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The Impact of Large Public Sales of Government Assets --- Empirical Evidence from the Chinese Stock Markets on a Gradual and Offer-to-Get Approach

Yan Zeng • Josie McLaren

Abstract In June 2001, the Chinese Government announced proposals to reduce its retained ownership in listed Chinese state-owned enterprises. In the three months following the announcement, the market fell by 40% and as a consequence, in 2002 the programme was cancelled. The Government learnt lessons and in April 2005 it launched a revised plan to sell its shares, known as the Full Circulation Reform. The new reform was carefully guided by official document releases, trialled with a pilot programme, and then extended to the majority of firms in groups over a two year period. The process was known as a gradual, offer-to-get approach. At the firm-level, each reforming company gradually implemented the sale of its Government-held shares through one negotiation stage and one voting stage. Part of the negotiation stage centred on the compensation that would be paid by the Government to the public shareholders to ensure that the reforms went through. This paper investigates market reactions around the critical event dates in the reform process and the underlying dynamics. The results show that this reform had positive impact on prices, indicating the gradual and offer-to-get approach was very successful and Government objectives for the sale were met.

Keywords Chinese state-owned enterprises · Split-share structure reform · Gradualism · Offer-to-get approach · Consideration

JEL Classification C14 · C31 · G14 · G15 · G18

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1 Introduction

When the Chinese stock markets were established in the early 1990s, including the Shanghai Stock Exchange and Shenzhen Stock Exchange (SHSE and SZSE), two thirds of China domestic shares were held by the central Government or their representatives and only about one third were issued to public investors. Government shares in listed companies could not be traded publicly while otherwise identical shares were freely-traded. This split-share structure led to conflicts of interest between tradable (public) and non-tradable (Government) shareholders and was recognized as the source of many corporate governance problems in China (Wang and Chen 2006; Guo and Keown 2009). Furthermore, it has been argued that Government-owned shares had a negative impact on the performance and the value of listed firms (Qi et al. 2000; Sun et al. 2003; Bai et al. 2004; Wang et al. 2004; Chi et al. 2005). These governance problems, together with a desire to raise funds and move China towards a market economy, provided the incentive for the Government to propose to release its retained shares to the market.

On 12th June 2001, State Council issued a regulation entitled *Provisional Measures on Management over the Reduction of State Shares to Raise the Social-security Fund* [Measures (2001)] aiming to reduce the state shares in listed state-owned enterprises (SOE) and detailing the programme to reduce Government stock. The proposals were unsuccessful as the market collapsed under severe price pressure. It was no surprise, given over 90% of the listed firms were SOEs and almost 67% of the shares were held by the Government.¹

The minority public owners feared that a large-scale sale of Government assets was imminent although the Government emphasized it was a mere proposal (Kim et al. 2003; Wong 2006; De Jonge 2008; Hou 2010) and no firm took real action to reduce the Government ownership under this proposal. Furthermore, the majority owners were not happy with the scheme of equal pricing, as they believed the Government shares were overvalued and an equal pricing mechanism would transfer wealth from tradable shareholders to non-tradable shareholders (Beltratti and Bortolotti 2006). Moreover, the uncertainties over when this would happen and how many shares would be sold also concerned the investors (Green 2003). The Government was aware of these issues and scrapped the proposals in 2002.

In 2005, the Chinese Government launched the Split-Share Structure Reform (SSSR) as a revised plan to sell their stake in the listed companies. This time the Government adopted a gradual, experimental and bottom-up approach. The reform was carefully guided by the official document releases, trialled with a pilot programme, then extended to the firms in groups. At the firm-level, each firm undergoing SSSR was allowed to design its own proposal instead of using a one-fits-all plan. For each firm, the plan was gradually implemented through two stages, where trading in shares was suspended during consultation and voting periods. The majority of Chinese listed SOEs successfully completed the reform over a two-year time period. By the end of 2007, 1,254 firms were successfully restructured to be fully listed, representing over 97% of the market capitalization by number of firms at the time.

