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Essays on Chinese Markets: Government Regulation, Managerial Behavior and Market Consequence

by

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Abstract

Whether securities markets need regulations has been debated for many years. As one of the largest emerging markets in the world, the Chinese market is highly regulated and regulations are changing. Therefore, it is an ideal setting to investigate how government regulation affects the securities market development.

Chapter 2 focuses on the regulatory framework related to IPOs. It finds that the pricing regulations that require IPO firms to price new shares based on the accounting earnings might have induced IPO firms to inflate the pricing-related earnings. Such opportunistic behavior during the IPO process may be the cause of the large decline in post-IPO profitability. On the other hand, the penalty regulations against overoptimistic earnings forecast might have deterred IPO firms from making aggressive forecast and decreased the use of earnings management. First-day stock returns and long-run stock returns are significantly worse for IPO firms that report unusually good pricing-related earnings or make overoptimistic earnings forecast. This chapter, therefore, documents significant impacts of government regulations on the performance of Chinese IPOs.

Chapter 3 examines a couple of contentious issues on earnings announcement timing in a unique setting under the Chinese regulatory environment. Since fiscal 2001, Chinese firms have been required to disclose in advance their expected annual report dates. An unusually large number of firms choose to release annual reports near the end of the 4-month reporting season. This chapter finds that investors rationally

interpret early (late) schedules as good (bad) news and react positively (negatively) to firms that release early (late) schedules. It next examines why so many Chinese firms report annual earnings very late although investors perceive late schedules as bad news. This chapter find that late firms report more non-operating income than others and the excessive non-operating income is unexpected by investors, suggesting that the excessive non-operating income reported by late firms is opportunistic and likely to be due to earnings management. This chapter concludes that one possible motivation behind firms' decisions to report earnings late is that these firms need more time to manage earnings.

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To

My Family

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CHAPTER ONE

INTRODUCTION

Whether securities markets need regulations and how markets should be regulated if the presence of regulations is necessary have been debated for many years. Some scholars suggest that market mechanisms and general legal arrangements are enough for securities market development (Stigler (1964)). Government regulation is not only redundant but also harmful in that it may increase contracting costs or cause political interference (Coase (1975)). Other scholars argue that regulations are important in that enforcement costs can be reduced (Landis (1938), Coffee (1984, 1989, 2002); Pistor and Xu (2002); among others)[1]. Most recently, in a cross-country research, La Porta et al. (2006) argue that mandatory disclosure and facilitating enforcement through liability rules benefit stock markets, whereas public enforcement does not.

This dissertation studies how government regulations in China affect the Chinese stock market development. As one of the largest and fastest-growing emerging markets in the world, the Chinese stock market is highly regulated and regulations in China have been evolving. Hence, it provides us an ideal setting to examine the impact of government regulations on the development of securities markets. This single-country setting also allows us to focus on some specific institutional factors, while holding constant other institutional factors that possibly affect securities market development. This dissertation, therefore, can have useful implications for the debate on the association between financial development and government regulations. In the first essay, we investigate how IPO regulations in China affect the performance of China's share issue privatization. In the second essay

[1] See La Porta et al. (2006) for a detailed discussion about different theories with respect to securities market regulation.

we test several contentious issues on earnings announcement timing in a unique setting provided by the Chinese regulatory environment.

In Chapter Two, we investigate the impact of government regulation on the performance of China's share issue privatization. Since 1990, more than 1000 state-owned enterprises in China have been transformed into listed corporations by selling new shares to public investors through initial public offerings. We focus on IPO pricing regulations and penalty regulations against overoptimistic earnings forecast. We find that the pricing regulations based on the accounting earnings induce IPO firms to inflate pricing-period earnings by using earnings management. As a result, the post-IPO profitability declines significantly. We find that the better the pricing-period performance, the larger the decline of post-IPO profitability. On the other hand, the penalty regulations aimed at penalizing overoptimistic forecasts deter IPO firms from making overoptimistic forecasts and decrease the extent of earnings management. Both pricing period performance and the IPO year's forecast optimism have predictive power on IPO underpricing and long-term stock performance. The first-day return is significantly smaller for IPO firms that report unusually good pricing period performance or make overoptimistic forecasts. This shows that Chinese investors are not naïve in that they retain some skepticism about these firms. However, Chinese investors do not fully anticipate the opportunistic behaviors during the IPO process. As a result, the long-term stock performance is very poor. The 3-year post-IPO abnormal return for the whole sample is –23%. We find that the better the pricing period accounting earnings, the worse the post-IPO stock performance. We also find that post-IPO stock return is decreasing with the increase of forecast optimism.

Our evidence shows that Chinese government's regulations have an important impact on the success of China's share issue privatization. The literature about

privatization along this line is quite sparse. Therefore our work enriches the literature about privatization. We find that the pricing regulations that represent a direct intervention by the government have negative impacts, whereas the penalty regulations aimed at penalizing corporate fraud have positive effects. Therefore, our findings support a standard economic argument that in a market-oriented economy, the state should play a role to penalize fraud and ensure fair competition, instead of replacing firms to make firm-specific decisions such as the pricing of new shares in equity financing. Our evidence also suggests that in a market lacking private litigation, public enforcement is necessary for financial market development. Therefore, our results have important policy implications for the policy-maker.

In Chapter 3, we examine a couple of contentious issues on earnings announcement timing in a unique setting provided by the Chinese regulatory environment. Since 2001, Chinese firms have been required to disclose the expected annual report dates in advance. An unusually large number of listed firms in China tend to report annual earnings near the end of the reporting season. In this chapter, we first re-visit the literature on the information content of timing of earnings announcements in a setting where the earnings release schedule is publicly disclosed in advance of actual earnings announcements. Using value-weighted or equally weighted market return as the benchmark, we find that Chinese investors rationally interpret late (early) earnings release schedule as bad (good) news and react negatively (positively) at the time it is publicly announced. The second purpose of this study is to explain why so many Chinese listed firms delay making earnings announcements until towards the end of the reporting season. Using non-core return on assets (NCROA), defined as net non-operating income deflated by total assets, as a proxy for the extent of earnings management, we find that profitable late-reporting

firms tend to over-report their non-core earnings, whereas money-losing late-reporting firms would under-report by taking a big bath. Finally, there is no evidence that late announcers have worse stock returns than early announcers when actual earnings are announced. These findings suggest that to manage earnings could be a motivation behind managers' decision to delay the release of annual reports.

To the extent that late-reporting is motivated by a desire to manage earnings, it may be worthwhile for regulators to focus their attention on firms which apply for late dates to release current year's earnings and annual reports, part way through the reporting season. As well, it would be useful to track a firm's reporting pattern over time to see if late announcers in the past indeed engaged in more earnings management activities. For these firms, regulators may want to carefully scrutinize their initial submission of earnings release schedule in the current year and move it up to earlier date, if the prospect of continued earnings management is high.

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CHAPTER TWO
THE IMPACT OF GOVERNMENT REGULATIONS ON THE SUCCESS OF CHINA'S SHARE ISSUE PRIVATIZATION

1. Introduction

Since early 1990s, many Chinese state-owned enterprises (SOEs) have transformed themselves into listed corporations through initial public offerings (IPOs). Anecdotal evidence and prior studies (Sun and Tong (2003), Fan and Wong (2004)) show that the performance of newly privatized Chinese firms is poor. In contrast, most studies on share issue privatization[2] offer the evidence that SIP is associated with significant improvements in the operating and financial performance of SOEs. Moreover, the average long-term abnormal return earned by investors in SIPs is statistically and economically significantly positive. The Chinese government tightly controls the IPO process by regulations. The poor regulatory practice by the Chinese government such as the existence of unnecessary intervention and the lack of the effective supervision has been widely blamed for harming the Chinese stock market[3]. This study explores the poor regulatory practice as one possible cause of the poor performance of China's share issue privatization launched in the early 1990s.

In the sample period that we examine, the regulator, China Securities Regulatory Committee (CSRC), adopts a policy of prescribing an IPO pricing formula whereby the IPO offering price is defined as the product of earnings per share (eps) in a certain period (we defined it as the pricing period below) and price-to-earnings (P/E) ratio. Moreover, all Chinese IPO firms are required to disclose the management's earnings forecast for the IPO year in their prospectuses. Initially there is no official penalty

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[2] See a review by Meggnison and Netter (2001).

[3] For example, Time Asia Magazine (Jan 30, 2005) reports that 'despite a roaring economy, mainland stocks are in the dumps' and argues that 'China's stock markets are afflicted by poor regulatory supervision, rampant insider trading, lack of corporate transparency, shady stockbrokers, and frequent government intervention'.

against overoptimistic forecasts. The first penalty regulation was issued on Dec 26th, 1996 and the second one was issued on Sep 13th, 1997. Under these regulations, an IPO firm and its auditor need to explain and apologize if the IPO firm's realized earnings in the IPO year are 10% or more below its forecast earnings. If the forecast earnings exceed the realized earnings by 20% or more, the IPO firm may be subject to investigation by CSRC or even be prohibited from doing any right issues within 2 years after IPO besides explaining and apologizing to public investors.

Unlike SIPs in many other countries, which are mainly secondary offerings, most SIPs in China are primary offerings, whose proceeds from selling new shares flow to IPO firms instead of the government. This creates a direct incentive for managers of IPO firms to inflate pricing period earnings in order to raise as much money as possible from share offerings. We find that the post-IPO profitability of new IPO firms declines unanimously. By simply dividing IPO firms into terciles based on the pricing period performance, we find that the profitability of IPO firms in the top tercile, which reports the highest pricing period performance, declines to a much greater extent after the IPO than that of firms in the bottom or middle tercile. Using the non-operating income to measure the extent of earnings management, we document limited evidence that IPO firms in the top tercile use more income-increasing earnings management in the pricing period.

On the other hand, we find that penalty regulations have positive effects on IPO firms' behaviors. The portion of firms that fall short of their forecast numbers by more than 10% declines from 16% in the period without official penalty regulations to 10% in the period with penalty regulations. Furthermore, we find that the decline in forecast error is not because firms subject to the penalty regulations adopt more income-increasing management strategies to meet the forecasts, but because these

firms make more conservative forecasts that are closer to the realizable numbers. The magnitude of earnings management declines after the penalty regulations are in effect.

We find that pricing period accounting performance and forecast optimism have predictive power for both IPO underpricing and long run stock performance. The first-day return for firms in the top tercile of the pricing period performance is 42% lower than that for firms in the bottom tercile after controlling for factors that possibly have effects on IPO underpricing. The first-day return is also declining with increasing forecast optimism. This shows that Chinese investors have skepticism on firms that report unusually good pricing period performance or firms that are likely to have made overoptimistic earnings forecasts.

However, Chinese investors do not fully anticipate the IPO firm managers' opportunistic behaviors. As a result, the long-run stock performance of IPO firms is significantly worse than that of the matching non-IPO firms. The 3-year cumulative abnormal return (CAR) for the whole sample is –23% and it is significant at a 1% level. We find that the higher the pricing period accounting performance, the poorer the long term stock performance. The 3-year CAR for firms in the top tercile of the pricing period accounting performance is 39% less than that for firms in the bottom tercile. We also find that the long-term abnormal returns for firms issuing aggressive earnings forecasts are significantly worse than those for firms issuing conservative earnings forecasts. These results hold in both univariate tests and multivariate tests. These results are also robust to alternative benchmarks.

Our study extends the research on earnings management and IPO. Teoh et al. (1998) report that U.S. IPO firms opportunistically inflate their earnings by taking positive accruals prior to the offering. Aharony et al. (2000) document some evidence of earnings management by Chinese firms from the unprotected industries taking their

B- or H-shares public during 1992-95. Dewenter and Malatesta (2001) find that operating profits increase prior to SIPs but not after. They conjecture that the increase in operating profits prior to SIPs is due to earnings management by the government aiming to raise more money from the privatization. To the best of our knowledge, we are the first research team to consider the potential role that government regulations may play in affecting the firm's reporting practices and earnings management activities surrounding IPO.

Our study also extends the research on stock market performance following SIP (Jones et al., 1998; Dewenter and Malatesta, 2001). In contrast to these studies, we suggest that not well thought-out regulatory practices such as the pricing regulations by the Chinese government may have harmed the Chinese stock market performance in the 1990s.

Our work also has useful implications to the debate whether security markets need regulators and how markets should be regulated if the presence of regulators is necessary. Some scholars suggest that security markets should be left unregulated (Stigler (1964)), whereas others argue that government regulations are necessary (Landis (1938), Coffee (1984, 1989, 2002); Pistor and Xu (2002); among many others). Most recently, La Porta et al. (2006) suggest that disclosure and liability regulations are critical for finance market development, while public enforcement is not. Our study shows that in a market lacking private litigation, public enforcement such as the official penalty against overoptimistic earnings forecast is necessary for security market development.

The rest of this chapter is organized as follows. Section 2 describes the institutional background. Section 3 describes the data. Section 4 tests the relation between the pricing regulations, earnings management by IPO firms, and long-run

post-IPO profitability. Section 5 examines associations between the penalty regulations against forecast errors and earnings management. Section 6 evaluates IPO underpricing. Section 7 tests the impact of both the pricing regulations and penalty regulations on long-run stock performance. Section 8 carries out some robustness checks. Section 9 summarizes the main findings and concludes this chapter.

2. Institutional Background

The development of the Chinese stock market is closely related to the process of transitioning the Chinese economy from a planned economy to a market economy, and the process of transforming state-owned enterprises (SOEs) into listed corporations. In the early 1990s, the Chinese government announced its plan to transform old SOEs into modern listed corporations to achieve its objective of establishing a "socialist market economy". From its beginning, the Chinese stock market has assumed a central role in converting SOEs into modern listed corporations[4].

In a mature stock market, undergoing an IPO is a firm-private decision. For a long time period, however, Chinese firms needed to get approval from the CSRC for almost every important decision related to their IPOs. Such decisions include the quantity of new shares that they can issue, the time at which they can issue new shares, and the time and exchange at which they can list their stocks. Besides these, the CSRC adopted a policy of prescribing an IPO pricing formula, whereby the IPO offering price was defined as the product of earnings per share and price-to-earnings

[4] Chinese leaders have stated many times on different occasions that the stock market must serve for the objective of the reform of the state-owned enterprises. Private ventures, foreign ventures and Sino-foreign joint ventures have been almost excluded from raising capital on the Chinese domestic stock market.

(P/E) ratio[5]. This policy was in effect until Feb 12, 1999. The value of the second component, the P/E ratio, was usually set at around 15, with little variation across firms or over time. The definition of the first component, on the other hand, evolved through the years. First it was a simple average of forecasted earnings per share for the IPO year and realized earnings per share for the fiscal year immediately preceding the IPO year (January 1, 1996 - December 25, 1996, labeled Regulation I). Then it became the average of three-year pre-IPO realized earnings per share (December 26, 1996 - March 16, 1998, labeled Regulation II). Finally it became the forecasted earnings per share for the IPO year (March 17, 1998 - February 11, 1999, labeled Regulation III). Formula-based IPO pricing was abolished on February 12, 1999. Since then, Chinese IPO firms have been allowed to price their IPOs in negotiation with underwriters, after taking into account market conditions and firm-specific prospects[6].

All IPO firms are required to disclose their management's earnings forecasts for the IPO year in their prospectuses. Initially, however, there was no regulation officially disciplining IPO firms for forecast manipulation. The first penalty regulation against overoptimistic forecast was issued accompanying Pricing Regulation II (Dec 26, 1996). Under this regulation, an IPO firm and its auditor need to explain and apologize to the public if the forecast error is above 10%[7]. If the forecast error is more than 20%, an IPO firm may be subject to investigation by CSRC. According to a regulation issued on Sep 10, 1997(CSRC 1997[13]), an IPO firm is prohibited from

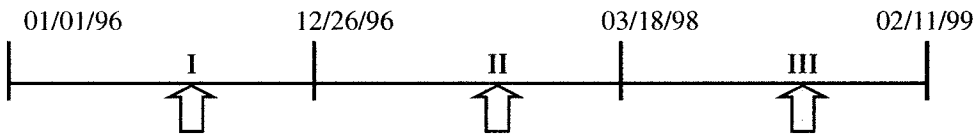
[5] We are not clear the motivation behind Chinese regulators' decision to adopt such policy and to change the definitions of earnings per share in the pricing formula from time to time. Some other Asian economies used formula to regulate IPO pricing as well. For example, Taiwan's regulator, SFC, suggested a pricing formulae by which new share price is defined on earnings per share, past and future dividend and book value of equity (Chang and Tang (2002)). Therefore policy in China mainland might have been affected by regulations in Taiwan or other economies.

[6] However, the offering prices still need to be approved by the CSRC.

[7] According to CSRC's regulations, the forecast error is defined as: forecast error = (forecast earnings – realized earnings) / (forecast earnings).

doing further new issues for 2 years after the IPO, besides being subject to investigation by CSRC, if its forecast error is larger than 20%.

Appendix I presents some examples how IPO firms comply with the regulation to price new share and make earnings forecast for the IPO year. A summary of the evolution of pricing regulations and penalty regulations follows.



I	II	III
1. IPO pricing is based on the average of forecast earnings for the IPO year and earnings for the fiscal year prior to the IPO year. 2. No official penalty on forecast errors.	1. IPO pricing is based on the average of three-year pre-IPO realized earnings. 2. An official penalty is imposed if an IPO firm has a forecast error larger than 10%.	1. IPO pricing is based on the forecast earnings for the IPO year. 2. An official penalty is imposed if an IPO firm has a forecast error larger than 10%

SIPs in many other countries are mainly secondary offerings (see Meggnison and Netter (2001)). However, most SIPs in China are primary offerings. During a primary offering, the proceeds from selling new shares flow into the IPO firm and therefore are under the control of its managers. This creates a direct incentive for managers to raise as much money as possible from the IPO. The accounting-based pricing regulations may therefore encourage managers of IPO firms to inflate earnings that are used in the pricing formulae. Managers of IPO firms in Regime I have an incentive to inflate earnings for the year prior to the IPO year and for the IPO year to generate optimistic forecasts. Managers of IPO firms in Regime II have an incentive to inflate the three-year pre-IPO earnings. Finally, managers of IPO firms in Regime III have an incentive to inflate earnings during the IPO year in order to generate an optimistic forecast.

Most Chinese IPO firms are not independent entities before the IPO. Usually, an IPO firm is a new entity formed by carving out one or more divisions or business units from a large SOE. Arhorny at el. (2000) give a detailed description of this equity carve-out process. The entity is formed just before the IPO, but is assumed to have existed for the past 3 fiscal years. *Pro forma* financial statements for each of the previous three years are compiled for this fictitious firm and disclosed in the prospectus. In preparing the previous 3 years' financial statements, assets, sales and expenses must be divided between the carved-out entity and the remaining part of the former SOE, which usually becomes the holding company of the new IPO firm. However, no enforceable guidelines or effective monitoring of the carve-out process have been imposed to ensure a reasonable allocation of these assets, sales and expenses. Therefore, the process of equity carve-out gives managers of IPO firms the opportunity to manipulate pre-IPO earnings. By carving out temporarily profitable divisions, shedding unprofitable assets or allocating more sales and fewer expenses to the carved-out entity, the managers can manipulate pre-IPO earnings without resorting to discretionary accruals or non-operating income, which are the two common approaches used to manage earnings elsewhere. A highly profitable IPO firm can thus be formed through this carve-out process from a deeply unprofitable SOE[8]. Earnings manipulation through this approach is also hard to detect or forbid because no discretionary accruals or non-operating earnings are involved.

The pricing regulations that require IPO firms to price new shares using accounting-based performance give managers an incentive to manipulate earnings.

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[8] Huang and Song (2003) give a good example on this. Sinopec Corp. is carved-out from Siopec Group. According to the pro forma financial statements in its public offer and placement prospectus, the net income of Sinpec Corp. in 1997, 1998 and 1999 totaled RMB 6.0 billion, (0.3) billion, and 4.7 billion respectively. The net income of the retained business within the parent company totaled RMB (3.9) billion, (4.5) billion, and (2.9) billion respectively. Thus the performance of the segments that went public was much better than that of the retained business of the Sinpec Group.

The lack of both regulations and effective monitoring of the restructuring process as well as the weak external constraints and the limited capabilities of the regulators provides opportunities for managers to manipulate earnings to maximize the proceeds from the IPO. External constraints on managers' earnings manipulation are quite weak. Managers can even get help from their auditors to manipulate earnings if the SOEs' managers lack the necessary expertise (Aharony et al. (2000)). Furthermore, although the regulators censor IPO applications, they have neither the incentive nor the ability to detect earnings manipulation. However, the penalty regulation puts a limit as to how far reported earnings, earnings forecasts, or both would be managed.

3. Sample and Data

We obtain IPO firms' identities, accounting data, and stock return data from the China Stock Market and Accounting Research Database (CSMAR). Where necessary, the search was supplemented by data manually collected from firms' annual reports and IPO prospectuses.

The initial sample consists of 479 firms that issue A shares for the first time between Jan 1st 1996 and Feb 11th 1999 We impose several restrictions on the sample firms. First, firms must not issue B shares or H shares before issuing A shares because these firms are not true IPO firms[9]. With this criterion, 23 firms are dropped. Second, firms must have earnings forecast numbers in the IPO year. Eight firms are deleted for not meeting this requirement. A sample of 448 firms survives after the first two criteria. The third requirement is that firms must have accounting data for all 7 years around the IPO (3 years prior to the IPO year plus the IPO year plus the 3 years

[9] A shares are issued to Chinese domestic investors and traded on the domestic stock markets; B shares are issued to foreign investors and traded on the domestic markets as well. Since Feb 2001, Chinese domestic investors are allowed to hold and trade B shares. H shares are stocks issued by Chinese firms to investors on Hong Kong market and are traded on Hong Kong market. A Chinese firm can have one or two of these three different types of stocks. The different classes of stocks for the same firm can be issued at different time.

subsequent to the IPO year) to calculate critical accounting ratios including ROA, core ROA, non-core ROA, return on sales (ROS) and operating margin (OM). The meaning and calculation of these accounting ratios is discussed below. Eighty-two firms do not meet this criterion and are dropped. The number of firms surviving after the third criteria is 366. We also impose two other filters. One is that firms must not be in the financial or insurance sector. The other is that firms must not be delisted in 3 years after IPO. All 366 firms meet these two criteria. Hence, the final sample consists of 366 firms. Among them, 95 firms are subject to the pricing regulation I, 189 firms are subject to the pricing regulation II, and 82 firms are subject to the pricing regulation III. We use Set A, B, and C to denote the sub samples under the pricing regulations I, II, and III, respectively. Firms in Set A are not subject to the penalty regulations for the forecast errors, whereas firms in B and C are subject to the penalty regulations.

The distributions of the sample of 366 firms by year and industry are reported in Table 1. The number of sample firms in 1999 is quite small. This is understandable since only IPO firms with the IPO dates between Jan 1st and Feb 11th 1999 are included. The properties and real estate sector also has a relatively small number of IPO firms.

[Table 1 about here]

Table 2 reports the total assets of the sample firms at the end of their IPO years and 3-year's post-IPO cumulative returns of the sample firms. The size of the sample firms increase significantly over time[10]. The mean value of total assets of sample

[10] In China, the IPO firms must hire professional appraisers to appraise non-cash assets before going public. The book value of non-cash assets is adjusted to reflect the appraised value. Therefore, the book value of the IPO firms' assets reflects the prevailing market price and the inflation in the past. We do not adjust book value of IPO firms going public in different years in that the inflation rates in the years in question are relatively low. The inflation rates in 1997, 1998, 1999, 2000, 2001, 2002 (the last year during which the stock returns are included) are

firms in set A is only half those in B or C. This partially reflects the experimental character of the Chinese stock market at its early stage and the unique characteristics of China's economic reforms. The guideline for China's economic reform is 'crossing the river by touching stones'. The impact of this guideline on the development of the Chinese stock market is that the Chinese government first allowed small and medium-size firms to issue shares to the public and be partially privatized. When the SIP was proven safe, big state-owned enterprises were gradually allowed to issue public shares.

