

Accounting-based regulation in emerging markets: The case of China's seasoned-equity offerings

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Abstract

In China, listed companies are required to achieve a minimum return on equity (ROE) before they can apply for permission to issue additional shares through seasoned-equity offerings (SEO). We document two benefits of this accounting-based regulation in China. First, this regulation limits the increase in the supply of shares and the dilution of existing share prices. The Chinese stock market reacted positively to the announcement of this accounting-based regulation. Moreover, investors' reactions to SEO, announcements are less negative since the accounting-based regulation was introduced than before the regulation was enacted. The second benefit is that the regulation reduces adverse selection in SEO, as shown by the finding that prior to this regulation, firms below the ROE threshold underperformed the market after their SEO, much like what has been observed in other markets; while those above the threshold outperformed the market. Thus, although positive accounting theory predicts that regulations based on accounting numbers create incentives for managers to manipulate their accounting numbers, accounting-based regulations in China seem to serve some useful purposes.

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1. Introduction

Contracts and regulations based on accounting numbers could provide the incentive for contracting parties to opportunistically manipulate accounting data (see a review in [Healy](#)

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& Wahlen, 1999) because it is costly for enforcers to “undo” such earnings management (Watts & Zimmerman, 1990). Thus, in a mature market, regulations seldom are based on accounting numbers. However, in China, regulators have long required listed companies to achieve a minimum return on equity (ROE) before allowing them to apply for permission to issue additional shares through rights issues. Moreover, after allowing companies to conduct seasoned equity offerings (SEO) in 2000, the Chinese government found it necessary in July 2002 to impose a minimum ROE of 10% as a qualification for firms to initiate SEO (referred to as the “2002 Regulation” hereafter).¹ Although previous studies show that the accounting-based regulations in China have led to opportunistic earnings management and capital misallocation (Chen & Yuan, 2004), Chinese regulators still maintain the ROE threshold requirement in determining the qualification of rights issues and SEO.

The public-interest theory of regulation, or the “helping hand” view that originated from Pigou (1938), characterizes the regulation process as one in which government intervention corrects market failures and maximizes social welfare (Joskow & Noll, 1981). In the case of regulating equity issuance after initial public offerings (IPO), regulators in many countries typically adopt a “disclosure-based approach.” That is, no official approval is needed for the issuance of additional shares as long as companies provide adequate disclosure. For example, a company must file an application to and seek authorization from the New York Stock Exchange prior to the issuance of additional shares. There is no profitability threshold that the company has to meet before making the application.

The situation in China differs in at least three aspects. First, when the market is moving up, investors tend to gobble up most of rights issues or SEO due to a lack of market efficiency. As time goes by, investors might learn to weed out firms that have poor prospects. However, at the current stage of China’s market development, investors do not have this level of sophistication. At least, the government does not believe so. The second difference is that firms can sell additional shares at a discount from the ongoing price. This is typical in other markets. For example, Corwin (2003) reports that in the United States, the SEO discount (the discount of offer price from the market price before the SEO announcement) averaged 2.92% in the 1990s. In China, the average discount is much higher: 21.6% based on 119 SEO from June 1998 to June 2005. This high discount in effect forces current holders of tradable shares to buy the additional shares to avoid the dilution of the value of their shareholdings. The majority shareholders, who typically own nontradable shares (Chen & Xiong, 2002), do not suffer from the dilution. The third difference is that research in many equity markets worldwide has documented an “adverse-selection problem” in equity offerings. That is, managers know more than the market about the true value of the firm and have incentives to issue SEO when the prices of their stocks are overvalued (Myers & Majluf, 1984). As a result, investors typically react negatively to SEO announcements (e.g., Eckbo & Masulis, 1992) and the stocks of SEO firms significantly underperform the market after the offering (e.g., Loughran & Ritter, 1997, December). This problem is more severe in China, again because most of the majority shareholders’ shares are not tradable and they do not suffer from negative market reactions or from poor post-

¹ A firm can issue additional shares through rights issues, in which shares are sold to existing shareholders, or SEO, in which shares are sold to the public.

SEO stock performance. Thus, Chinese regulators considered the use of a mechanical hurdle to limit the number of firms that can undertake SEO.

We postulate that China's 2002 accounting-based regulation of SEO serves two purposes. First, by restricting SEO opportunities to firms meeting the 10% ROE threshold, the regulation limits the potential supply of additional shares to the market. Second, the ROE threshold precludes firms with relatively poor operating performance from issuing additional shares. Since their stock prices are more likely to underperform in the future, the regulation can reduce the adverse-selection problem. In this study, we use 250 firms announcing SEO proposals around the timing of the *2002 Regulation* (187 firms before the regulation and 63 firms after) to document several pieces of empirical evidence that are consistent with these two benefits. We find that the Chinese stock market reacted positively to the announcement of the accounting-based regulation. Moreover, for firms with ROE above the threshold, the market's reaction to the SEO proposal announcement was less negative after the accounting-based regulation than before the regulation. We also find that firms below the ROE threshold underperformed the market after their SEO, much like what has been observed in other markets, while those above the threshold outperformed the market. That is, the accounting regulation was able to reduce the adverse-selection problem whereby firms conduct SEO when their stocks are overvalued. Thus, although positive accounting theory predicts that regulations based on accounting numbers create incentives for managers to manipulate their companies' accounting numbers, the accounting-based regulation in emerging markets such as China's seems to serve some useful purposes.

