based models also show improvements in timeliness in loss recognition. In the persistence of earnings change model in equation (2), the coefficient β_2 on lagged positive earnings changes is small and insignificant for the pooled regression and for all sub-periods, ranging from -0.098 to 0.032. This indicates a near absence of either continuation or reversal of income increases. In contrast, negative change in net income is more transitory than positive change, as indicated by the significantly negative incremental coefficient β_3 (-0.695). This coefficient is negative for all

¹⁸ Basu (1997) uses both inter-announcement period return and calendar year return to assess conservatism. The coefficients in the regressions using inter-announcement period return are larger than those using calendar year return.

sub-periods and becomes increasingly negative in the later periods, suggesting an improvement of timeliness in loss recognition through time.

The sample periods for the test using the accrual-cash flow model are 1995-1997 and 2000-2003, due to data constraints. The depreciation data which is required for the computation of accrual is not available in CSMAR database for period before 1995 and during 1998-1999. The results from regression model (3) for the whole sample period does not indicate timeliness in loss recognition. The incremental accrual-cash flow coefficient β_3 for negative cash flow firm-years is negative (-0.117) and statistically significant, implying that firms are less likely to recognize possible future loss into current accruals based on the current cash flow loss. However, results on the two sub-periods show a sharp contrast in the value of the coefficient of β_3 . It is significantly negative (-0.249) for the sub-period 1995 to 1997 but becomes significantly positive (0.135) for the sub-period 2000 to 2003, showing an improvement in the timeliness in loss recognition over time.

7.2 Empirical Analysis on Ownership Structure and TLR

7.2.1 Description of Ownership Structure and Measurement

As discussed in Chapters 2 to 4, the ownership structure in China is unique and the contracting efficiency varies under different ownership structure.

In this study, to examine the impact of ownership on the timeliness in loss recognition, dummy variables are used to capture the different types of owners of listed firms in China.

First, the immediate shareholding structure is analyzed. The 20% cutoff is used to identify the largest shareholders, which is commonly used in the studies on ownership structure. La Porta *et al.* (1999) argue that if an owner controls 20% of the votes, it is usually enough to have an effective control of the firm.

If the proportion of state shares to total shares outstanding exceeds 20%, the listed firm is classified as owned by the state shareholder. If legal-person share takes up more than 20% of total shares in the listed firm, the firm is defined as legal-person owned. If both state shares and legal-person shares exceed 20% each, the ownership is determined by the share class of the largest shareholder of the firm (e.g., if the largest shareholder holds state shares, the owner is the state). Under this classification, 3,535 firm-year observations are immediately held by state and 2,620 firm-year observations are legal-person controlled. Only 673 firm-year observations are not either immediately controlled by the state or legal-person.

Next the ultimate ownership structure is examined. The disclosure of information on ultimate ownership became mandatory from 2001. For years before 2001, the list of top ten shareholders of the firm is checked to detect any

changes. This change could be identified from the annual list of top ten shareholders in the CSMAR database. If there is no change, the ultimate owner before 2001 is assumed to be the same as in 2001. If there is any change, the details of the changes are analyzed and any switch of ultimate ownership from state to non-state entities is identified. The majority of the firms are ultimately owned by the government. 5,420 firm-year observations from our pooled sample for the return model regression are ultimately state-owned, and only 1,168 firm-year observations have non-state ultimate owners. However, the dominance of state as ultimate owner becomes relatively weaker in recent years. From Panel B in Table 3, based on the ultimate ownership data collected from Sinofin database, the non-state listed sector is experiencing rapid growth through the years, increasing from 177 firms in 2001 to 318 firms in 2003, while the number of ultimately state-owned firms remains steady.

Two comparisons are made to analyze the difference in the impact on timeliness in loss recognition by these various types of controlling shareholders. The first comparison is made between the group of state controlled firms and legal-person controlled firms based on immediate ownership, excluding the firms that are not immediately controlled by either state or legal-person. A dummy variable is used to capture the controlling shareholder. If the firm is controlled by the state, the dummy D_DOWN equals one. If it is controlled by a

legal-person, D_OWN equals zero. In the second comparison, firms are classified based on the ultimate ownership. The ownership dummy equals one if the firm is ultimately owned by the government, otherwise D_OWN is zero (e.g. firms owned by private entities, foreign firms). No further classification among non-state-owned firms is made as the overwhelming majority of the non-state-owned firms are held by private entities.¹⁹

The regression models applied to test the impact of ownership structure on the timeliness in loss recognition are developed from the three basic conservatism models (1), (2) and (3). All three models are augmented with the ownership variables, as follows:

$$NI_t = \beta_0 + \beta_1 RD_t + \beta_2 R_t + \beta_3 RD_t * R_t + \beta_4 D_Own_t + \beta_5 D_Own_t * RD_t + \beta_6 D_Own_t * R_t + \beta_7 D_Own_t * RD_t * R_t + \varepsilon_t \quad (5)$$

$$\Delta NI_t = \beta_0 + \beta_1 NID_{t-1} + \beta_2 \Delta NI_{t-1} + \beta_3 NID_{t-1} * \Delta NI_{t-1} + \beta_4 D_Own_t + \beta_5 D_Own_t * NID_{t-1} + \beta_6 D_Own_t * \Delta NI_{t-1} + \beta_7 D_Own_t * NID_{t-1} * \Delta NI_{t-1} + \varepsilon_t \quad (6)$$

$$ACC_t = \beta_0 + \beta_1 DCFO_t + \beta_2 CFO_t + \beta_3 DCFO_t * CFO_t + \beta_4 D_Own_t + \beta_5 D_Own_t * DCFO_t + \beta_6 D_Own_t * CFO_t + \beta_7 D_Own_t * DCFO_t * CFO_t + \varepsilon_t \quad (7)$$

where

NI_t : Annual net income per share deflated by the beginning stock price of period t ;

R_t : Value-weighted market-adjusted abnormal return for the firm during period t ;

RD_t : Dummy variable that equals 1 if R_t is negative, and 0 otherwise;

ΔNI_t : Change in annual net income per share deflated by the beginning stock price of period t ;

¹⁹ Among the 328 firms ultimately owned by non-state owners in 2003, 306 firms are owned by families or a collective group of people (e.g. Township and Village Enterprises, social groups). The other 12 firms are controlled by foreign entities.

NID_{t-1} : Dummy variable that equals 1 if ΔNI_{t-1} is negative, and 0 otherwise;

CFO_t : Annual cash flow per share from operation deflated by beginning stock price of period t ;

$DCFO_t$: Dummy variable that equals 1 if CFO_t is negative, and 0 otherwise;

ACC_t : Accrual per share during period t deflated by beginning stock price of period t ;

D_Own_t : Dummy variable for ownership structure; in Regression 1, it equals 1 if the firm is controlled by state, and 0 if the firm is controlled by legal-person; and in Regression 2, it equals 1 if the firm is ultimately controlled by the state, and 0 otherwise.

The coefficient for gain and loss recognition for state-owned and non-state-owned firms could be summarized in Chart 5.

[INSERT CHART 5 HERE]

The timeliness in gain and loss recognition is indicated by the timeliness in recognizing economic income into accounting income in model (5), persistence of change of income in model (6), and accrual-cash flow relation in model (7). The focus here is to examine the incremental coefficient (β_7) of loss recognition of state-owned firms over non-state-owned firms in the models. If state-owned firms recognize loss in a less timely fashion than non-state-owned firms, β_7 is predicted to be negative in market-based model (5) and accrual-cash flow model (7), but positive in earnings change persistence model (6). In addition, F-tests are conducted to compare the absolute coefficients of loss recognition between state-owned firms ($\beta_2 + \beta_3 + \beta_6 + \beta_7$) and non-state-owned firms ($\beta_2 + \beta_3$).

7.2.2 Empirical Results on H1: Ownership Structure and TLR

Based on the two different ownership classifications, immediate ownership approach and ultimate ownership approach, two regressions are applied to compare conservatism of firms under each classification. Regression 1 compares the firms that are immediately owned by the state with firms immediately controlled by legal persons. Regression 2 contrasts firms ultimately owned by the state with non-state-owned firms.

[INSERT TABLE 8 HERE]

Table 8 shows the results of our analysis of the impact of ownership structure on the timeliness in loss recognition. The return model (5) yields results consistent with hypothesis 1 that state-owned firms are less timely in loss recognition than other types of firms. Panel A indicates that the firms immediately owned by the state are less likely to recognize economic loss in a timely manner than firms controlled by legal-person, indicated by the significantly negative β_7 in regression 1 (-0.015 with t-value of -2.04). In regression 2, firms ultimately owned by the state are compared with firms owned by non-state owners. The estimated coefficient of β_7 is -0.024 (t-value of -2.55), significant at 1% level. This finding supports hypothesis 1 that firms owned by the state, either directly or indirectly, are less timely in loss recognition than firms owned by others.

The persistence in earnings change model (5) and accrual-cash flow model (6) present a somewhat different story in the comparison of state (immediate) controlled firms and legal-person (immediate) controlled firms (regression 1). As shown in Panel B and Panel C of Table 8, the coefficients on β_7 are not significant, indicating that firms controlled by state and legal-persons are not statistically different in their timeliness in loss recognition. It could be explained by the fact that many legal-person owners themselves are owned by the state, thus the listed firm is ultimately controlled by the government through corporate layers. These firms are not likely to recognize loss in a timely fashion when the government exerts little demand on their financial reporting. Therefore, the state-owned legal-person controlled firms are not more conservative than those firms controlled directly by the state. The discrepancy between this insignificant result and the significant coefficient in the return model may be attributed to the investors' perception of reported accounting information. Being unsophisticated, investors may place higher credibility on the financial reporting by firms controlled by legal persons than those directly controlled by government. Because the immediate ownership may not truly reflect the underlying incentives of the owners, only ultimate ownership approach is used in the later tests.

The results from regression 2 (using ultimate ownership) of models (6)

and (7) are consistent with that in model (5). Decreases in earnings are more persistent for ultimately state-owned firms. The estimated incremental coefficient β_7 on state-controlled firms in the persistence model is 0.468 (t-value of 4.83), significantly positive at 1% level (Table 8, Panel B). That is, earnings decreases in state-owned firms are more persistent than non-state-owned firms, suggesting less timely incorporation of economic loss in state-owned firms. Further, the state-owned firms are less likely to incorporate expected future negative cash flow into current earnings based on the negative current cash flow. The coefficient β_7 is estimated as -0.084, statistically negative at 5% level with t-value at -2.46 (Table 8, Panel C).

In untabulated results, this study further compares the impact of immediate ownership of state, legal person, and other types of owners on the timeliness of loss recognition. The other types of owners are mostly private entities and foreign firms. They control about 10% of the listed firms through immediate shareholding. For all three models, firms controlled by other types of owners are quickest in recognizing economic losses, outperforming both firms immediately owned by legal-person and state. In fact, the firms immediately owned by the other types of firms are part of the non-state-owned firms sample in the ultimately ownership analysis. It is not surprising that they show more timeliness in loss recognition than state and legal-person controlled firms.

In Panel D of Table 8, F-tests are employed to compare the timeliness of loss recognition under both immediate and ultimate ownership. The coefficients for firms immediately controlled by state ($\beta_2 + \beta_3 + \beta_6 + \beta_7$) and legal-person ($\beta_2 + \beta_3$) show significant difference only in the return model (F-statistics is 2.67, with p-value 0.0912) but are indifferent in the two accounting-based models. However, using ultimate ownership and comparing the coefficient for state-owned and non-state-owned firms, the F-tests indicate that the timeliness in loss recognition varies significantly under both return and persistence in earnings change model, providing further support for hypothesis 1.