The mean cumulative raw return is calculated in the following way,

$$CR_T = \frac{\sum_{i=1}^{N}\left[\sum_{t=1}^{T} r_{t,t}\right]}{N} \qquad (1)$$

where $r_{i,t}$ is the t^{th} monthly raw return of IPO firm i, T is the holding period and N is the number of firms used in calculating the mean. The mean 3-year cumulative raw return of sample firms in A is 128%, whereas that in B is 89% and that in C is only 56%. This is in coincident with the fact that the Chinese stock market had been booming in 1990s but has been in depression since middle 2001.

[Table 2 about here]

For each sample firm, we identify a matching firm to calculate the long-run post-IPO abnormal returns. Following Loughran and Ritter (1995), we match each sample firm to a control firm of similar size. We use total assets instead of market capitalization as a proxy for size because Chinese firms have both tradable and non-tradable shares. Non-tradable shares can be transferred in blocks outside the exchange. Chen and Xiong (2001) find that these block transfer prices are typically much lower

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given by 3.5%, -0.8%, -1.5%, 0.4%, 0.7%, and -0.8% (Source: China Statistical Yearbook 1997, 1998, 1999, 2000, 2001 and 2002). Therefore, inflation has little effect on the comparability of the values of accounting measures and stock returns across firms and over time.

than the market price of the corresponding tradable shares. Hence the market value obtained by simply multiplying the tradable shares' price by the total number shares could be misleading. Therefore, we use total assets as a proxy for size to match sample firms to control firms. A matching firm is required to list at least 3 years earlier than the sample firm. In the same year as the IPO year of a sample firm, all other firms meeting this requirement are ranked based on total assets at the year-end[11]. The firm with total assets closest to that of the IPO firm at the end of the IPO year is then chosen as this IPO firm's matching firm. Table 2 reports total assets and 3-year cumulative raw returns for the matching firms. It shows that the sizes of the sample firms and control firms are almost identical. The 3-year cumulative returns for the sample firms, however, are much lower. This is consistent with previous evidence of poor post-IPO performance (Ritter (1990), Loughran and Ritter (1995)). However, this contrasts with the studies about SIP in other countries, which find that investors earn significantly positive abnormal returns by buying stocks of newly privatized firms (Megginson and Netter (2001), Dewenter and Malatesta (2000)).

4. Pricing Regulations, Earnings Management and Post-IPO Profitability

In this section, we explore the association between pricing regulations and earnings management. We also explore the impact of pricing regulations and earnings management on post-IPO profitability.

4.1. Definitions and Accounting-based Performance Measures

Sun & Tong (2003) and Aharony et al. (2000) argue that ROA right after the IPO may

[11] To avoid that an IPO firm in our sample is selected as the control firm for another IPO firm, only firms listed before January 1st, 1996 are included in the control sample.

be biased due to a mechanical increase in equity if year-end total assets or equity is used as the deflator. Aharony et al. partially solve this problem by using "adjusted total assets", which they define as the sum of all non-cash assets, as the deflator. These authors, however, also point out that their adjustment may be crude since only unused IPO proceeds are taken out. We use beginning-of-year total assets as the deflator to calculate ROA. Therefore, the increase in total assets due to the share issuance does not affect the calculation of the IPO year's ROA but affects the calculation of ROAs of the years subsequent to the IPO year. This is reasonable in that new investments financed with the proceeds from the IPO are unlikely to generate considerable profits for the company in the IPO year, whereas they might gradually generate profits after the IPO year [12]. Therefore, scaling by total assets at the beginning of each year decreases this bias in ROA. Sun and Tong (2003) use other measures less affected by this problem, such as ROS (return on sales). Following Sun and Tong (2003), we include ROS as another performance measure. Studies of the Chinese stock market find that non-operating income is widely used by Chinese firms to manage earnings (Chen and Yuan (2004), Haw et al. (2005))[13]. ROA and ROS, which are based on net income, therefore, may contain an earnings management component. To reflect performance more faithfully, we also calculate core ROA (CROA) and operating margins (OM), which are defined as after-tax operating income divided by beginning-of-year total assets and sales, respectively.

We use non-operating income as one proxy for earnings management. We

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[12] The official pricing formulae are based on certain years' earnings per share or forecast earnings per share. All others are the same, the higher the profitability (ROA), the higher the earnings per share and the higher the new share price. Since earnings per share (eps) is not comparable across different firms and over time (due to seasoned offerings or stock dividends), we use ROA (CROA) and ROS (OM) to compare the profitability across firms and over time.

[13] One requirement to do right offerings is that ROE should be at least 10% in previous years. These two studies find that many Chinese firms meet 10% requirement by using non-operating income to increase earnings.

calculate non-operating income using a method similar to that adopted by Chen and Yuan (2004) and Haw et al. (2005). Non-operating earnings have two components. One is taxable, including the gain or loss from investments or sales (write-offs) of long-term assets. The other is tax-exempt, such as income tax refunds or government subsidies. The first portion of non-operating earnings is reported before income tax but after operating earnings. We convert pre-tax non-operating income into after-tax non-operating income by using an estimated tax rate. The income tax rate is estimated in the following way: if income tax paid is non-positive or pre-tax earnings are non-positive, then the income tax rate is set to zero; otherwise, the income tax rate is the ratio of income tax paid to pre-tax income. Non-core ROA (NCROA) is defined as after-tax non-operating income divided by total assets at the beginning of each year.

To increase the issuing price, managers try to inflate earnings priced using the mandated pricing formula in force at the time. The carve-out process enables the manager to dress pre-IPO earnings by carving out temporarily profitable divisions, shedding unprofitable assets, or allocating fewer expenses to the new IPO entity. To rely on non-operating income to manage pre-IPO earnings is not necessary. It is also unwise to rely on non-operating income to inflate pre-IPO earnings because it is easily detected. Chen and Yuan (2004) find that applications for doing right offering from companies that meet the right-offering requirements by using non-operating income are more likely to be denied by Chinese regulators. Therefore, using non-operating income to inflate pre-IPO earnings risks rejection of the IPO application. Actually, in a test using all sample firms, we find that median non-core ROA of all 366 sample firms in Year -3, Year -2 and Year -1 are 0%, 0% and 0.04%, respectively. In the same test, however, we find that median non-core ROA in Year 0, Year 1, Year 2 and Year 3 to be 1.88%, 1.25%, 0.9% and 0.59%. Hence, firms do rely on non-

operating income to manage the IPO year's earnings and the post-IPO earnings [14].

We define those years whose earnings or forecasted earnings are priced by the mandatory pricing formulae as the "pricing period". We further define the IPO year as Year 0 and the year that is t years from the IPO year as Year t. Hence, the pricing period of Set A covers Year -1 and Year 0, that of Set B covers Year -3, Year -2 and Year -1, and that of Set C is Year 0. In the IPO year, the forecast ROA (FROA) is defined as the forecast earnings in the IPO year scaled by the total assets at the beginning of the IPO year. For each sample firm, we calculate the projected ROA, which is defined as the average of ROA in Year –1 and FROA in Year 0 for sample firms in Set A, the average of pre-IPO ROAs from Year –3 to Year –1 for sample firms in Set B, and FROA for firms in Set C. Therefore, all else equal, the higher the projected ROA, the higher the new share's price. In this sense, the projected ROA defined in this way is comparable across sub samples. We also calculate the pricing period's ROA, CROA, ROS and OM, which are defined as the averages of the corresponding values in years covered by the pricing period. For example, for a firm in Set A, the pricing period's ROA is the average of the realized ROA of this firm in Year -1 and Year 0. The calculation of the value of a pricing period's performance measure, therefore, is different across sets. In Set A, the value of any pricing period's performance measure is the average of values of that measure in Year -1 and Year 0. In Set B, it is the average of values of that measure in Year -3, -2 and -1 [15]. In Set C,

[14] To record non-operating income is not illegal. Normal firms can have some non-operating income as well (for example, gain or loss from short-term investment in securities or from the write-off of unused assets). However, it is suspicious if the magnitude of non-operating income is too large. It could be due to related party transactions that are not based on market price (for example, the IPO firm may sell an investment with market value of 1 million to its parent at a price of 10 million and hence it can record a gain of 9 million). Still, such deals are not illegal since it is a willing transaction between two parties. However, it is easily to be detected as an opportunistic behavior. Regulators may rely on it to screen some applications for seasoned offerings but cannot accuse firms of doing so. Listed corporations may use non-operating income to achieve some other objectives (for example, to meet the earnings forecast or to break even).

[15] Therefore projected ROA for firms in B is the same as pricing period ROA because both are defined on the realized ROA in the three pre-IPO years.

it is simply the value of that measure in the IPO year.

Sample firms are divided into terciles based on the projected ROA. The high (low) category in each sample set includes IPO firms in the top (bottom) tercile containing the 1/3 of sample firms in each set that report the best (worst) projected ROA. The medium category includes the remaining 1/3 of sample firms in each set. The high category of the whole sample includes firms in the high categories of all three sets. Similarly, the low (medium) category of the whole sample is simply the union of the low (medium) categories of all three sets. Therefore, we rely on the within-set distributions, rather than the whole-sample distribution, to decide whether or not an IPO firm reports higher pricing performance than other firms.

Finally we calculate the average post-IPO ROA (CROA, ROS and OM) of one sample firm as the simple average of ROAs (CROAs, ROSs, and OMs) in Year 1, Year 2 and Year 3 for that firm.

4.2. Post-IPO profitability

Table 3 reports the mean (median) of projected ROA and post-IPO ROA for the whole sample and subsamples. Their difference, the projected ROA minus the post-IPO ROA, is also reported. The larger the difference, the larger the decline in post-IPO performance, compared with the performance used to price the new shares. Table 3 shows that the higher the projected ROA, the larger the decline in post-IPO ROA. This trend can be observed in both the whole sample and the subsamples. The t and z statistics show that the decline in performance for the high category is highly significantly larger than that for the low category. Again, the same trend can be found using the whole sample or subsamples.

[Table 3 about here]

Table 4 reports the forecast error (FERR) of different performance groups in the IPO year. FERR is defined as the following [16],

FERR = (forecast earnings – actual earnings) / (forecast earnings).

Therefore, the smaller the FERR, the more conservative the forecast. The mean and median of FERR for different performance groups – for the whole sample and the three subsamples – are reported. The mean (median) FERR of the low and high categories are compared and the corresponding t and z statistics are reported. Table 4 shows that there is no significant relation between the projected ROA and the forecast optimism. This is true for each subsample. It seems that firms in different performance categories make similar endeavors to meet the forecast.

[Table 4 about here]

The post-IPO ROA could be underestimated because of a mechanical increase of total assets after the IPO. ROS or OM is less misleading. The conclusions drawn from Table 4 would be more convincing if we compare the projected ROS (OM) with the post-IPO ROS (OM). The forecast sales, cost of goods sold, or periodical expenses in our dataset are mostly missing. Since Table 4 shows that there is no significant difference in the forecast errors between different performance groups, we compare the pricing period's ROS (OM, ROA, CROA) with the post-IPO ROS (OM, ROA, CROA) to see whether the relation between the projected ROA and the decline of profitability still holds.

Table 5 reports the pricing period ROA, CROA, ROS and OM of different

[16] We define the forecast error in the same way as used by the CSRC.

categories defined in III.A [17]. Panel A reports results by using ROA and CROA and Panel B reports results by using ROS and OM. In panels, Columns (3) and (7) report the mean values of performance measures in the pricing period. Columns (4) and (8) report the mean values of performance measures in the post-IPO period. Column (5) and (9) report the means of the differences in the accounting ratio's values between the pricing period and the post-IPO period. The difference equals the value of the pricing period's performance measure minus that of the post-IPO period's performance measure. Column (6) and (10) report the medians of the difference. N is the number of firms used in the computation. The means (medians) of differences in the low category and those in the high category are compared and the corresponding t and z statistics are reported.

Table 5 shows that, overall, post-IPO performance declines when compared to the pricing period's performance. The mean and median declines in ROA (CROA) are 7.66% (7.71%) and 5.95% (5.79%), respectively. ROS and OM, which are less biased by the mechanical increase in total assets, are also significantly poorer in post-IPO years. The mean and median of changes in ROS (OM) are 2.59% (4.02%) and 1.29% (3.12%), respectively. The means of declines in performances are all significant at a 1% level.

[Table 5 about here]

Unsurprisingly, Table 5 shows that the pricing period performance of firms in the high projected performance category is much higher than that of firms in the low projected performance category. Panel A and B show that the average pricing period ROA, CROA, ROS and OM of the high category firms are 26.01%, 24.23%, 25.62%,

[17] The pricing period ROA for Set B is the same as the projected ROA because firms in Set B rely on pre-IPO realized earnings to price new share.

and 27.14%, respectively. Those of the low category are only 8.53%, 7.41%, 12.79%, and 13.15%, respectively. Similar patterns can be observed in the subsamples, A, B and C.

More interestingly, Table 5 again demonstrates that the better the pricing-period's performance, the greater the decline in post-IPO performance. Columns (5) and (6) demonstrate that this decline in ROA, CROA, ROS, and OM rises with the elevation of the pricing period performance. In contrast, ROS (OM) for the low category does not change significantly from the pricing period to the post-IPO period. ROA (CROA) for the low category declines by 1.93% (1.88%) in means and 2.48% (2.59%) in medians.

The decline in performance of the high category is much more significant. ROS (OM) for the high category declines by 5.47% (7.29%) in means and 3.86% (5.71%) in medians. ROA (CROA) for the high category declines by 15.96% (15.78%) in means and 12.40% (12.39%) in medians. T (Z) statistics show that the decline in performance for firms in the low category is significantly smaller than the decline for those in the high category.

Table 5 also shows that the post-IPO performance of high category firms exceeds that of the medium and the low category firms in their post-IPO periods. Therefore, the depressed post-IPO performance of the high category firms is perhaps not due to relatively poor post-IPO profitability, but to their pricing period performance being 'too good' [18].

[18] In Appendix II, we use two individual stocks to illustrate the association between pricing period performance and the post-IPO performance.

4.3. Pricing Period Performance and Earnings Management

The patterns discussed above can be found in the whole sample and the subsamples. This common decline in profitability with a large cross-sectional variation requires explanation.

There are several possibilities. Recall that most Chinese IPOs are subsidiaries of state-owned enterprises. The parent SOE's managers could carve out temporarily profitable product lines or departments to form retrospectively profitable IPO firms as needed given the relevant period's pricing formula. Profitability is known to be mean-reverting, both within and across industries (Stigler (1963), Fama and French (2000)). The decline in post-IPO performance, therefore, could be due to this sort of mean-reversion in profitability.

Another possibility is that the IPO firm's pricing-period's performance is elevated due to 'earnings management'. Perhaps high pricing period performance category IPO firms undertake the most intensive income-increasing earnings management, whereas IPO firms in the low pricing period performance category undertake the least intensive income-increasing earnings management. Since the inflated component of earnings is not recurring, we therefore observe a larger decline in performance associated with higher pricing-related performances.

Common approaches used to manage earnings include adopting discretionary accruals (Dechow et al. (1995), Teoh et al. (1998)) and recording non-operating income (Bartov (1993), Hermann et al. (2002), Chen and Yuan (2004), Haw et al. (2005)). The restructuring process during Chinese IPOs gives managers another way to inflate pre-IPO earnings. Due to a lack of enforceable guidelines and effective monitoring, managers can "improve" pre-IPO profitability by allocating more sales and fewer expenses to the new IPO entity during the restructuring process. Managing

earnings using this approach costs nothing and is much harder for regulators and other outsiders to detect *ex ante* than common earnings management techniques. This approach also easily inflates earnings on a surprisingly large scale compared to earnings management via adopting discretionary accruals or non-operating earnings. Given this, Chinese IPO firms need not rely on accruals or non-operating income to inflate pre-IPO earnings. These common approaches are both unnecessary and unwise. However, post-IPO, these firms have to rely on either discretionary accruals or non-operating income to manage earnings. Therefore, it is easier to inflate pre-IPO earnings than to inflate the IPO year's or post-IPO earnings.

Unfortunately, information about 'true' pre-IPO performance is unavailable, and perhaps nonexistent in a fundamental sense. Since IPO firms can be defined ex-post to include income streams and exclude costs, defining, let alone measuring, 'true' pre-IPO performance is as much a philosophical challenge as an accounting one.

We can only test the hypothesis that firms reporting better pricing period performance adopt more intensive conventional earnings management. To do this, we test the association between pricing period performance and the magnitude of non-operating income in the IPO year. Although the pricing of new shares by Set B firms is totally determined by pre-IPO earnings, the pricing of Set A and C firms depends partially on the IPO year's earnings. The IPO year contains both a pre-IPO period and a post-IPO period. In the post-IPO period of the IPO year, managers have to resort to non-operating earnings. Therefore, if the better pricing period performance is due to more intensive conventional earnings management, we observe evidence of this in Set A or Set C firms.

Earnings management is also likely to be affected by penalty regulations. The formal test is deferred to the next section.

5. Penalty Regulations, Forecast Optimism and Earnings Management

In this section, we investigate the impact of penalty regulations on management's forecast optimism and earnings management during the IPO year.

5.1. Regulations and Forecast Optimism

Table 6 reports the distribution of firms with different levels of forecast errors. Forecast ROA (FROA) and forecast error (FERR) are defined as in Section 4. The table shows that firms in A and C are more likely to miss their forecasts, while firms in B are more likely to meet their forecasts. The percentage of firms in A that meet their forecasts is 60%, and that in C is 54%, whereas that in B is 68%. This makes sense since the IPO prices for A and C firms are determined by forecast earnings, while IPO prices for B firms do not.

However, because penalty regulations apply to Set B and C firms whose earnings fall more than 10% short of their forecasts, such shortfalls should be less common than for Set A firms, to which no such penalties apply. Among firms in Set A that fail to meet their forecasts, 44% have forecast errors larger than 10% [19]. The corresponding figures for Set B and Set C firms are 21% and 29%, respectively. Also, far fewer Set C firms miss their forecasts by more than 20%, compared to firms in A or B. This shows that the second penalty regulation had a stronger impact. Under this regulation, firms with forecast error exceeding 20% are prohibited from doing any

[19] Among firms that miss their forecasts, 44% in Set A have forecast errors larger than 10%, 21% in B and 29% in C. The calculations are as follows. A: (10+5)/(23+10+5)=44%; B: (5+8)/(48+5+8)=21%; C: (10+1)/(27+10+1)=29%. Among firms that fall short of their forecast by more than 10%, 33% in Set A have forecast error larger than 20%, 62% in B, only 9% in C. The calculations are as follows. A: 5/(10+5)=33%; B: 8/(8+5)=62%; C: 1/(10+1)=9%.

right issues for 2 years after IPO[20].

[Table 6 about here]

We use logistic regressions to formally test for an interactive effect of pricing regulations with penalty regulations on the probability that an IPO firm's earnings forecast error exceeds a given threshold. We control for the time length from IPO to the end of the IPO year, measured in months. The rationale is that the longer the forecast period, the greater the difficulty in making an accurate forecast. We also control for the firm's size, measured as the log of total assets at the beginning of the IPO year. Large firms are more mature and their profitability is easier to forecast. In contrast, small firms have more growth potential and their earnings can be more difficult to forecast. We estimate three regressions. The first uses all observations to test for differences in the probability that a firm fails to meet its forecast under the different pricing regulations. The regression is,

$$PP = \alpha + \beta_1 DV_a + \beta_2 DV_c + \gamma_1 Time + \gamma_2 Size + \varepsilon, \quad (2)$$

where *PP* equals to 1 if a firm meets the forecast number and equals to 0 otherwise, DV_a equals to 1 if a firm belongs to Set A and equals to 0 otherwise, DV_c equals to 1 if a firm belongs to Set C and equals to 0 otherwise, *Time* is the length of time from the month after the IPO to the end of the IPO year, and *Size* is the log of total assets at the beginning of the IPO year.

Table 7 shows that firms in A and C are more likely to miss their forecasts. The coefficient estimate for DV_c is significant at the 5% level. The estimate for DV_a is

[20] The second penalty regulation was issued in September 13, 1997. Therefore sample firms in Set B after September 13, 1997 are subject to the second penalty regulation as well. We do not divide Set B into two for several reasons. First, we are mainly interested in the impact of official penalty on firms' behaviors, i.e., comparing behaviors of firms not subject to penalty regulations (Set A) with behaviors of firms subject to penalty regulations (Set B and C). Second, even under the first penalty regulation, IPO firms get more severe penalty if the forecast error is 20% or more. Third, usually IPO firms need to wait several months to get approval for their IPO applications after submitting them to the CSRC. As a result, their forecast behaviors might be affected by the old regulation instead of new regulation in effect when they issue stocks.

positive as well and the t value is given by 1.59. The longer the time from the IPO to the end of the IPO year, the larger the probability that a firm misses its forecast. This also makes sense because forecasting performance in the more distant future is harder. Size seems unrelated to forecast errors.

[Table 7 about here]

We next examine the impact of penalty regulations on the likelihood of large forecast errors. Firms in B and C are subject to official penalties if their actual earnings fall short of the forecast earnings by a gap of 10% or more. In Model 2, we use a subsample of firms that fail to meet their forecasts. The logistic regression to be estimated is

$$PP = \alpha + \beta_1 DV_b + \beta_2 DV_c + \gamma_1 Time + \gamma_2 Size + \varepsilon, \quad (3)$$

where PP equals to 1 if a firm has the forecast error less than 10% and equals to 0 if it has a forecast error larger than 10%. We set DV_b equal to 1 if the firm is in Set B and equal to 0 if not. The other variables are defined as in equation (2).

Table 7 shows that among firms that miss the forecasts, those in B and C indeed are less likely to have a forecast error of 10% or more. This indicates that a penalty regulation decreases the arbitrariness of earnings forecasts. The coefficient estimate for DV_b is significant at 1%, whereas the estimate for DV_c is not significant. This difference reflects the impact of pricing regulations. Although firms in both B and C are subject to a penalty, the benefit to a firm in C of making an optimistic forecast is larger since its forecast earnings affect its IPO price.

Finally we check the impact of the second penalty regulation. Under the second penalty regulation, a firm in C is prohibited from doing a right issue for 2 years after its IPO if its earnings fall short of its forecast earnings by more than 20%. This penalty is considered very severe; in the sense that a right issue is almost the only way

Chinese firms can raise equity capital after their IPOs (Haw et al. (2005)). We use all firms that have forecast errors of 10% or more and estimate the following logistic regression,

$$PP = \alpha + \beta_1 DV_a + \beta_2 DV_b + \gamma_1 Time + \gamma_2 Size + \varepsilon, \quad (4)$$

where *PP* equals 1 if the firm's forecast error is less than 20% and 0 is more than 10%, but less than 20%. The other variables are as in Equation (2) and (3).

Table 7 shows, that among firms that have forecast errors of 10% or more, firms in C are much less likely to have forecast errors of 20% or more than those in A or C. The second penalty regulation indeed deters IPO firms from making very optimistic forecasts.

5.2. Penalty Regulations and Earnings Management

Table 6 and Table 7 show that penalty regulations decrease the probability of a firm having a large forecast error. Two reasons may explain this result. One is that IPO firms in B and C use more intensive earnings management to meet their forecasts. The other reason is that IPO firms in B and C make forecasts that are closer to realizable numbers. The first explanation can be seen as a negative effect of penalty regulations, and the second one can be seen as a positive effect. The threat of a penalty may encourage managers to make forecasts closer to a number they can realize. Hence, their forecast optimism decreases, as does the intensity of earnings management during the pricing period. However, fear of a penalty might also induce managers to undertake more intensive earnings management after the IPO to meet their forecast and hence disguise their behaviors of inflating forecast. As a result, the overall intensity of earnings management might increase. The net effect of penalty regulations on earnings management is thus unclear. The situation is more

complicated if we consider that forecast earnings are used to price IPOs for firms in A and C, but not for those in B. Next we explore this issue.