Table 1
China's regulation of rights offerings and SEOs

Date	Regulation of rights offering	Regulation of SEO
Nov. 17, 1993	Listed companies were allowed to issue rights to existing shareholders if they are profitable in the previous two years.	SEO was not allowed.
Sept. 30, 1994	Three years' profits and three-year average return on equity (ROE) $\geq 10\%$.	
Jan. 24, 1996	ROE $\geq 10\%$ in each of previous three years.	
Mar. 17, 1999	Three-year average ROE $\geq 10\%$ and ROE $\geq 6\%$ in each of previous three years.	
May 22, 2000		<i>The 2000 Regulation:</i> companies with three years' profits can apply to the CSRC for conducting SEO. ^a
Mar. 15, 2001	Three-year average ROE $\geq 6\%$.	<i>The 2001 Regulation:</i> three-year average ROE $\geq 6\%$ but not definitive. Companies not meeting the threshold can be qualified provided that the management and the underwriter provide detailed explanation that shows the healthy condition of the company. ^b
July 24, 2002		<i>The 2002 Regulation:</i> Three-year average ROE $\geq 10\%$ and ROE $\geq 10\%$ in the previous year. ^c

^aThe regulation was released by the CSRC on May 22 and published in newspapers on the next day.

^bThe regulation was released by the CSRC to all listed companies on Mar 15 and published in newspapers on Mar 28.

^cThe exposure draft was released on June 22 and the final regulation was released by the CSRC on July 24. It was published in newspapers in July 26.

The rest of the paper is organized as follows. Section 2 briefly introduces the Chinese government's regulations on additional share issuance and some testable predictions. Section 3 discusses the sample and the empirical results. Finally, Section 4 offers concluding remarks.

2. China's regulations on issuing additional shares and possible benefits

2.1. Background of China's regulations on issuing additional shares

China's Securities Regulatory Commission (CSRC) has been using a merit-based system to regulate share issuance by listed companies. In the early 1990s, listed companies were able to issue additional shares only through preemptive rights offered to their existing shareholders. This kind of offering is known as a *rights offering* in the United States. Due to the lack of other means for listed companies to raise capital and the Chinese investing public's insatiable demand for stocks in the early 1990s, rights offerings were excessively abused by listed companies (Chen & Yuan, 2004). To curb this excessive activity, the CSRC issued a series of regulations to restrict rights issues after November 1993. As summarized in Table 1, each regulation required a minimum level of profit or ROE. The restrictions were tightened gradually: the 1993 regulation required only 2 years of profits; this was tightened to a three-year average ROE of 10% in 1994.² However, the 1994 regulation proved to be ineffective because the amount of capital raised through rights issues exceeded that from initial public offerings (IPOs) in 1995. As a response, the regulation in 1996 required an ROE of at least 10% in *each* of the previous three years. However, the 1996 regulation also created a remarkably clear pattern of opportunistic earnings management. Fig. 1 shows that there was a sharp increase in reported ROE between 10 and 11% for 1995–1998; this pattern was not found for 1992–1994, however, when there was no ROE requirement. In early 1999, in response to public criticisms of the earnings-manipulation phenomenon, the CSRC reduced the ROE requirement from 10 to 6% for each of the previous three years. However, the reduction of the ROE threshold did not seem to reduce the magnitude of earnings manipulation. Fig. 1 also shows that the spike in the distribution of reported ROEs moved to 6–7% for 1999–2004. In other words, the earnings manipulation target shifted from 10% to 6% as the regulation on rights issues changed.

To give companies more options to raise additional capital, the CSRC started to allow large-scale seasonal equity offerings (SEO) in May 2000 by issuing a regulation (*the 2000 Regulation* hereafter).³ This regulation did not impose a strict profitability threshold and any company with profits in the previous three years could apply to the CSRC for SEO authorization. Since the regulation on rights issues was much tighter at that time (i.e., a minimum three-year average ROE of 10%), a large number of firms rushed to announce SEO proposals. The CSRC then modified the regulations on both rights issues and SEO to

² Ten percent was roughly the rate paid on one-year bank deposit in China in 1994. The idea is that firms should return more than the bank-deposit rate to deserve additional share issuance. Because bank-deposit rates declined later, the threshold was reduced to 6% in March 1999, again roughly the prevailing bank-deposit rate.

³ See Table 1 for a series of regulations on SEO since 2000.

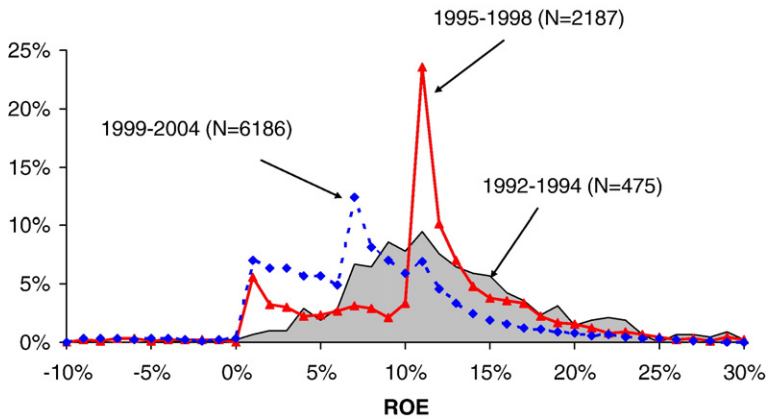


Fig. 1. The distribution of ROEs. This figure plots the distribution of the reported ROEs of all Chinese listed companies in three different periods from 1994 to 2004. ROE is net income divided by total shareholders' equity.