7.2.3 Empirical Results on H2: Effectiveness of Accounting Reform on Firms across Ownership Structures

The sample is further decomposed into three sub-periods to compare the timeliness of loss recognition of ultimate state-owned firms with that of ultimate non-state-owned firms. Only ultimate ownership is explored here because the ultimate ownership is a better proxy to reflect the differential contracting efficiency in determining timeliness in loss recognition.

The models used in this investigation are the same as in the previous section, i.e., models (5), (6), and (7). Again, the focus is on the incremental coefficient β_7 , which measures the gap of conservatism for losses between

state-owned firms and non-state-owned firms. The prediction is that the state-owned firms show less improvement in timeliness in loss recognition than non-state-owned firms since the state firms lack the governance mechanisms to ensure the effective enforcement of the improved accounting standards.

[INSERT TABLE 9 HERE]

The results in Table 9 generally support this assertion. The market-based return model shows increased gap between the pre-1998 period and post-1998 years. The coefficient on β_7 is insignificantly positive (0.013, with t-value at 0.73) for the period 1994-1997, and becomes significantly negative in the later periods (-0.029, with t-value of -1.90 for 1998-2000, and -0.020 with t-value of -1.72 for 2001-2003). This suggests that in the early sub-period, there is no significant difference between the state and non-state-owned firms in timeliness in loss recognition. However, in the later sub-periods, the state-owned firms become significantly less timely in loss recognition compared to the non-state-owned firms. On the absolute level of loss recognition, the value of coefficient of state-owned firms ($\beta_2 + \beta_3 + \beta_6 + \beta_7$) only increases from 0.041 (1994-1997) to 0.061 (2001-2003), whereas the coefficient of non-state-owned firms ($\beta_2 + \beta_3$) grows from 0.028 to 0.083 across the same time periods. This suggests that LCM accounting is more effectively practised in non-state-owned firms.

The results of the persistence in earnings change model and the cash flow model support the findings from the return model. In the persistence in earnings change model, while β_3 becomes more negative over the sub-periods, the gap in earnings persistence measured by β_7 increases for each sub-period, from -0.086 in 1994-1997 to 0.512 in 2001-2003. This indicates that while the change in earnings becomes more negatively correlated in non-state-owned firms over the sub-periods, the change is much slower for state-owned firms across time. The results of the accrual-cash flow model show that there is no difference in timeliness in loss recognition in the early sub-period, but in the second sub-period, the state-owned firms show less timeliness in loss recognition than non-state-owned firms.

A further comparison is conducted between the coefficient of timeliness in bad news recognition of non-state-owned firms ($\beta_2 + \beta_3$) and that of state-owned firms ($\beta_2 + \beta_3 + \beta_6 + \beta_7$). For the return model, the F-statistics in subperiod 1994-1997 is 1.05, indicating that the difference is not significantly different from zero. The F-statistics in following two subperiods are 4.01 and 3.22 respectively, both significant at 10% level. The F-test results for the earnings change model yield similar pattern, and provide further support for hypothesis 2. In the accrual-cash flow model, only two subperiods are analyzed due to data restriction. In both subperiods, the differences in absolute timeliness

in loss recognition are not significant as indicated by the F statistics. However, non-state-owned firms show greater improvement of timeliness in loss recognition as their accrual-cash flow association becomes less negative in the later period (from -0.920 to -0.648), whereas the state-owned firms demonstrate little improvement (from -0.754 to -0.711).

7.3 Empirical Analysis of the Impact of Legal Environment on TLR across Ownership Structures

The legal environment is a key determinant of a firm's reporting behavior. However, it is likely that the impact of legal environment on timeliness of loss recognition depends on the ownership structure. Since the inherent contracting mechanism is less efficient in state-owned firms, external legal enforcement and litigation may act as a substitute mechanism to compel state-owned firms to report more conservatively. However, for non-state-owned firms, with the relatively more efficient contracting mechanism, the increased exposure to litigation risk could be less important than that for state-owned firms.

The difference in legal environment is captured through two ways. The first investigates the increased litigation risk when the firms cross-list in Hong Kong or B-share market and are exposed to more sophisticated foreign

investors. The second measure explores the regional difference in legal environment within China.

7.3.1 Empirical Results on H3: Impact of Cross-Listing on TLR across Ownership Structures

When cross-listed in a market with more stringent legal environment, firms are faced with stricter legal enforcement and exposed to increased litigation risk by sophisticated foreign investors. However, the effect of this stringent legal environment on timeliness in loss recognition is likely to be different on state-owned firms and non-state-owned firms because of the difference in the inherent contracting efficiency. It is predicted that cross-listing leads to greater improvement in timeliness in loss recognition for state-owned firms. Thus, the gap in the timeliness in loss recognition between state-owned firms and non-state-owned firms for cross-listed firms is smaller than that of purely domestic listed firms.

To examine this assertion, the sample is divided into cross-listed group and non-cross-listed group. For each group, regression models (5), (6) and (7) are employed to analyze the timeliness of loss recognition across ownership structures. Chinese GAAP earnings are used for cross-listed firms to be

consistent with the non-cross-listed firms.²⁰

[INSERT TABLE 10 HERE]

Table 10 reports the different impact of cross-listing on the timeliness in loss recognition of state-owned firms and non-state-owned firms. In all three models, the incremental coefficient β_7 is not significant for the comparison within cross-listed firms, indicating that there is no significant difference in timeliness of loss recognition between state-owned and non-state-owned firms once they cross-list in Hong Kong or B-share market. However, in the purely domestic listed group, the state-owned firms are significantly slower in loss recognition than non-state-owned firms. In Panel A, the market-based return model yields a β_7 of -0.026 (t-value -2.70) for the regression on purely domestic-listed firms, indicating a significant gap in timeliness in loss recognition between domestic-listed state-owned firms and non-state-owned firms. In the two accounting-based models, for purely domestic-listed firms, earnings changes of state-owned firms show significantly more positive persistence (β_7 is 0.521, with t-value 5.96), and their accrual-cash-flow relation is more negative (β_7 is -0.091, significant at 10% level). All these findings are consistent with hypothesis 3.

²⁰ The cross-listed firms need to report both IAS and Chinese GAAP earnings. Appendix A compares the IAS earnings and Chinese GAAP earnings reported by cross-listed firms from 1998 to 2003. On average, IAS earnings is 5.69% lower than Chinese GAAP earnings but the difference diminishes in later years as the Chinese GAAP converges to IAS and with the adoption of LCM accounting.

In Panel D of Table 10, F-tests are conducted to compare the absolute value of coefficients on timeliness of loss recognition between non-state-owned firms ($\beta_2 + \beta_3$) with state-owned firms ($\beta_2 + \beta_3 + \beta_6 + \beta_7$). The result from the return model shows that both types of firms show insignificant difference in timeliness in loss recognition (F-statistics is 0.05, with p-value 0.8236) when cross-listed in a more stringent legal environment. However, for domestic-listed firms, significant difference in the timeliness of loss recognition is documented (F-statistics is 6.99, with p-value 0.0082). The persistence of earnings change model generates results consistent with the return model, thus providing further support for hypothesis 3. In the accrual-cash flow model, although F-statistics are not significant for both groups, the F-value is much greater in domestic group (1.74) than that in cross-listed group (0.23).

7.3.2 Empirical Results on H4: Impact of Regional Difference in Legal Environment on TLR across Ownership Structures

Regional difference is a key characteristic of China given the vast area and different stages of economic development across regions. According to National Economic Research Institute (NERI) index of marketization of China's provinces, developed by Fan and Wang (2003), the coastal areas are far more developed than the inland regions. This NERI index is composed of five

items, namely, the relationship between the government and market, development of non-state-owned economy, development of product market, development of factor market, legal environment and development of market intermediaries. The last item, legal environment and development of market intermediaries, is of most relevance to this study on the comparison of firms from different provinces with different legal environments. The legal environment is measured as the extent to which property rights, intellectual property rights, and consumer rights are protected. The development of market intermediaries is measured by the ratio of number of lawyers and Certified Public Accountants to the total population within the province. Appendix B lists the details of NERI index for all provinces except Tibet.²¹

Based on NERI index on legal environment and development of market intermediaries, regions with higher than median index are classified as regions with stringent legal environment and those with lower than the median index are defined as regions with weak legal environment. Each firm observation is categorized under either stringent or weak legal environment, thus the sample is divided into two groups. Models (5), (6), (7) are used to regress the two groups separately.

As non-state-owned firms are likely to have more efficient contracting and

²¹ Fan and Wong (2003) do not provide the index for Tibet, which has 8 firms in our sample. I exclude these 8 firms from the analysis on the impact of legal environment on TLR.

monitoring, the more stringent legal environment might have little impact on timely loss recognition. On the other hand, state-owned firms are subject to lax monitoring and do not have efficient contracting mechanisms to promote conservative accounting practices. The gap in the timeliness in loss recognition between state and non-state-owned firms in regions with stringent legal environment is predicted to be smaller than that in regions with relatively weak legal environment.

[INSERT TABLE 11 HERE]

Table 11 reports the comparison of timeliness in loss recognition between state-owned firms and non-state-owned firms under different legal environment. The results suggest that under stringent legal environment, both groups of firms are not significantly different in the timeliness in loss recognition. β_7 is not significant for all three models. However, in regions with poor legal infrastructure, the state-owned firms become less timely in loss recognition than non-state-owned firms. In poor legal environment, state-owned firms are less timely in recognizing economic loss (β_7 is -0.052, with t-value -3.44), their earnings changes show more persistence (β_7 is 0.627, with t-value 5.73), and the accrual-cash-flow relation is more negative (β_7 is -0.114, significant at 10% level).

The F-test to compare the timeliness of loss recognition between

non-state-owned firms with state-owned firms supports the above findings. Under stringent legal environment, both types of firms show insignificant difference in the timeliness in loss recognition (F-statistics is 0.56, with p-value 0.4541). However, under poor legal environment, significant difference in the timeliness of loss recognition is documented (F-statistics is 13.33, with p-value 0.0003) in the return model. The other two models generate similar results as the return model as the difference is more significant under poor legal environment than under stringent legal environment, thus providing further support for hypothesis 4.

7.4 Robustness Test

7.4.1 Controlling for Size, Industry and Leverage

In this section, the models are rerun by incorporating the common factors that could impact the timeliness in loss recognition of the firms, namely, size, leverage, and industry. Size may have been an important factor in determining the accounting conservatism practice. Larger firms are likely to recognize loss in a more timely fashion than small firms, due for example to greater litigation risk. Size is measured as the logarithm of the year-end total asset. Leverage could be a proxy for the riskiness of debt or default risk. Highly levered firms are associated with high risk and hence their loss recognition may not be as

timely as other firms. The leverage is defined as the ratio of long-term debt to shareholder's equity. Industry is also included in the regression based on the industry classification in Panel B of Table 1.