We switch to another angle to examine forecast optimism. Table 8 reports ROA, CROA and FROA in the IPO year. Forecast optimism is measured in two ways. One is the difference between the FROA and ROA. Column (4) reports the mean and median of the differences between FROA and ROA. It shows that, in general, IPO firms in all sets meet their forecasts.

[Table 8 about here]

Since ROA may include a component of earnings management, the forecast optimism measured above could be biased. Therefore, we use another measure, the difference between FROA and CROA. That is, we remove the effect of non-operating income. Column (5) reports the mean and median of this measure. Column (5) reveals a quite different picture from that in Column (4). On average, all IPO firms fail to meet their forecasts by this measure. However, firms in B and C fail to meet their forecasts with a much smaller gap than those in A. The FROA of firms in A is 2.13% larger than the CROA, and this difference is significant at a 1% level. The forecast errors of firms in B and C, however, are not significantly different from 0 – even using this measure. This shows that the penalty regulations might force B and C firms to make forecasts based on operating income they can realize. In contrast, without any official penalty, firms in A make more arbitrary forecasts and then try to use non-operating income to manage earnings if they find that they are unable to meet the forecast.

Table 9 compares earnings management in different subsamples by contrasting the means and medians of non-core ROA (NCROA). It shows that firms in all three sets undertake income-increasing earnings management in the IPO year. However, the

NCROA of firms in A is significantly larger than that of firms in B or C. The intensities of earnings management by firms in B and C are not significantly different.

One unanswered question is why the penalty regulations might decrease the use of non-operating income to manage earnings. As discussed above, non-operating income typically is from one-time transactions including gain or loss from selling investments and writing off fixed assets, and government's tax refunds and subsidies. Chen and Yuan (2004) argue that Chinese firms typically keep their books open until the completion of audit of annual reports. Usually around the end of a year, a firm may try to negotiate with its related parties to arrange some one-time transactions or/and lobby the local government to give it a tax refund or subsidies if the firm finds that it is unlikely to meet some earnings-based requirements. If a firm successfully arranges such transactions, it backdates such transactions if transactions are done after the end of a fiscal year. However, a firm may fail to obtain non-operating income as it wishes[21]. Therefore, the magnitude of non-operating income is quite unpredictable. When there are penalty regulations, it could be very risky for managers to make overoptimistic forecasts with the hope of meeting forecasts by arranging some one-time transactions. Thus, the penalty regulations might force managers make conservative forecast close to its realizable operating income. As a result, we observe a decline of overall earnings management in the IPO year after the issuance of penalty regulations.

[Table 9 about here]

Hence, penalty regulations on large forecast errors might deter IPO firms from making overoptimistic forecasts and then covering the forecast errors by artificially

[21] For example, firms' connection to government's officials could be cut because officials are removed and therefore these firms lose the benefits they obtained through the help of those officials (see Fan et al., 2005). Once firms lose the connection to the officials, they may fail to get subsidies or tax refunds from the government as they had wished.

inflating actual earnings. This shows that these regulations aimed at penalizing misinformation might have positive effects on IPO firms' behaviors.

5.3. IPO Regulations and Earnings Management: A Multivariate Test

Since earnings management is likely to be affected by both pricing regulations and penalty regulations, we do a multivariate test in this section. We use several indicator variables. Prior studies (Bartov (2003), Chen and Yuan (2004), Haw et al. (2005)) argue that the liquidity of assets might affect the magnitude of non-operating income. In view of this, we control for the current ratio defined as current assets over current liabilities. We also control for size. The log value of total assets at the beginning of the IPO year is used as a proxy for size. Following Chen and Yuan (2004), we also control for the lag value of the dependent variable. The equation to be estimated is,

$$\begin{aligned} NCROA = \quad & \alpha + \beta_1 FROA + \beta_2 FROA \times DV_f + \beta_3 FROA \times DV_p \times DV_f \\ & + \delta_1 Size + \delta_2 CR + \delta_3 LNCROA + \varepsilon \end{aligned} \tag{5}$$

where DV_p =1 if the firm is in Set B or C and 0 otherwise (therefore, DV_p indicates whether a sample firm is subject to a penalty regulation); DV_f is 1 if the firm is in Set A or C and 0 otherwise (therefore, DV_f indicates whether the forecast earnings are priced for a sample firm); FROA is the forecast ROA for the IPO year defined as the ratio of the forecast earnings to the total assets at the beginning of the IPO year; *Size* is the log of total asset, *CR* is the current ratio and *LNCROA* is the lag value of *NCROA*, i.e., *NCROA* in the year immediately prior to the IPO year. All accounting measures use data as of the beginning of the IPO year. The results are reported in Table 10.

Table 10 shows that FROA is positively correlated with NCROA. This suggests that on average firms that make better forecast (higher FROA) adopt more non-operating income. However, the estimate for the interaction variable between FROA

and DV_f shows that this correlation is much stronger when the forecast earnings are used in the IPO pricing. Hence, the pricing regulations based on the forecast earnings might encourage IPO firms to make aggressive earnings forecast and then try to cover the shortfall by using earnings management. The estimate for the interaction among FROA, DV_p and DV_f is significantly negative. Therefore, the evidence here is consistent with the introduction of the second penalty, discouraging firms from making earnings forecasts that they are likely to be missed by more than 20%.

[Table 10 about here]

6. Underpricing

In this section, we investigate the impact of earnings management and forecast optimism on the first-day stock returns of IPO firms.

6.1. Why Might The First-Day Stock Return Be Different?

Prior studies find that IPO stocks are 'underpriced' and that first-day return to IPO stocks is significantly positive[22]. The positive initial returns of IPO shares might be associated with information uncertainty (Rock (1986), Allen and Faulhaber (1989)). Evidence about IPO underpricing using Chinese data is also documented (Chan et al. (2003)).

As discussed above, Chinese IPO firms are required to price new shares based on a formula and use almost identical P/E ratios. This lets two other factors affect the first-day return.

First, the average market P/E ratio might affect IPO firms' initial returns. Since all firms are required to use almost identical P/E ratios (around 15 and not

[22] See a review by Welch and Ritter (2002).

significantly different across firms or through time), the higher the stock market at the time of the IPO, the greater the initial underpricing due to a fixed P/E ratio.

Second, opportunistic behavior during the IPO pricing process might also affect the first-day return. If some firms inflate their earnings and so affect their IPO pricing more than others, their stocks would be relatively overpriced. If investors anticipate this, the first-day return of these firms' stocks might be smaller. Similarly, if some firms make overoptimistic earnings forecasts and investors anticipate such opportunistic behaviors, their first-day returns would again be smaller, after controlling for other factors.

Thus, we expect several factors to affect first-day return. These include information uncertainty, the magnitude of earnings inflation in priced earnings, forecast optimism, and the valuation of the market at the time of the IPO.

6.2. Underpricing: A Formal Test

Table 11 reports the mean (median) of first-day return by performance category for the whole sample and the subsamples. We compare both raw returns and abnormal returns, the latter equal to the difference between the raw return of the sample firm and the return of the control firm on the first trading day of the sample firm. Formally, the initial return and the initial abnormal return are calculated as,

$$RET_0 = \frac{\sum_{i=1}^{N}\left(\frac{P_{i,1} - P_{i,0}}{P_{i,0}}\right)}{N}, \tag{6}$$

and

$$ARET_0 = \frac{\sum_{i=1}^{N}\left(\frac{P_{i,1} - P_{i,0}}{P_{i,0}} - r_{i,c}\right)}{N}, \tag{7}$$

where $P_{i,0}$ is the offering price and $P_{i,1}$ is the first day's closing price, N is the number of sample firms used in the computation, and $r_{i,c}$ is the control firm's daily return on the IPO day of the sample firm i. We continue to classify sample firms into terciles based on their projected ROA. We also divide all IPO sample firms by their forecast errors. Our *conservative group* contains 143 firms that exceed their forecasts by 10% or more. Our *aggressive group* contains 39 firms that fall short of the forecast number by 10% or more. Our *normal group* includes the remaining 184 firms, which have forecast errors between -10% and 10%.

[Table 11 about here]

Table 11 shows that initial underpricing does exist, as in the IPOs of the private sector (Welch and Ritter (2002)) and SIP firms in other countries (Jones et al. (1998)). It also shows that the initial (abnormal) returns of the stocks of firms with the aggressive earnings forecasts are less than those of the stocks of firms with conservative forecasts. Evidence of an association between pricing period performance and initial returns is mixed. Since the initial return is likely to be affected by many other factors, particularly, the market valuation on the first trading day, we rely on multivariate regressions to draw the conclusions.

We run the following multivariate regression,

$$R = \alpha + \beta_1 Medium + \beta_2 High + \gamma_1 Normal + \gamma_1 Aggressive + \delta_1 Market + \delta_2 Size + \delta_3 Leverage + \delta_4 PCTNT + \varepsilon \quad (8)$$

where R is initial return or initial abnormal return. *Medium, High, Normal,* and *Aggressive* are dummy variables. *Medium* has value of 1 if firm *i*'s pricing period ROA is in the medium category and has a value of 0 otherwise. *High* has a value of 1 if firm *i*'s pricing period ROA is in the high category and has a value of 0 otherwise. *Normal* has a value of 1 if firm *i*'s forecast error is between -10% and 10% and has a

value of 0 otherwise. *Aggressive* has a value of 1 if firm *i*'s forecast error is greater than 10% and has a value of 0 otherwise. *Market* equals to the log of the Shanghai A share index, which is used as a proxy for the valuation of the market on the IPO day. *Size* is the firm's log of total assets at the beginning of the IPO year. *Leverage* is the ratio of debt to total assets at the beginning of the IPO year. *PCTNT* is the percentage of non-tradable shares to total shares right after the IPO[2 3]. Size is used as the proxy of information uncertainty (Jones et al. (1998)). It is expected that the larger the size the smaller the initial return. Leverage is also controlled for, as a proxy of information uncertainty. Firms with higher leverage may have a greater risk of financial distress. *PCTNT* is the fractional stake retained by the IPOs firm's old owners. A larger retained ownership stake suggests that the old owner will bear a larger risk in its residual income and therefore the agency problem might be less serious. Therefore, we expect the return to be positively related to *PCTNT*.

We estimate two specifications. The first one uses the initial return (RET_0) as the dependent variable, whereas the second one uses the initial abnormal return ($ARET_0$) as the dependent variable. The top and bottom-one percent of observations are dropped (in total, 6 observations are dropped). Table 12 reports the results of regressions.

Table 12 shows that Chinese investors indeed have some skepticism about firms that report unusually good pricing-period earnings. The 1st day returns of firms in the high and medium pricing period earnings categories are significantly smaller than those of firms in the low category. This result suggests that Chinese investors expect

[2 3] Some prior studies suggest that state ownership and legal person ownership might have different impacts on post-IPO performance (Sun and Tong (2003)). However, in tests (not reported here) where we control for state ownership or legal person ownership, we do not find significant impact of state ownership or legal person ownership on the underpricing and long-term stock performance. In China, state shares are defined as shares owned by the government bureaus directly, whereas shares owned by the state-owned enterprises are classified into legal person shares. Therefore, legal person shares in most cases are indirect state shares. It is not surprising to find that state shares and legal person shares do not have significantly different impacts on stock performance of IPO firms.

that the unusually good pricing period earnings performance may not be persistent. Table 12 also shows that the initial returns for firms with overoptimistic forecasts are significantly lower. Chinese IPO firms must report the realized financial performance accumulated from the first day of the IPO year to a recent month of the IPO year in the prospectus. Investors therefore may infer from prospectuses that firms with overoptimistic earnings forecasts are unlikely to meet those forecasts. Hence, the initial returns for IPO firms with overoptimistic forecast are significantly lower. As expected, first day returns are highly positively correlated with the market average P/E ratio for which we use the log value of Shanghai A share index as the proxy. Finally, the initial return is higher for firms with larger percentages of non-tradable shares retained by their old owners, showing that the market prices these firms higher.

7. Long-term Stock Performance

The results about underpricing show that Chinese investors at least partially anticipate IPO firms' opportunistic behaviors during their IPO processes. But can they fully anticipate all such opportunistic behaviors? In this section we investigate whether there is a long-term impact of pricing regulations and penalty regulations on stock returns.

7.1. Definitions, Control Variables and Proxies

Following the procedure in previous sections, we classify IPO firms into three categories — low, medium, and high. In the regressions, we use two dummies to indicate whether an IPO firm belongs to the medium or high category.

We again also partition our IPO firms based on the forecast error. The conservative group contains 143 firms, which exceed their forecasts by 10% or more.

The aggressive group has 39 firms, which fall short of their forecasts 10% or more. The normal group includes the remaining 184 firms, which have the forecast error between -10% and 10%.

Fama (1998) argues that the buy-and-hold returns in long-run performance studies can be problematic in that small initial differences can be exaggerated through compounding. We therefore use cumulative abnormal returns (CAR) as the dependent variable in contrasting the abnormal returns of firms with different degrees of forecast optimism or different pricing period earnings performance. A matching firm is used as a benchmark to calculate the cumulative abnormal return (CAR) of each IPO firm. Mean CAR of a group is computed as,

$$CAR_T = \frac{\sum_{i=1}^{N}\left[\sum_{t=0}^{T}(r_{i,s,t} - r_{i,c,t})\right]}{N} \qquad (9)$$

$r_{i,s,t}$ is the *t-th* monthly raw return of the sample firm *i*. $r_{i,c,t}$ is the *t-th* monthly return of the corresponding control firm. *N* is the number of sample firms used in the computation. The 24-month CAR and 36-month CAR are compared and formally tested.

7.2. Univariate Tests of Post-IPO Stock Performance

We first check the long-run post-IPO stock performance of the whole sample and also compare the post-IPO abnormal returns of different categories.

Figure 1 plots the mean and median of the cumulative abnormal returns of the whole sample of 366 firms over a 3-year horizon after IPO[24]. It shows that IPO firms do not earn negative abnormal returns in the first 12 months. Their post-IPO

[24] The abnormal return is cumulated from one month after IPO. That is, we exclude the first month's return.

performance become poorer and poorer after the first year, and on average these firms earn -23% over a three-year term. This result is consistent with the overall decline of accounting-based performance revealed in Section 4. We conjecture that, because investors do not fully anticipate that average pricing period performance is inflated under the accounting-based pricing regulations, they pay too much to buy the stocks of IPO firms. When these firms' good performance is shown to be only temporary, the disappointed investors bid down the stock prices of these IPO firms.

To test this, we compare the 36-month abnormal returns of firms in low, medium and high pricing period earnings categories in Figure 2. Panel A reports means, and Panel B reports medians. Both diagrams clearly show that high category firms perform much worse than low category firms. This is consistent with the evidence in Section 4, that high category firms undertake more intensive earnings management and experience larger earnings deteriorations in their post-IPO periods.

To examine the impact of the penalty regulations, we compare 36-month abnormal returns for firms with different degrees of forecast optimisms. Figure 3 plots the CARs for firms in the conservative, normal and aggressive categories. Panel A and Panel B report means and medians, respectively. They demonstrate that aggressive group firms perform worse than normal group firms, and conservative group firms perform best of all. That aggressive group firms seriously underperform their benchmarks could be due to several reasons. One is that investors price these firms' forecast earnings, and then bid down their prices when managers' over-optimism becomes clear. The second is that large forecast errors, which are more readily revealed than earnings management, might harm the managers' reputations and raise investors concerns about governance. As a result investors may discount the stock price further. Third, those firms reporting unrealizable earnings might have more

frauds being revealed in the later years. Therefore, we observe extremely poor long-term stock performance for IPO firms making very aggressive forecasts.

Table 13 reports the results of univariate tests that contain the 24-month and 36-month cumulative abnormal returns for the whole sample and different sub samples. The means (medians) of abnormal returns in different sub samples of interest to us are compared and the corresponding statistics are reported.

[Table 13 about here]

Panel A reports 2-year and 3-year abnormal returns for the whole sample. It shows that the mean 2-year abnormal return is -11%, and the mean 3-year abnormal return is -23%. Both are significant at a 1% level. The median of the 2-year and that of 3-year abnormal returns are -9% and -18%. Therefore, generally, IPO firms have significantly lower returns than comparable non-IPO firms.

Panel B reports CARs for firms with different degrees of forecast optimisms. Abnormal returns become more negative with increased forecast aggression. At a 2-year horizon, the conservative group firms have mean and median abnormal returns of 2% and 0%, respectively; whereas the aggressive group firms have -37% mean and median abnormal returns. At a 3-year horizon, the conservative group has mean and median abnormal returns of -12% and -10%, respectively; whereas the aggressive group posts mean and median abnormal returns of -43% and -40%, respectively. The differences in mean (median) 2-year abnormal returns between the conservative and aggressive categories are significant at a 1% level. The differences in abnormal returns between the conservative and aggressive categories over a 3-year horizon are also significant.

Panel C compares CARs for firms with different pricing period earnings

performance. Abnormal returns fall with increasing reported pricing period earnings performance. The differences in abnormal returns between the low and high categories, whether measured in a 2-year or 3-year term, are significant at a 1% level.

Panel D to F report CARs for firms with different pricing period performances in Set A, B and C, respectively. These results show that in each set, the abnormal return is declining with the increase of the reported pricing period accounting performance. The differences of abnormal returns between the low and high categories are significant for most tests.

The univariate tests show that the pricing period accounting performance and forecast optimism can predict the long-run stock return performances of IPO firms. Next we will check whether these differences in abnormal returns are significant in a multivariate setting.

7.3. Multivariate Regressions

In the multivariate regressions, we again control for dummy variables as well as size, leverage and PCTNT. The equation to be estimated is,

$$CAR_i = \alpha + \beta_1 Medium + \beta_2 High + \gamma_1 Normal + \gamma_1 Aggressive + \delta_1 Size + \delta_2 Leverage + \delta_3 PCTNT + \varepsilon, \quad (10)$$

where CAR_i is the cumulative abnormal return for IPO firm i and is defined as in equation (9). Independent variables are defined similarly as those in Equation (9).

The variables of interest are dummies for firms in the medium and high categories and for firms in the normal and aggressive categories. We control for firm size and leverage, as in Fan and Wong (2004). We also control for the percentage of non-tradable shares relative to total shares, again as suggested by Fan and Wong (2004) who argue that the non-transferability of state-owned shares can have negative

implications on corporate governance and firm efficiency.

The 2-year and 3-year CARs are regressed on this set of variables. The regression results are reported in Table 14. The abnormal return of high category firms is significantly lower than that of low category firms. Furthermore, the abnormal returns of the medium and aggressive group firms are significantly below those of conservative group firms. Large firms have better post-IPO stock performance than small firms. In previous sections, we find that large firms use less income-increasing earnings management than small firms. Therefore, the decline of the post-IPO profitability of large firms may not be as large as small firms.

[Table 14 about here]

8. Robustness Check

In this section, we perform some robustness checks by using different benchmarks. We also run regressions explaining long-term stock performance and initial underpricing for each subsample – A, B and C.

In the previous section, we use matching firm as benchmark to calculate abnormal returns. Here we use the market return as the benchmark and redo the regressions (8) and (10).

We first use equally weighted market returns and then use value-weighted market returns as benchmarks. The coefficient estimates for the *Medium, High, Normal* and *Aggressive* dummies are reported in Table 15. As it shows, the results do not change. Therefore our results are robust to these alternative benchmarks.

[Table 15 about here]

Chan et al. (2003) argue that the length between the IPO day and the listed day

(the first trading day) brings uncertainty to investors. They find that the underpricing in China is positively correlated with the length between the IPO day and the listed day. In view of this, we control for the time length and rerun the regressions for underpricing. The regression becomes,

$$R = \alpha + \beta_1 Medium + \beta_2 High + \gamma_1 Normal + \gamma_1 Aggressive + \zeta WTIME + \delta_1 Market + \delta_2 Size + \delta_3 Leverage + \delta_4 PCTNT + \varepsilon \quad (11)$$

Where *WTIME* is number of business days between the IPO day and the listed day and other independent variables are defined in the same way as before. R is the abnormal return and calculated in the following way,

$$R = \frac{P_{i,1}}{P_{i,0}} - \prod_{t=0}^{T}(1 + R_{c,t}) \quad (12)$$

Where Day 0 is the IPO day and Day T is the listed day; $R_{c,t}$ is the control firm's daily return on Day t. Other variables are defined in similar ways as those in Section 6. Hence, underpricing is measured as the difference between the sample firm's first day return and the control firm's buy-and-hold return from the sample firm's IPO day to the first trading day.

We run equations (11) and results are reported in Table 16. Column (2) and (3) report estimates and t-stat by using all observations and Column (4) and (5) report results by excluding 3 influential observations whose value of student residual is at least 3. In the first regression, the estimate for WTIME is significantly positive, whereas in the second one, it is significantly negative. Hence, the association between the length between the IPO day and the listed day and the underpricing is not clear. However, in both regressions, underpricing, again, are negatively correlated with forecast optimism and pricing period accounting performance.

[Table 16 about here]

We then rerun regressions (8) and (10) for each sub sample using control firm returns as benchmarks. The coefficients of the *Medium, High, Normal* and *Aggressive* dummies are reported in Table 16. The main results are similar to those based on the whole sample, although the statistical significance is somewhat lower due to the reduced sample size. Therefore, the findings reported above are not driven by a particular pricing regime.

[Table 17 about here]

Finally, we run the White (1980) specification test and find that the Chi-squares are not significant ($p>0.10$) for all the OLS regression models, except the one where *NCROA* serves as the dependent variable [Equation (5)]. We therefore reestimate this regression by the White heteroskedasticity-consistent covariance matrix estimator. However, the White t-values are quite comparable to those reported in Table 8. Therefore, the regressions are well specified and heteroskedasticity is not a significant problem in our data. Moreover, our regression results are not due to a few influential observations as the results are qualitatively the same when we drop observations with absolute value of studentized residuals larger than 2 or 3.

9. Conclusions

Prior studies find that Chinese SIPs are not as successful as those in other countries. The possible reasons include poor corporate governance (Sun and Tong (2003)) and the intervention of politicians in the management of partially privatized firms by appointing politically-connected CEOs (Fan and Wong (2004)). Our study, on the other hand, shows that the poor performance of SIPs in China can partially be

attributed to the poor regulatory practice by the Chinese government. Accounting-based IPO pricing regulations induce IPO firms to inflate their pricing period earnings performance. The lack of specific regulations or effective monitoring of the carve-out process, on the other hand, enables IPO firms to do earnings management. As a result, their post-IPO profitability declines in relative terms. Consistent with this, the long-run stock performance of IPO firms is significantly worse than that of size-matched non-IPO firms. The cumulative abnormal return of IPO firms is -23% over the three yeas after the IPO. We find that, the better the IPO firm's pricing period earnings performance, the larger the decline in its post-IPO profitability. IPO firms reporting better pricing period earnings performance use more income-increasing earnings management than other firms. Consequently, these firms experience extremely poor post-IPO stock return performance. The cumulative abnormal returns of firms reporting the best pricing period earnings performance average -45% over the three years after the IPO. Therefore, our evidence suggests that accounting-based regulations that replace firm-specific valuations might have a negative effect on the post-IPO performance of many Chinese SIPs.

We also investigate the impact of penalty regulations. We find that penalty regulations deter IPO firms from making extremely optimistic forecasts and deter earnings management. Forecast errors have an important effect on long-run stock return performance. The 36-month CAR of firms that issue the most aggressive earnings forecasts in the IPO years averages -43%. Penalty regulations, thus, might have positive effects on the performance of China's SIP by reducing the incidence of large forecast errors and the magnitude of earnings management.