impose a consistent threshold (a minimal three-year average ROE of 6%) in March 2001 (*the 2001 Regulation* hereafter). However, the 6%-ROE criterion is not definitive: any company that did not meet the 6%-threshold could qualify if the management and the underwriter provided a detailed explanation that showed the healthy condition of the company.⁴ Thus, the 6%-criterion was almost equivalent to no profitability requirement at all. Many firms continued to announce SEO proposals. As tabulated in [Table 2](#), there were 187 firms making such announcements in the span of about two years (from May 2000 to July 2002). Among them, 90 (48%) did not meet the 10%-ROE requirement.⁵ In July 2002, after calls by the media for stricter regulations (e.g., [Liu, 2002](#)), the CSRC required a minimal three-year average ROE of 10% for an SEO (*the 2002 Regulation* hereafter). This regulation was successful in substantially reducing the number of firms announcing SEO proposals. As shown in [Table 2](#), there were only 63 proposals announced in the two and a half years from July 2002 to December 2004, and only seven firms did not meet the 10% ROE threshold. The seven firms were eligible according to a separate regulation issued in 2001 that allowed firms that were re-organized due to mergers, acquisitions, and major restructuring to issue additional shares with a minimum ROE of 6%. This change in the regulatory regime provides a unique setting for us to investigate the possible benefits of accounting-based regulations.

⁴ For example, Wuhan Department Store Group Co. Ltd. announced an SEO proposal right after the *2001 Regulation* went into effect. Its ROEs in the previous three years (1998 to 2000) were 3.16%, 2.72%, and 2.41%, all below 6%. A report by *NetEase.com* criticized the proposal and warned investors to invest with caution.

⁵ [Table 2](#) also shows that, among the 97 SEO announcements made before July 2002 by firms with ROE above 10%, 48 (51%) completed their SEOs. By comparison, among the 90 firms that announced SEO in the same period whose ROE was below 10%, only 17 (19%) completed their SEO. The remaining 81% of firms were either rejected by regulators or approved but then abandoned the SEO plans voluntarily due to lower share prices. The high percentage of possible rejection by firms with ROE below 10% indicates that Chinese regulators might have used the 10% hurdle as an implied criterion in the approval process.

Table 2

The timing and ROE distribution of firms announcing SEOs before and after the July 2002 Regulation

SEO proposals made	Before 2002 Regulation (May 2000 to July 2002)	After 2002 Regulation (August 2002 to December 2004)	Total
By firms whose ROE \geq 10%	97 (48)	56 (18)	153 (66)
By firms whose ROE < 10%	90 (17)	7 (1)	97 (18)
Total	187 (65)	63 (19)	250 (84)

The table reports the number of firms announcing SEOs before and after the July 2002 Regulation and the completion status (the number of firms that completed SEOs reported in parentheses). The numbers are broken down into firms whose ROE was above or below 10% in the year before the SEO announcement.

2.2. Possible costs and benefits of China's regulations on issuing additional shares

The various regulations on SEO mentioned above imposed at least two types of costs for China's securities market. The first was the possible earnings management to achieve the numerical accounting threshold. Chen and Yuan (2004) show that a similar accounting threshold (i.e., an ROE of 10%) for rights issues set forth in 1996–1998 induced a clear earnings-management pattern, in which firms used non-operating items to achieve the rights-issue qualification. They document that many of those firms were able to obtain the governmental approval to conduct rights issues, but their subsequent performance was generally below the industry norms. The second cost of a numerical threshold for SEO was that it would exclude firms with good future performance (“type I error”) and allow firms with poor future performance (“type II error”) to conduct SEO. For example, among all firms with ROEs less than 10% in 2002, only 13.4% had a turnaround in 2003 (with ROE above 10%). On the other hand, among all firms with ROEs above 10% in 2002, 35.5% had their ROEs fall below 10% in 2003. Thus, using 10% as a benchmark for performance, the numerical rule creates both types of error.

Despite the costs of the numerical rules, the Chinese government until now still uses similar rules to establish rights issue and SEO qualifications. As we mentioned in Section 1, there are two possible benefits of this accounting-based regulation: one is that the regulation limits the potential supply of additional shares to the market and the other is that the regulation can reduce the adverse selection problem in equity offerings. We make three testable predictions from these two benefits. First, as mentioned in the previous subsection, when there was essentially no profitability threshold requirement before 2002, a great number of firms rushed to propose SEO. The profitability threshold set forth in Regulation 2002 substantially reduced the number of firms that could issue SEO. In China, the supply of shares is tightly controlled by the government, whose approval is needed before a listed firm can issue additional shares. Since the overall stock-price level is determined by the supply and demand of shares, any regulation to restrict the supply of shares, such as the 2002 Regulation, is likely to be considered by the stock market as good news. That is, we expect to find a positive market reaction to the announcement of the 2002 Regulation. As a comparison, the 2001 Regulation did not require a clear-cut profitability threshold, thus the market reaction to the announcement of that regulation should be much weaker. In addition, the 2002 Regulation should affect firms that did not meet the 10% cut-off more

positively because it disqualified those firms from issuing new shares and hence reduced their adverse-selection problems. Thus, we predict that the market reaction to the announcement of the *2002 Regulation* is stronger for firms whose ROE are below 10% than for firms whose ROE are above 10%.