Models (5), (6) and (7) are extended to include these control variables as interactive variables. Due to the complexity of the model, only one control variable is included each time. For example, to control for size effect, model (5) is extended as follows:

$$\begin{aligned}
 NI_t = & \beta_0 + \beta_1 RD_t + \beta_2 R_t + \beta_3 RD_t * R_t + \beta_4 D_Own_t + \beta_5 D_Own_t * RD_t \\
 & + \beta_6 D_Own_t * R_t + \beta_7 D_Own_t * RD_t * R_t + \beta_8 SIZE_t + \beta_9 SIZE_t * RD_t \\
 & + \beta_{10} SIZE_t * R_t + \beta_{11} SIZE_t * RD_t * R_t + \varepsilon_t
 \end{aligned} \tag{8}$$

where

NI_t : Annual net income per share deflated by the beginning stock price of period t ;

R_t : Value-weighted market-adjusted abnormal return for the firm during period t ;

RD_t : Dummy variable that equals 1 if R_t is negative, and 0 otherwise;

D_Own_t : Dummy variable for ownership structure; in Regression 1, it equals 1 if the firm is controlled by state, and 0 if the firm is controlled by legal-person; and in Regression 2, it equals 1 if the firm is ultimately controlled by the state, and 0 otherwise;

$SIZE_t$: Logarithm of total asset at the end of period t .

[INSERT TABLE 12 HERE]

The other models are in the same format as model (10) and each of the regressions are re-analyzed with the incorporation of the control variables. Only the regression results from model (8) are tabulated. Table 12 presents the results and shows that size adds little or no explanatory power. The adjusted R-squares for the two regressions increase by less than 0.5%. The coefficient on

$SIZE_i$, RD_i , R_i (β_{11}) is positive for both regressions but only marginally significant, consistent with larger firms being more likely to incorporate loss in a more timely manner. Nevertheless, the coefficient of our primary interest, β_7 , continues to be significantly negative and varies little from the results in model (5). Therefore, size differences do not explain difference between state-owned and non-state-owned firms in loss recognition practices.

In untabulated results from other regressions incorporating the control variables, the results on coefficient β_7 are qualitatively unchanged. The inclusion of the control variables thus does not alter our main results.

7.4.2 Alternative Measure for Accrual and Cash Flow

The accrual-cash flow models use operating cash flow estimated from changes in balance sheet accounts. As the data for depreciation and amortization is not available before 1995 and between 1998 and 1999 in the CSMAR database, the analysis is restricted. In additional test, operating cash flow data is retrieved directly from cash flow statement, which is required to be disclosed for all listed firms from 1998. Then the accrual is computed by deducting operating cash flow from recurring income.

The sample is pooled from 1998 to 2003 and then divided into two sub-periods, namely, 1998-2000 and 2001-2003. The results are not tabulated

here. From the pooled regression for the sample of 5,628 firm-year observations, the incremental loss recognition indicator β_3 of model (3) is significantly negative (-0.079 with t-value 2.23), consistent with the results using cash flow estimated from the balance sheet reported in Panel C of Table 7. Further analysis on the two sub-periods shows improvement in timeliness in loss recognition over time as β_3 increases from 1998-2000 (-0.207 and t-value of -10.72) to 2001-2003 (0.168 and t-value of 8.29). This approach is also incorporated to rerun the accrual-cash flow model (7). The results for the main variable of interest β_7 are unaltered.

7.4.3 Controlling for Growth and Profitability

The two accounting-based models (2) and (3), used to complement market-based model (1) in assessing the timeliness of loss recognition, help to mitigate the problem by model (1) and provide robustness to the results; however, they may suffer from other problems. One issue is that the time-series behavior of the earnings may be influenced by the underlying economic condition of the firm besides conservatism. If the firms are experiencing rapid growth, it would show positive earnings changes in consecutive periods and thus show positive autocorrelation. Another issue is that the conservatism behavior may be influenced by the profitability of the firm as unprofitable firms

are less willing to recognize losses in a timely manner than profitable firms in order to avoid more negative reported results.

I address these two issues in this section and divide the sample into subgroups according to growth and profitability. Then regression analyses are conducted separately for these subgroups to check the robustness of results. To form two subgroups according to growth, following Collins and Kothari (1989), I divide the firms based on market-to-book ratio. If the firm's market-to-book ratio is above median, it is classified into high-growth subgroup, otherwise, it is categorized into low-growth subgroup. This test is applied to earnings persistence model only as it is subject to the autocorrelation problem. To form two subgroups according to profitability, I divide the sample using return-on-equity (ROE). Profitable firms are the firms with ROE above median and unprofitable firms are those with ROE lower than median. The profitability test is conducted for all three models.

[INSERT TABLE 13 HERE]

Panel A of Table 13 reports the results after controlling for the growth trend of the firm. The main results hold as in both high and low growth subgroups, the main variable of interest β_7 is significantly positive, indicating that state-owned firms in both subgroups recognize loss in a less timely fashion than non-state-owned firms. Panel B presents the regression results after

controlling for profitability for all three models. β_7 in both regressions from return model are significantly negative. The profitable subgroup reports coefficient β_7 as -0.15 (t-value -1.81), while the unprofitable subgroup shows a more significant regression coefficient β_7 at -0.031 (t-value -2.25). The larger magnitude of β_7 in the unprofitable group indicates that the difference in timeliness of loss recognition between state-owned and non-state-owned firms is larger for unprofitable firms and unprofitable state-owned firms are least willing to report losses in a timely fashion. The results from the earnings change persistence model and accrual-cash flow model supports the finding from the return model. In summary, after controlling for the growth trend and profitability, the main results still hold.

7.4.4 Assessing the Validity of Conservatism Measures Using Earnings Management Test

Aggressive earnings management to achieve certain earnings threshold may adversely impact the conservatism of accounting information. This relation forms the basis of this sensitivity test to assess the appropriateness of applying two of the conservatism models to China stock market. If the conservatism models in this study could indicate lower degree of conservatism or less timeliness in loss recognition for firms that are more likely to have engaged in

earnings management, it enhances the confidence of using these models to assess accounting practices in China.

One of the most significant motivations of earnings management by listed firms in China is to qualify for the government ruling of rights issues that is based on explicit accounting numbers. To be eligible for rights issues under current regulation, listed firms must achieve an average of 6% return on equity (ROE) for the past three years, and in any of these three year, ROE could not be negative. The regulation during 1996 to 1998 is even more demanding, requiring ROE to exceed 10% for each of the three consecutive years before rights issues. These thresholds offer clear earnings targets that firms must meet in order to qualify for rights issues.

This test follows Burgstahler and Dichev (1997) and Degeorge *et al.* (1999) and uses frequency distribution to capture the pervasiveness of earnings management in China. Based on earnings distribution, firms with ROE just above the earnings thresholds are classified as earnings management group. An earnings management dummy variable is used. It equals one if the firm-year observation falls into the earnings management group, otherwise it equals zero. Appendix C elaborates on the details on the relation between rights issues and incentives for earnings management and further discusses the definition of earnings management variable.

The regression models applied to assess the earnings management practice are developed from the basic conservatism models, (1) and (3). Model (2), the persistence of earnings change model, is not appropriate for this analysis because earnings change in earnings management firms are by nature negatively correlated if they manipulate earnings upward in some years and downward in other years. Models (1) and (3) are expanded with the earnings management indicators.

$$NI_t = \beta_0 + \beta_1 RD_t + \beta_2 R_t + \beta_3 RD_t * R_t + \beta_4 D_EM_t + \beta_5 D_EM_t * RD_t + \beta_6 D_EM_t * R_t + \beta_7 D_EM_t * RD_t * R_t + \varepsilon_t \quad (9)$$

$$ACC_t = \beta_0 + \beta_1 DCFO_t + \beta_2 CFO_t + \beta_3 DCFO_t * CFO_t + \beta_4 D_EM_t + \beta_5 D_EM_t * DCFO_t + \beta_6 D_EM_t * CFO_t + \beta_7 D_EM_t * DCFO_t * CFO_t + \varepsilon_t \quad (10)$$

where

NI_t : Annual net income per share deflated by the beginning stock price of period t ;

R_t : Value-weighted market-adjusted abnormal return for the firm during period t ;

RD_t : Dummy variable that equals 1 if R_t is negative, and 0 otherwise;

CFO_t : Annual cash flow per share from operation deflated by beginning stock price of period t ;

$DCFO_t$: Dummy variable that equals 1 if CFO_t is negative, and 0 otherwise;

ACC_t : Accrual per share during period t deflated by beginning stock price.

D_EM_t : Dummy variable equals 1 if the firm's current year ROE falls in the following intervals, namely 0%-1.5% (avoiding loss), 6%-7.5% (rights issues incentive from 1998 onwards), and 10%-11.50% (rights issues incentive during 1996-1998). Otherwise it equals 0. As the rights issues threshold changed from 10% during 1996-1998 to 6% after 1998, the interval to capture the incentive from rights issues switch from 10%-11.50% to 6%-7.5%.

The results for both return model and accrual-cash flow model indicate that firms with higher probability of earnings management practices recognize

loss in a less timely manner (as reported in Appendix C). The incremental coefficient for earnings management group, β_7 , is -0.057 (t-value of -4.64) in the market-based model (9). The estimated coefficient on β_7 for the accrual-cash flow model (10) is -0.207 with a t-value of -4.39, which is statistically significant at 1% level, suggesting that firms in the earnings management group are less likely to incorporate future expected negative cash flow (relative to positive cash flow) into current period's accruals than other firms.

The results from the earnings management tests support the appropriateness of two of the conservatism measures in the context of China, and add robustness to the findings of this study.

Chapter 8 Conclusions

This thesis empirically analyzes the effectiveness of the accounting reform in China over the period 1990 to 2003, and examines the impact of two key institutional factors in China, namely, ownership structure and legal environment, on the timeliness in loss recognition. The results show that accounting income becomes increasingly timely in loss recognition (relative to gains) as the Chinese government is determined to establish a well-developed accounting system and capital market. A significant improvement is observed in the timeliness in loss recognition for the period after 1998, when the accounting reform accelerates. This finding validates the government's effort in promulgating high quality IAS as the basis of accounting system in China. This study provides some basis for continuing with the issuing of new IAS-based accounting standards to further improve the reported accounting information and has implications for other emerging markets with similar weak institutional background.

Subsequent analysis examines the timeliness in loss recognition (relative to gains) of the accounting information within the context of the unique institutional background in China. Results show that state ownership and weak legal environment are two key factors that limit the effectiveness of the accounting reform. As state-owned firms are faced with non-profit

maximization goals and poor monitoring by shareholders, creditors, and auditors, the state-owned firms incorporate loss in a less timely fashion and their improvement of timeliness in loss recognition along the accounting reform is much less than the non-state-owned firms. However, the results also show that the inefficiency of state ownership could be mitigated by the stricter enforcement of laws. When cross-listed in the markets with more stringent legal environment, the state-owned firms show insignificant difference in timeliness in loss recognition from the non-state-owned firms. In addition, the differences in the legal environment within China also influence reporting behavior of state-owned firms. The gap in the timeliness in loss recognition between state-owned firms and non-state-owned firms in regions with stringent legal environment is smaller than that in provinces with poor legal infrastructure.