This study is likely to be of interest to scholars, investors and regulators. We document a significant impact of regulations on the performance of Chinese share

issue privatizations. The literature on this subject is relatively sparse. We also provide evidence that income-increasing earnings management might be a partial cause of poor post-IPO performance. These findings are also useful to investors who rely on information contained in prospectuses to make investment decisions. Finally, this study has useful implications for policy-maker. In a market-oriented economy, the state should play a role in penalizing frauds and ensuring fair competition; but it should not replace firms' managers as regards firm-specific decisions. Our evidence supports this standard economic argument.

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Figure. 1. The 36-month post-IPO Abnormal Return for the Whole Sample. The sample consists of 366 firms going public in the period from Jan 1, 1996 to Feb 11, 1999. The size-matching firms' returns are used to calculate the cumulative abnormal returns. Details are discussed in Table 13.

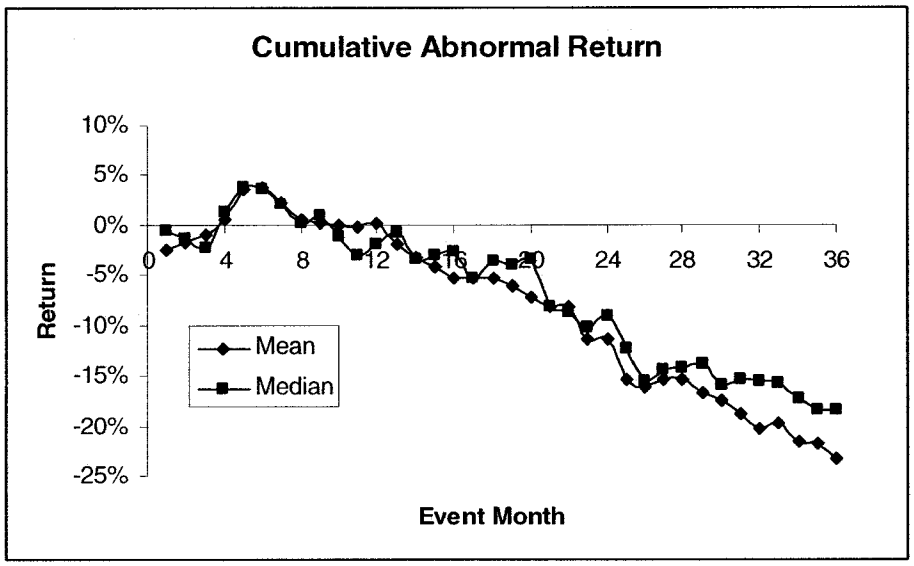
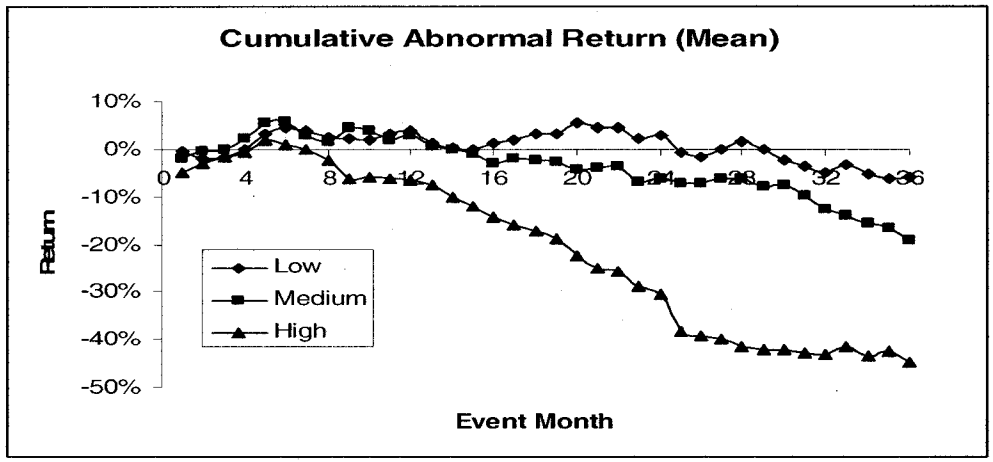


Figure. 2. The 36-Month Post-IPO Abnormal Returns for Sample Firms with Different Pricing Period Performances. Sample firms are divided into three categories based on the projected ROA. The high category consists of one third of the sample firms who report the highest projected ROA. The low category consists of one third of the sample firms who report the lowest projected ROA. The medium category includes the remaining firms. The size-matching firms' returns are used as the benchmarks to calculate the abnormal returns. Details are discussed in Table 2, 3 and 14.

Panel A: Mean of the Cumulative Abnormal Return (CAR)



Panel B: Median of the Cumulative Abnormal Return (CAR)

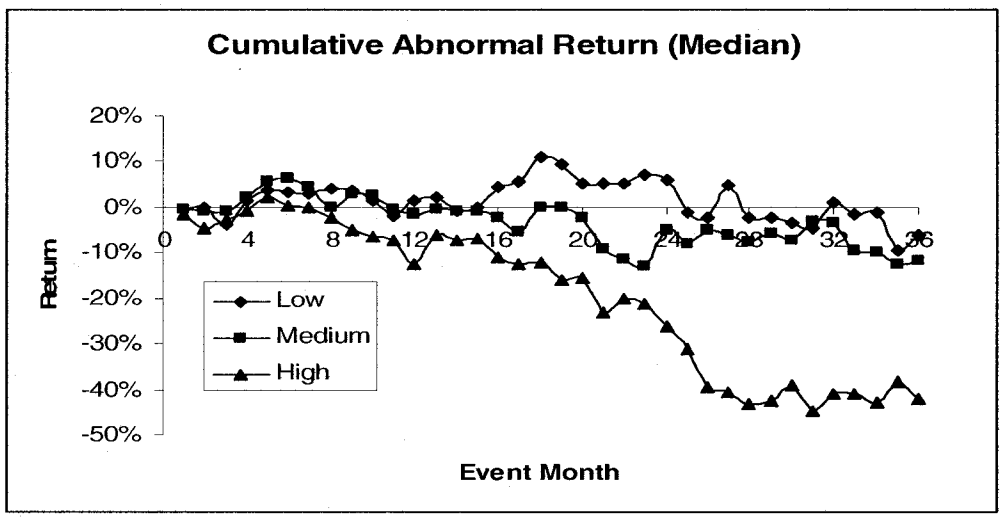
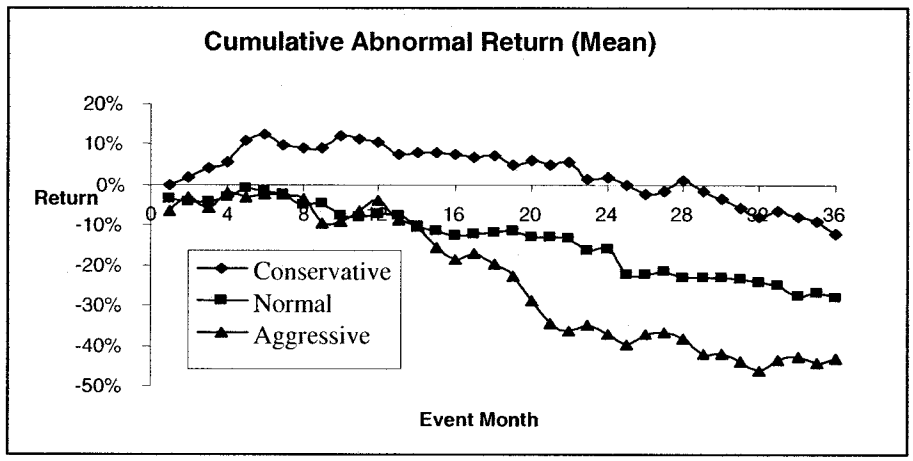


Figure. 3: The 36-Month Post-IPO Abnormal Returns for Sample Firms with Different Earnings Forecast Optimisms. Sample firms are divided into three groups based on the forecast optimism. The conservative group consists of 143 sample firms whose realized earnings in the IPO year exceed the forecast earnings by at least 10%. The aggressive group consists of 39 sample firms whose realized earnings in the IPO year fall short of the forecast earnings by at least 10%. The normal group includes the remaining sample firms. The size-matching firms' returns are used as the benchmarks to calculate the abnormal returns. Details are discussed in Table 2, 7 and 14.

Panel A: Mean of Cumulative Abnormal Return



Panel B: Median of Cumulative Abnormal Return

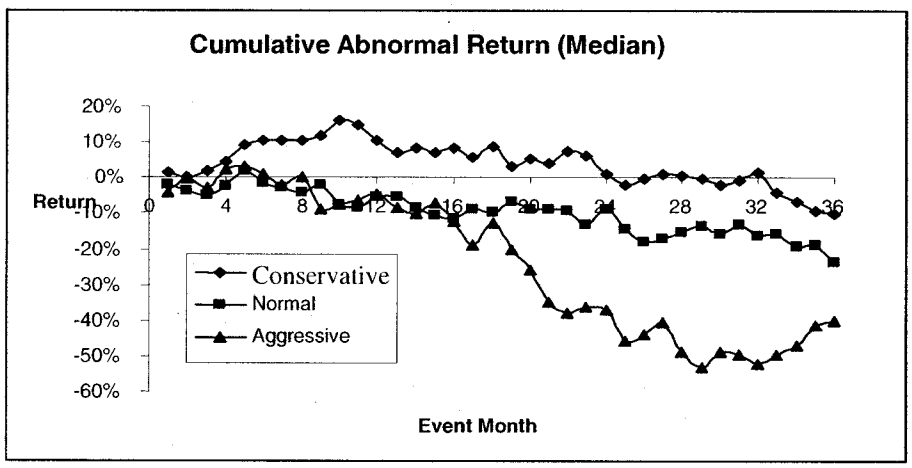


Table 1. The Sample Distribution

The whole sample consists of 366 firms going public in the period from Jan 1, 1996 to Feb 11, 1999. Set A includes IPO firms that must price new shares using a simple average of forecasted earnings per share for the IPO year and realized earnings per share for the fiscal year immediately preceding the IPO year (January 1, 1996-December 25, 1996). Set B includes IPO firms that must price new shares using average three-year pre-IPO realized earnings per share (December 26, 1996-March 16 1998). Set C includes IPO firms that must price new shares using the forecasted earnings per share for the IPO year (March 17, 1998-February 11, 1999).

Panel A: By Year

	All	Set A	Set B	Set C
1996	105	95	10	0
1997	157	0	157	0
1998	87	0	22	65
1999	17	0	0	17

Panel B: by Industry

	All	Set A	Set B	Set C
Information Technology & Electronics	16	4	9	3
Commerce	30	10	14	6
Conglomerate	63	17	40	6
Consumer Goods	91	21	44	26
Machinery & Equipment Manufacturing	48	10	23	15
Materials	91	27	44	20
Properties & Real Estates	4	1	0	3
Utilities	23	5	15	3
Total	366	95	189	82

Table 2. Sample Characteristics

Assets of sample firms are year-end total assets in the IPO year. Assets of control firms are year-end total assets in the same year as the IPO year of the corresponding sample firms. CR is the cumulative raw return and is calculated as $CR_T = \frac{\sum_{i=1}^{N}\left[\sum_{t=1}^{T} r_{t,i}\right]}{N}$, where $r_{i,t}$ is the *t-th* monthly raw return of IPO firm *i*, *T* is the holding period and *N* is the number of firms used in calculating the mean or median. The matching firms' buy-and-hold raw returns are calculated in the same way. A matching firm is required to list at least 3 years earlier than the sample firm. In the same year as the IPO year of a sample firm, all other firms meeting this requirement are ranked based on total assets at the year-end. The firm with total assets closest to those of the IPO firm at the end of the IPO year is then chosen as this IPO firm's matching firm.

	Mean		Median	
	Sample Firms	Matching Firms	Sample Firms	Matching Firms
Panel A: All				
Assets (RMB million Yuan)	932	928	623	624
3-Year's CR	92%	115%	86%	105%
Panel B: Set A				
Assets (RMB million Yuan)	475	476	370	373
3-Year's CR	128%	158%	121%	155%
Panel C: Set B				
Assets (RMB million Yuan)	1,075	1,069	659	655
3-Year's CR	89%	117%	91%	113%
Panel D: Set C				
Assets (RMB million Yuan)	1,113	1,112	912	917
3-Year's CR	56%	62%	50%	61%

Table 3. Comparison of Priced Earnings and Post-IPO Earnings

The projected ROA of a firm in Set A is the average of its ROA in Year t-1 and its forecast ROA in Year 0; that for Set B is the average of its ROAs in the three pre-IPO years; and that for Set C is the forecast ROA in the IPO year. ROA is net income deflated by beginning-of-year total assets. In each set, sample firms are classified into three categories — low, medium, and high — based on their projected ROAs. The high category includes IPO firms with the top third of all projected ROAs, the low category includes those with the lowest third of all projected ROAs, and the medium category includes the remaining firms. The low category of the overall sample contains firms classified into low categories in any set, the medium category of the overall sample contains firms classified into medium categories in any set, and the high category of the overall sample contains firms classified into high categories in any set. Post-IPO ROA is the average of ROAs in Year 1, 2 and 3. Difference is measured as projected ROA minus post-IPO ROA. Asterisks denote levels of statistical significance (two-sided): *** 1%, ** 5% and * 10%.

	N	Projected ROA		Post-IPO ROA		Difference	
		Mean	Median	Mean	Median	Mean	Median
Panel A: All							
Low	121	8.21%	8.36%	6.59%	6.42%	1.62%	2.44%
Medium	123	13.05%	12.93%	8.53%	7.52%	4.53%	5.18%
High	122	25.57%	20.71%	10.05%	9.24%	15.52%	11.65%
All	366	15.62%	12.95%	8.39%	7.64%	7.23%	5.48%
		t (Z) for differences in mean (median)					
		Low versus High				-10.92***	-11.61***
Panel B: Set A							
Low	31	7.48%	7.74%	7.77%	6.88%	-0.29%	0.11%
Medium	32	11.53%	10.87%	10.22%	9.29%	1.31%	2.38%
High	32	21.62%	18.94%	11.37%	10.28%	10.25%	9.17%
All	95	13.61%	11.12%	9.81%	9.04%	3.80%	2.83%
		t (Z) for differences in mean (median)					
		Low versus High				-6.08***	-5.12***
Panel C: Set B							
Low	63	8.70%	9.04%	6.81%	6.89%	1.89%	2.16%
Medium	63	14.18%	13.71%	8.40%	7.50%	5.78%	6.38%
High	63	30.20%	23.32%	10.10%	9.75%	20.10%	16.55%
All	189	17.69%	13.71%	8.44%	7.86%	9.26%	6.39%
		t (Z) for differences in mean (median)					
		Low versus High				-9.11***	-9.20***
Panel D: Set C							
Low	27	7.90%	7.85%	4.75%	4.23%	3.15%	3.31%
Medium	28	12.24%	12.32%	6.86%	6.85%	5.39%	5.65%
High	27	19.46%	16.73%	8.37%	7.77%	11.09%	8.15%
All	82	13.19%	12.32%	6.66%	6.74%	6.53%	5.79%
		t (Z) for differences in mean (median)					
		Low versus High				-4.27***	-5.41***

Table 4. Comparison of Forecast Errors across Different Performance Categories

FERR = (forecast earnings – actual earnings) / (forecast earnings). In each set, sample firms are classified into three categories — low, medium, and high — based on their projected ROAs. The high category includes IPO firms with the top third of all projected ROAs, the low category includes those with the lowest third of all projected ROAs, and the medium category includes the remaining firms. The low category of the overall sample contains firms classified into low categories in any set, the medium category of the overall sample contains firms classified into medium categories in any set, and the high category of the overall sample contains firms classified into high categories in any set. Asterisks denote levels of statistical significance (two-sided): *** 1%, ** 5% and * 10%.

Category	N	FERR	
		Mean	Median
Panel A: the whole sample			
Low	121	-12.30%	-4.24%
Medium	123	-12.03%	-3.47%
High	122	-9.74%	-2.65%
	t (z) for differences in mean (median)		
Low versus High		-0.71	-0.69
Panel B: Set A			
Low	31	-7.01%	-2.12%
Medium	32	-16.13%	-6.00%
High	32	-2.01%	0.64%
	t (z) for differences in mean (median)		
Low versus High		-0.96	-0.97
Panel C: Set B			
Low	63	-16.47%	-9.36%
Medium	63	-13.10%	-4.16%
High	63	-14.06%	-8.25%
	t (z) for differences in mean (median)		
Low versus High		-0.42	-0.64
Panel D: Set C			
Low	27	-8.65%	-0.80%
Medium	28	-4.97%	2.44%
High	27	-8.81%	-2.65%
	t (z) for differences in mean (median)		
Low versus High		0.02	0.40

Table 5. Comparison of Post-IPO Performances and Pricing Periods' Performances

ROA and CROA are net income and net operating income, respectively, scaled by beginning-of-year total assets. ROS and OM are net income and net operating income, respectively, scaled by sales. The pricing period for Set A covers Year -1 and Year 0, that for Set B covers Year -3, Year -2 and Year -1 and that for Set C is Year 0. Sample firms are divided into three categories – low, medium and high – based on the projected ROA. Details are discussed in Table 3. The post-IPO period for all sets covers Year 1, Year 2 and Year 3. Year 0 is defined as the IPO year and Year *t* is defined as the year that is *t* years from Year 0. Columns (3) and (7) report average values of the performance measures in the pricing period. Columns (4) and (8) report the mean values of performance measures in the post-IPO period. Column (5) and (9) report the means of the differences in the accounting ratio's values between the pricing period and the post-IPO period. The difference equals the value of the pricing period's performance measure minus the value of the post-IPO period's performance measure. Column (6) and (10) report the median of the difference. N is the number of firms used in the computation. The means (medians) of differences in the low category and those in the high category are compared and the corresponding t and z statistics are reported. Asterisks denote levels of statistical significance (two-sided): *** 1%, ** 5% and * 10%.

Panel A: Comparison of ROA and CROA

		ROA				CROA			
	N	Pricing period	Post-IPO Period	Difference in ROA		Pricing period	Post-IPO Period	Difference in CROA	
				Mean	Median			Mean	Median
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A1: All									
Low	121	8.53%	6.59%	1.93%	2.48%	7.41%	5.53%	1.88%	2.59%
Medium	123	13.60%	8.53%	5.07%	5.55%	12.51%	7.07%	5.44%	5.76%
High	122	26.01%	10.05%	15.96%	12.40%	24.23%	8.46%	15.78%	12.39%
All	366	16.06%	8.39%	7.66%	5.95%	14.73%	7.02%	7.71%	5.79%
				t (Z) for differences in mean (median)					
	Low versus High			-11.22***	-11.79***			-10.68***	-11.19***
Panel A2: Set A									
Low	31	7.85%	7.77%	0.08%	0.86%	6.51%	7.22%	-0.72%	0.99%
Medium	32	12.63%	10.22%	2.40%	3.10%	11.00%	8.70%	2.30%	2.67%
High	32	21.73%	11.37%	10.36%	8.41%	19.12%	9.63%	9.49%	7.82%
All	95	14.13%	9.81%	4.33%	4.08%	12.27%	8.53%	3.74%	3.13%
				t (Z) for differences in mean (median)					
	Low versus High			-6.43***	-5.41***			-5.52***	-4.89***

(To be continued)

Table 5 (Continued)

Panel A3: Set B									
Low	63	8.70%	6.81%	1.89%	2.16%	8.07%	5.30%	2.77%	2.67%
Medium	63	14.18%	8.40%	5.78%	6.38%	13.63%	6.83%	6.81%	7.47%
High	63	30.20%	10.10%	20.10%	16.55%	29.21%	8.57%	20.64%	15.32%
All	189	17.69%	8.44%	9.26%	6.39%	16.97%	6.90%	10.07%	7.50%
				t (Z) for differences in mean (median)					
	Low versus High			-9.11***	-9.20***			-8.82***	-8.90***
Panel A4: Set C									
Low	27	8.90%	4.75%	4.15%	4.18%	6.91%	4.12%	2.79%	3.31%
Medium	28	13.38%	6.86%	6.53%	6.49%	11.71%	5.75%	5.95%	5.57%
High	27	21.30%	8.37%	12.93%	10.64%	18.67%	6.78%	11.89%	10.30%
All	82	14.51%	6.66%	7.85%	6.68%	12.42%	5.55%	6.87%	5.60%
				t (Z) for differences in mean (median)					
	Low versus High			-4.80***	-5.41***			-5.18***	-5.41***

(To be continued)

Table 5 (Continued)

Panel B: Comparison of ROS and OM

		ROS				OM			
	N	Pricing period	Post-IPO Period	Difference in ROS		Pricing period	Post-IPO Period	Difference in OM	
				Mean	Median			Mean	Median
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel B1: All									
Low	121	12.79%	12.06%	0.73%	-0.22%	13.15%	11.55%	1.60%	1.35%
Medium	123	18.46%	16.90%	1.56%	1.09%	19.44%	16.29%	3.15%	2.20%
High	122	25.62%	20.16%	5.47%	3.86%	27.14%	19.85%	7.29%	5.71%
All	366	18.97%	16.39%	2.59%	1.29%	19.93%	15.91%	4.02%	3.12%
				t (Z) for differences in mean (median)					
		Low versus High		-3.47***	-4.45***			-4.31***	-4.99***
Panel B2: Set A									
Low	31	11.21%	12.37%	-1.17%	-1.82%	11.09%	11.32%	-0.23%	-1.23%
Medium	32	16.08%	18.75%	-2.67%	-1.50%	16.88%	18.73%	-1.85%	-0.83%
High	32	24.95%	21.85%	3.09%	1.03%	25.15%	20.80%	4.35%	2.31%
All	95	17.48%	17.71%	-0.24%	-1.08%	17.77%	17.01%	0.77%	-0.20%
				t (Z) for differences in mean (median)					
		Low versus High		-1.92*	-1.86*			-1.87*	-1.40
Panel B3: Set B									
Low	63	12.33%	13.05%	-0.72%	-0.82%	13.38%	12.11%	1.27%	0.89%
Medium	63	21.45%	18.19%	3.26%	1.21%	22.63%	16.96%	5.67%	4.74%
High	63	26.87%	20.20%	6.68%	4.12%	29.29%	20.59%	8.71%	6.46%
All	189	20.22%	17.15%	3.07%	1.09%	21.77%	16.55%	5.22%	3.70%
				t (Z) for differences in mean (median)					
		Low versus High		-3.97***	-4.11***			-3.87***	-4.25***
Panel B4: Set C									
Low	27	15.66%	9.39%	6.27%	3.60%	14.96%	10.51%	4.45%	3.62%
Medium	28	14.47%	11.89%	2.58%	2.11%	15.17%	11.99%	3.17%	2.01%
High	27	23.51%	18.06%	5.46%	3.74%	24.50%	17.03%	7.47%	6.54%

All	82	17.84%	13.10%	4.74%	2.93%	18.17%	13.16%	5.01%	4.43%
				t (Z) for differences in mean (median)					
	Low versus High			0.25	-0.69			-1.19	-2.49**

Table 6. Distribution of Forecast Error

Forecast error is defined as the difference between forecast earnings and net income in the IPO year scaled by forecast earnings. Firms are further partitioned into 4 categories based on forecast errors. The number of firms in each category is reported, as is the percentage in each set (reported in the brackets).