The second prediction is that investors might react less negatively to individual firms' SEO announcements after the *2002 Regulation*. In other markets worldwide, investors typically react negatively to SEO announcements. One of the reasons is the "adverse-selection problem," i.e., managers know more than the market about the true value of the firm and have incentives to conduct SEO when the prices of their stocks are overvalued (Myers & Majluf, 1984). Thus, an SEO announcement is interpreted as overvaluation of the firm's stock in established markets (Eckbo & Masulis, 1995). We expect that the Chinese stock market would also react negatively to SEO announcements. In addition, when no accounting-profit threshold existed prior to July 2002, every company with a "healthy financial condition" could apply to the CSRC for SEO authorization. Firms had to compete with many others for SEO capital. Since the *2002 Regulation* severely reduced the number of firms that qualified to conduct SEO, qualified firms no longer needed to compete with many others for SEO capital. Thus, we predict that investors reacted less negatively to SEO proposal announcements after the *2002 Regulation*.

The third prediction about the *2002 Regulation* is that it reduced the adverse-selection problem in SEOs. The adverse-selection problem arises because firms time the market in issuing additional shares when their market values are high, relative to book value and past market value (Baker & Wurgler, 2002, February). Thus, Loughran and Ritter (1995, March, 1997, December) find that firms conducting SEOs substantially outperform their non-issuing peers in both stock returns and accounting profitability prior to the SEO, but they significantly underperform their peers after the offerings. Under the *2002 Regulation*, firms were required to have an average three-year ROE of 10% in order to propose an SEO. Due to their superior performance, such firms are less likely to underperform their non-issuing peers after the SEO. Thus, we predict that the *2002 Regulation* reduced this adverse-selection problem. Empirically, we expect that, among the 65 firms that completed SEO before the *2002 Regulation*, the firms meeting the 10% ROE threshold should outperform the market after the offerings, while those that fall below the threshold should underperform the market.

3. Empirical results

3.1. Market-level reaction to the 2002 Regulation

To test the market reactions to the two regulations in 2001 and 2002, we employ an augmented market model used in previous studies (see, e.g., Berger, Li, & Wong, 2005; Berkman, Cole, & Fu, 2005). More specifically, we form a value-weighted portfolio of all 1126 listed firms with available data and analyze the cumulative abnormal returns around the announcement dates of the *2001* and *2002 Regulations*. We examine the market reactions to the regulations within a three-day window, starting from one trading day before to one trading day after the CSRC release of the new regulation (or the draft of the new

regulation, the exact dates for each regulation announcement are provided in [Table 1](#)).⁶ We estimate the cumulative mean-adjusted returns around each regulation announcement using the following ordinary least square (OLS) model:

$$R_t = \beta_0 + \beta_1 * \text{REG}_{2001} + \beta_2 * \text{REG}_{2002} + \varepsilon_t, \quad (1)$$

where R_t is the return for day t on the value-weighted market portfolio; REG_{2001} and REG_{2002} are dummy variables that equal to 1/3 for days within the event windows around the release of the *2001* and *2002 Regulations* (March 15, 2001 and July 24, 2002, respectively) and zero otherwise.

Our sample period for estimating Eq. (1) is from the first trading day of 2000 (January 4) to the last trading day of 2002 (December 31), resulting in a window of 716 trading days. The sample forming the market portfolio includes all 1126 firms (with available data) listed on the two stock exchanges as of December 2002. Market return data are obtained from the China Stock Market and Accounting Research (CSMAR) trading database. The two coefficients, β_1 and β_2 , in (1) capture the cumulative mean-adjusted returns during the event windows around the release of the *2001* and *2002 Regulations*, respectively. We expect β_2 to be significantly positive and greater than β_1 .

Model 1 in [Table 3](#) presents the regression results of Eq. (1) using the three-day short windows. The results show that the coefficient on REG_{2002} (β_2) is significantly positive (with $p < 0.01$), i.e., the market reacted positively to the *2002 Regulation* in the short window. This is consistent with our prediction that the market favored the introduction of the accounting-based regulation. The coefficient on REG_{2001} is insignificant (with a p -value of 0.640) and the magnitude is significantly less than the coefficient on REG_{2002} (with an F -value of 9.87). This is due to the fact that the *2001 Regulation* did not set forth a rigorous numerical threshold to limit the number of firms that could conduct SEOs.

In Model 2 of [Table 3](#), we add two interactive terms: $\text{REG}_{2001} * \text{DROE}$ and $\text{REG}_{2002} * \text{DROE}$, where DROE is defined as one if the portfolio consists of firms with ROE less than 10% and zero otherwise. Since the *2002 Regulation* disqualified firms with ROE below 10% to issue new shares, investors in those firms were no longer subject to the adverse-selection problem from SEO. Thus, we expect the coefficient on $\text{REG}_{2002} * \text{DROE}$ to be positive, while that on $\text{REG}_{2001} * \text{DROE}$ to be no different from zero. Model 2 shows that both terms are not significantly different from zero at conventional levels (with p -values of 0.911 and 0.957, respectively). The estimated coefficient on REG_{2002} (β_2) remains significantly positive and significantly larger than that on REG_{2001} . Thus, the *2002 Regulation* affects the overall market valuation due to its limitation of additional supplies of shares to the market.