This study contributes to current literature on accounting in China by empirically evaluating the effectiveness of accounting reform and timeliness in loss recognition within the unique institutional setting of China. It covers the period of accounting reform and capital market development in China from 1990 and adopts both market-based and accounting-based measures to add robustness to the results. This study has practical implications for Chinese regulators with respect to accounting reform, as well as the privatization scheme of the listed firms. The Chinese government is currently promoting

shareholding reform in the stock market. The reform aims to further privatize the listed firms by reducing the ownership of the state and allowing the trading of state shares. Therefore, our results, which show the negative impact of state shareholding on timeliness in loss recognition, could support the government's decision in this reform. This study is also informative to regulators and accounting information users in other emerging markets. It helps to promote understanding that institution and accounting are closely related and that improvement in institutional environment enhances the effectiveness of adoption of high quality accounting standards.

This thesis has at least four limitations. First of all, the conservatism and timeliness in loss recognition measures used in this paper are limited. According to Watts (2003b), there are three types of common measures for conservatism, namely net asset measures, earnings and accrual measures, and earnings-stock return relation measures. Only the latter two measures are used in this thesis. Further research could be conducted to develop net asset measures of conservatism and check the robustness of the results in this study. Second, the ownership variable is only captured by a dummy variable in this study. Some key features of ownership structure, such as actual percentage of shareholding, and ownership concentration, are not captured in this simple measure. Based on the simple dummy measure, this thesis provides some early

evidence on the impact of ownership structure on accounting in China. Future research should refine the measures to capture the complex ownership structure in China and better examine its implications on accounting information. Thirdly, this study suffers a common drawback of data restriction. The depreciation data for year 1998 to 1999 is not available in CSMAR database. So the accrual measure could not be derived from the balance sheet during that period, which reduces the power of the accrual-cash flow model. Finally, this study assumes linear relationship between stock return and accounting earnings. However, non-linear relations may exist between price and earnings (Hayn, 1995; Zhang, 2000). Follow-up studies on this topic could address the non-linearity issue and analyze its potential impact.

Future research could investigate the effect of the recent shareholding reform, which will fundamentally change the ownership structure in the listed firms in China.²² By the end of 2008, all shares are allowed to be freely traded on the market and the state ownership could be reduced. Research to examine the impact of the change in the ownership structure on the timeliness in loss recognition could contribute to a better understanding of the effect of

²² Currently, the state shares are not allowed to trade on the stock market. The shareholding reform aims to solve the problem accompanied with untransferability of state shares. To get the state shares traded freely on markets, state shareholders need to compensate the shareholders of tradable shares for a portion of shares they own. For example, the state shareholder of Shanghai Automobiles (stock code: 600104) agreed to compensate 3.4 shares for every 10 shares owned by the tradable shareholders (http://www.sse.com.cn/cs/zhs/scfw/gg/ssgs/2005-10-18/600104_20051018_1.pdf). Thus, after the transfer, the shareholding of the state is reduced from 70% to 59.80%. It is subject to further reduction after the free public transfer of state shares so that non-state-owners could purchase shares from state-owners on the stock market.

institutional environment. Another issue for further investigation is the social responsibility of state-owned firms. Prior literature and this thesis document state-ownership in China as inefficient and a mechanism of expropriation of wealth from state-owned firms. However, it is possible to examine this issue from the social responsibility angle. State-owned firms provide safeguards for the larger population, and thereby shifting wealth to other socially necessary activities. This line of research may help provide alternative explanations of the inefficiency of state ownership as state-owned firms assume more social responsibilities than non-state-owned firms.

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Table 1 Overview of Stock Market in China

Panel A: IPO Firms in Each Year

YEAR	No. of IPO Firms	Percentage (%)	Total No. Listed
1990	8	0.63	8
1991	6	0.47	14
1992	39	3.05	53
1993	124	9.70	177
1994	110	8.61	287
1995	24	1.88	311
1996	203	15.88	514
1997	206	16.12	720
1998	106	8.29	826
1999	98	7.67	924
2000	137	10.72	1061
2001	79	6.18	1140
2002	71	5.56	1211
2003	67	5.24	1278
TOTAL	1278	100.00	

Panel B: Industry Classification (as at the end of 2003)

INDUSTRY	No. of Firms	Percentage (%)
Commerce	108	8.45
Conglomerate	237	18.54
Finance	9	0.7
Industrial	795	62.21
Property	38	2.97
Utility	91	7.12
TOTAL	1278	100.00

Panel C: A Comparison of the Largest Stock Markets in the World (2002)

Rank	Stock Market	Total Market Cap (US\$ billion)	Concentration (%)	Turnover Velocity (%)
1	NYSE	9,015	61.3	94.8
2	Tokyo	2,095	60.6	67.9
3	Nasdaq	1,994	63.1	159.8
4	London	1,800	84.5	97.3
5	Euronext	1,538	72.3	153.6
6	Deutsche Börse	686	72.0	125.1
7	Toronto	570	67.8	67.9
8	Swiss	547	81.2	138.6
9	Italian	477	66.1	120.7
10	China (Hong Kong)	463	83.0	39.7
11	China (domestic)	463	29.4	224.2

*Panel A and B are based on domestic A-share market listed firms.

*Panel C from Allen et al. (2005). Figures from 01/01/2002 to 12/31/2002. Concentration is the ratio of the combined market cap of top 5% largest firms over total market cap of all firms listed on the exchange. Turnover velocity is the total turnover for the year expressed as a percentage of the total market capitalization.

*The total market cap of China (domestic) in Panel C is based on the combine total capitalization of A- and B-share market, including both tradable and non-tradable shares. The tradable portion is US\$174B. Turnover velocity is the total turnover as a percentage of tradable market capitalization.

Table 2 Comparison across China and Hong Kong Stock Exchanges

The table compares Chinese domestic A-share and B-share stock market with Hong Kong stock market using a comprehensive set of measures. The measures include the number of listed companies; the proceeds raised through IPO; the market P/E ratio; the total market value; the trading value and the market turnover rate (defined as the total trading value / the total market capitalization) for sample period 1993 to 2002. All these measures are used to evaluate the quality and attractiveness of these three competing stock markets. The figures of IPO fund raised, market value and trading value of Hong Kong stock market have been converted into RMB using monthly end official exchange rate between Hong Kong Dollar and Chinese RMB.

Year	Number of Listed Companies			Fund Raised (IPO) (Billion RMB)			Market P/E Ratios		
	A-share	B-share	Hong Kong	A-share	B-share	H&N Shares	A-share	B-Share	Hong Kong
1993	177	40	477	19,483	3,813	6,093	28.19	7.87	21.6
1994	287	58	529	4,962	3,827	18,873	18.4	6.54	10.7
1995	311	70	542	2,268	3,335	3,146	18.54	8.97	11.4
1996	514	85	583	22,445	4,718	8,356	37.62	10.34	16.7
1997	720	101	658	65,506	8,076	36,103	41.75	9.62	12.1
1998	826	106	680	43,945	2,076	4,496	40.77	5.88	10.7
1999	924	108	701	49,952	0.381	4.72	41.46	10.22	26.73
2000	1061	114	736	78,991	1,400	56,221	62.54	16.23	12.8
2001	1140	112	756	46,112	0	7,021	49.87	34.35	12.18
2002	1211	111	812	46,216	0	18,175	53.56	28.06	14.89

Year	Tradable Market Value (Billion RMB)			Trading Volume (Billion RMB)			Turnover Rate		
	A-share	B-share	Hong Kong	A-share	B-share	Hong Kong	A-share	B-share	Hong Kong
1993	45.19	6.05	1,427.71	352.25	47.28	762.87	7.79	7.81	0.53
1994	72.27	15.55	2,683.66	800.49	95.28	1,080.72	11.08	6.13	0.40
1995	82.67	14.56	2,308.36	395.82	52.41	799.72	4.79	3.60	0.35
1996	165.42	20.50	3,086.60	2,105.23	96.53	1,383.36	12.73	4.71	0.45
1997	4,10.91	40.66	4,061.55	3,028.61	197.78	3,771.04	7.37	4.86	0.93
1998	5,56.17	26.18	2,788.80	2,340.75	72.24	1,707.39	4.21	2.76	0.61
1999	7,28.21	26.10	3,640.99	3,093.04	128.56	2,043.16	4.25	4.93	0.56
2000	1,267.97	38.83	5,002.72	6,028.85	54.80	3,235.51	4.75	1.41	0.65
2001	1,525.29	106.85	4,423.61	3,327.32	514.96	2,068.75	2.18	4.82	0.47
2002	1,360.18	75.37	3,946.25	2,704.63	507.62	1,566.17	1.99	6.73	0.40

Table 3 Ownership Structure in China

Panel A: Share Class and Structure at end of 2003 (Immediate Ownership)

Share Class	Equity Holders	Negotiability	% of Total Shares	Dominating Share Class*
State-Owned Shares	Held by the central government, local governments, and wholly state-owned enterprises	Non-tradable	35.82	690
Legal-Person (LP) Shares	Issued to institutions that are mainly owned by or connected to the central or local governments	Non-Tradable	28.57	482
A-Shares	Issued to public investors, either Chinese citizens or domestic institutions	Tradable	27.08	106
Foreign shares (B, H, N)	Issued to foreign investors and investors from Taiwan, Hong Kong, and Macao	Tradable	7.94	
Employee Shares	Issued to employees and executives of a SOE to be listed	Converted to A-shares after an 6-12 mth lock-up period	0.59	

* Number of the listed firms dominated by each class of shares. Dominance is determined as the share class with the largest percentage out of all shares outstanding.

Panel B: State-owned vs. Non-state-owned firms (Ultimate Ownership)

Year	2001	2002	2003
State-owned	925	946	923
Non-state-owned	177	218	318

Panel C: Cross-Listed Firms and Ownership Structure (Ultimate Ownership)**Non-Cross-Listed firms**

Year	2001	2002	2003
State-owned	840	857	825
Non-state-owned	168	205	299

Cross-Listed Firms

Year	2001	2002	2003
State-owned	85	89	98
Non-state-owned	9	13	19

*Under ultimate ownership structure, state-owned firms are the firms ultimately controlled by the state. Many legal-person-owned firms (under immediate ownership) are classified as state-owned if the legal-person itself is a SOE. The non-state-owned firms are those firms owned by private entities, collective groups, social groups, and foreign entities.

Table 4 Accounting Numbers and Stock Return through Time

The table shows the progression of domestic A-Share market development in China. The mean of key accounting and return variables in each year is listed. The accounting variables include average total asset, total income, and net income, all denominated in million Chinese RMB. Net income became a compulsory reporting item from 1994. Annual return is calendar year, equally-weighted and value-weighted market return, excluding IPO firms during the year.

Year	Firm No.	Total Asset	Total Income	Net Income	Annual Return	
					Equally-weighted	Value-weighted
1990	8	184	9.14	N.A.	/	/
1991	14	370	20.64	N.A.	341.66%	136.69%
1992	53	718	50.26	N.A.	124.95%	104.90%
1993	177	965	86.57	N.A.	29.20%	-1.65%
1994	287	973	79.93	66.16	-22.85%	-26.22%
1995	311	1172	62.69	50.51	-11.16%	-13.00%
1996	514	1076	56.80	45.56	100.56%	92.42%
1997	720	1178	69.41	55.84	31.82%	23.08%
1998	826	1303	72.49	56.34	12.04%	-5.94%
1999	924	1476	79.27	61.91	21.70%	17.65%
2000	1061	1612	81.32	62.97	69.90%	54.58%
2001	1140	1779	69.19	52.18	-22.21%	-23.46%
2002	1211	1938	73.11	49.34	-19.81%	-16.83%
2003	1278	2090	84.99	58.56	-13.05%	4.13%

Table 5 Descriptive Statistics

The table reports the descriptive statistics of main accounting and return variables of interest. The sample excludes 9 firms in the finance industry because CSMAR accounting database does not cover this industry and the accounting numbers of firms in finance industry are very different from other industries. Invalid observations are deleted before calculating the statistics. Net income is net profit realized by a company in the current period (available from 1992 and some firms from 1994). Total income is total profit realized by a company in the current period. Recurring income is profit incurred from company's main and other operations. Income from main operations is profit incur from a company's main business operations. Return is accumulated in both calendar year and inter-announcement period (from May to April of next year) to match the reporting period. Raw return is the buy-an-hold return of a firm during each year. Abnormal return is calculated by subtracting either equal-weighted or value-weighted market return during the same period. Return in IPO year is excluded from the sample.