As part of the proposals for the listing of the tradable shares, the Government introduced a unique offer-to-get approach. The Government, as the non-tradable

¹ According to the National Bureau of Statistics of China, the average Government ownership of listed firms peaked in 1993 (75.6%) but reduced to 63.9% in 2004.

shareholders, had to pay compensation, called Consideration, to the tradable shareholders in each company, in order to implement the reforms. In other words, the Government compensated these shareholders for the estimated loss that they would suffer due to the sale of the Government shares. The aim of the Consideration was to ensure that market stability would be maintained. The objective of this paper is to examine the market reactions to the macro official Government announcements which guided the reform and to the critical firm-specific announcements. The event-study method is used to analyse how this gradual and offer-to-get approach affected the market. A few previous studies have examined the market reaction to the share reform (Beltratti and Bortololli 2006; Lu et al. 2008; Ren et al. 2009; Firth et al. 2010). However none of them looked at the complete reform process. Instead, researchers cherry-picked particular event dates, focusing either on stock price changes only at the first official document release to formally launch the SSSR [Notice (2005)], or the beginning of the firm-specific reform process (the 1st resumption day).² As such, the previous literature has provided an incomplete picture. In this paper, we extend the literature by investigating market reactions during the entire reform process for each firm, including three Government announcements, one group date which announced the set of firms to be privatised at that time, and two firm-specific events. In addition, previous papers have applied the event-study method somewhat arbitrarily. The choice of estimation periods, event periods and statistical tests varied across studies and was not explained. As a consequence, the studies lacked a convincing and plausible illustration of the application in the context of Chinese stock markets, which weakened the power of their results and conclusions. In this paper, discussions and justification of the key elements in the event-study are provided, such as the choice of event period, estimation period, return model, market index and statistical tests, as well as the removal of confounding events. This rigorous modelling helps to ensure the validity of the results obtained.

Furthermore, in this study explanatory variables including issue size, compensation size, negotiation period, group order are regressed against the market reactions around each event date to measure their impact. Among them, group order has never been investigated before. Negotiation period stands for the efforts made by the non-tradable shareholders to solicit opinions from the tradable shareholders to reach an agreement. The more effort made by the non-tradable shareholders to communicate with the tradable shareholders, the less surprise the announcement made later would bring to the market, regardless of whether it was a negative or positive surprise. Overall, the research provides a comprehensive investigation of the entire SSSR process in China and thus it contributes to our understanding of the process, whether it was successful and whether such a format could be employed by other Governments looking to sell their holding in listed SOEs.

The remainder of this paper is organized as follows. The detailed background of the SSSR scheme and producers are introduced in Section 2; the data and research design, as well as hypotheses are discussed and developed in Section 3; the results are presented and discussed in Section 4, finally a conclusion is presented in Section 5.

² Details are provided in section 3.

2 China Split-Share Structure Reform

2.1 Background

On 29th April 2005, the China Securities Regulatory Commission (CSRC) promulgated the *Notice on the Trial Implementation of Measures on Split-Share Structure Reform for Listed Companies and Related Questions* [Notice (2005)], which aimed to float to the stock markets the non-tradable shares retained by the Government. In other words, all the shares would be sold freely on the stock markets. This announcement was widely regarded as a formal launch of the SSSR, the final step in China SOE reform³.

2.1.1 The Split-Share Structure

Since the establishment of Chinese stock markets in the early 1990s, Government shares, which comprised almost two thirds of Chinese domestic shares, were not allowed to be traded publicly while otherwise identical shares, which are sold to the public investors, were freely-traded.