⁶ Long windows are defined as one trading day before the CSRC release of the new regulation (or the draft of the new regulation) until one trading day after the regulation was first published in newspapers. The long window is necessary because the information about the regulation was released to a limited number of market participants including regional securities regulatory offices, the two stock exchanges, investment bankers, and listed companies. The restricted release of information makes it likely that many investors received the information only after the regulations were published in newspapers. However, the long windows are likely to include other news that might confound our results. Thus, we use the short-window test in [Table 3](#). The long-window tests yield similar results.

Table 3
Stock price reactions to SEO regulations announced in 2001 and 2002

	Predicted sign	Model 1	Model 2
<i>Intercept</i>	?	−0.000 (0.865)	0.000 (0.813)
REG ₂₀₀₁	?	0.012 (0.640)	0.012 (0.655)
REG ₂₀₀₁ *DROE	?	−	0.002 (0.957)
REG ₂₀₀₂	+	0.124*** (0.000)	0.116*** (0.000)
REG ₂₀₀₂ *DROE	+	−	0.004 (0.911)
No. of observations		712	1432
Adj. <i>R</i> -square		3.02%	3.30%
<i>F</i> -value for difference between the coefficients on REG ₂₀₀₁ and REG ₂₀₀₂		9.87***	9.65***

The table reports market reactions of SEO regulations announcements in China. The stock price reactions are estimated using the model below over the period from January 4, 2000, to December 31, 2002 ($t=716$):

$$R_t = \beta_0 + \beta_1 * \text{REG}_{2001} + \beta_2 * \text{REG}_{2002} + \varepsilon_t, \quad (1)$$

$$R_t = \beta_0 + \beta_1 * \text{REG}_{2001} + \beta_2 * \text{REG}_{2001} * \text{DROE} + \beta_3 * \text{REG}_{2002} + \beta_4 * \text{REG}_{2002} * \text{DROE} + \varepsilon_t. \quad (2)$$

In model (1), R_t is the return for day t on the value-weighted market portfolio. In model (2), we decompose the market portfolio into one with firms with ROEs of 10% and above and one with firms with ROEs less than 10%. We compute R_t for both portfolios and then pool them together. DROE is one if the portfolio consists of firms with ROEs less than 10% and zero otherwise. REG₂₀₀₁ and REG₂₀₀₂ are dummy variables that equal 1/3 for days within the event windows around the release of the *2001* and *2002 Regulations* (March 15, 2001 and July 24, 2002, respectively) and zero otherwise. p -values are in parentheses. *** denotes significance level at 1% for two-tailed tests.

3.2. Market reactions to SEO announcements before and after the 2002 Regulation

To test the second prediction that the market reacted less negatively to the SEO announcements after the *2002 Regulation*, we employ the event-study methodology summarized by Campbell, Lo, and MacKinlay (1997). The event date (day zero) is defined as the date the firm makes an announcement of a proposal to issue additional shares.⁷ For each company, we use an event period of 300 days (starting at day -279 and ending at day $+20$ relative to day zero). The first 259 days in this period (-279 through -21) are designated as the “estimation period,” and the following 41 days (-20 through $+20$) are

⁷ The proposal is the first public information made available about a seasoned-equity offering in China. After approving the resolution, the board of directors should inform the exchange and announce the resolution including the SEO proposal and the notice on the holding of a general meeting in two working days. The proposal should disclose the relevant information such as the proportion of shares and the total number of shares to be issued, the pricing method of the issuing price, and the use of the funds to be raised. The announcement should be published in three major Chinese financial newspapers (*China Securities*, *Shanghai Securities News*, and *Security Times*). Our event date is defined as the date the announcement is made in the newspapers.

designated as the “event period.” We use the following market model to specify the normal returns of security i as

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}, \quad (2)$$

where R_{it} is the observed return for security i at day t , R_{mt} is the return on the value-weighted market index for day t , and ε_{it} is the zero mean disturbance term. For every security, the abnormal return (AR) for each event day is estimated as:

$$AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt}, \quad (3)$$

where $\hat{\alpha}_i$ and $\hat{\beta}_i$ are the estimated values from applying the OLS regression to Eq. (2). The cumulative abnormal return (CAR) for a τ -day period is then calculated as:

$$CAR_{i\tau} = \sum_{t=1}^{\tau} AR_{it}. \quad (4)$$

To test the null hypothesis that the mean cumulative abnormal return ($CAR_{i\tau}$) is equal to zero, we use a t -statistic calculated as the ratio of the mean $CAR_{i\tau}$ to its estimated standard deviation; the standard deviation is estimated from a time series of mean abnormal returns.

The sample includes 187 and 63 SEO proposal announcements made before and after the *2002 Regulation*, respectively.⁸ Fig. 2 shows CAR of the two samples from day -20 to day $+20$. The figure indicates that CAR drop substantially in both samples around day zero and that the drop is steeper in the sample of announcements before the *2002 Regulation*.