Panel A: Accounting Variables (Million RMB)

Variables	Firm-Year No.	Mean	Std Error	Minimum	1 st Quartile	Median	3 rd Quartile	Maximum
Total Assets	8422	1,849	6,640	0.98	570	1,016	1,862	368,375
Equity	8422	904	2,692	-2,406	290	523	961	146,515
Net Income	8406	64.51	307	-3,402	13.88	36.76	78.60	14,121
Total Income	8421	88.82	438	-3,405	17.95	45.99	97.51	22,012
Recurring Income	8409	78.00	454	-2,803	8.89	35.84	81.39	23,844
Income from Main Operations	8398	196	1055	-346	33.78	83.85	178	61,150

Panel B: Stock Return Variables

Variables	Firm-Year No.	Mean	Std Error	Minimum	1 st Quartile	Median	3 rd Quartile	Maximum
Return accumulated by calendar year								
Raw Return	7201	10.53%	0.5744	-89.57%	-25.13%	-6.61%	29.92%	959.41%
Market Adjusted (Equal-Weighted)	7201	0	0.4322	-258.38%	-20.06%	-5.52%	11.46%	858.85%
Market Adjusted (Value-Weighted)	7201	2.68%	0.4513	-150.44%	-19.57%	-4.65%	14.92%	866.99%
Return accumulated from May to April of the next year (inter-announcement period)*								
Raw Return	7449	9.82%	0.6250	-86.04%	-24.95%	-7.82%	24.50%	1112.70%
Market Adjusted (Equal-Weighted)	7449	0	0.4766	-205.36%	-18.87%	-5.49%	10.71%	991.39%
Market Adjusted (Value-Weighted)	7449	2.82%	0.4919	-136.54%	-19.24%	-4.77%	13.25%	1003.62%

*All firms in China have the same fiscal year end Dec. 31st and are required to issue annual report by April 30th.

Table 6 Pearson Correlation Matrix

The table reports Pearson correlation matrix. AR_EWMR is the abnormal return calculated as raw return minus equally-weighted market return. AR_VWMR is the abnormal return calculated as raw return minus value-weighted market return. Main Oper is income from main operations. Total income, net income, income from operation, and recurring income per share are all scaled by stock price at the beginning of each period. Top 1% and bottom 1% of raw return is trimmed.

	Raw Return	AR_EWMR	AR_VWMR	Total Assets	Total Income	Net Income	Main Oper	Recurring Income
Raw Return	1.0000							
AR_EWMR	0.6059	1.0000						
AR_VWMR	0.7153	0.9623	1.0000					
Total Assets	-0.0164	0.0290	0.0071	1.0000				
Total Income	0.2584	0.2337	0.2564	0.0974	1.0000			
Net Income	0.2661	0.2326	0.2582	0.0713	0.9744	1.0000		
Main Oper	0.0300	0.1620	0.1013	0.2023	0.4896	0.4201	1.0000	
Recurring Income	0.1803	0.2007	0.2040	0.1133	0.9198	0.8780	0.5665	1.0000

* The return variables showed in this matrix are the inter-reporting period return, which is from May 1st to Apr 30th of next year. Calendar year return yields similar correlation with the accounting variables.

Table 7 Conservatism and Timeliness in Loss Recognition

Panel A: Return Model

$$NI_t = \beta_0 + \beta_1 RD_t + \beta_2 R_t + \beta_3 RD_t * R_t + \varepsilon_t$$

β_0	$RD_t(\beta_1)$	$R_t(\beta_2)$	$RD_t * R_t(\beta_3)$	Adj. R^2	N
?	?	+	+	(Predicted sign)	
0.022 (27.27)***	-0.004 (-3.48)***	0.016 (8.64)***	0.017 (4.85)***	0.0725	6828
Sub-periods					
1991--1993		0.003* (1.94)	-0.005 (-0.26)	0.0502	37
1994--1997		0.011 (2.92)***	0.029 (4.72)***	0.0855	1192
1998--2000		0.013 (5.24)***	0.018 (2.82)**	0.0359	2384
2001--2003		0.025 (4.52)***	0.057 (7.08)***	0.1280	3215

Panel B: Earnings Change Model

$$\Delta NI_t = \beta_0 + \beta_1 NID_{t-1} + \beta_2 \Delta NI_{t-1} + \beta_3 NID_{t-1} * \Delta NI_{t-1} + \varepsilon_t$$

β_0	$NID_{t-1}(\beta_1)$	$\Delta NI_{t-1}(\beta_2)$	$NID_{t-1} * \Delta NI_{t-1}(\beta_3)$	Adj. R^2	N
?	?	0	-	(Predicted sign)	
-0.001 (-0.74)	-0.014 (-9.50)***	-0.021 (-0.92)	-0.695 (-21.46)***	0.1461	5625
Sub-periods					
1993--1997		-0.098 (-1.51)	-0.239 (-2.59)***	0.0298	836
1998--2000		-0.037 (-1.01)	-0.822 (-14.69)***	0.1653	2040
2001--2003		0.032 (0.81)	-1.274 (-22.05)***	0.2938	2749

Panel C: Accrual-Cash Flow Model

$$ACC_t = \beta_0 + \beta_1 DCFO_t + \beta_2 CFO_t + \beta_3 DCFO_t * CFO_t + \varepsilon_t$$

β_0	$DCFO_t(\beta_1)$	$CFO_t(\beta_2)$	$DCFO_t * CFO_t(\beta_3)$	Adj. R^2	N
?	?	-	+	(Predicted sign)	
0.001 (9.85)***	-0.001 (-4.52)***	-0.701 (-59.32)***	-0.117 (-6.81)***	0.7506	5226
Sub-periods					
1995--1997		-0.754 (-22.87)***	-0.249 (-6.75)***	0.8545	1004
2000--2003		-0.846 (-62.90)***	0.135 (6.19)***	0.6592	4222

***, **, * denote significance at the 1, 5, and 10 percent level respectively in two-tailed tests.

^ Depreciation data is not available before 1995 and 1998-1999 in CSMAR database, so accruals cannot be calculated for period before 1995 and during 1998-1999.

Variables:

NI_t : Annual net income per share deflated by the beginning stock price of period t ;

R_t : Value-weighted market-adjusted abnormal return for the firm during period t ;

RD_t : Dummy variable that equals 1 if R_t is negative, and 0 otherwise;

ΔNI_t : Change in annual net income per share deflated by the beginning stock price of period t ;

NID_{t-1} : Dummy variable that equals 1 if ΔNI_{t-1} is negative, and 0 otherwise;

CFO_t : Annual cash flow per share from operation deflated by beginning stock price of period t ;

$DCFO_t$: Dummy variable that equals 1 if CFO_t is negative, and 0 otherwise;

ACC_t : Accrual per share deflated by beginning stock price of period t .

Table 8 Ownership Structure and Timeliness in Loss Recognition

Regression 1 compares the timeliness in loss recognition in state-controlled firms with that in legal-person controlled firms. It includes the sample of firms that are controlled by either state or legal-person. Regression 2 compares the timeliness in loss recognition in ultimately state controlled firms with that in ultimately non-state controlled firms.

Panel A: Return Model

$$NI_t = \beta_0 + \beta_1 RD_t + \beta_2 R_t + \beta_3 RD_t * R_t + \beta_4 D_Own_t + \beta_5 D_Own_t * RD_t + \beta_6 D_Own_t * R_t + \beta_7 D_Own_t * RD_t * R_t + \varepsilon_t$$

	Predicted sign	REG1: State vs. LP	REG2: State vs. Non-State
Intercept (β_0)	?	0.019 (15.10)***	0.019 (10.67)***
RD_t (β_1)	?	-0.002 (-1.05)	-0.001 (-0.29)
R_t (β_2)	+	0.017 (6.04)***	0.013 (3.39)***
$RD_t * R_t$ (β_3)	+	0.023 (4.27)***	0.035 (4.21)***
D_Own_t (β_4)	?	0.004 (2.27)**	0.002 (1.14)
$D_Own_t * DR_t$ (β_5)	?	-0.004 (-1.63)	-0.004 (-1.39)
$D_Own_t * R_t$ (β_6)	?	-0.002 (-0.49)	0.002 (0.47)
$D_Own_t * RD_t * R_t$ (β_7)	-	-0.015 (-2.04)**	-0.024 (-2.55)***
Adj. R^2		0.0745	0.0716
N		6155 3535 (state) 2620 (LP)	6588 5420 (state) 1168 (non-state)

Panel B: Earnings Change Model

$$\Delta NI_t = \beta_0 + \beta_1 NID_{t-1} + \beta_2 \Delta NI_{t-1} + \beta_3 NID_{t-1} * \Delta NI_{t-1} + \beta_4 D_Own_t + \beta_5 D_Own_t * NID_{t-1} + \beta_6 D_Own_t * \Delta NI_{t-1} + \beta_7 D_Own_t * NID_{t-1} * \Delta NI_{t-1} + \varepsilon_t$$

	Predicted sign	REG1: State vs. LP	REG2: State vs. Non-State
Intercept (β_0)	?	-0.002 (-1.87)	-0.001 (-0.45)
NID_{t-1} (β_1)	?	-0.010 (-4.68)***	-0.010 (-3.39)***
ΔNI_{t-1} (β_2)	0	0.040 (1.04)	0.002 (0.03)
$NID_{t-1} * \Delta NI_{t-1}$ (β_3)	-	-0.746 (-13.27)***	-1.216 (-13.80)***
D_Own_t (β_4)	?	0.002 (1.23)	0.000 (0.03)
$D_Own_t * NID_{t-1}$ (β_5)	?	-0.000 (-0.14)	0.0001 (0.06)
$D_Own_t * \Delta NI_{t-1}$ (β_6)	?	-0.095 (-1.90)*	-0.058 (-0.92)
$D_Own_t * NID_{t-1} * \Delta NI_{t-1}$ (β_7)	+	-0.043 (-0.55)	0.468 (4.83)***
Adj. R^2		0.1152	0.1149
N		5047	5434

Panel C: Accrual-Cash Flow Model

$$ACC_t = \beta_0 + \beta_1 DCFO_t + \beta_2 CFO_t + \beta_3 DCFO_t * CFO_t + \beta_4 D_Own_t + \beta_5 D_Own_t * DCFO_t + \beta_6 D_Own_t * CFO_t + \beta_7 D_Own_t * DCFO_t * CFO_t + \varepsilon_t$$