This resulted in a structure of non-tradable shares and tradable shares, which is normally referred to as the split-share structure. By 2005, there were 1381 firms listed on two Chinese exchanges, of which 92% were former SOEs. No SOE in China was completely privatised.⁴

The split-share structure is not unique to China. In the past, Governments across the world didn't tend to fully privatise an entire SOE or even a controlling stake at the first time of listing (Jones et al 1999)⁵. Proponents argued that Governments tended to privatise a smaller proportion of such firms at the beginning because they wanted to send a credible signal to the market that they, as the largest stakeholders, were not expropriating shareholders' wealth (Perotti 1995), with the high equity retention by the state signalling the Government's confidence in the company, like a business guarantee (Mok and Hui 1998). Opponents to the structure criticised it from the corporate governance perspective. They argued that many controlling shareholders treated listed enterprises as cash cows from which they could benefit at the expense of the minority shareholders (Tenev and Zhang

³ China SOE Reform is a centerpiece of the overall Chinese overall reform of transforming from a centrally planned economic system to a market-oriented system (Liu and Gao 1999). From 1949 to 1979, the Government controlled all major sectors of the economy and formulated all decisions about the use of resources and the distribution of output. Planners decided what should be produced in accordance with national and social objectives. SOE executives were appointed and dismissed by the Government and usually treated as Government officials (Liu and Gao 1999). Since the 3rd Plenum in 1978, Chinese SOEs have been gradually given more and more autonomy to take control themselves, dealing with relevant rights and responsibilities. However, SOE executives were not fully responsible for any losses in their companies. This situation aggravated the moral hazard problem and led to increasing losses reports in many China SOEs. The policy of *Zhuada fangxiao* (grasping the large and letting go of the small) in the early 1990s had successfully privatised the failing and smaller SOEs through restructuring, selling and mergers, while some relatively strong medium and large-sized SOEs were selected to be transformed into publicly listed firms on the Chinese stock market. The Government didn't sell all of the shares in the SOEs at once. They cautiously retained a substantial ownership in the listed SOEs. In general, two thirds of Chinese domestic shares were held by the central Government through state asset management agencies or by their SOE representatives. Only about one third were issued to public investors.

⁴ A further split in the structure arose through the denomination of A shares that were available uniquely to Chinese investors, and B shares that were available uniquely to foreign investors. Government shares were categorised therefore as non-tradable A shares (NTAS). Tradable shares could be further divided into tradable A shares (TAS) and tradable B shares (TBS). This paper is concerned only with the A-share market and A-share owners as the B-share market and owners weren't affected by the sale of Government shares.

⁵ For instance, the UK retained controlling ownership in some of the SOEs at the first sale in 1980s, when decentralization sparked and swept around the UK, an extreme example market-oriented privatization in JMNN (1999)..

2002).⁶ Evidence of conflicts of interest has also been found between the owners of NTAS and the TAS in China (Tenev and Zhang 2002; Wang and Chen 2006; Guo and Keown 2009). Green and Liu (2005) further argued that legal protection for shareholders in China improved little in the 1990s because the regulators were under the influence of the local Governments that wanted to maintain a low level of legal protection for the average shareholders in order to enable the listed SOEs to reap the benefits of expropriations created by a weak legal framework.

Empirical evidence showed that the Chinese Government shares had a negative impact on the performance and the value of listed SOE firms (Qi et al. 2000; Sun et al. 2003; Bai et al. 2004; Wang et al. 2004; Chi et al. 2005).

Generally speaking, corporate governance issues due to the partial privatisation were more serious in China than in other countries. It may be because the listed SOEs were dominant on the Chinese stock markets while there were fewer in quantity on other stock exchanges. In particular, as time elapsed, these governance problems began to outweigh the Government guarantee, and this, together with a desire to raise funds and to move to a market economy, provided the incentive for the Chinese Government to propose to release its retained shares to the market.

2.1.2 *The first attempt to sell Government assets publicly*

The first attempt by the Government to sell publicly its shares in listed companies took place in June 2001, marked by the issuance of *Measures on Administration of Split Share Structure Reform of Listed Companies* (2001) [Measures (2001)], which outlined the proposed privatisation. Though published in a favourable macro-economic environment, this announcement caused the markets to plummet. The main indices on the SHSE and SZSE exchanges fell dramatically (about 40%) after the announcement and the bear market persisted for a long time (Hou 2010). It was such a disaster that even the 9-11 attack around the same time didn't cause the US markets to fall to the same extent. The S&P 500 and the FTAS declined by 15.47% and 16.48% respectively within three months after 12 June 2001, around half the decreases witnessed on the China stock markets over the same period.⁷ This is consistent with Hou (2010) that the US and UK markets greatly outperformed China markets.