	FERR<0%	0≤FERR<10%	10%≤FERR<20%	FERR≥20%	Total
Set A	57	23	10	5	95
	(60%)	(24%)	(11%)	(5%)	
Set B	128	48	5	8	189
	(68%)	(25%)	(3%)	(4%)	
Set C	44	27	10	1	82
	(54%)	(33%)	(12%)	(1%)	
All	229	98	25	14	366
	(62%)	(28%)	(7%)	(3%)	

Table 7. Logistic Regressions: Impact of Penalty Regulations on Forecast Errors

DV_a = 1 if the pricing method is 'A'; = 0 otherwise. DV_b = 1 if the pricing method is 'B'; =0 otherwise. DV_c =1 if the pricing method is 'C'; =0 otherwise. *Size* = log (assets). *Time* equals to the number of months from the first month after IPO to December of the IPO year. Model (1) tests the probability that a firm meets or exceeds its forecast earnings. All observations are used. Model (2) tests the probability that a firm's forecast error is less than 10% given that the firm fails to meet its earnings forecast. A subsample of firms that do not meet their forecasts is used in this logit regression. Model (3) tests the probability that a firm's forecast error is less than 20% given that its forecast error is larger than 10%. A subsample of firms with forecast errors larger than 10% is used in this logit regression. Asterisks denote levels of statistical significance (two-sided): *** 1%, ** 5% and * 10%.

Variables	Model (1)		Model (2)		Model (3)	
	Estimates	t-Stat.	Estimates	t-Stat.	Estimates	t-Stat.
N	366		137		39	
Intercept	-0.83	-0.30	1.48	0.30	11.21	1.31
DV_a	-0.45	-1.59			-2.16	-1.62
DV_b			1.41	2.61**	-3.00	-2.40**
DV_c	-0.72	-2.56**	0.80	1.41		
Time	-0.97	-2.10**	-2.30	-2.62**	0.09	0.00
Size	0.11	0.74	-0.01	0.00	-0.44	-1.02
Pseudo R^2	0.03		0.09		0.21	

Table 8. Overall Forecast Optimism

ROA and CROA are net income and net operating income in the IPO year, respectively, deflated by beginning-of-year total assets. FROA is forecast earnings in the IPO year scaled by beginning-of- year total assets. Column (4) reports forecast errors measured as the difference between FROA and ROA. Column (5) reports the forecast error measured as the difference between FROA and CROA. The statistical significance of the means of the differences is reported. The means and the medians are compared and the corresponding t and Z statistics are reported. Asterisks denote levels of statistical significance (two-sided): *** 1%, ** 5% and * 10%.

	N	(1)	(2)	(3)	(4)= (3) – (1)		(5)= (3) – (2)	
		ROA	CROA	FROA	Mean	Median	Mean	Median
Set A	95	15.44%	12.26%	14.39%	-1.05%***	-0.33%	2.13%***	1.66%
Set B	189	17.07%	14.65%	16.10%	-0.97%	-1.33%	1.45%	0.54%
Set C	82	14.51%	12.42%	13.19%	-1.32%***	-0.21%**	0.77%	1.13%
All	366	16.07%	13.53%	15.00%	-1.07%**	-0.61%	1.47%***	1.03%
		t (Z) for differences in mean (median)						
		A versus B			-0.08	1.92*	0.62	2.89***
		A versus C			0.54	0.00	2.33**	1.90*
		B versus C			0.34	1.85*	0.66	0.87

Table 9. Univariate Tests: Earnings Management and Penalty Regulations

Non-core ROA is net non-operating income scaled by beginning-of-year total assets. The statistical significance of means of the differences is reported. The means and the medians are compared and the corresponding t and Z statistics are reported. Asterisks denote levels of statistical significance (two-sided): *** 1%, ** 5% and * 10%.

	Non-core ROA (NCROA)		
	N	Mean	Median
Set A	95	3.18%***	2.22%
Set B	189	2.42%***	1.69%
Set C	82	2.09%***	1.76%
All	366	2.55%***	1.88%
		t (Z) for differences in mean (median)	
A versus B		1.88*	1.68*
A versus C		2.69***	1.67*
B versus C		1.18	-0.23

Table 10. Multivariate Test: Impact of IPO Regulations on EM

The following equation is estimated,

$$NCROA = \alpha + \beta_1 FROA + \beta_2 FROA \times DV_f + \beta_3 FROA \times DV_p \times DV_f + \delta_1 Size + \delta_2 CR + \delta_3 LNCROA + \varepsilon,$$

where $DV_p = 1$ if the pricing method is B or C, = 0 otherwise; $DV_f = 1$ if the pricing method is A or C, = 0 otherwise; *FROA* is the forecast ROA measured as the forecast earnings for the IPO year deflated by the total assets at the beginning of the IPO year; *Size* is the log total asset at the beginning of the IPO year, *CR* is the ratio of current assets to current liabilities at the beginning of the IPO year and *LNCROA* is the lag value of the dependent variable. Asterisks denote levels of statistical significance (two-sided): *** 1%, ** 5% and * 10%.

Variables	Estimates	t-Stat.
Intercept	0.092	2.45**
FROA	0.044	2.25**
$FROA \times DV_f$	0.057	2.75***
$FROA \times DV_p \times DV_f$	-0.047	-1.83*
Size	-0.004	-2.15**
CR	0.000	0.71
LNCROA	0.401	6.87***
Adj. R^2	20%	
N	366	

Table 11. Univariate Test: Underpricing

Initial return is defined as $RET_0 = \frac{\sum_{i=1}^{N}\left(\frac{P_{i,1}-P_{i,0}}{P_{i,0}}\right)}{N}$ and initial abnormal return is defined as $ARET_0 = \frac{\sum_{i=1}^{N}\left(\frac{P_{i,1}-P_{i,0}}{P_{i,0}} - r_{i,c}\right)}{N}$, where $P_{i,0}$ is the offering price and $P_{i,1}$ is the first day's closing price, N is the number of sample firms used in the computation, and $r_{i,c}$ is the control firm's daily return on the IPO day of firm i. Sample firms are divided into three categories – low, medium, and high – based on the projected ROA, as described in Table 3. Sample firms are also partitioned into three groups – conservative, normal and aggressive – based on the forecast optimism in the IPO year. The conservative group consists of 143 sample firms whose realized earnings in the IPO year exceed the forecast earnings by at least 10%. The aggressive group consists of 39 sample firms whose realized earnings in the IPO year fall short of the forecast earnings by at least 10%. The normal group includes the remaining sample firms. Asterisks denote levels of statistical significance (two-sided): *** 1%, ** 5% and * 10%.

	N	Initial Return RET_0		Initial Abnormal Return $ARET_0$	
		Mean	Median	Mean	Median
Panel A: All					
	366	134%	117%	134%	117%
Panel B: by Forecast Optimism					
Conservative	143	142%	123%	142%	123%
Normal	184	130%	115%	130%	116%
Aggressive	39	123%	98%	122%	95%
		t (Z) for differences in mean (median)			
Conservative versus Aggressive		0.83	2.24**	0.86	2.32**
Panel C: by Projected ROA					
Low	121	131%	119%	130%	119%
Medium	123	146%	124%	147%	125%
High	122	124%	110%	125%	111%
		t (Z) for differences in mean (median)			
Low versus High		0.67	0.72	0.58	0.64
Panel D: Set A and by Projected ROA					
Low	31	128%	108%	128%	102%
Medium	32	123%	109%	123%	111%
High	32	99%	94%	99%	94%
All	95	116%	103%	116%	101%
		t (Z) for differences in mean (median)			
Low versus High		1.53	0.85	1.51	0.91
Panel E: Set B and by Projected ROA					
Low	63	149%	139%	149%	139%
Medium	63	164%	137%	164%	136%
High	63	133%	111%	134%	116%
All	189	149%	130%	149%	132%
		t (Z) for differences in mean (median)			
Low versus High		1.31	1.63	1.18	1.52
Panel F: Set C and by Projected ROA					
Low	27	90%	86%	90%	82%
Medium	28	135%	108%	136%	111%
High	27	133%	122%	134%	123%
All	82	120%	96%	120%	94%
		t (Z) for differences in mean (median)			
Low versus High		-1.99**	-1.64	-2.01**	-1.68*

Table 12. Multivariate Tests: Underpricing

Sample firms are divided into three categories – low, medium, and high – based on the projected ROA, as described in Table 3. Sample firms are also partitioned into three groups – conservative, normal and aggressive – based on the forecast optimism in the IPO year, as described in Table 11. The following regressions are estimated,

$$R = \alpha + \beta_1 Medium + \beta_2 High + \gamma_1 Normal + \gamma_1 Aggressive + \delta_1 Market + \delta_2 Size + \delta_3 Leverage + \delta_4 PCTNT + \varepsilon.$$

where *Medium* has value of 1 if firm *i*'s pricing periods' ROA is classified into the medium category and has the value of 0 otherwise; *High* has the value of 1 if firm *i*'s pricing periods' ROA is classified into the high category and has the value of 0 otherwise; *Normal* has the value of 1 if firm *i*'s forecast error is between -10% and 10% and has the value of 0 otherwise; *Aggressive* has the value of 1 if firm *i*'s forecast error is no less than 10% and has the value of 0 otherwise; *size* is the log of the total assets at the beginning of the IPO year; *Leverage* is the ratio of debt to total assets at the beginning of the IPO year; PCTNT is the percentage of non-tradable shares in the total shares right after IPO; *Market* equals to the log of the Shanghai A share index points, which is used as the proxy of the average P/E ratios of the market on the IPO day. Two specifications are estimated. The first one uses the initial return (RET_0) as the dependent variable, whereas the second one uses the initial abnormal return ($ARET_0$) as the dependent variable. The top-one and bottom-one percent observations are dropped (totally 6 observations are dropped). Asterisks denote levels of statistical significance (two-sided): *** 1%, ** 5% and * 10%.

Variables	Initial Return (RET_0)		Initial Abnormal Return ($ARET_0$)	
	Estimates	t-Stat.	Estimates	t-Stat.
N	360		360	
Intercept	-1.99	-1.44	-2.09	-1.49
Medium	-0.21	-2.41**	-0.21	-2.39**
High	-0.42	-4.42***	-0.42	-4.38***
Normal	-0.10	-1.33	-0.10	-1.36
Aggressive	-0.27	-2.18**	-0.28	-2.31**
Market	1.80	9.72***	1.78	9.61***
Size	-0.50	-9.59***	-0.49	-9.34***
Leverage	-0.51	-1.73*	-0.52	-1.75*
PCTNT	1.69	2.81***	1.71	2.85***
Adj. R^2	0.32		0.32	

Table 13. The Post-IPO Market Performance

Panel A reports the post-IPO stock return for the whole sample of 366 firms. In Panel B, Sample firms are partitioned into three groups – conservative, normal and aggressive – based on the forecast optimism in the IPO year, as described in Table 11. *CAR* is the cumulative abnormal return and is computed as $CAR_T = \frac{\sum_{i=1}^{N}\left[\sum_{t=0}^{T}(r_{i,s,t} - r_{i,c,t})\right]}{N}$, where $r_{i,s,t}$ is the t-th monthly raw return of the sample firm i, $r_{i,c,t}$ is the t-th monthly return of the corresponding control firm, and N is the number of sample firms used in the computation. In Panel B, Sample firms are also partitioned into three groups – conservative, normal and aggressive – based on the forecast optimism in the IPO year, as described in Table 11. In Panel C to F, Sample firms are divided into three categories – low, medium, and high – based on the projected ROA, as described in Table 3. N is the number of sample firms used in the computation. The statistical significance of the means of the differences is reported. The means and the medians are compared and the corresponding t and Z statistics are reported. Asterisks denote levels of statistical significance (two-sided): *** 1%, ** 5% and * 10%.

	N	2 year *CAR*		3-year *CAR*	
		Mean	Median	Mean	Median
Panel A: All					
	366	-11%***	-9%	-23%***	-18%
Panel B: by Forecast Optimism					
Conservative	143	2%	0%	-12%	-10%
Normal	184	-16%	-9%	-28%	-24%
Aggressive	39	-37%	-37%	-43%	-40%
		t (Z) for differences in mean (median)			
Conservative versus Aggressive		-4.04***	-3.73***	-2.81***	-2.53**
Panel C: by Pricing periods' Performances					
Low	121	3%	6%	-6%	-6%
Medium	123	-6%	-5%	-19%	-12%
High	122	-30%	-26%	-45%	-42%
		t (Z) for differences in mean (median)			
Low versus High		3.91***	3.81***	4.13***	3.77***
Panel D: Set A and by Pricing periods' Performances					
Low	31	1%	-1%	-1%	-1%
Medium	32	-4%	14%	-27%	-13%
High	32	-42%	-61%	-60%	-76%
All	95	-15%*	-11%	-30%***	-28%
		t (Z) for differences in mean (median)			
Low versus High		2.22**	2.23**	2.73***	2.44**
Panel E: Set B and by Pricing periods' Performances					
Low	63	-1%	3%	-13%	-11%
Medium	63	-9%	-11%	-24%	-14%
High	63	-31%	-29%	-47%	-38%
All	189	-13%**	-14%	-28%***	-22%
		t (Z) for differences in mean (median)			
Low versus High		2.59**	2.46**	2.62**	2.40**
Panel F: Set C and by Pricing periods' Performances					
Low	27	12%	12%	5%	-1%
Medium	28	-4%	-4%	1%	-2%
High	27	-16%	-13%	-22%	-27%
All	82	-2%	-3%	-5%	-5%
		t (Z) for differences in mean (median)			
Low versus High		1.95*	1.95*	1.75*	1.59

Table 14. Regression Results: Long-Run Stock Performance

Sample firms are divided into three categories – low, medium, and high – based on the projected ROA, as described in Table 3. Sample firms are also partitioned into three groups – conservative, normal and aggressive – based on the forecast optimism in the IPO year, as described in Table 11. The following equation is estimated,

$$CAR_i = \alpha + \beta_1 Medium + \beta_2 High + \gamma_1 Normal + \gamma_1 Aggressive + \delta_1 Size + \delta_2 Leverage + \delta_3 PCTNT + \varepsilon,$$

where *Medium* has value of 1 if firm *i* is in the medium category and has the value of 0 otherwise; *High* has the value of 1 if firm *i* is classified into the high category and has the value of 0 otherwise; *Normal* has the value of 1 if firm *i* is divided into the normal group and has the value of 0 otherwise; *Aggressive* has the value of 1 if firm *i* is divided into the aggressive group and has the value of 0 otherwise; *Size* is the log of the total assets at the beginning of the IPO year; *Leverage* is the ratio of debt to total assets at the beginning of the IPO year; PCTNT is the percentage of non-tradable shares in the total shares right after IPO. Asterisks denote levels of statistical significance (two-sided): *** 1%, ** 5% and * 10%.

Variables	2 year after IPO		3 year after IPO	
	Estimates	t-Stat.	Estimates	t- Stat.
N	366		366	
Intercept	-1.36	-1.51	-2.14	-2.13**
Medium	-0.07	-0.77	-0.07	-0.72
High	-0.32	-3.27***	-0.32	-2.93***
Normal	-0.20	-2.62**	-0.17	-2.02**
Aggressive	-0.38	-3.05***	-0.27	-2.01**
Size	0.08	1.64	0.13	2.29**
Leverage	-0.39	-1.29	-0.15	-0.44
PCTNT	0.12	0.19	-0.45	-0.66
Adj. R^2	0.06		0.06	

Table 15. Multivariate Tests: Alternative Benchmarks

In Panel A, the equally weighted market returns are used as the benchmarks to calculate abnormal returns. In Panel B, the value-weighted market returns are used as the benchmarks to calculate abnormal returns. Equation (8) and (10), as described in Table 12 and 14, respectively, are estimated again. The estimates of Medium, High, Normal and Aggressive and the corresponding t-stats are reported in the brackets. *Medium* has value of 1 if firm *i* is in the medium category and has the value of 0 otherwise; *High* has the value of 1 if firm *i* is classified into the high category and has the value of 0 otherwise; *Normal* has the value of 1 if firm *i* is divided into the normal group and has the value of 0 otherwise; *Aggressive* has the value of 1 if firm *i* is divided into the aggressive group and has the value of 0 otherwise. Asterisks denote levels of statistical significance (two-sided): *** 1%, ** 5% and * 10%.

Dependent Variable	N	Variables				Adj. R^2
		Medium	High	Normal	Aggressive	
Panel A: the equal-weighted market return is used as the benchmark						
Initial Abnormal Return	360	-0.21	-0.42	-0.10	-0.27	0.32
($ARET_0$)		(-2.41)**	(-4.38)***	(-1.33)	(-2.22)**	
2-year CAR	366	-0.12	-0.31	-0.10	-0.21	0.16
(CAR_2)		(-2.18)**	(-5.16)***	(-2.21)**	(-2.73)***	
3-year CAR	366	-0.11	-0.31	-0.08	-0.15	0.18
(CAR_3)		(-1.69)*	(-4.48)***	(-1.47)	(-1.67)*	
Panel B: the value-weighted market return is used as the benchmark						
Initial Abnormal Return	360	-0.21	-0.41	-0.10	-0.27	0.32
($ARET_0$)		(-2.39)**	(-4.33)***	(-1.32)	(-2.22)**	
2-year CAR	366	-0.13	-0.32	-0.12	-0.25	0.17
(CAR_2)		(-2.23)**	(-5.24)***	(-2.64)**	(-3.24)***	
3-year CAR	366	-0.11	-0.31	-0.11	-0.22	0.19
(CAR_3)		(-1.73)*	(-4.53)***	(-2.05)**	(-2.48)**	

Table 16. Alternative Measure of Underpricing

Sample firms are divided into three categories – low, medium, and high – based on the projected ROA, as described in Table 3. Sample firms are also partitioned into three groups – conservative, normal and aggressive – based on the forecast optimism in the IPO year, as described in Table 11. The following regressions are estimated,

$$R = \alpha + \beta_1 Medium + \beta_2 High + \gamma_1 Normal + \gamma_1 Aggressive + \zeta WTIME + \delta_1 Market + \delta_2 Size + \delta_3 Leverage + \delta_4 PCTNT + \varepsilon.$$

where *Medium* has value of 1 if firm *i*'s pricing periods' ROA is classified into the medium category and has the value of 0 otherwise; *High* has the value of 1 if firm *i*'s pricing periods' ROA is classified into the high category and has the value of 0 otherwise; *Normal* has the value of 1 if firm *i*'s forecast error is between -10% and 10% and has the value of 0 otherwise; *Aggressive* has the value of 1 if firm *i*'s forecast error is no less than 10% and has the value of 0 otherwise; *WTIME* is number of business days between the IPO day and the list day; *size* is the log of the total assets at the beginning of the IPO year; *Leverage* is the ratio of debt to total assets at the beginning of the IPO year; PCTNT is the percentage of non-tradable shares in the total shares right after IPO; *Market* equals to the log of the Shanghai A share index points, which is used as the proxy of the average P/E ratios of the market on the IPO day. The dependent variable is the abnormal first-day stock return which is the first-day return minus the buy-and-hold return of the control firm from the IPO day to the List day of the IPO firm. The first one uses all observations and the second one excludes 3 observations with student residuals larger than 3. Asterisks denote levels of statistical significance (two-sided): *** 1%, ** 5% and * 10%.

Variables	R		R	
	Estimates	t-Stat.	Estimates	t-Stat.
N	366		363	
Intercept	-2.73	-1.83*	-3.98	-3.09***
Medium	-0.18	-1.91*	-0.19	-2.30**
High	-0.45	-4.33***	-0.40	-4.49***
Normal	-0.09	-1.16	-0.07	-1.01
Aggressive	-0.19	-1.48	-0.29	-2.53**
WTIME	0.01	2.84***	-0.01	-3.62***
Market	1.98	10.00***	2.13	12.39***
Size	-0.54	-9.59***	-0.51	-10.46***
Leverage	-0.56	-1.74*	-0.39	-1.42
PCTNT	1.83	2.81***	1.46	2.61***
Adj. R^2	0.35		0.41	

Table 17. Regressions by Using Subsamples

Equation (8) and (10), as described in Table 11 and 14, respectively, are estimated by using different subsamples A, B and C. The estimates of Medium, High, Normal and Aggressive and the corresponding t-stats are reported in the brackets. *Medium* has value of 1 if firm *i* is in the medium category and has the value of 0 otherwise; *High* has the value of 1 if firm *i* is classified into the high category and has the value of 0 otherwise; *Normal* has the value of 1 if firm *i* is divided into the normal group and has the value of 0 otherwise; *Aggressive* has the value of 1 if firm *i* is divided into the aggressive group and has the value of 0 otherwise. Asterisks denote levels of statistical significance (two-sided): *** 1%, ** 5% and * 10%.

	N	Variables				Adj. R^2
		Medium	High	Normal	Aggressive	
Panel A: Initial Return (RET_0)						
A	92	-0.18	-0.19	-0.08	-0.22	0.39
		(-1.08)	(-1.02)	(-0.58)	(-1.15)	
B	188	-0.16	-0.47	-0.05	-0.30	0.32
		(-1.28)	(-3.65)***	(-0.46)	(-1.48)	
C	80	-0.24	-0.08	-0.19	-0.03	0.48
		(-1.48)	(-0.44)	(-1.31)	(-0.14)	
Panel B: Initial Abnormal Return ($ARET_0$)						
A	92	-0.20	-0.22	-0.11	-0.25	0.38
		(-1.23)	(-1.16)	(-0.78)	(-1.31)	
B	188	-0.16	-0.46	-0.04	-0.31	0.32
		(-1.26)	(-3.56)***	(-0.38)	(-1.52)	
C	80	-0.22	-0.08	-0.18	-0.06	0.48
		(-1.38)	(-0.43)	(-1.30)	(-0.25)	
Panel C: 2-year CAR (CAR_2)						
A	95	-0.10	-0.44	-0.09	-0.30	0.01
		(-0.46)	(-1.76)*	(-0.47)	(-1.16)	
B	189	-0.04	-0.30	-0.23	-0.31	0.04
		(-0.28)	(-2.18)**	(-2.17)**	(-1.44)	
C	82	-0.10	-0.27	-0.33	-0.65	0.14
		(-0.72)	(-1.72)*	(-2.75)***	(-3.56)***	
Panel D: 3-year CAR (CAR_3)						
A	95	-0.16	-0.40	0.07	-0.21	0.02
		(-0.62)	(-1.36)	(0.33)	(-0.68)	
B	189	-0.05	-0.31	-0.27	-0.08	0.05
		(-0.37)	(-2.18)**	(-2.41)**	(-0.37)	
C	82	-0.01	-0.32	-0.29	-0.65	0.14
		(-0.06)	(-1.85)*	(-2.20)**	(-3.29)***	

CHAPTER THREE
WHY DO FIRMS DELAY ANNUAL EARNINGS REPORT? EVIDENCE FROM CHINESE MARKETS

1. Introduction

Reopened in late 1990, the Chinese stock market has grown rapidly since then and is now among the largest emerging markets in the world. By the end of 2004, the total number of firms listed on the two organized stock exchanges, Shanghai and Shenzhen, was more than 1,400. Unlike their counterparts in North America, Chinese listed firms have the same calendar fiscal yearend of December 31 and must release actual earnings along with annual reports over a four-month period (January 1-April 30) following the conclusion of each fiscal year. Since 2001, both Exchanges require additionally that all member firms publicly disclose their expected earnings announcement dates at the end of fiscal year. Normally, firms are permitted to submit a request, and receive approval, for one revision to the original release schedule. About one-fifth of listed firms choose to announce earnings in the last 10 days of April, even though it accounts for just over 8% of the reporting season. This pattern differs from that observed in other countries. Chambers and Penman (1984), for example, find that release of annual reports in the United States tends to cluster in Weeks 5-8 after the fiscal yearend, whereas only 3% of annual earnings announcements are made in Week 12 or later. [1]

The purpose of this study is two-fold: First, we re-visit the literature on the information content of timing of earnings announcements in a setting where the earnings release schedule is publicly disclosed in advance of actual announcements. Previous studies find that the market reacts positively (negatively) to early (late)

[1] See Figure 2 in Chambers and Penman (1984) for details.

earnings announcements (Haw et al. (2000), Begley and Fischer (1998), Chambers and Penman (1984), Kross and Schroeder(1984)). To determine whether actual earnings announcements are timely, most studies use an extrapolation model, inferring current period's expected earnings announcement dates from announcements made in the past. Bagnoli et al. (2002) argue that mechanical extrapolations yield low explanatory power and, instead, they use the expected quarterly earnings announcement dates submitted by firm managers at the request of First Call as a proxy for the market's expected announcement dates. While the setting employed by Bagnoli et al. arguably represents an improvement, their sample is likely to be biased toward large firms followed by financial analysts and may suffer from self-selection and non-response biases. The pre-announcement disclosure requirement imposed by Chinese stock exchanges applies to all listed firms and hence provides us with an opportunity to examine the information content of not just actual earnings announcements, but also earnings release schedule. The latter has not been addressed previously in the literature.