	Predicted sign	REG1: State vs. LP	REG2: State vs. Non-State
Intercept (β_0)	?	0.001 (12.07)***	0.002 (9.12)***
$DCFO_t$ (β_1)	?	-0.001 (-6.09)***	-0.001 (-3.53)***
CFO_t (β_2)	-	-0.892 (-71.24)***	-0.940 (-42.22)***
$DCFO_t * CFO_t$ (β_3)	+	-0.126 (-7.27)***	-0.066 (-2.11)**
D_Own_t (β_4)	?	0.0001 (0.67)	-0.0001 (-0.93)
$D_Own_t * DCFO_t$ (β_5)	?	0.0003 (1.18)	0.000 (0.14)
$D_Own_t * CFO_t$ (β_6)	?	0.013 (0.70)	0.061 (2.54)**
$D_Own_t * DCFO_t * CFO_t$ (β_7)	-	-0.029 (-1.21)	-0.084 (-2.46)**
Adj. R^2		0.8981	0.8929
N		4566	4880

***, **, * denote significance at the 1, 5, and 10 percent level respectively in two-tailed tests.

Panel D: Comparison of $\beta_2 + \beta_3 + \beta_6 + \beta_7$ with $\beta_2 + \beta_3$ in three models

Models	Regression 1 State vs. LP		Regression 2 State vs. Non-state	
	F-value	P-value	F-value	P-value
Return model	2.67	0.0912	3.31	0.0698
Earnings change	0.76	0.4073	2.98	0.0572
Accrual-cash flow	1.02	0.2796	1.23	0.1839

Variables:

NI_t : Annual net income per share deflated by the beginning stock price of period t ;

R_t : Value-weighted market-adjusted abnormal return for the firm during period t ;

RD_t : Dummy variable that equals 1 if R_t is negative, and 0 otherwise;

ΔNI_t : Change in annual net income per share deflated by the beginning stock price of period t ;

NID_{t-1} : Dummy variable that equals 1 if ΔNI_{t-1} is negative, and 0 otherwise;

CFO_t : Annual cash flow per share from operation deflated by beginning stock price of period t ;

$DCFO_t$: Dummy variable that equals 1 if CFO_t is negative, and 0 otherwise;

ACC_t : Accrual per share deflated by beginning stock price of period t . Calculated as:

$$Accrual = -(\Delta AR + \Delta INV + \Delta AP + \Delta TAX + \Delta OTH + DEP + AMOR)$$

where ΔAR is the decrease (increase) in accounts receivable, ΔINV is the decrease (increase) in inventory, ΔAP is the increase (decrease) in accounts payable, ΔTAX is the increase (decrease) in taxes payable, ΔOTH is the net change in other current assets, DEP is the depreciation expense, and $AMOR$ is the amortization expense.

D_Own_t : Dummy variable for ownership structure; in Regression 1, it equals 1 if the firm is controlled by state, and 0 if the firm is controlled by legal-person; and in Regression 2, it equals 1 if the firm is ultimately controlled by the state, and 0 otherwise.

Table 9 Accounting Reform, Ownership Structure, and TLR

This table reports the gap of timeliness in loss recognition between state-owned firms and non-state-owned firms. The gap is observed as β_7 in the three regressions below. The ownership classification is based on ultimate ownership.

Panel A: Return Model

$$NI_t = \beta_0 + \beta_1 RD_t + \beta_2 R_t + \beta_3 RD_t * R_t + \beta_4 D_Own_t + \beta_5 D_Own_t * DR_t + \beta_6 D_Own_t * R_t + \beta_7 D_Own_t * RD_t * R_t + \varepsilon_t$$

Sub-periods	β_2	β_3	β_6	β_7	Adj. R^2	N
	+	+	?	-	Predicted Sign	
1994--1997	0.009 (1.09)	0.017 (1.11)	0.002 (0.25)	0.013 (0.73)	0.0979	1133
1998--2000	0.01 (2.22)**	0.045 (2.83)***	0.001 (0.10)	-0.029 (-1.90)**	0.0786	2317
2001--2003	0.022 (1.69)*	0.061 (3.30)***	-0.002 (-0.11)	-0.020 (-1.72)*	0.1272	3137

Panel B: Persistence in Earnings Change Model

$$\Delta NI_t = \beta_0 + \beta_1 NID_{t-1} + \beta_2 \Delta NI_{t-1} + \beta_3 NID_{t-1} * \Delta NI_{t-1} + \beta_4 D_Own_t + \beta_5 D_Own_t * NID_{t-1} + \beta_6 D_Own_t * \Delta NI_{t-1} + \beta_7 D_Own_t * NID_{t-1} * \Delta NI_{t-1} + \varepsilon_t$$

Sub-periods	β_2	β_3	β_6	β_7	Adj. R^2	N
	0	-	?	+	Predicted Sign	
1994--1997	-0.207 (-0.75)	0.120 (0.39)	-0.165 (-0.52)	-0.086 (-0.24)	0.0475	647
1998--2000	0.054 (0.66)	-0.894 (-7.45)***	-0.087 (-0.92)	0.207 (1.65)	0.1414	1914
2001--2003	-0.021 (-0.18)	-1.326 (-10.27)***	-0.020 (-0.18)	0.512 (4.02)***	0.1549	2837

Panel C: Accrual-Cash Flow Model

$$ACC_t = \beta_0 + \beta_1 DCFO_t + \beta_2 CFO_t + \beta_3 DCFO_t * CFO_t + \beta_4 D_Own_t + \beta_5 D_Own_t * DCFO_t + \beta_6 D_Own_t * CFO_t + \beta_7 D_Own_t * DCFO_t * CFO_t + \varepsilon_t$$

Sub-periods	β_2	β_3	β_6	β_7	Adj. R^2	N
	-	+		-	Predicted Sign	
1995-1997	-0.723 (-15.27)***	-0.197 (-4.36)***	0.209 (3.12)***	-0.043 (-1.05)	0.9402	876
2000--2003	-0.831 (-38.27)***	0.183 (8.76)***	0.039 (1.91)*	-0.102 (-4.53)***	0.8520	3989

Panel D: Comparison of $\beta_2 + \beta_3 + \beta_6 + \beta_7$ with $\beta_2 + \beta_3$ in three models

	1994-1997		1998-2000		2001-2003	
	F-value	P-value	F-value	P-value	F-value	P-value
Return model	1.05	0.3053	4.01	0.0455	3.22	0.0783
Earnings change	1.72	0.1905	0.86	0.2819	5.31	0.0137
	1995-1997		2000-2003			
	F-value	P-value	F-value	P-value		
Accrual-cash flow	1.79	0.1658	0.84	0.3127		

***, **, * denote significance at the 1, 5, and 10 percent level respectively in two-tailed tests. t-statistics in the parenthesis.

^ Depreciation data is not available before 1995 and 1998-1999 in CSMAR database, so accruals cannot be calculated based on the non-cash adjustment to net incomes for period before 1995 and during 1998-1999. I also use (net income – operating cash flow) approach to calculate the accruals after the statement of cash flow is mandated from 1998. The results from accrual-cash flow model still hold.

Table 10 Cross-Listing, Ownership Structure and TLR

This table shows the gap of timeliness in loss recognition between state-owned firms and non-state-owned firms under cross-listed sample and non-cross-listed sample.

Panel A: Return Model

$$NI_t = \beta_0 + \beta_1 RD_t + \beta_2 R_t + \beta_3 RD_t * R_t + \beta_4 D_Own_t + \beta_5 D_Own_t * DR_t + \beta_6 D_Own_t * R_t + \beta_7 D_Own_t * RD_t * R_t + \varepsilon_t$$

Cross-Listing	R_t (β_2)	$RD_t * R_t$ (β_3)	$D_Own_t * RD_t * R_t$ (β_7)	Adj. R^2	N
	+	+	-	Predicted Sign	
Cross-listed	0.013 (1.91)*	0.028 (2.63)**	-0.008 (-0.26)	0.0595	795
Purely	0.012	0.036	-0.026	0.0847	5794
Domestic-listed	(3.04)***	(3.95)***	(-2.70)***		

Panel B: Persistence in Earnings Change Model

$$\Delta NI_t = \beta_0 + \beta_1 NID_{t-1} + \beta_2 \Delta NI_{t-1} + \beta_3 NID_{t-1} * \Delta NI_{t-1} + \beta_4 D_Own_t + \beta_5 D_Own_t * NID_{t-1} + \beta_6 D_Own_t * \Delta NI_{t-1} + \beta_7 D_Own_t * NID_{t-1} * \Delta NI_{t-1} + \varepsilon_t$$

Cross-Listing	ΔNI_{t-1} (β_2)	$NID_{t-1} * \Delta NI_{t-1}$ (β_3)	$D_Own_t * NID_{t-1} * \Delta NI_{t-1}$ (β_7)	Adj. R^2	N
	0	-	+	Predicted Sign	
Cross-listed	0.014 (0.93)	-1.112 (-3.07)***	0.194 (0.32)	0.2055	670
Purely	0.073	-1.079	0.521	0.1434	4785
Domestic-listed	(1.09)	(-12.02)***	(5.96)***		

Panel C: Accrual-Cash Flow Model

$$ACC_t = \beta_0 + \beta_1 DCFO_t + \beta_2 CFO_t + \beta_3 DCFO_t * CFO_t + \beta_4 D_Own_t + \beta_5 D_Own_t * DCFO_t + \beta_6 D_Own_t * CFO_t + \beta_7 D_Own_t * DCFO_t * CFO_t + \varepsilon_t$$

Cross-Listing	CFO_t (β_2)	$DCFO_t * CFO_t$ (β_3)	$D_Own_t * DCFO_t * CFO_t$ (β_7)	Adj. R^2	N
	-	+	-	Predicted Sign	
Cross-Listed	-0.922 (-5.70)***	0.054 (0.19)	-0.032 (-0.11)	0.8417	546
Purely	-0.881	-0.126	-0.091	0.8241	4154
Domestic-listed	(-23.31)***	(-3.27)***	(-1.86)*		

Panel D: F test to compare $\beta_2 + \beta_3 + \beta_6 + \beta_7$ with $\beta_2 + \beta_3$ in three models

	Cross-Listed firms		Purely Domestic-Listed firms	
	F-value	P-value	F-value	P-value
Return model	0.05	0.8236	6.99	0.0082
Earnings change	0.56	0.4565	9.83	0.0012
Accrual-cash flow	0.23	0.7037	1.74	0.1894

***, **, * denote significance at the 1, 5, and 10 percent level respectively in two-tailed tests. t-statistics in the parenthesis.

^ Depreciation data is not available before 1995 and 1998-1999 in CSMAR database, so accruals cannot be calculated for period before 1995 and during 1998-1999.

Table 11 Legal Environment, Ownership Structure, and TLR

This table shows the gap of timeliness in loss recognition between state-owned firms and non-state-owned firms in stringent and poor legal environment.