The Chinese Government cancelled the proposal in 2002 and no firm was actually privatised. The Government realised that the first trial step was too fast and too reckless in a transitional economy.

This unsuccessful attempt indicated that a premise to carry on the reform of reducing Government ownership needed to adopt a gradual and cautious approach to deal with the TAS owners in order to protect their interests and rights.⁸

2.1.3 *Did the Chinese Government give up?*

Kazakevitch et al. (2005) argued that the Chinese reforms were gradual in the macroeconomic sphere but sharp in the microeconomic sphere, in terms of “the

⁶ Such as obtaining soft loans from listed firms; using listed firms as guarantors to borrow money from banks, and buying and selling goods, services and assets at unfair prices

⁷ Data calculated from DataStream.

⁸ Since the very start of economic reforms in China in 1978, the Chinese Government has played an important role. Many economists argued that China's success demonstrated the superiority of an evolutionary, experimental, bottom-up approach over the comprehensive and top-down “shock therapy” approach that characterized the transition in Eastern Europe and the former Soviet Union (McKinnon 1994, Jefferson and Rawski 1995 and Sinchen 1997). However, the 40% fall in the markets in three months after the announcement of Measures (2001) indicated that it was apparent that the announcement of privatisation at this time shocked the stock markets and the investors.

boldness of the reforms and the rapidity of the changes China has made in moving to a market economy, which has exceeded that attempted in most countries” (Kazakevitch et al. 2005, page 70). This time the Chinese Government showed the “boldness” and determination to sell the retained Government shares with a meticulous attention to detail.

In early 2002, the CSRC promulgated a *Code of Corporate Governance for Listed Companies* [Code (2002)], which was mandatory for all listed companies to follow, and which put the protection of shareholders’ rights as the basic goal of corporate governance. Code (2002) required listed companies to adopt proxy voting and cumulative voting methods⁹ if necessary to increase the voting power of the TAS owners in order to encourage shareholder activism.

On 1st Feb 2004, the State Council issued *Some Opinions of the State Council on Promoting the Reform, Opening and Steady Growth of Capital Markets* [Opinions (2004)], the third article of which noted that the intention was to ensure that the Government would be “actively and reliably resolving the problem of separation of equity ownership and trading rights.”¹⁰ Opinions (2004) burdened the CSRC with a compulsory task to solve the separation of TAS and NTAS. Under the pressure, Dr Shang Fulin, Chairman of CSRC, frequently gave public speeches in addition to meetings and discussions with relevant important parties throughout 2004.

On 7th December 2004, the CSRC issued *Strengthening the Protection of the Rights and Interests of Public Shareholders Several Provisions* [Provisions (2004)], which proposed that listed companies’ major business decisions, such as asset restructuring and equity-for-debt plans, should win majority votes (>50%) from voting by public shareholders (both TAS and TBS) in the general shareholders’ meeting, and required listed companies to provide on-line voting platforms for shareholders’ meetings¹¹, given China’s vast territory made it difficult for many investors from dispersed geographic location to attend shareholders’ meetings in person.

From early 2002 to Dec 2004, the Chinese Government spent almost three years setting up a regulation system to protect the interests and rights of the TAS owners and simultaneously showed the “boldness” and determination to complete the sale of Government shares. All this foreshadowed a come-back plan envisaged by the Government to sell their ownership in the listed SOEs.

2.2 The come-back plan

On 29th April 2005, the Chinese Government announced the SSSR, marked by the release of Notice (2005).

The SSSR repackaged the Government’s asset sales programme in line with the improved regulation system that has been introduced as a result of the failed attempt in 2001, which aimed to protect the interests and rights of the TAS owners.