Panel A of Table 4 provides a statistical test of the difference in CAR of the 187 and 63 SEO announcements before and after the *2002 Regulation*, respectively. The tests are conducted on two event windows: $(-1, +1)$ and $(-3, +1)$.⁹ The panel shows that CAR in both windows is significantly negative, indicating that investors generally understood the SEO announcements as bad news. This is similar to the results documented from other markets worldwide (Eckbo & Masulis, 1995). In addition, the panel shows that CAR before the *2002 Regulation* were significantly more negative than those after the regulation, based on the non-parametric Wilcoxon test. For example, the median three-day CAR surrounding SEO proposal announcements made before July 2002 is -3.79% , which is significantly more negative (with a z -statistic of -2.09) than the median three-day CAR (-3.42%) surrounding announcements made after July 2002.

Due to the profitability threshold required in the *2002 Regulation*, the firms announcing SEOs before and after this regulation were naturally different in terms of profitability and other characteristics. We control for the differences in firm characteristics in two ways. First, we limit the pre-*2002-Regulation* sample to those with ROEs above 10%. According to panel B of Table 4, CAR of this reduced sample is still more negative than those of the post-*2002-Regulation* sample, according the Wilcoxon z -statistics.

⁸ The sample is identified from a Chinese website (www.cnlist.com), which compiles all corporate announcements, including SEO proposal announcements, made by Chinese listed companies. Financial and regulated utilities companies and those that issued only foreign-currency denominated shares are excluded.

⁹ Tests using a longer window of up to seven days $(-5, +1)$ yield the same results.

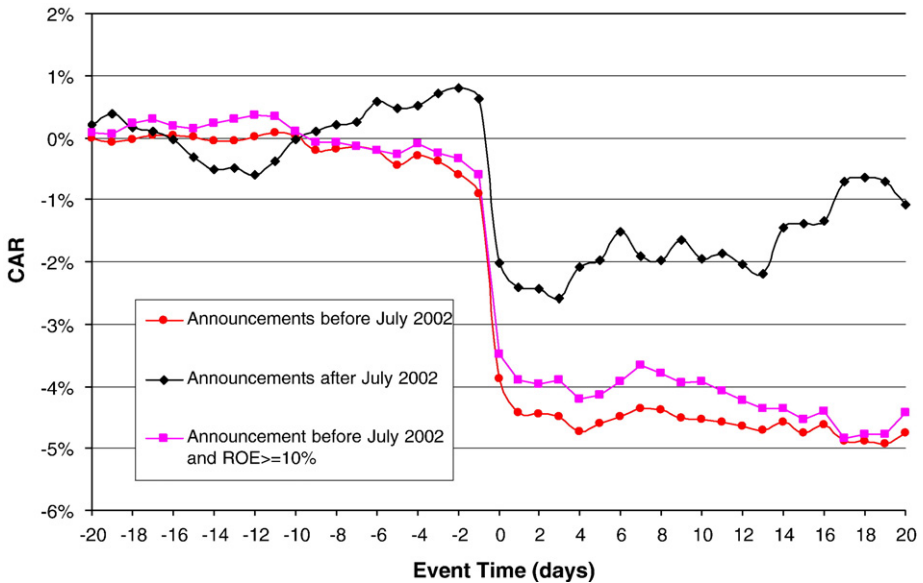


Fig. 2. Plot of cumulative abnormal returns surrounding the announcements of SEO proposals. The figure plots the cumulative abnormal returns (CARs) surrounding the SEO proposal announcements. The sample consists of 250 announcements made by China's listed companies during the period June 2000 to December 2004. The announcements are categorized into two groups, before July 2002 when there was no accounting-based regulation on SEO applications (187 announcements) and after July 2002 when there was an accounting-based regulation (63 announcements). The figure also plots a sub-sample of the former group, i.e., before July 2002 and $ROE \geq 10\%$ (97 announcements). The horizontal axis is the event day relative to the announcement day, and the vertical axis is the value of CARs.

The second approach we use to control for firm characteristics is to conduct a regression analysis using CAR as the dependent variable. The independent variables include a dummy variable *TIME* (equal to one if the SEO was announced after July 2002 and zero otherwise) and four firm-specific variables: cash flows from operations (*CFO*); the percentage of the number of additional shares to be issued according to the SEO proposal over the total number of existing shares (*SEOP*); financial leverage (*LEV*, total liabilities divided by total assets), and the natural logarithm of the book value of total assets to measure the size of the firm (*SIZE*). The regression results, together with a comparison of firm-characteristic variables, are reported in Table 5. Panel A of the table shows that in the pre-2002 sample, the characteristics of firms with ROEs above and below 10% are not different except in the variable of *CFO*. That is, firms with ROEs above 10% have more cash flow from operations than those with ROEs below 10%. In addition, between the firms with ROEs above 10%, the pre-2002 group has lower financial leverage (*LEV*) and smaller size (*SIZE*) than the post-2002 group. Panel B of Table 5 reports two regression models. Column (1) includes all 250 firms that announced SEO proposals before and after July 2002, and column (2) includes only firms that had a minimum ROE of 10% prior to their SEO announcements. It is seen that the dummy variable *TIME* is significant in both columns in Table 5. Thus, the inclusion of control variables does not change the basic result that the market reacted more negatively to SEO announcements made before

Table 4

Cumulative abnormal returns surrounding SEO proposal announcements made before and after the July 2002 Regulation