Panel A: Return Model

$$NI_t = \beta_0 + \beta_1 RD_t + \beta_2 R_t + \beta_3 RD_t * R_t + \beta_4 D_Own_t + \beta_5 D_Own_t * RD_t + \beta_6 D_Own_t * R_t + \beta_7 D_Own_t * RD_t * R_t + \varepsilon_t$$

Legal Environment	R_t (β_2)	$RD_t * R_t$ (β_3)	$D_Own_t * RD_t * R_t$ (β_7)	Adj. R^2	N
	+	+	-	Predicted Sign	
Stringent	0.010 (1.65)*	0.026 (2.32)**	-0.011 (-0.92)	0.0662	3461
Poor	0.016 (3.18)***	0.059 (4.31)***	-0.052 (-3.44)***	0.0828	3163

Panel B: Persistence in Earnings Change Model

$$\Delta NI_t = \beta_0 + \beta_1 NID_{t-1} + \beta_2 \Delta NI_{t-1} + \beta_3 NID_{t-1} * \Delta NI_{t-1} + \beta_4 D_Own_t + \beta_5 D_Own_t * NID_{t-1} + \beta_6 D_Own_t * \Delta NI_{t-1} + \beta_7 D_Own_t * NID_{t-1} * \Delta NI_{t-1} + \varepsilon_t$$

Legal Environment	ΔNI_{t-1} (β_2)	$NID_{t-1} * \Delta NI_{t-1}$ (β_3)	$D_Own_t * NID_{t-1} * \Delta NI_{t-1}$ (β_7)	Adj. R^2	N
	0	-	+	Predicted Sign	
Stringent	0.037 (0.47)	-0.740 (-6.58)***	0.232 (1.85)	0.1259	2889
Poor	-0.039 (-0.42)	-1.332 (-11.45)***	0.627 (5.73)***	0.1017	2539

Panel C: Accrual-Cash Flow Model

$$ACC_t = \beta_0 + \beta_1 DCFO_t + \beta_2 CFO_t + \beta_3 DCFO_t * CFO_t + \beta_4 D_Own_t + \beta_5 D_Own_t * DCFO_t + \beta_6 D_Own_t * CFO_t + \beta_7 D_Own_t * DCFO_t * CFO_t + \varepsilon_t$$

Legal Environment	CFO_t (β_2)	$DCFO_t * CFO_t$ (β_3)	$D_Own_t * DCFO_t * CFO_t$ (β_7)	Adj. R^2	N
	-	+	-	Predicted Sign	
Stringent	-0.918 (-20.33)***	-0.017 (-0.31)	-0.056 (-0.97)	0.8237	2478
Poor	-0.749 (-16.76)***	-0.227 (-3.71)***	-0.114 (-1.83)*	0.8779	2387

Panel D: F test to compare $\beta_2 + \beta_3 + \beta_6 + \beta_7$ with $\beta_2 + \beta_3$ in three models

	Stringent Environment		Poor Environment	
	F-value	P-value	F-value	P-value
Return model	0.56	0.4541	13.33	0.0003
Earnings change	2.10	0.0874	6.10	0.0136
Accrual-cash flow	0.19	0.6644	2.94	0.0865

***, **, * denote significance at the 1, 5, and 10 percent level respectively in two-tailed tests. t-statistics in the parenthesis.

^ Depreciation data is not available before 1995 and 1998-1999 in CSMAR database, so accruals cannot be calculated for period before 1995 and during 1998-1999.

Table 12 Robustness Tests – Control for Size, Industry, and Leverage

This table reports the regression results after including the control variable.

Model:

$$NI_t = \beta_0 + \beta_1 RD_t + \beta_2 R_t + \beta_3 RD_t * R_t + \beta_4 D_Own_t + \beta_5 D_Own_t * RD_t \\ + \beta_6 D_Own_t * R_t + \beta_7 D_Own_t * RD_t * R_t + \beta_8 SIZE_t + \beta_9 SIZE_t * RD_t \\ + \beta_{10} SIZE_t * R_t + \beta_{11} SIZE_t * RD_t * R_t + \varepsilon_t$$

	Predicted sign	REG1: State vs. LP	REG2: State vs. Non-State
Intercept (β_0)	?	0.017 (12.37)***	0.015 (8.67)***
RD_t (β_1)	?	-0.002 (-1.03)	-0.001 (-0.21)
R_t (β_2)	+	0.019 (6.32)***	0.011 (3.02)***
$RD_t * R_t$ (β_3)	+	0.026 (4.41)***	0.039 (4.73)***
D_Own_t (β_4)	?	0.004 (2.27)**	0.002 (1.14)
$D_Own_t * DR_t$ (β_5)	?	-0.004 (-1.63)	-0.004 (-1.39)
$D_Own_t * R_t$ (β_6)	?	-0.002 (-0.49)	0.002 (0.47)
$D_Own_t * RD_t * R_t$ (β_7)	-	-0.014 (-1.97)**	-0.022 (-2.39)***
$SIZE_t$ (β_8)	?	-0.002 (-1.32)	-0.003 (-1.27)
$SIZE_t * RD_t$ (β_9)	?	-0.001 (-0.69)	-0.004 (-1.23)
$SIZE_t * R_t$ (β_{10})	?	-0.021 (-0.77)	-0.053 (-1.68)
$SIZE_t * RD_t * R_t$ (β_{11})	+	0.037 (1.42)	0.076 (1.99)
Adj. R^2		0.0757	0.0731
N		6155	6588

Variables:

NI_t : Annual net income per share deflated by the beginning stock price of period t ;

R_t : Value-weighted market-adjusted abnormal return for the firm during period t ;

RD_t : Dummy variable that equals 1 if R_t is negative, and 0 otherwise;

D_Own_t : Dummy variable for ownership structure; in Regression 1, it equals 1 if the firm is controlled by state, and 0 if the firm is controlled by legal-person; and in Regression 2, it equals 1 if the firm is ultimately controlled by the state, and 0 otherwise;

$SIZE_t$: Logarithm of total asset at the end of period t .

Table 13 Robustness Tests – Control for Growth and Profitability

This table presents the regression results after controlling for growth trend and profitability. Growth trend is measured as Market-to-Book (M/B) ratio in Panel A. If M/B ratio for the firm is above median, then the firm is classified as high growth subgroup, otherwise, it is categorized in low growth subgroup. In Panel B, profitable firms are the firms with return-on-equity (ROE) above median and unprofitable firms are those with ROE lower than median.

Panel A: Control for Growth in Earnings Persistence Model

$$\Delta NI_t = \beta_0 + \beta_1 NID_{t-1} + \beta_2 \Delta NI_{t-1} + \beta_3 NID_{t-1} * \Delta NI_{t-1} + \beta_4 D_Own_t + \beta_5 D_Own_t * NID_{t-1} + \beta_6 D_Own_t * \Delta NI_{t-1} + \beta_7 D_Own_t * NID_{t-1} * \Delta NI_{t-1} + \varepsilon_t$$

Growth Trend	ΔNI_{t-1} (β_2)	$NID_{t-1} * \Delta NI_{t-1}$ (β_3)	$D_Own_t * NID_{t-1} * \Delta NI_{t-1}$ (β_7)	Adj. R^2	N
	0	-	+		
High	0.065 (1.07)	-0.911 (-8.73)***	0.326 (3.15)***	0.1194	2720
Low	-0.058 (-0.84)	-1.309 (-10.68)***	0.583 (5.22)***	0.0824	2718

Panel B: Control for Profitability for All Three Models

Profitability	Return Model	Earnings persistence	Accrual-cash flow
	β_7	β_7	β_7
Profitable	-0.015 (-1.81)*	0.372 (2.98)***	-0.063 (-1.87)*
Unprofitable	-0.031 (-2.25)**	0.563 (4.23)***	-0.106 (-2.31)**

Chart 1 Issuance of New Accounting Standard Converging to IAS

No.	Accounting Standard	Issuance Date	Effective Date	Modified Version Effective Date
1	Disclosure of Related Party Relationship and Transactions	1997-05-22	1997-01-01	
2	Cash Flow Statement	1998-03-20	1998-01-01	2001-01-01
3	Events Occurring after Balance Sheet Date	1998-05-12	1998-01-01	2003-07-01
4	Debt Restructuring	1998-06-12	1999-01-01	2001-01-01
5	Revenue	1998-06-20	1999-01-01	
6	Investments	1998-06-24	1999-01-01	2001-01-01
7	Construction Contracts Revenue	1998-06-25	1999-01-01	
8	Changes in Accounting Policy, Accounting Estimates, and Corrections of Accounting Errors	1998-06-25	1999-01-01	2001-01-01
9	Non-Monetary Transactions	1999-06-28	2000-01-01	2001-01-01
10	Contingencies	2000-04-27	2000-07-01	
11	Intangible Assets	2001-01-18	2001-01-01	
12	Borrowing Costs	2001-01-18	2001-01-01	
13	Leases	2001-01-18	2001-01-01	
14	Interim Financial Reports	2001-11-02	2002-01-01	
15	Inventories	2001-11-09	2002-01-01	
16	Fixed Assets	2001-11-09	2002-01-01	

Chart 2 Developments of Laws and Regulations for Stock Market

Law and Codes	Issuance	Effective	Modified Version
	Date	Date	Effective Date
Corporate Law	1993-12-29	1994-07-01	2000-07-01
Accounting Law	1993-12-29	1994-01-01	2000-07-01
Audit Law	1994-08-31	1995-01-01	
Securities Law	1998-12-29	1999-07-01	
Code of Corporate Governance	2001-01-07	2001-01-07	

Chart 3 Timeline for Development of Accounting System and
Capital Market Legal Enforcement Mechanisms in China

Chart 4 Measures for Timeliness in Loss Recognition

	Measures	Equations	Indication of Greater Timeliness in Loss Recognition
1	Asymmetric sensitivity to bad news	(1)	$\beta_3 > 0$
2	Asymmetric persistence in change of earnings	(2)	$\beta_3 < 0$
3	Asymmetric accrual-cash flow association	(3)	$\beta_3 > 0$

Chart 5 Coefficients for Timely Gain and Loss Recognition

	Non-state-owned firms	State-owned firms
Timeliness in gain recognition	β_2	$\beta_2 + \beta_6$
Timeliness in loss recognition	$\beta_2 + \beta_3$	$\beta_2 + \beta_3 + \beta_6 + \beta_7$
Incremental (over gain) loss recognition	β_3	$\beta_3 + \beta_7$
Difference in the incremental loss recognition of state-owned firms over non-state-owned firms	β_7	

* The chart presents the comparison between state-owned and non-state-owned firms under ultimate ownership approach. Under immediate ownership approach, legal-person owned firms have the same coefficient as the non-state-owned firms.

Figure 1 Comparison of Timeliness in Economic Income Recognition Between China and Other Countries

The figure shows the timeliness in gain and loss recognition across major common law, code law and East Asian countries. The positive returns proxy for economic gains, and the negative returns proxy for economic losses. The timeliness is assessed through coefficients from equation $NI_t = \beta_0 + \beta_1 RD_t + \beta_2 R_t + \beta_3 RD_t * R_t + \varepsilon$. The coefficient that indicates the timeliness in gain recognition is β_2 , and the coefficient that indicates timeliness in loss recognition is $\beta_2 + \beta_3$.

Numbers for USA, Canada, Aus, UK, France, Germany, Japan from Ball *et al.* (2000a), data range: 1985-1995

Numbers for Hong Kong and Singapore from Ball *et al.* (2003), data range: 1984-1996.

China data range: 1991-2003.

Appendix A: Comparison of Chinese GAAP and IAS Earnings

This appendix compares the two sets of earnings reported by the cross-listed firms.

Period	Difference in earnings ¹	Observation
1998-2003	5.69%	585
<u>Breakdown according to year:</u>		
1998	14.25%	76
1999	10.85%	82
2000	11.12%	93
2001	9.15%	102
2002	2.13%	114
2003	-7.26%	118

¹ The difference in reported Chinese earnings and IAS earnings by cross-listed firm is calculated as:
(Chinese GAAP earnings – IAS earnings) / Chinese GAAP earnings.