Second, we seek to explain why so many Chinese listed firms delay making earnings announcements until towards the end of the reporting season. Trueman (1990) presents a theoretical model that predicts that the delay may be motivated by a desire to manage earnings, which can take time. In particular, firms that report late may use more income-increasing accounting choices than others. A competing argument suggests that late-reporting firms tend to have unfavorable earnings news and managers want to delay the release of the bad news through delaying earnings announcements. The delay enables these firms to either complete a planned sale of securities or negotiate a new compensation contract before the release of bad news. The Chinese regulatory environment and corporate ownership structure have made it

less likely for bad-news firms to delay earnings announcements (see Section 2.1 for discussion), thus allowing us to focus on Trueman's prediction, which to our knowledge has not tested before in the extant literature.

Our sample consists of 3,290 firm-year observations with complete accounting, return and earnings announcement data over a period of three years, 2002-2004. For the main analysis, we classify sample firms into early, normal or late-reporting groups for firms that release earnings between January 1 and February 28/29, between March 1 and April 20, and between April 21 and April 30, respectively. Using value-weighted market return as the benchmark, we find that Chinese investors rationally interpret late (early) earnings release schedule as bad (good) news and react negatively (positively) at the time it is publicly announced. For firms that post early schedules, the market reaction is even stronger for a subset of firms which stay with their originally disclosed earning release schedule or for those which chose not to alter the original schedule in the immediately preceding year. Taken together, these results imply that the market views announcements of earnings release schedules as credible.

Using non-core return on assets (NCROA), defined as net non-operating income deflated by total assets, as a proxy for the extent of earnings management, we find that profitable late-reporting firms tend to over-report their non-core earnings, whereas money-losing late-reporting firms would under-report by taking a big bath. Results hold in a multivariate setting after controlling for covariates, such as firm size, current ratio, past non-core ROA and year as well as industry effects, lending support for Trueman's model prediction. Finally, there is no evidence that late announcers have worse stock returns than early announcers when actual earnings are announced, based on either univariate or multivariate analysis. On the surface, these findings

appear surprising in light of what has been documented in the literature. In particular, Haw et al. (2000) show that late-reporting Chinese firms have worse announcement-period stock returns than other firms over a four-year period (1994-1997) that pre-dates the 2001 disclosure regulation. But, we surmise that much of the information content associated with timeliness of reporting might have been preempted by the disclosure of earnings release schedule in our study.[2]

The above findings are not sensitive to the choice of benchmarks or alternative definitions of early or late announcements. The results are qualitatively similar if equally weighted market returns are used as benchmarks to calculate abnormal returns. Moreover, when we divide sample firms into quartiles based on absolute lags and define firms in the 1^{st} (4^{th}) quartile as the early (late) reporting, main findings still hold or become even stronger.

To the extent late-reporting is motivated by a desire to manage earnings, it may be worthwhile for regulators to focus their attention on firms which apply to release current year's earnings and annual reports late (i.e., part way through the reporting season). As well, it would be useful to track a firm's reporting pattern over time to see if late announcers in the past indeed engaged in more earnings management activities. For these firms, regulators may want to carefully scrutinize their initial submission of earnings release schedule in the current year and move it up to an earlier date, if the prospect of continued earnings management is high.

The remainder of this paper is organized as follows. The next section presents an overview of relevant institutional factors and a review of related literature; Section 3

[2] We also cannot rule out the possibility that a concurrent disclosure regulation, requiring firms to pre-announce earnings if the net income is expected to be negative or if it will likely deviate from that of the previous year's by more than 50%, might have allowed much of the information contained in the annual reports to be conveyed to the market in advance of their release. While interesting, it is beyond the scope of current study.

describes the sample and data used in the analysis; Section 4 reports the empirical results; Section 5 presents results from robustness checks, and Section 6 concludes the study.

2. Institutional Background and Literature Review

2.1 Institutional Background

Unlike listed firms in North America, all Chinese listed firms have the same fiscal yearend of December 31 and are required to announce earnings simultaneously with the filing of annual reports on or before April 30. Annual reports represent the most important information source for Chinese investors, as the financial intermediaries are still in their infancies. To ensure an orderly release of earnings and annual reports, since 2001 the two major Chinese Stock Exchanges, Shanghai and Shenzhen, have required firms listed on the Exchange to publicly disclose their expected annual report dates at the end of each fiscal year. In the first two years of the new disclosure regulation (fiscal 2001 and 2002), firms were required to first inform the Exchange of their expected earnings report dates, which were then published in the Exchange's Web Site in early January. Since fiscal 2003, firms have been required to directly post their earnings release schedule on the Web Site specified by the Exchange in the last week of fiscal year. If any firm wishes to make a change, it must submit an application, including reasons for the change, on a day at least five business days prior to the previously disclosed expected earnings announcement date or the new release date if the latter is earlier. The Exchange normally approves only one change by each firm in any given year. The designated Exchange Web site is updated daily. While it indicates whether a firm has made any revision to the original earnings release

schedule, it does not keep a record of the dates when the firm makes changes. Thus, during our sample period, the actual earnings announcements dates always coincide with the most recently released expected earnings announcement dates and are known by investors at least five business days in advance.

2.2 Literature Review and Research Questions

Since market expectation about the expected earnings announcement date is unobservable, prior studies of the association between information content of earnings announcements and timeliness of such disclosure have used extrapolative models for estimation purposes. A variety of extrapolative models have been used. Chamber and Penman (1984) and Begley and Fischer (1998), for example, define the expected reporting date in the current period as the end of fiscal period plus the year-ago reporting lag. Kross and Schroeder (1984) and Cohen et al. (2004) use more complicated times-series expectation model to generate expected reporting lags. The findings on whether investors react to the perceived acceleration or delay of earnings announcements are mixed so far. Begley and Fischer (1998), among others, report that investors rationally interpret a delay as bad news and react negatively if earnings release is not forthcoming on the expected earnings announcement dates. Cohen et al. (2004), however, find that late announcing firms have negative but insignificant abnormal returns in the expected announcement window, suggesting that investors do not interpret a delay as bad news. Penman (1984) shows that a short position constructed on the expected announcement dates of stocks for firms that delay the earnings announcement enjoys significantly positive abnormal returns, pointing to slow reaction by investors to a delay. Little or no reaction to the delay may imply either market inefficiency or measurement errors.

Bagnoli et al. (2002) report that the prediction power of extrapolative models is very poor. Instead, they use the expected earnings announcement dates conveyed to First Call by firm managers at the request of First Call as a proxy for market expectation. They find that delay in releasing quarterly earnings report is related to a negative earnings surprise and that investors bid down the stock price if they see a delay. There are, however, several problems in Bagnoli et al.'s approach. First, their sample is biased toward large firms followed by First Call. Second, First Call solicited the announcement schedule one or two weeks before the date when the corresponding quarterly earnings were announced one year ago. Their sample therefore could suffer from self-selection and non-response bias, as firms relatively unsure of the actual earnings announcement dates might not have responded. Third, the self-reported earnings release schedule was shared with First Call, but was not publicly disclosed. Thus, like studies before them, the market could only infer from the passage of time whether actual earnings were announced early, on time or late in Bagnoli et al.

The Chinese regulation requiring disclosure of earnings release schedule at fiscal yearend provides an opportunity to examine the information content of earnings release schedules, as well as actual earnings announcements conditional on such schedule, without resorting to an arbitrary extrapolation assumption or subjecting to bias inherent in an interview approach. If the investor views timely earnings report favorably, we would expect the market to react positively (negatively) to firms that announce an early (late) release schedule. Cohen et al. (2004) find that abnormal returns are reduced or even eliminated through pre-announcements. Chari et al. (1988) and Ball and Kothari (1991) present evidence that abnormal returns around earnings announcement dates are driven mainly by small firms, whose disclosure environment is generally considered as poor, whereas abnormal returns for large firms are not

significantly different from zero. To the extent that the disclosure of earnings release schedule improves the overall information environment in China, we would expect the difference between announcement-period abnormal returns for early versus late-reporting firms to be less than that previously documented in the literature using either American data or pre-2001 Chinese data.

If earnings release schedule were informative and if the information content of timely earnings announcements were largely preempted, then what might have prompted firm managers to delay earnings reports? Using the analyst earnings forecast errors as a proxy for earnings surprise, Begley and Fischer (1998) find that less than 4% of the variation in announcement timing can be explained by earnings surprises. A popular explanation is that managers of firms with unfavorable earnings news may choose to report late in order to give them time to complete a planned sale of securities, conduct contract negotiations at more favorable terms or allow bad news to filter into stock price slowly (Watts and Zimmerman (1990)). Trueman (1990) however challenges the so-called intentionally-withheld-bad-news hypothesis and points out that a delay itself can be viewed as bad news. Negative market reaction to a delay could render any such attempt futile. As well, litigations concerns may force some managers to release bad news sooner so as to preempt stockholders' legal actions precipitated by large price declines on earnings announcement dates (Skinner (1994)). Managers may also incur reputation costs and have their ability called into question, if they fail to disclose bad news in a timely manner. The practice in China casts further doubt on the popular argument, as listed firms in China are mainly owned by state-owned enterprises (SOEs) with managers holding merely a fraction of the company they run. Hence, any personal benefit with respect to sale of securities from withholding bad news is likely to be trivial. Moreover, SOEs typically make

senior managers' appointment and compensation decisions, which are then approved during annual shareholders' meetings. As the majority shareholders, SOEs are unlikely to be fooled by their managers into offering an overly attractive compensation package before the release of bad news.

Trueman (1990) proposes an alternative explanation for the timing of earnings announcements. He argues that firms with unfavorable earnings news may need time to manage earnings and hence they tend to report late. An empirical implication from Trueman's theory is that late-reporting firms may engage in greater earnings management than other firms. Evidence of earnings management has been widely documented using Chinese data. Aharony et al. (2000) report that Chinese firms tend to inflate pre-IPO earnings in order to improve their chance of getting a regulatory approval for their IPO applications. Chen and Yuan (2004) and Haw et al. (2005) also present evidence that non-recurring revenue and expense items are managed by listed firms in advance of their applications for right issues.[3] Jian and Wong (2003) show that Chinese firms manage earnings through related party transactions, which are usually done through time-consuming negotiations between listed firms and their related parties. The earnings management practice in China highlights the need of time to prepare earnings management. Chen and Yuan (2004) point out that Chinese firms often keep their books open until the completion of audits and that some firms are said to have backdated one-time transactions to the just concluded fiscal year, even though they take place after fiscal yearend. None of these studies and, to our knowledge, similar studies using US data have tested Trueman's prediction that late-reporting firms undertake more earnings management than early or normal-reporting

[3] Evidence that managers are likely to record non-recurring items around the year-end has also been documented using U.S. data. Francis et al. (1996) find that most write-offs of assets occur in the fourth fiscal quarter.

firms.

3. Sample Selection

Our sample period spans over three years, from 2002 to 2004. We exclude fiscal year 2001 from the sample because firms may need time to assess the full effect of new disclosure regulation when it was first introduced in 2001. We obtain daily return data from Datastream and the expected earnings release schedule along with actual earnings announcement dates and accounting data from the Shanghai Exchange and Shenzhen Exchange.[4]

The initial sample consists of 3,661 firm-year observations. Deleting 18 observations whose prior-year's actual annual report dates are missing and another 86 which are either without industry classification or are in finance and insurance industries results in 3,557 firm-year observations. We also drop 267 observations which lack the necessary accounting data for the purpose of computing return on assets (ROA), core ROA (CROA) and non-core ROA (NCROA) defined, respectively, as net income, net operating income and net non-operating income deflated by total assets, to yield a final sample of 3,290 firm-year observations. The sample is evenly distributed, drawing 1,032, 1,107 and 1,151, observations from fiscal years 2002, 2003 and 2004, respectively.

4. Empirical Results

4.1. Descriptive Statistics

Figure 1 depicts the distribution of actual earnings announcement dates at an interval of 10 days, both overall and by year. Of the four-month (January 1-April 30) reporting

[4] We would like to thank Zhaohui Chen in Shenzhen Exchange and Peng Ren and Bin Wang in Shanghai Exchange for collecting these data.

season, there are a total of 12 possible equal-length reporting segments. As is evident from Panel A, across the entire sample period, relatively few firms (14%, 467 out of 3,290) release actual earnings within the first six (January 1-February 28) reporting segments, whereas a disproportionately large number of firms (20%, 663 out of 3,290) do so in the last segment (April 21-April 30). The majority of firm-year observations (66%, 2,160 out of 3,290) report earnings during reporting segments 7-9 (March 1-April 20). The reporting pattern extends to each of the three sample years (see Panels B-D). Thus, for the main analysis, we choose to classify firms into three groups: early-reporting firms whose earnings are released before March 1, normal-reporting firms with a release date of between March 1 and April 20, and late-reporting firms with a release date of between April 21 and April 30. As robustness checks, we consider other definitions of early, normal and late-reporting later on by reference to quartile distribution of absolute reporting lag or relative reporting lag (see Section 5).

[Figure 1 about here]

Table 1 presents the distribution of sample firms by year (Panel A), industry (Panel B) and firm characteristics (Panel C), according to the timing of earnings releases. Even though the last 10 days of April account for only 1/12 of the reporting season each year, 19%, 20% and 22% of sample firms report late in fiscal 2002, 2003 and 2004 respectively (see Panel A). The corresponding percentages for firms announcing their earnings in the first half of the reporting season are 15%, 15% and 13%, respectively. A formal χ^2 test rejects the null hypothesis of independence between year and timing of earnings releases, marginally at the 10% level.

According to Panel B, the percentages of early-reporting firms range from a low of 2% in the Construction Industry to a high of 29% in the Communication and

Culture Industry, and the corresponding percentages for late-reporting firms are 8% (Mining) and 30% (Farming, Forestry, Animal Husbandry, and Fishery), respectively. For 11 (8) of the 15 industries, the percentage of early (late) reporting firms falls within ±5% of the overall sample percentage of 14% (20%). Nonetheless, a formal χ^2 test rejects the null hypothesis of independence between industry membership and timing of earnings releases at the 1% level.

Using total assets and sales as proxies for firm size, we find that late-reporting firms are much smaller in size than early-reporting firms with median total sales (assets) of ¥478 million versus ¥833 million (¥1,243 million versus ¥1,529 million), respectively (see Panel C).[5] Thus, preliminary evidence does not appear to support the conjecture that relatively large firms would delay releasing earnings because they require more time to prepare annual reports.

[Table 1 about here]

4.2. Market Reaction to the Release of Expected Earnings Announcement Dates

If investors are rational and if the timeliness of earnings announcements has information content, then we would expect to observe market reaction to the disclosure of expected earnings announcement dates. We use the data from 2003 to 2004 to test this conjecture because for both years firms are required to post their expected earnings release schedule on the Web sites specified by the Exchange in the last week of fiscal year.[6] We classify firms into early-, normal- and late-schedule

[5] With a handful of exceptions, results from pair-wise comparisons of means are qualitatively similar to those based on medians in this and subsequent tables.

[6] As discussed in Section 2.1, in fiscal 2002, the Exchange gathers announcement schedules from member firms first and publishes them on January 6, 2003 in its Web site. It is therefore difficult to

groups if their first-disclosed expected earnings announcement dates are earlier than March 1, between March 1 and April 20, and later than April 20, respectively.

Since the specific dates when firms post their expected earnings announcement dates cannot be identified from the database, we include the entire final week of fiscal year in the event window. The first business day when firms are allowed to post the expected announcement dates is defined as Day 0 and the last one is coded as Day +4. In addition, we include an additional business day immediately before the last calendar week of each fiscal year to allow for potential information leakage. For posting made on the last business day of the year, it is possible that the public may not learn the posted schedule until the first business day of the following fiscal year. Thus, the largest event window we consider in the ensuing analysis is (–1, +5). We use the value-weighted market return as the benchmark to remove the year effect. Abnormal returns for each group are computed as follows:

$$CAR_T = \frac{\sum_{i=1}^{N}\left[\sum_{t=-1}^{T}(R_{i,t} - R_{m,t})\right]}{N} \quad (1)$$

where $R_{i,t}$ is the daily return to Firm i on event day t, $R_{m,t}$ is the value-weighted market return on event day t, T is the event day and N is the number of firms used in the computation of the mean.

Panel A (B) of Figure 2 depicts the mean (median) of day-by-day abnormal returns for the early-reporting and late-reporting groups. On average, investors react positively to firms that announce earnings early and negatively to firms that announce late, for all measures of event window (Panel A). Starting from Day –1, abnormal returns for the early-reporting group lie consistently above those for the late-reporting

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determine when firms submit their schedule to the Exchange and whether some investors might have learned about the schedule from other sources prior to the official posting. Therefore we do not include data of 2002 in this test.

group. Moreover, the daily spread in abnormal returns between these two groups of firms widens as we move towards the end of the event window with the former group exhibiting an upward trend and the latter group displaying a downward trend. The pattern is similar for the median abnormal returns (Panel B).

[Figure 2 About Here]

Table 2 summarizes the cumulative abnormal returns (CAR) from Day –1 to Day +5 for the early-reporting and late-reporting groups, and compares CARs across these two groups of firms. Results from Panel A indicate that mean CARs of the late-reporting group are significantly negative, measured over any length within the event window (–1, +5). The most negative CARs, –2.16%, occur with the second largest event window (–1, +5). By comparison, mean CARs of the early-reporting group are mostly positive, and moreover are significantly larger than zero when event windows are given by (–1, +4) and (–1, +5). For the seven possible event windows considered in the study, both mean and median CARs of the early-reporting group are consistently higher than those of the late-reporting group, significant at the 5% level or better.

[Table 2 about Here]

In short, evidence presented in this section implies that the disclosure of expected earnings announcement dates is informative. In particular, the market reacts favorably to firms that expect to report early, and unfavorably to those that plan to report late. These results are new and have not been documented in prior literature. Absent explicit regulation requiring public disclosure of reporting schedule in advance of actual earnings announcements, researchers interested in this line of enquiry had to deal with unobservable market expectation in the past.

4.3 Earnings Management and Timeliness of Annual Reports

In the preceding section, we have found that investors react positively (negatively) to early (late) earnings announcements schedules. We now turn to the question of why notwithstanding the differential market reaction firms still choose to announce actual earnings late. One explanation, argued by Trueman (1990), is that firms may need time to manage reported earnings. For this analysis, we decompose earnings into operating and non-operating income and measure accounting performance in three ways: ROA, CROA and NCROA. Following Chen and Yuan (2004) and Haw et al. (2005) who show that non-operating income is more subject to earnings management than operating income, we use the third accounting performance measure, NCROA, as a proxy for the extent of earnings management. Results on the association between the timeliness of actual earnings announcements and ROA/CROA (NCROA) appear in Panel A (Panel B), Table 3.

As is evident from the first two columns of Panel A, the median ROA and CROA are significantly smaller in the late-reporting group than those in the early-reporting group (0.42 % and –0.09% versus 5.18% and 4.59%), implying better performing firms tend to announce their earnings early. These findings are similar to those reported by Haw et al. (2000) and other studies in this line. Defining changes in accounting performance, ESURP and CESURP, as changes in ROA and CROA, respectively, from the preceding year, we find that early-reporting firms generally experience improved accounting performance from one year to the next, whereas late-reporting firms face worsening performance (last two columns of Panel B). The median ESURP (CESURP) for the former group is 0.03% (0.26%), significantly higher than –1.35% (–1.01%) for the latter group at the 1% (1%) level.

Turning next to the issue of earnings management. The first set of columns in

Panel B show that profitable late-reporting firms tend to have significantly more non-operating income than the profitable early and normal-reporting firms. The median NCROAs for these three groups of firms are 0.23%, 0.13% and 0.15%, respectively. Pair-wise comparisons of medians involving the late-reporting group are all significant at the 5% level or better. Conversely, money-losing late-reporting firms record significantly more non-operating expense/loss, compared to the money-losing early and normal-reporting firms, with median NCROAs of –1.30%, –0.17% and –0.73%, respectively. The median NCROA for the late-reporting group is significantly smaller, or equivalently more negative, than that for the early-reporting (normal-reporting) group at the 10% (1%) level. These results suggest that profitable late-reporting firms over-report their non-core earnings, whereas their money-losing counterpart tends to under-report by taking a big bath. Late-reporting firms also appear to have a larger change in the extent of non-operating income from one year to the next, as measured by NCESURP, compared to the early or normal-reporting firms (see the second set of columns in Panel B), suggesting the change of NCROA for late firms might be more opportunistic.

[Table 3 about here]

Results from Panel B indicate that the majority (256 out of 454) of money-losing firms release earnings late, whereas less than 4% (17 out of 454) report early. Un-tabulated results also reveal that early-reporting firms on average announce their earnings 27 days earlier than previous year, whereas late-reporting firms do so 15 days later than last year. Preliminary evidence suggests that the delay in making earnings announcements might have been prompted by a desire to manage earnings. We address this issue more formally next in a multivariate setting using the following regression models, after controlling for covariates such as current ratio (Chen and

Yuan (2004)), lag value of dependent variable (Chen and Yuan (2004)), firm size, and year and industry effects.

$$NCROA = \alpha + \beta_1 Late + \beta_2 Size + \beta_3 CR + \beta_4 LNCROA + \beta_5 YEAR + \beta_6 IND \quad (2)$$

where *NCROA* is the non-core ROA; *Late* is a dummy variable, set equal to 1 if a sample firm is in the late-reporting category and 0 otherwise; *Size* is measured by the log value of total assets; *CR* denotes current ratio, defined as current assets divided bye current liabilities; *LNCROA* is the lag value of *NCROA* from the immediately preceding fiscal year; *YEAR* is a dummy variable, representing each of the three sample years (2002, 2003 or 2004); and *IND* is a dummy variable, proxying for each of the 15 industries described in Panel B, Table 1. Table 4 presents the results of multivariate regressions, both overall and separately for profitable and money-losing loss firms.

Profitable firms that delay earnings reports use significantly more income-increasing earnings management. The coefficient estimate for *Late* is 0.003, significant at the 1% level. This finding is consistent with the prediction of Trueman's model (1990), which predicts that late firms may need more time to prepare income-increasing earnings management. By comparison, loss firms that delay earnings reports use more income-decreasing earnings management. The coefficient estimate for *Late* is -0.02, significant at the 5% level. Taken together, these results indicate that firms that report earnings late adopt more earnings management than other firms. We conjecture that the delay may be prompted by a need for more time to manage reported earnings.

[Table 4 about here]

4.4. Market Reaction to Actual Earnings Announcements

As reviewed in Section 2.2, a number of studies have documented positive (negative) announcement-period abnormal stock returns for early (late) reporting firms, implying that the timeliness of earnings announcements has information content. However, none of these studies speak to settings where firms are required to disclose reporting schedule in advance of actual earnings announcements. An open question then is whether the improved disclosure environment in China might have pre-empted much of the information pertaining to timely reporting at a time when actual earnings are released.