	Number of events	Average CAR (%)	Median CAR (%)	<i>t</i> -statistics (z-statistics)
<i>Panel A: comparison of CARs for SEO announcements made before and after the July 2002 Regulation</i>				
Three-day window CAR (−1,+1)				
Before July 2002	187	−3.94	−3.79	
After July 2002	63	−3.22	−3.42	−2.10** (−2.09**)
Five-day window CAR (−3,+1)				
Before July 2002	187	−4.32	−3.81	
After July 2002	63	−2.94	−2.65	−2.19** (−2.12**)
<i>Panel B: comparison of CARs for SEO announcements made before and after the July 2002 Regulation, for firms with ROE ≥ 10% only</i>				
Three-day window CAR (−1,+1)				
Before July 2002 and ROE ≥ 10%	97	−3.73	−3.20	
After July 2002 and ROE ≥ 10%	56	−2.57	−2.76	−2.32** (−2.02**)
Five-day window CAR (−3,+1)				
Before July 2002 and ROE ≥ 10%	97	−4.10	−3.60	
After July 2002 and ROE ≥ 10%	56	−2.29	−2.24	−2.06** (−2.05**)

The table reports the cumulative abnormal returns of various windows surrounding the SEO proposal announcements. The sample consists of 187 and 63 announcements made by China's listed companies during the period from June 2000 to June 2002 and July 2002 to December 2004, respectively. The market model using the CSMAR value-weighted market return is used for the normal returns. CAR is the sample average cumulative abnormal return for the specified event window. The last column reports *t*-statistics (Wilcoxon *z*-statistics) that are used to test the mean (median) CAR difference between the samples before and after July 2002. ** denotes significance at a level of 5% in two-tailed tests.

the 2002 Regulation than after. In addition, the difference in the market reactions to SEO announcements exists in firms that were qualified under both the new and the old regulations. In summary, the 2002 Regulation seems conducive to a less negative reaction by the market to SEO announcements.

3.3. Subsequent performance of SEO firms

In Section 2, we predicted that among the firms announcing SEO before the 2002 Regulation, those meeting the ROE threshold outperform, while those below the threshold underperform, the market after completion of their SEO. As in previous studies on post-SEO performance (e.g., Loughran & Ritter, 1997, December), we focus on the performance after the completion of the SEO. Since many firms did not complete the SEO proposals that they had announced, the sample is reduced from 187 to 65 firms, including 48 firms above the threshold and 17 below the threshold.¹⁰ In addition we measure performance using

¹⁰ That is, 51% of 97 firms with ROEs above 10% and 19% of 90 firms with ROEs below 10% completed their SEO proposals. Those that failed to complete the SEOs could have either abandoned the proposal voluntarily, or have had it rejected by the regulators. The large difference in the completion rates between the two groups indicates that Chinese regulators might have used the 10-percent hurdle as an implied criterion in the approval process.

Table 5
Cross-sectional regressions of CARs surrounding SEO announcements

Panel A descriptive statistics of independent variables						
	Full sample	Sub-sample A	Sub-sample B	Sub-sample C	A vs. B	A vs. C
		Firms with ROE ≥ 10% and before July 2002	Firms with ROE < 10% and before July 2002	Firms with ROE ≥ 10% and after July 2002	(<i>t</i> - and <i>z</i> -stat)	(<i>t</i> - and <i>z</i> -stat)
CFO	0.061 (0.060)	0.065 (0.068)	0.043 (0.044)	0.085 (0.093)	1.90 (2.17)	-1.27 (-1.56)
SEOP	0.260 (0.228)	0.249 (0.221)	0.249 (0.221)	0.310 (0.238)	-0.29 (-0.91)	-1.80 (-1.39)
LEV	0.464 (0.471)	0.443 (0.419)	0.435 (0.437)	0.537 (0.547)	0.31 (0.10)	-3.73 (-3.60)
SIZE	2.458 (1.332)	2.028 (1.278)	1.942 (1.254)	4.218 (2.571)	0.30 (0.68)	-2.47 (-2.67)

Panel B regression analysis			
		(1)	(2)
	Predicted sign	All firms	Firms with ROE ≥ 10%
Intercept	?	-0.182 (0.240)	-0.042 (0.847)
TIME	+	0.034** (0.026)	0.043** (0.033)
CFO	+	0.090 (0.119)	0.178** (0.035)
SEOP	-	-4.412 (0.326)	-6.108 (0.317)
LEV	?	-0.002 (0.958)	-0.029 (0.582)
SIZE	?	0.007 (0.389)	0.001 (0.949)
Number of obs.		250	153
Adj. <i>R</i> -square		3.62%	7.12%

Panel A of this table presents descriptive statistics of independent variables used in the regressions. Mean and median values (in parentheses) are reported for the full sample and three sub-samples as well. The last two columns of Panel A report *t*-statistics for mean comparisons and signed rank *z*-statistics (in parentheses) for median comparisons among the three sub-samples. Statistics in bold indicate significant differences at a level of at least 5%. Panel B shows the results from regressing the 3-day cumulative abnormal returns (CAR_{*i*}) surrounding the SEO proposal announcement on the variables TIME_{*i*}, CFO_{*i*}, SEOP_{*i*}, LEV_{*i*} and SIZE_{*i*}.