Appendix B NERI Index of Marketization of China's Provinces

Regions	Rank	Overall score	Government Involvement Index	Legal Environment Index	No. Listed Firms
Guang Dong	1	8.41	7.99	7.29	138
Zhe Jiang	2	8.32	8.37	6.24	64
Fu Jian	3	8.10	7.12	6.32	47
Jiang Su	4	7.90	8.12	6.29	79
Shan Dong	5	7.15	7.38	5.63	69
Shang Hai	6	7.04	7.49	6.98	132
Tian Jin	7	6.89	6.05	6.96	21
Hai Nan	8	6.41	6.02	6.33	24
Liao Ning	9	6.40	6.14	5.53	55
An Hui	10	6.40	7.43	5.32	36
He Bei	11	6.39	7.13	5.15	34
Chong Qing	12	6.33	7.61	3.83	24
Guang Xi	13	5.95	7.89	4.92	21
Bei Jing	14	5.74	6.40	7.97	77
Si Chuan	15	5.70	7.43	4.69	67
He Nan	16	5.64	5.54	4.93	31
Hu Bei	17	5.61	5.11	5.05	58
Ji Lin	18	5.51	5.70	5.81	36
Hu Nan	19	5.48	5.73	2.62	39
Jiang Xi	20	5.46	6.15	4.78	23
Hei Long Jiang	21	5.16	3.60	5.34	33
Yun Nan	22	4.89	6.56	3.87	19
Gan Su	23	4.86	5.94	3.98	17
Nei Meng Gu	24	4.76	3.27	4.93	19
Gui Zhou	25	4.62	5.43	4.36	14
Shan Xi	26	4.53	4.54	5.53	21
Shaan Xi	27	4.15	5.30	3.21	25
Ning Xia	28	4.02	3.79	5.16	11
Qing Hai	29	3.40	3.04	4.69	9
Xin Jiang	30	3.15	3.16	4.10	26

Note: Overall score measures the overall development of market economy in the province. It is composed of five items, namely, the relationship between the government and market, development of non-state-owned economy, development of product market, development of factor market, and legal environment and development of market intermediaries. Government Involvement Index and Legal Environment Index are sub-indexes that measure the degree of government involvement in local economy and the development of local legal environment for each province or province level region. These three indices are from Fan and Wang (2003). For overall score, the higher the score, the more developed the market economy in that region. For Government Involvement Index, the larger the index, the smaller the government involvement. For legal Environment Index, the larger the index, the better the legal environment. Fan and Wang (2003) do not provide the index for Tibet, which has 8 firms in our sample.

Appendix C Rights Issues and Earnings Management

This appendix shows the incentive of earnings management from rights issues and defines the earnings management variable for the assessment of conservatism models.

On average, rights issues account for 30% of the total amount of funding raised in China stock market. China has a unique IPO process. It had a stringent IPO quota system before 2000 which sets a limit on total amount of fund raised in the market in a certain year. Then the quota is divided among provinces based largely on the size and economic development of the provinces. Because there are hundreds of firms queuing up to get listed each year, the local provincial government tries to share the quota among as many firms as possible. As a result, firms usually cannot raise enough capital in their IPOs. Rights issues are the most important avenue to raise additional equity capital. In fact, most listed firms have had rights issues within three years after their listing. Therefore, listed firms have strong incentives to qualify for rights issues.

Comparison of Rights Offering Proceeds with IPO Proceeds

This table shows the number of firms that make IPO and rights issues from 1993 to 2002. The proceeds are in million Chinese Yuan. The relative size is measured as the fraction of proceeds from rights offering to the proceeds from IPOs.

Year	IPO		Rights Issues		Relative Size
	No. Firms	IPO Proceeds	No. Firms	RO Proceeds	
1993	123	21,438.89	5	305.59	0.01
1994	110	15,754.35	26	2,069.36	0.13
1995	24	2,753.23	66	5,400.03	1.96
1996	203	22,874.49	34	5,931.93	0.26
1997	206	61,921.24	105	24,549.94	0.39
1998	106	35,051.76	151	35,735.17	1.02
1999	98	50,503.43	121	28,583.09	0.57
2000	137	85,202.51	167	51,053.80	0.60
2001	62	38,814.32	100	36,502.24	0.94
2002	69	50,292.50	19	4,562.05	0.09
Total	1138	385,606.70	794	194,693.18	0.51

To regulate this activity since 1993, the China Securities Regulatory Commission (CSRC) has stipulated requirements that the listed firms must meet to qualify for rights issue. These requirements have been updated regularly, shown in the following chart.

Regulations on rights issues

Date	Requirement	ROE threshold
Nov. 1993	Two years' profits	0%
Sept. 1994	Three years' profits and three-year average ROE $\geq 10\%$	Average 10%
Jan. 1996	ROE $\geq 10\%$ in each of previous three years	10%
Mar. 1999	Three-year average ROE $\geq 10\%$, and ROE $\geq 6\%$ in each of previous three years	10% & 6%
Jun. 2001	Three-year average ROE $\geq 6\%$ and $\geq 0\%$ in each year. (ROE is calculated based on the lower of net income and net income before extraordinary items)	6%

Based on their sample from 1996 to 1998, Chen and Yuan (2004) document that Chinese firms applying for right issues are more likely to inflate their earnings to reach the 10% ROE threshold by increasing income from non-operating activities, such as inflating profit by selling off assets and not recognizing loss in asset write-downs. They further find that in the three years subsequent to application for rights issues, these earnings management firms underperform other firms that are less likely to manipulate earnings, indicating that these firms are aggressively recognizing non-sustainable economic gains to achieve this target.

This study follows Burgstahler and Dichev (1997) and Degeorge *et al.* (1999) and uses frequency distribution to capture the pervasiveness of earnings management in China. An advantage of this approach is that it can capture earnings management without estimating the noisy abnormal accruals. This approach is particularly suitable for detecting

earnings management in China because of the short history of Chinese stock market. Since data are generally not available for non-listed firms and firms before IPO, the short listing history makes the time-series based accrual estimation difficult. In addition, there are many non-listed major firms in almost all industries, resulting in the cross-section based accrual estimation inaccurate as well. The distributions of two ROE measures are compared: total ROE and recurring ROE. The first is calculated as net income deflated by the weighted average of equity during the same year, whereas the second measure uses recurring income instead of net income. The difference between the two measures is the income from non-operating and non-recurring activities.

From the distribution of total ROE for the whole sample period in the above figure, three obvious spikes are observed, namely 0%, 6%, and 10%. However, the distribution of recurring ROE does not show any abnormal spikes. This indicates that management is likely to be using non-recurring earnings to inflate earnings to avoid loss or to meet rights issue threshold, which is based on total ROE (total earnings/weighted average of equity during the year).

According to the different requirements of the regulations issued by CSRC, the sample is decomposed into three periods. Before 1996, the regulation is relatively loose. The requirements are that the three years' average ROE be at least 10%, and the ROE for each year must exceed 0%. There is no special ROE threshold (except avoid loss threshold of 0%) for each year's ROE. During the period 1996 to 1998, firms need to meet ROE at 10% threshold for three consecutive years to qualify for rights issue. The figure 2 shows that the most striking spike for this period is at 10% ROE. When the regulation is further revised in 1999, the spike transfers to 6%. For recurring ROE, it is evenly distributed in all three sub-periods.

Earnings Management ROE Distribution

Total ROE is calculated as net income / weighted average of equity during the year; recurring ROE is calculated as recurring income / weighted average of equity during the year. The first row shows the total ROE and recurring ROE distribution during the whole sample period from 1990 to 2003. The second row shows the total ROE and recurring ROE distribution in sub-periods, divided according to the ruling change in ROE threshold to qualify for rights issues.

A disproportionately large number of firms' ROEs fall within the small interval just above the three ROE thresholds, namely 0%, 6% and 10%. Because of their incentives to avoid losses or to qualify for rights issues, firms that just reach or exceed the thresholds are most suspicious of earnings management. For the period between 1996 and 1998, the earnings management group is defined as with ROE from 0% to 1.5% or 10% to 11.5%, whereas in post 1998 period, firms with ROE range from 0% to 1.5% or 6% to 7.5% are classified as earnings management group. The use of 6%-7.5% instead of 10%-11.5% is because the rights issue requirement moves from 10% to 6% ROE threshold. In this study, an earning management dummy variable is used. It equals one if ROE falls into the earnings management group, otherwise it equals zero.

Earnings Management and Timeliness in Loss Recognition

Regression 1 compares the timeliness in loss recognition into net incomes in earnings management firms with that in non-earnings management firms. Regression 2 compares the timeliness in loss recognition into recurring incomes in earnings management firms with that in non-earnings management firms.

Panel A: Return Model

$$NI_t = \beta_0 + \beta_1 RD_t + \beta_2 R_t + \beta_3 RD_t * R_t + \beta_4 D_EM_t + \beta_5 D_EM_t * RD_t + \beta_6 D_EM_t * R_t + \beta_7 D_EM_t * RD_t * R_t + \varepsilon_t$$

	Predicted sign	REG1: EM vs. Non EM (NI)	REG2: EM vs. Non EM (RI)
Intercept (β_0)	?	0.017 (12.14)***	0.022 (17.07)***
RD_t (β_1)	?	0.001 (0.41)	-0.003 (-1.35)
R_t (β_2)	+	0.033 (17.32)***	0.023 (12.31)***
$RD_t * R_t$ (β_3)	+	0.053 (8.58)***	0.053 (9.05)***
D_EM_t (β_4)	?	-0.002 (0.81)	-0.003 (-1.06)
$D_EM_t * DR_t$ (β_5)	?	-0.002 (-0.38)	0.003 (0.67)
$D_EM_t * R_t$ (β_6)	?	-0.016 (-3.07)***	-0.020 (-4.07)***
$D_EM_t * RD_t * R_t$ (β_7)	-	-0.057 (-4.64)***	-0.035 (-3.01)***
Adj. R^2		0.1213	0.0914
N		6587	6587
		1782 (earnings management)	
		4805 (non-earnings management)	

Panel B: Accrual-Cash Flow Model

$$ACC_t = \beta_0 + \beta_1 DCFO_t + \beta_2 CFO_t + \beta_3 DCFO_t * CFO_t + \beta_4 D_EM_t + \beta_5 D_EM_t * DCFO_t + \beta_6 D_EM_t * CFO_t + \beta_7 D_EM_t * DCFO_t * CFO_t + \varepsilon_t$$

	Predicted sign	REG1: EM vs. Non EM
Intercept (β_0)	?	0.001 (8.00)***
$DCFO_t$ (β_1)	?	-0.001 (-3.39)***
CFO_t (β_2)	-	-0.795 (-55.88)***
$DCFO_t * CFO_t$ (β_3)	+	0.074 (3.23)***
D_EM_t (β_4)	?	0.001 (1.63)
$D_EM_t * DCFO_t$ (β_5)	?	0.001 (1.64)
$D_EM_t * CFO_t$ (β_6)	?	-0.136 (-4.21)***
$D_EM_t * DCFO_t * CFO_t$ (β_7)	-	-0.207 (-4.39)***
Adj. R^2		0.6750
N		5018

***, **, * denote significance at the 1, 5, and 10 percent level respectively in two-tailed tests.