As with Section 4.2, we use the value-weighted market returns as the benchmark to calculate CAR. Two event windows are analyzed: (–1, 0) and (–1, 1), where Day 0 is defined as the actual earnings announcement date, and Day –1 is included to allow for possible information leakage, and Day +1 is considered to accommodate likely delay. The mean and median of CARs for early, normal and late-reporting firms appear in Table 5. Results indicate that, for either event window, the market does not react more negatively to late-reporting firms, compared to early-reporting firms. The pattern is largely similar when the contrast is made between late-reporting and normal-reporting firms.

[Table 5 about here]

The above CAR analysis points to likely preemption of information contained in the timing of earnings announcements. To test this conjecture more formally, we next examine the return-earnings relationship in a multivariate setting. Motivated by Dechow (1994) and Sloan (1996) who show that investors react differentially to components of earnings, we control for changes in both CROA and NCROA (i.e.,

CESURP and NCESURP) in the regression. Since our interest lies in whether investors react differently to late versus early or normal-reporting firms, we include a dummy variable to indicate whether a firm belongs to the late-reporting group. In addition, following the finance literature, we also control for value-weighted market return, firm size, year and industry dummies. The complete model is as follows:

$$CAR_{T,j} = \alpha + \beta_1 Late + \beta_2 CESURP + \beta_3 NCESURP + \beta_4 Late * CESURP + \beta_5 Late * NCESURP + \gamma_1 SIZE + \gamma_2 B/M + \gamma_3 YEAR + \gamma_4 IND \quad (3)$$

Where $CAR_{T,i}$ is the cumulative return for firm *i* from Day –1 to Day T; *Late* is a dummy variable, set equal to 1 if the earnings announcement date is April 21-April 30 and 0 otherwise; *B/M* denotes book-to-market ratio; *CESURP*, *NCESURP*, *SIZE*, *YEAR* and *IND* are as defined previously.

The abnormal returns cumulated from Day –1 to Day 0 and from Day –1 to Day 1 are used as the dependent variables respectively. Table 6 reports the results. Late firms do not have significantly different abnormal returns as other firms, after controlling for factors possibly affecting the stock returns, suggesting that timeliness alone does not have information content. The estimated coefficients for changes in both earnings components for other firms are not significantly different from zero, suggesting that the market might have expected these changes. The coefficient estimate for *Late*CESURP* is also insignificant, implying that the change of core earnings for late firms might have been incorporated into stock prices as well. However, the coefficient estimate for *Late*NESURP* is 0.14 (0.151), significant at the 1% (5%) level when CAR(–1, 0) (CAR(–1, 1)) is used as the dependent variable. Thus, the change in non-operating income for late firms appears to be unexpected by investors. Perhaps, the change in non-operating income for late firms may have come from one-time transactions taken

place close to the release of annual reports but backdated into the previous years' financial statements.

[Table 6 about here]

5. Robustness Check

5.1 Credibility of Earnings Release Schedule

The results presented in Section 4 suggest that the disclosure of expected earnings announcement dates has information content and is viewed as credible by the market. These findings are not surprising, as firms are normally allowed to make one change to their earnings release schedule announced in the final week of each fiscal year (see Section 2.1). Un-tabulated results show that, overall, about 65% of sample firms stay with their original release schedule. The percentages increase from 58% in 2002 to 68% in 2003 and 2004. Among firms that alter their schedule, the average interval between the original schedule and the eventual earnings announcement date is only 3.6 days.[7]

Since the disclosure regulation governing the earnings release schedule began in fiscal 2001, an interesting question then is whether the market reacts differently to the first-released schedule, depending on whether a firm has made any change to that schedule previously. For this analysis, we focus on the subset of firms that stay with their original earnings release schedule. Panels A and B of Table 7 presents CARs from Day –1 to Day +5 conditional on one-year prior history for the early-schedule and late-schedule firms, respectively.

Results indicate that 230 early-schedule firms that did not alter their original release schedule in the immediately preceding year enjoy significantly positive CARs

[7] A staff in charge of monitoring of the financial reports of listed firms in the Shenzhen Exchange indicated to us that many firms change the expected annual report dates due to unavailability of senior managers on dates when financial reports are due to be signed.

(Panel A). By comparison, the 110 early-schedule firms that deviated from the original schedule in the past do not have significantly positive CARs over both windows, (–1, 4) and (–1, 5). The differential market reaction, however, does not extend to the late-schedule firms (Panel B).

Thus, it would appear that the market considers an early earnings release schedule as more credible if the firm has demonstrated an ability to stick to a similar early-schedule in the past. But, a late-schedule is viewed unfavorably regardless of whether firms had to revise a similar late-schedule previously.

[Table 7 about here]

5.2 Alternative Timeliness Measure Based On Absolute Lags

In this section, we replicate our main analysis by dividing sample firms into quartiles based on absolute lags. Firms belonging to the first (last) quartile are defined as the early- (late-) reporting and the remaining firms as normal-reporting. Results are reported in Table 8.

Consistent with Table 2 results, we find that investors react favorably to the release of early schedules and negatively to the announcement of late schedules (see Panel A, Table 8). For example, the mean CAR for the former group over the event windows (–1, 4) is 0.44%, significantly higher than –1.82% for the latter group. Late profitable firms have greater mean NCROA than early profitable firms, 0.94% versus 0.60%, and late loss firms report more negative mean NCROA than early loss firms, –5.17% versus –1.39% (see Panel B, Table 8). Results are similar when we focus on median NCROA.

We next rerun equation (2). To conserve space, we only report regression results on the variable *Late* in Panel C. The coefficient estimate in the regression for

profitable firms is 0.003, significant at the 1% level, whereas that for loss firms is –0.021, significant at the 5% level. These results suggest that late profitable (loss) firms engage in more income-increasing (income-decreasing) earnings management than other firms, consistent with findings from our main analysis.

Panel D presents CARs for each quartile over the two announcement windows: (–1, 0) and (–1, 1). As before, late-reporting firms do not appear to experience worse announcement-period stock returns, compared to firms in the early- or normal-reporting group. This preliminary impression is confirmed at the multivariate level (Panel E, Table 8). Rerunning equation (3), we find that the coefficient estimates for *Late*NCESURP* are 0.135 and 0.132, when CAR (–1, 0) and CAR (–1, 1) are used as the dependent variable, respectively. Both estimates are significant at the 5% level or better, suggesting that the non-core earnings for late-reporting firms may be unexpected by investors.

[Table 8 about here]

5.3 Alternative Benchmark Based on Equally Weighted Market Returns

We now replace value-weighted market returns with equally-weighted market returns as the market benchmark, and report results in Table 9.

The abnormal returns over event windows (–1, 4) and (–1, 5) for early-schedule firms are 1.35% and 1.30%, respectively, both significant at the 1% level, and the corresponding abnormal returns for late-schedule firms are –1.49% and –1.09%, respectively, and again significant at the 1% level (see Panel A, Table 9). These results offer consistent, and stronger, support for the earlier findings that early reporting schedules are viewed as good news by investors.

Results on announcement-period abnormal returns for different groups of firms

are reported in Panel B, Table 9. For event window, (–1, 0), both the mean and the median cumulative abnormal returns for the late-reporting group are not significantly worse than those for the other two groups (0.17% versus –0.21% and –0.40%; 0.36% versus –0.36% and –0.53%). Findings are similar when the event window, (–1, 1), is analyzed instead. These univariate results extend to the multivariate setting, after controlling for factors that have been shown to affect the announcement-period returns. As reported in Panel C, Table 9, the coefficient estimates on *Late*CESURP* over both event windows, at 0.006 and –0.005, are insignificantly different from zero. By comparison, the coefficient estimates on *Late*NCESURP* are 0.135 and 0.142, significantly different from zero at the 1% and 5% level, respectively. Taken together, our results appear to be quite robust to the choice of market benchmark.

[Table 9 about here]

5.4 Alternative Sample Based On First-Disclosed Earnings Release Schedule

We now consider the question of whether the market reacts differently to the announcement of earnings release schedule by a subset of firms which do not revise their first-disclosed schedule by repeating Tables 2-6 tests.

Defining the market benchmark using value-weighted market returns, we find that the announcement of early earnings release schedule is once again viewed favorably by the market over both event windows, whereas the disclosure of late release schedule is viewed unfavorably (Panel A, Table 10). Take event window (–1, 4) for example. The mean (median) cumulative abnormal returns for the former group are 1.07% (0.71%), compared to –1.66% (–1.63%) for the latter group. The magnitude of market reaction to early-schedule firms is stronger than what was reported previously in Table 2 when all early-schedule firms were included in the tests.

However, the converse is true for the late-schedule firms.

Panel B reports NCROA for each group of firms. Consistent with earlier findings, profitable late-reporting firms are found to engage in more income-increasing earnings management than profitable early-reporting firms (mean NCROA of 0.90 versus 0.63), and money-losing late-reporting firms engage in more income-decreasing earnings management than their counterparts which report early (mean NCROA of –6.14 versus –1.49). The coefficient estimate for the variable, *Late*, in the regression of profitable firms is 0.003, significant at the 5% level, while that in the regression for loss firms is not significant different from 0 (see Panel C, Table 10).

According to Panel D, late-reporting firm do not experience significantly worse stock returns over the earnings announcement periods than other firms. The coefficient estimates for the variable, *Late*NCESURP*, are positive over both event windows, though not significantly different from 0. The weaker results might have been caused by the reduced sample size.

[Table 10 about here]

6. Conclusion

Regulations requiring the disclosure of expected earnings announcement dates in China provide a unique setting to assess several contentious issues relating to the timing of earnings announcements. We find that investors react negatively to firms expected to report late, and positively to those expected to report early. However, late-reporting firms do not have significantly worse stock returns around the release of annual reports, compared to early or normal-reporting firms. These findings suggest that the information content of annual reports is largely preempted in China. We also find that accounting performance of late-reporting firms is worse than that of other

firms. Moreover, profitable late-reporting firms tend to report more income-increasing non-operating income and their money-losing counterpart tend to have more income-decreasing non-operating income. These results imply that earnings management could be one motivation for managers of firms with bad performance to report earnings late.

The findings in this study may be of interest to investors as well as regulators. Since the late annual reports likely contain more earnings management, investors must evaluate these firms more carefully in making investment decisions. Similarly, given limited regulatory resources, regulators may want to target their regulatory attention on firms, which are more likely to engage in questionable earnings management practice.

As possible extensions to the current study, it will be interesting to see whether past reporting pattern can be used to predict the timing of current period's earnings announcements, and if repeat late-reporting firms engage in more earnings management activities, compared to one-time late announcers. Finally, if the market were efficient, it might not react as strongly, or positively, to an early earnings release schedule announced at the end of fiscal year, if it was preceded by changes made in the past, each time pushing the original schedule back from early to late in the reporting season.

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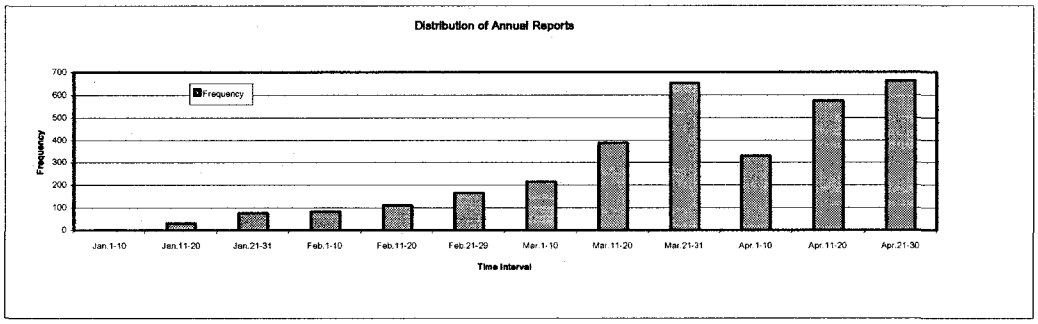
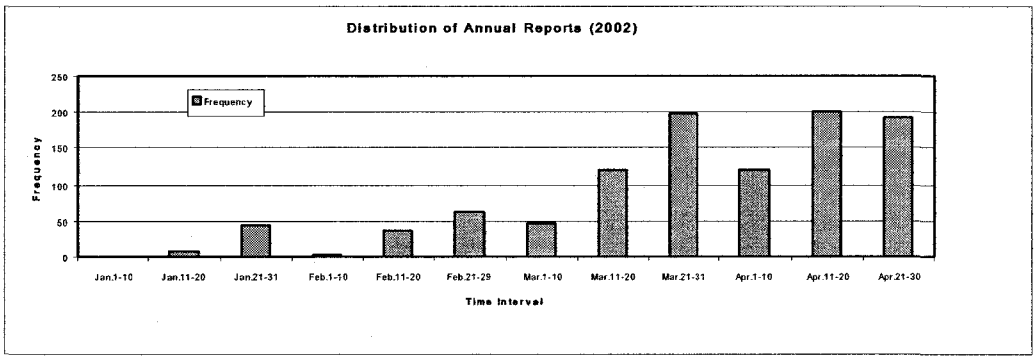
Fig. 1. Frequency Distribution of Annual Reports

This figure plots the frequency of annual reports in different time intervals in the annual report season. The annual reporting season includes four months, from January to April each year, and is divided into 12 intervals. Each month is divided into 3 intervals. The first one includes the first 10 days, the second includes the next 10 days and the last one includes the left days. Panel A plots the distribution for the whole sample, while Panel B to D plot the distribution for the fiscal year of 2002 to 2004, respectively.

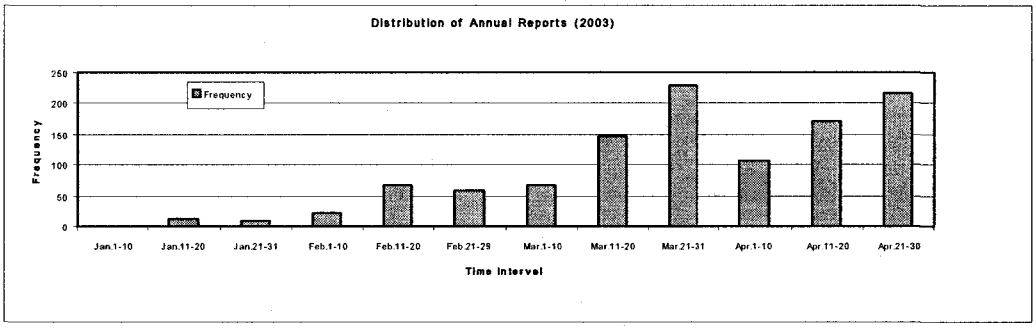
Panel A: Frequency Distribution of Annual Reports for the Whole Sample



Panel B: Frequency Distribution of Annual Reports (2002)



Panel C: Frequency Distribution of Annual Reports (2003)



Panel D: Frequency Distribution of Annual Reports (2004)

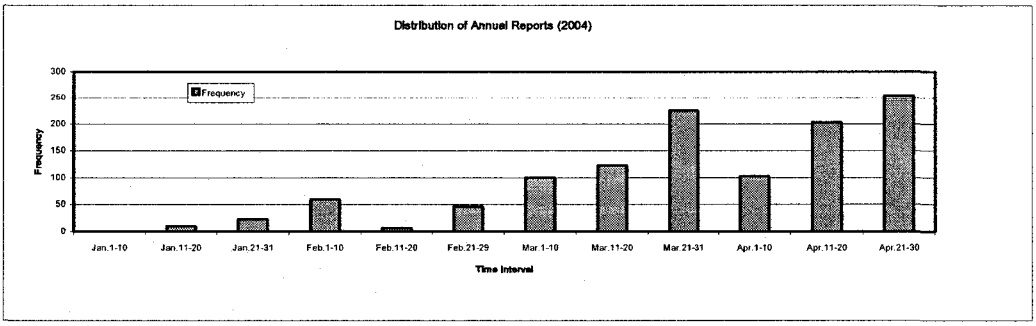


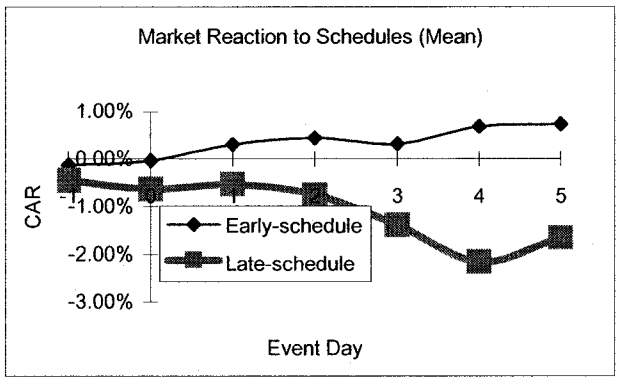
Fig. 2. Market Reaction When Expected Annual Report Dates are Released

The early-schedule portfolio includes firms with expected annual report dates between January 1st and February 28th (29th) and the late-schedule portfolio includes firms with expected annual report dates between April 21st and April 30th. The event window is (-1, 9), where day –1 is the business day immediately prior to the week during which firms release the expected annual report dates, day 0 to 4 are the last five business days in each year during which firms are required to release the expected annual report dates and day 5 is the first business day following the week during which firms release the expected annual report dates. Sample period is from 2003 to 2004. CAR_T is computed as the following way,

$$CAR_T = \frac{\sum_{i=1}^{N}\left[\sum_{t=-1}^{T}(R_{i,t} - R_{m,t})\right]}{N}$$

where $R_{i,t}$ is the daily return to the firm i on event day t, $R_{m,t}$ is the value-weighted market return on event day t, T is the event day, and N is the number of firms used in the computation of the mean. Panel A reports the means CAR for both portfolios and Panel B reports the medians.

Panel A: Market Reaction to Schedules (Mean)



Panel B: Market Reaction to Schedules (Median)

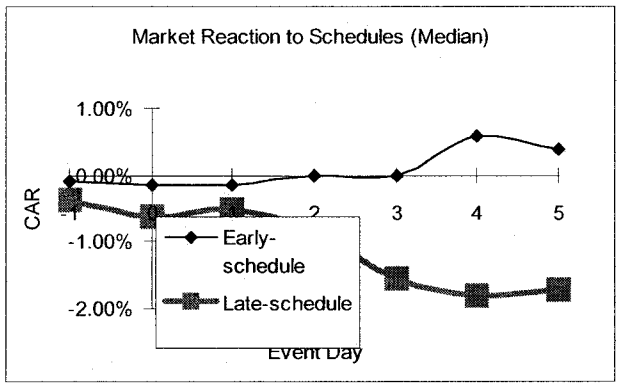


Table 1. Descriptive Statistics

Sample firms are divided into three sub samples—early-, normal- and late-reporting groups. Early-reporting group includes firms that report earnings before March 1, late-reporting group includes firms that report earnings after April 20 and normal-reporting group includes all other firms that report earnings between March 1 and April 20. Panel A reports sample distribution by year; Panel B reports sample distribution by industry; Panel C reports firm characteristics associated with different groups. Asterisks denote levels of statistical significance: ***1%, **5%, and *10% (two-tailed tests).

Panel A: By Year

	Early-reporting	Normal-reporting	Late-reporting	Sum
2002	155 (15%)	685 (66%)	192 (19%)	1,032
2003	169 (15%)	722 (65%)	216 (20%)	1,107
2004	143 (13%)	753 (65%)	255 (22%)	1,151
Total	467 (14%)	2,160 (66%)	663 (20%)	3,290

Panel B: By Industry Sector

Industries	Early-reporting	Normal-reporting	Late-reporting	Sum
Communication and Culture Industry	9 (29%)	13 (42%)	9 (29%)	31
Conglomerates	24 (10%)	148 (62%)	66 (28%)	238
Construction	1 (2%)	40 (75%)	12 (23%)	53
Farming, Forestry, Animal Husbandry, and Fishery	11 (14%)	46 (56%)	25 (30%)	82
Information Technology	12 (8%)	105 (64%)	46 (28%)	163
Machinery and Equipment Manufacturing	71 (14%)	347 (68%)	95 (18%)	513
Metal, non-Metal	69 (22%)	194 (63%)	47 (15%)	310
Mining	6 (15%)	31 (77%)	3 (8%)	40
Other Manufacturing	107 (15%)	462 (64%)	155 (21%)	724
Petroleum, Chemical, Plastics and Rubber Products Manufacturing	68 (18%)	252 (67%)	55 (15%)	375
Real Estate	12 (13%)	60 (63%)	24 (24%)	96
Social Services	14 (12%)	87 (74%)	17 (14%)	118
Transportation and Warehousing	19 (15%)	93 (72%)	17 (13%)	129
Utilities	12 (9%)	93 (72%)	25 (19%)	130
Wholesale and Retail Trade	32 (11%)	189 (66%)	67 (23%)	288
Total	467 (14%)	2,160 (66%)	663 (20%)	3,290

Panel C: Firm Characteristics

Sub samples	Assets (Millions ¥)		Sales (Millions ¥)		Book-to-market Ratio	
	Mean	Median	Mean	Median	Mean	Median
Early-reporting	2,662	1,529	1,955	833	0.55	0.57
Normal-reporting	2,638	1,505	1,780	734	0.59	0.60
Late-reporting	2,088	1,243	1,150	478	0.57	0.58
	t (z) statistics for difference in mean (median)					
Early versus Normal	0.09	0.15	0.87	1.98**	-4.12***	-3.60***
Early versus Late	2.34**	3.04***	4.17***	7.08***	-1.69*	-1.60
Normal versus Late	3.63***	4.43***	5.30***	7.72***	2.27**	1.80*

Table 2. Market Reaction When Expected Annual Report Dates are Released

The early-schedule portfolio includes firms with expected annual report dates between January 1st and February 28th (29th) and the late-schedule portfolio includes firms with expected annual report dates between April 21st and April 30th. The event window is (-1, 5), where day –1 is the business day immediately prior to the week during which firms release the expected annual report dates, day 0 to 4 are the last five business days in each year during which firms are required to release the expected annual report dates and day 5 the first 5 business day following the week during which firms release the expected annual report dates. Sample period is from 2003 to 2004. CAR_T is computed as the following way,

$$CAR_T = \frac{\sum_{i=1}^{N}\left[\sum_{t=-1}^{T}(R_{i,t} - R_{m,t})\right]}{N}$$

where $R_{i,t}$ is the daily return to the firm i on event day t, $R_{m,t}$ is the value-weighted market return on event day t, T is the event day, and N is the number of firms used in the computation of the mean. Asterisks denote levels of statistical significance: ***1%, **5%, and *10% (two-tailed tests).

Day	Early-schedule			Late-schedule			T-test	Z-test
	Mean	t	Median	Mean	t	Median		
-1	-0.13%	-1.43	-0.10%	-0.44%	-4.15***	-0.38%	2.26**	2.49**
0	-0.04%	-0.31	-0.16%	-0.64%	-4.14***	-0.62%	2.97***	3.40***
1	0.30%	1.14	-0.14%	-0.54%	-2.94***	-0.52%	2.62**	3.17***
2	0.44%	1.60	-0.01%	-0.76%	-3.21***	-0.84%	3.31***	3.93***
3	0.31%	1.13	-0.02%	-1.38%	-5.15***	-1.55%	4.40***	5.39***
4	0.68%	2.34**	0.57%	-2.16%	-7.30***	-1.82%	6.85***	7.45***
5	0.73%	2.50**	0.40%	-1.65%	-5.72***	-1.73%	5.79***	6.20***
N		340			353			

Table 3. Univariate Test of Earnings Management

Sample firms are classified into three groups—Early-, Normal- and Late-reporting groups—based on actual earnings announcement days. Early-reporting group includes firms that report earnings before March 1, late-reporting group includes firms that report earnings after April 20 and normal-reporting group includes all firms that report earnings between March 1 and April 20. ROA, CROA and NCROA are defined as the net income, the net operating income and the net non-operating income deflated by the total assets, respectively. ESURP, CESURP and NCESURP are defined as the change of ROA, CROA and NCROA, respectively, from the previous year. Panel A reports ROA, CROA, ESURP, and CESURP; Panel B reports NCROA and NCESURP. The means and medians of these measures are compared and reported. Asterisks denote levels of statistical significance: ***1%, **5%, and *10% (two-tailed tests).