$$CAR_i = \beta_0 + \beta_1 * TIME_i + \beta_2 * CFO_i + \beta_3 * SEOP_i + \beta_4 * LEV_i + \beta_5 * SIZE_i + \varepsilon_i$$

where TIME_{*i*} equals one if firm *i*'s SEO proposal was announced after July 2002 and zero otherwise; CFO_{*i*} is firm *i*'s cash flows from operations in the year prior to the announcement year scaled by concurrent average total assets; SEOP_{*i*} is firm *i*'s proposed number of shares for SEO over the total number of outstanding shares before announcement date; LEV_{*i*} is firm *i*'s leverage ratio (total liabilities over total assets); SIZE_{*i*} is firm *i*'s natural logarithm of book value of total assets at the end of year prior to the announcement year. Column (1) reports the regression results for 250 firms that announced SEO proposals and Column (2) reports the sub-sample of 153 firms in which all firms have a minimum ROE of 10% prior to their SEO proposal announcement year. *p*-values are in parentheses. ** denotes significance at a level of 5% in two-tailed tests.

market-adjusted returns (cumulative monthly stock returns minus cumulative monthly market index returns).

Table 6 shows that the pre-SEO stock returns were higher for firms whose ROEs were above 10% than for firms whose ROE were below 10%. The difference, however, does not reach statistical significance levels according to the Wilcoxon *z*-test. After the completion of the SEOs, the market-adjusted returns of firms above the 10% threshold are positive in the 12 and 24-month intervals (6.71% and 9.48% respectively), while the market-adjusted returns of the firms below the threshold are negative in the same two intervals (-11.65%

Table 6
Comparison of pre- and post-SEO market-adjusted returns (%)

	2 years before	1 year before	Issuing year	1 year after	2 years after
Above threshold	28.85	8.15	–	6.71	9.48
Below threshold	3.04	–0.43	–	–11.65	–6.45
Wilcoxon z-statistics	1.77	1.50	–	3.22***	2.15**

This table reports pre- and post-SEO stock returns of firms that had completed SEO before July 2002 when there was no strict hurdle of ROE as an SEO qualification. The sample consists of 65 firms, including 48 firms with minimum ROEs of 10% in the preceding year and 17 firms below the threshold. The market-adjusted return is measured as the cumulative daily market-adjusted stock returns. z-statistics for the Wilcoxon signed-rank test of median difference between two groups are also provided. ** and *** denote the significance level of 5% and 1% for two-tailed tests, respectively.

and – 6.45% respectively).¹¹ All the post-SEO return measures are significantly different from zero according to unreported *t*-statistics. Moreover, the differences between the two groups' market-adjusted returns are significant during each of the two intervals. That is, the firms above the 10% threshold significantly outperform those below the threshold up to at least 2 years after the completion of the SEO. These results indicate that firms below the threshold are more likely than firms above the threshold to conduct SEO at the peak of their stock prices. Since underperformance in the post-SEO period is typically taken as an indication of the adverse-selection problem (e.g., Loughran & Ritter, 1997, December), Table 6 demonstrates that the problem is less severe in firms above the threshold than in firms below the threshold.¹²

4. Conclusion

In China, listed companies are required by regulations to achieve a minimum return on equity (ROE) before they can apply for permission to issue additional shares through rights issues or seasoned-equity offerings (SEO). Although such accounting-based regulations have led to clear earnings-management behavior, the Chinese government still maintains the threshold requirement even today.

We document two possible benefits of this accounting-based regulation for China, an emerging market: (1) to limit the supply of shares and the dilution of existing share prices and (2) to reduce adverse selection in the SEO. As evidence for the first benefit, we find that the Chinese stock market reacted positively to the announcement of the accounting-based regulation. Moreover, among firms with ROE above the threshold, the market reaction to their SEO announcements was less negative after the accounting-based regulation went into effect. As evidence for the second benefit, we find that firms below the ROE threshold underperform the market after their SEO, much like what has been observed in other

¹¹ The finding that SEO firms whose ROEs were above the threshold outperformed the market after their SEO is consistent with Wang, Wei, and Pruitt's (2006) finding that China's rights-issuing firms' stock returns outperformed those of control firms after the rights issue. But Wang et al.'s (2006) sample includes firms whose ROE was above the threshold only.

¹² Since our purpose in Table 6 is to investigate whether firms time the market to conduct SEOs when their stock prices are relatively high, we do not examine the accounting-based performance measures.

markets; those above the threshold outperform the market. That is, the accounting-based regulation is able to reduce the adverse-selection problem in which firms conduct SEO when their stocks are overvalued.

Positive accounting theory predicts that regulations based on accounting numbers create incentives for managers to manipulate their accounting numbers (Watts & Zimmerman, 1990). Chen and Yuan (2004) have shown that China's accounting-based regulations led to some resource misallocation. Our paper extends that study by showing that the regulations seem to achieve some useful objectives in China's particular investment environment. Our study also explains why the accounting-based regulations still exist given the manipulation behavior they create.

Finally, one important limitation should be pointed out. That is, our objective is to examine whether the adverse-selection problem is reduced by using an ROE cut-off relative to the regulatory regime in which no cut-off was imposed. It could be argued, however, that a measure such as market-to-book ratio might be a better measure for regulators to reduce the adverse-selection problem; but this is beyond the scope of this study.

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