Panel A: Accounting Performance

Sub sample	N	ROA		CROA		ESURP		CESURP	
		Mean	Median	Mean	Median	Mean	Median	Mean	Median
Early-reporting	467	5.28%	5.18%	4.66%	4.59%	0.80%	0.03%	0.71%	0.26%
Normal-reporting	2,160	2.61%	2.60%	2.22%	2.04%	-0.03%	-0.25%	0.03%	-0.20%
Late-reporting	663	-4.44%	0.42%	-3.47%	-0.09%	-3.50%	-1.35%	-2.33%	-1.01%
All	3,290	1.57%	2.43%	1.42%	1.88%	-0.61%	-0.32%	-0.34%	-0.25%
		t (z) statistics for difference in mean (median)							
Early versus Normal		8.60 ***	13.29 ***	8.29 ***	12.82 ***	2.67 ***	3.56 ***	2.58 **	3.58 ***
Early versus Late		18.20 ***	20.97 ***	18.91 ***	20.64 ***	8.57 ***	8.96 ***	7.89 ***	8.33 ***
Normal versus Late		14.80 ***	19.41 ***	16.13 ***	19.35 ***	8.08 ***	9.39 ***	7.47 ***	8.37 ***

Panel B: Earnings Management

Sub Sample	NCROA									NCESURP								
	All Firms			Profitable Firms			Loss Firms			All Firms			Profitable Firms			Loss Firms		
	N	Mean	Median	N	Mean	Median	N	Mean	Median	N	Mean	Median	N	Mean	Median	N	Mean	Median
Early	467	0.54%	0.12%	450	0.59%	0.13%	17	-1.03%	-0.17%	467	0.10%	-0.06%	450	0.23%	-0.05%	17	-3.46%	-3.05%
Normal	2,160	0.35%	0.11%	1979	0.60%	0.15%	181	-2.37%	-0.73%	2,160	-0.07%	-0.04%	1979	0.13%	-0.02%	181	-2.24%	-1.19%
Late	663	-0.86%	0.00%	407	0.96%	0.23%	256	-3.75%	-1.30%	663	-1.01%	-0.21%	407	0.46%	-0.03%	256	-3.35%	-1.57%
All	3,290	0.14%	0.09%	2836	0.65%	0.16%	454	-3.10%	-0.93%	3,290	-0.23%	-0.06%	2836	0.20%	-0.03%	454	-2.91%	-1.39%
							t (z) statistics for difference in mean (median)											
Early vs Normal		1.71 *	0.75		-0.08	-0.34		1.12	0.64		1.08	-0.10		0.74	-0.66		-0.75	-1.06
Early vs Late		6.82 ***	3.76 ***		-2.45 **	-2.59 **		1.90 *	1.73 *		4.44 ***	4.43 ***		-1.11	1.03		-0.07	-0.48
Normal vs Late		6.46 ***	5.62 ***		-2.85 ***	-2.97 ***		2.74 ***	2.76 ***		4.35 ***	5.07 ***		-1.84 *	-0.76		1.73 *	1.83 *

Table 4. Multivariate Test of Earnings Management

The equation to be estimated is as follows,

$$NCROA = \alpha + \beta_1 Late + \beta_2 Size + \beta_3 CR + \beta_4 LNCROA + \beta_5 YEAR + \beta_6 IND$$

NCROA is the after-tax non-operating income deflated by the total assets. Late equals to 1 if a sample firm is in the late category and equals to 0 otherwise. Size is the log value of total assets. CR is the current ratio defined as the current assets divided by the current liabilities. *LNCROA* is the lag value of *NCROA*, i.e., *NCROA* in the prior year. Asterisks denote levels of statistical significance: ***1%, **5%, and *10% (two-tailed tests).

Variables	All Firms		Profitable Firms		Loss Firms	
	Estimate	White t	Estimate	White t	Estimate	White t
Intercept	0.003	1.46	0.060	5.36***	-0.611	-4.53***
Late	-0.011	-6.44***	0.003	2.96***	-0.020	-2.25**
Size	0.000	2.11**	-0.003	-4.98***	0.028	4.30***
CR	0.001	2.79***	0.000	-0.99	0.004	1.27
LNCROA	0.265	5.66***	0.250	5.82***	0.183	1.12
Year Effect	Yes		Yes		No	
Industry Effect	Yes		Yes		No	
N	3,290		2,836		454	
Adj. R^2	9.13%		12.83%		11.68%	

Table 5. Abnormal Returns around the Release of Annual Reports

Sample firms are classified into three groups—Early-, Normal- and Late-reporting groups—based on actual earnings announcement days. Early-reporting group includes firms that report earnings before March 1, late-reporting includes firms that report earnings after April 20 and normal-reporting group includes all firms that report earnings between March 1 and April 20. The annual report date is defined as Day 0. The abnormal returns for two event windows, (-1, 0) and (-1, 1) are calculated and compared across groups. The mean abnormal returns are calculated as the following way,

$$CAR_T = \frac{\sum_{i=1}^{N}\left[\sum_{t=-1}^{T}(R_{i,t} - R_{m,t})\right]}{N}$$

where $R_{i,t}$ is the daily return to the firm i on event day t, $R_{m,t}$ is the value-weighted market return on event day t, T is the event day, and N is the number of firms used in the computation of the mean. Asterisks denote levels of statistical significance: ***1%, **5%, and *10% (two-tailed tests).

Sub Sample	CAR (-1, 0)		CAR (-1, 1)	
	Mean	Median	Mean	Median
Early-reporting	-0.17%	-0.27%	-0.39%	-0.69%
Normal-reporting	-0.49%	-0.56%	-0.57%	-0.71%
Late-reporting	-0.35%	-0.08%	-0.74%	-0.47%
	t (z) statistics for difference in mean (median)			
Early vs. Normal	1.98**	1.94*	0.96	0.77
Early vs. Late	0.75	-0.35	1.08	0.34
Normal vs. Late	-0.66	- 2.01**	0.75	-0.21

Table 6. Stock Returns and Earnings Information in Annual Reports

The model to be estimated is as the following,

$$CAR_{T,j} = \alpha + \beta_1 Late + \beta_2 CESURP + \beta_3 NCESURP + \beta_4 Late * CESURP + \beta_5 Late * NCESURP + \gamma_1 SIZE + \gamma_2 B/M + \gamma_3 YEAR + \gamma_4 IND$$

Where:

$CAR_{T,i}$: the cumulative return for firm *i* from Day -1 to Day T;

Late : = 1 if the annual report date for a firm is later than April 20th; = 0, otherwise;

CESURP: the change of CROA from the previous year;

NCESURP: the change of NCROA from the previous year;

SIZE: log value of total assets;

B/M: book-to-market ratio;

Year: year dummies;

IND: industry dummies.

Asterisks denote levels of statistical significance: ***1%, **5%, and *10% (two-tailed tests).

Variable	CAR (-1, 0)		CAR (-1, 1)	
	Estimate	White t	Estimate	White t
Intercept	-0.025	-4.25***	-0.042	-5.68***
Late	0.002	1.10	0.000	-0.07
CESURP	0.014	0.92	0.024	1.22
NCESURP	-0.023	-0.94	-0.012	-0.37
Late* CESURP	0.001	0.03	-0.014	-0.34
Late* NCESURP	0.140	3.08***	0.151	2.45**
B/M	-0.004	-0.82	-0.002	-0.42
Size	0.003	3.33***	0.005	4.26***
YEAR	No		Yes	
IND	Yes		Yes	
N	3,290		3,290	
Adj. R^2	1.26%		1.75%	

Table 7. Credibility of Earnings Release Schedule

This table replicates tests in Table 2 by further divide early-schedule (late-schedule) portfolio into two based on whether a firm changed its first-time expected annual report date in the prior year. Panel A reports CARs for early-schedule firms, whereas Panel B reports late-schedule firms. More details see Table 2. Asterisks denote levels of statistical significance: ***1%, **5%, and *10% (two-tailed tests).

Panel A: Early-schedule Firms

Day	No Change				Change			
	N	Mean	t	Median	N	Mean	t	Median
-1		-0.02%	-0.19	-0.02%		-0.35%	-2.28**	-0.15%
0		0.07%	0.46	-0.05%		-0.28%	-1.30	-0.23%
1		0.16%	0.82	-0.12%		0.58%	0.83	-0.18%
2	230	0.39%	1.78*	0.14%	110	0.55%	0.77	-0.29%
3		0.37%	1.57	0.06%		0.22%	0.32	-0.12%
4		0.60%	2.23**	0.55%		0.88%	1.26	0.73%
5		0.76%	2.56**	0.37%		0.76%	1.14	0.62%

Panel B: Late-schedule Firms

Day	No Change				Change			
	N	Mean	t	Median	N	Mean	t	Median
-1		-0.27%	-2.03**	-0.15%		-0.67%	-3.82***	-0.65%
0		-0.54%	-2.62**	-0.60%		-0.76%	-3.27***	-0.77%
1		-0.52%	-2.18**	-0.46%		-0.56%	-1.96**	-0.72%
2	195	-0.63%	-2.20**	-0.63%	158	-0.92%	-2.34**	-1.22%
3		-1.32%	-4.10***	-1.62%		-1.47%	-3.22***	-1.49%
4		-2.21%	-5.70***	-1.87%		-2.10%	-4.57***	-1.57%
5		-1.64%	-4.45***	-1.86%		-1.65%	-3.61***	-1.66%

Table 8. Alternative Timeliness Measure Based On Absolute Lags

In this table, sample firms are divided into quartiles based on absolute lags. The 1st quartile is defined as early-reporting group and the 4th quartile defined as late-reporting group. Tests in Table 2, 3, 4, 5, and 6 are replicated and key findings are reported in this Table. More details see Table 2 – 6. Asterisks denote levels of statistical significance: ***1%, **5%, and *10% (two-tailed tests).

Panel A: Market Reaction to the Announcement of Expected Annual Report Dates

Event Window	1st Quartile			4th Quartile		
	Mean	t	Median	Mean	t	Median
(-1, 4)	0.44%	2.56**	0.08%	-1.82%	-10.28***	-2.01%
(-1, 5)	0.46%	2.72***	-0.02%	-1.45%	-8.05***	-1.72%

Panel B: Earnings Management (NCROA)

Sub Samples	All Firms		Profitable Firms		Loss Firms	
	Mean	Median	Mean	Median	Mean	Median
1st Quartile	0.51%	0.12%	0.60%	0.13%	-1.39%	-0.22%
2nd Quartile	0.39%	0.08%	0.55%	0.10%	-4.77%	-0.91%
3rd Quartile	0.33%	0.12%	0.70%	0.18%	-2.51%	-0.72%
4th Quartile	-0.61%	0.03%	0.94%	0.24%	-5.17%	-1.21%

Panel C: Multivariate Tests of Earnings Management (NCROA)

Key Variable	All Firms		Profitable Firms		Loss Firms	
	Estimate	White t	Estimate	White t	Estimate	White t
Late	-0.009	-6.34***	0.003	2.69***	-0.021	-2.50**

Panel D: Market Reaction to Earnings Announcement

Sub Sample	CAR (-1, 0)		CAR (-1, 1)	
	Mean	Median	Mean	Median
1st Quartile	-0.38%	-0.36%	-0.49%	-0.69%
2nd Quartile	-0.54%	-0.57%	-0.57%	-0.72%
3rd Quartile	-0.50%	-0.74%	-0.64%	-0.71%
4th Quartile	-0.28%	-0.06%	-0.68%	-0.50%

Panel E: Multivariate Tests: Market Reaction to Earnings Announcement

Key Variable	CAR (-1, 0)		CAR (-1, 1)	
	Estimate	White t	Estimate	White t
Late	0.002	1.22	0.001	0.65
CESURP	0.024	1.54	0.038	1.88*
NCESURP	-0.021	-0.84	0.001	0.02
Late* CESURP	-0.001	-0.04	-0.026	-0.65
Late* NCESURP	0.135	2.77***	0.132	2.05**

Table 9. Alternative Benchmark Based on Equally Weighted Market Returns

In this table, equally weighted market returns are used as benchmarks to calculate abnormal returns. Tests in Table 2, 5, and 6 are replicated and key findings are reported in this Table. More details see Table 2, 5 and 6. Asterisks denote levels of statistical significance: ***1%, **5%, and *10% (two-tailed tests).

Panel A: Market Reaction to the Announcement of Expected Annual Report Dates

Event Window	Early-schedule			Late-schedule		
	Mean	t	Median	Mean	t	Median
(-1, 4)	1.35%	4.67***	0.97%	-1.49%	-5.04***	-1.29%
(-1, 5)	1.30%	4.44***	0.92%	-1.09%	-3.80***	-1.20%

Panel B: Univariate Tests of Market Reaction to Earnings Announcement

Sub Sample	CAR (-1, 0)		CAR (-1, 1)	
	Mean	Median	Mean	Median
Early-reporting	-0.21%	-0.36%	-0.53%	-0.89%
Normal-reporting	-0.40%	-0.53%	-0.46%	-0.62%
Late-reporting	0.17%	0.36%	0.08%	0.30%

Panel C: Multivariate Tests: Market Reaction to Earnings Announcement

Key Variable	CAR (-1, 0)		CAR (-1, 1)	
	Estimate	White t	Estimate	White t
Late	0.007	3.35***	0.007	2.77***
CESURP	0.011	0.73	0.018	0.92
NCESURP	-0.022	-0.89	-0.013	-0.38
Late* CESURP	0.006	0.17	-0.005	-0.12
Late* NCESURP	0.135	3.00***	0.142	2.36**

Table 10. Alternative Sample Based On First-Disclosed Earnings Release Schedule

In this table, firms that do not stick to their first-time expected annual report dates are dropped. The left firms are divided into three groups—Early-, Normal- and Late-reporting groups—based on actual earnings announcement days (absolute lags), as in Table 2-6. Tests in Table 2, 3, 4, 5, and 6 are replicated and key findings are reported in this Table. More details see Table 2 – 6. Asterisks denote levels of statistical significance: ***1%, **5%, and *10% (two-tailed tests).

Panel A: Market Reaction to the Announcement of Expected Annual Report Dates

Event Window	Early-schedule			Late-schedule		
	Mean	t	Median	Mean	t	Median
(-1, 4)	1.07%	2.86***	0.71%	-1.66%	-5.00***	-1.63%
(-1, 5)	1.06%	2.84***	0.75%	-1.30%	-3.96***	-1.64%

Panel B: Earnings Management (NCROA)

Sub Sample	All Firms		Profitable Firms		Loss Firms	
	Mean	Median	Mean	Median	Mean	Median
Early-reporting	0.54	0.12	0.63	0.13	-1.49	-0.49
Normal-reporting	0.38	0.11	0.56	0.14	-3.58	-0.68
Late-reporting	-0.18	0.08	0.90	0.24	-6.14	-1.15

Panel C: Multivariate Tests: Market Reaction to Earnings Announcement (NCROA)

Key Variable	All Firms		Profitable Firms		Loss Firms	
	Estimates	White t	Estimates	White t	Estimates	White t
Late	-0.006	-3.03***	0.003	1.96**	-0.005	-0.32

Panel D: Market Reaction to Earnings Announcement

Sub Sample	CAR (-1, 0)		CAR (-1, 1)	
	Mean	Median	Mean	Median
Early-reporting	-0.13%	-0.22%	-0.33%	-0.66%
Normal-reporting	-0.60%	-0.68%	-0.70%	-0.79%
Late-reporting	-0.20%	-0.08%	-0.77%	-0.43%

Panel E: Multivariate Tests: Market Reaction to Earnings Announcement

Key Variables	CAR (-1, 0)		CAR (-1, 1)	
	Estimate	White t	Estimate	White t
Late	0.003	1.17	-0.001	-0.26
CESURP	-0.001	-0.04	0.000	0.00
NCESURP	-0.015	-0.49	-0.012	-0.27
Late* CESURP	0.005	0.09	0.013	0.20
Late* NCESURP	0.114	1.34	0.117	1.04

Appendix I

How IPO Firms Comply with Regulations to Price New Shares and Make Earnings Forecast

Regime I: Qinghai Gelatin (Trading code: 000606, IPO date: August 30, 1996)

- The pricing of new share
  - IPO price: 4.30 yuan per share
  - Pricing method: Price/share = Average EPS×P/E ratio
  - Average EPS = (EPS_{1995}×50%) + (Forecast EPS_{1996}×50%) = 0.27 yuan
  - P/E ratio = 15.9
- Earnings forecast for the IPO year (1996)
  - Operating Income = 16.07 million
  - Income before Tax = 16.07 million
  - Net Income = 13.98 million (tax rate = 13%)

Regime II: Beijing Wandong Medical Equipment (Trading code: 600055, IPO date: April 18, 1997)

- The pricing of new share
  - IPO price: 8.54 yuan per share
  - Pricing method: Price/share = Average EPS×P/E ratio
  - Average EPS = (EPS_{1994} + EPS_{1995} + EPS_{1996}) / 3 = 0.61 yuan
  - P/E ratio = 14
- Earnings forecast for the IPO year (1997)
  - Operating Income = 29.16 million
  - Income before Tax = 29.16 million
  - Net Income = 24.79 million (tax rate = 15%)

Regime III: Shanghai Fortune Industrial (Trading code: 600196, IPO date: June 22, 1998)

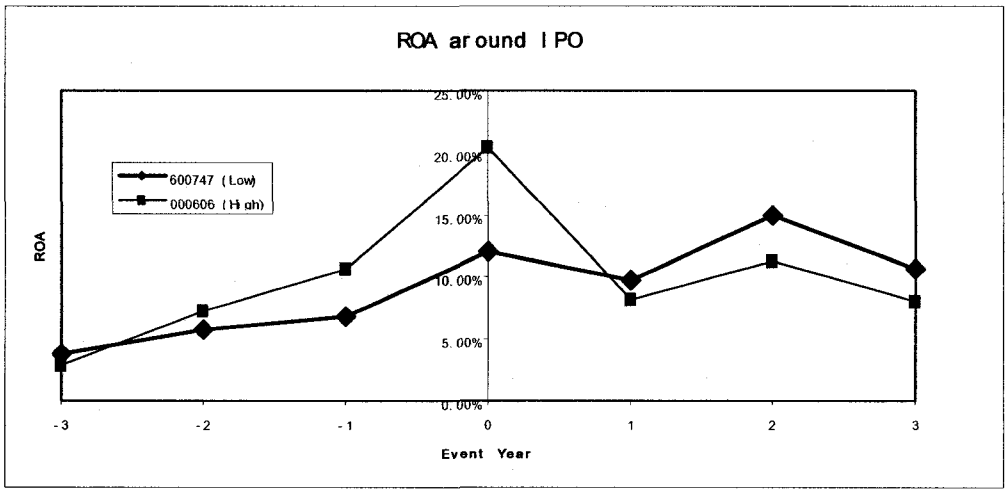
- The pricing of new share
  - IPO price: 7.15 yuan per share
  - Pricing method: Price/share = Forecast EPS×P/E ratio
  - Forecast EPS = Forecast EPS_{1998} = 0.48 yuan
  - P/E ratio = 15.0
- Earnings forecast for the IPO year (1998)
  - Operating Income = 77.59 million
  - Income before Tax = 78.20 million
  - Net Income = 59.91 million (tax rate = 15%)

Appendix II

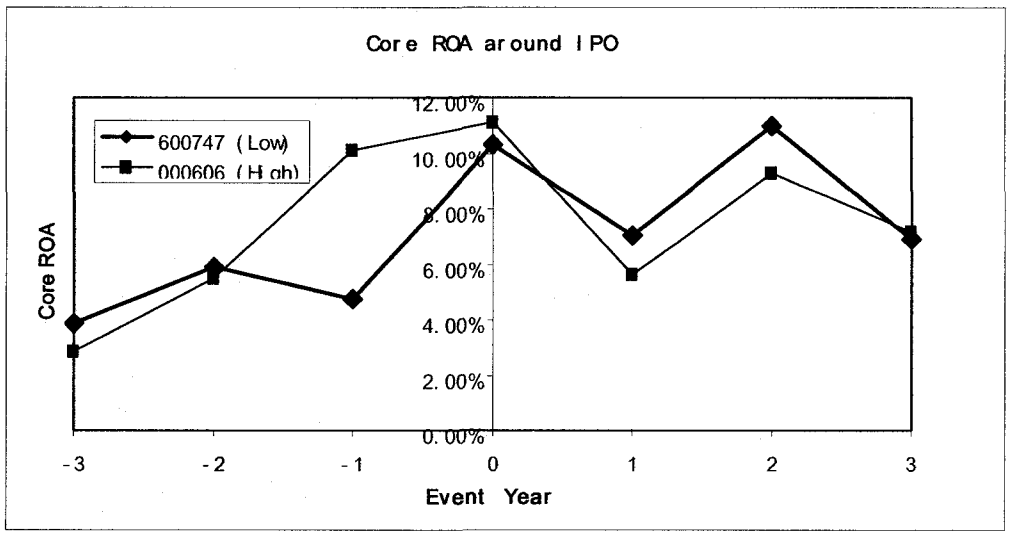
The Life of Two Stocks (Trading code: 600747 and 000606)

ROA and CROA are net income and net operating income, respectively, deflated by beginning-of-year total assets. NCROA is net non-operating income scaled by beginning-of-year total assets. *CAR* is the cumulative abnormal return and is computed as $CAR_T = \sum_{t=1}^{T}(r_{s,t} - r_{c,t})$, where $r_{s,t}$ is the t-th monthly raw return of the sample firm, $r_{c,t}$ is the t-th monthly return of the corresponding control firm. ROA, CROA and NCROA from year t-3 to t+3 are plotted. The cumulative abnormal returns from the 1st to 36th month are plotted.

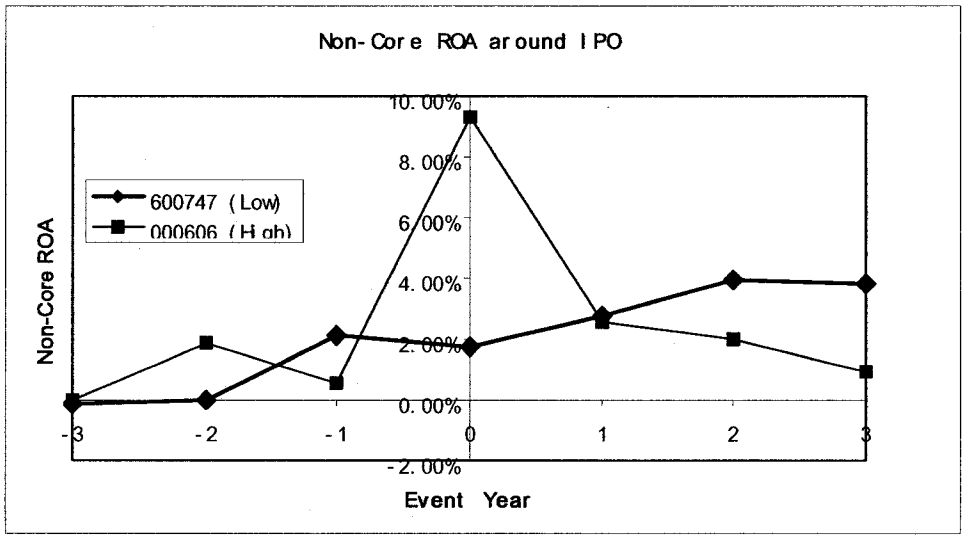
Panel A: ROA around IPO



Panel B: Core ROA around IPO



Panel C: Non-core ROA around IPO



Panel D: 36-Month Cumulative Abnormal Return