⁹ Cumulative voting is a type of voting process that helps strengthen the ability of minority shareholders to elect a director. This method allows shareholders to cast all of their votes for a single nominee for the board of directors when the company has multiple openings on its board. In contrast, in “regular” or “statutory” voting, shareholders may not give more than one vote per share to any single nominee.

¹⁰ The separation of equity ownership refers to the separation between the tradable and non-tradable shares. Tradable shares have trading rights while non-tradable shares don’t. It also stated that “When resolving this issue, the solution must respect market laws, contribute to the stability and development of the market and genuinely protect the lawful rights and interests of investors, in particular public investors.”

¹¹ However, more work needs to be done to promote the understanding of on-line voting among investors and increase the turnout rate (statistics show that those who have voted on-line represent no more than 10% of the tradable shares of the company).

In implementation, the Government took a *gradual and cautious approach* as it always did¹² and also adopted an unprecedented *offer-to-get approach*, by “*offering*” Consideration (compensation) to the TAS owners “*to get*” the right to sell its ownership.¹³

There were four event dates at the Government level.

From April 2005 to September 2005, the Government made three announcements [*Notice (2005)*, *Guideline (2005)* and *Measures (2005)*] to launch the SSSR, introduce a pilot programme and finalise an exemplary process. All the listed SOEs on the Chinese Stock Markets implemented the SSSR sequentially in groups.¹⁴ The Group lists (*Group Announcements*) were announced by the CSRC.

2.2.1 *Notice (2005)*

Notice (2005) introduced a pilot programme and proposed relevant issues in line with Opinions (2004), with objectives concerning the stability and healthy growth of the market and protection of the lawful rights and interests of public investors. Notice (2005) also set out the timescale of an individual reform process which should include two suspension stages. The first stage was a negotiation stage during which the holders of TAS and NTAS¹⁵ discussed the reform proposal. The second stage was a voting stage during which the tradable shareholders had an opportunity to vote on the agreed reform proposals at a shareholders’ meeting. Each stage was marked by a suspension day and a resumption day. In addition, Notice (2005) granted the holders of TAS the equally weighted voting rights as the holders of NTAS and put trading restrictions on the sale of Government shares

¹² China adopted a gradual, evolutionary approach to the transition from a planned economy to a market economy since its overall reform started at the end of 1978. This approach has often been said to “piecemeal, partial, incremental, often experimental, especially without large-scale privatisation” (Lin 2004). The gradual approach was also applied in the SSSR.

¹³ It is not uncommon for the Government to pay a premium to the public investors in order to secure their proposals. When privatizing SOEs by selling the ownership on the stock markets, governments across the world usually underpriced shares of SOEs more than in private equity offerings (Jenkinson and Mayer 1988, Jelic and Briston 1999, Choi and Nam, 1998, Ljungqvist et al. 2000).

¹⁴ There were 1345 SOEs involved. The reform process took place in orderly groups. In total, there were 66 groups.

¹⁵ The holders of TAS are public investors who own the tradable shares, including domestic and foreign institutional investors as well as Chinese individuals. Foreign investors were forbidden to purchase Yuan-denominated “A” shares before 2002. But the QFII (Qualified Foreign Institutional Investors) program launched in 2002 allowed licensed foreign investors to buy and sell “A” shares. The holders of NTAS are the government owners of non-tradable shares. The holders of TAS and NTAS were on opposite sides of the negotiating table bargaining for a better deal for their own groups during the first suspension period. But the two groups had different objectives. According to Firth et al. (2010), the government had strong incentives to complete the reform smoothly and quickly while institutional investors, mainly mutual funds, were keen to bargain for better terms in the reform package, and individual shareholders were likely to be free-riders (Davis and Kim 2007).

In some ways, the situation is similar to a union/management negotiation. One group, traditionally considered weak in bargaining power relative to the other group, takes certain actions against the “strong group” who then has to face the “weak group” squarely at the negotiating table. In 2001, the relatively weak TAS holders dumped their shares, resulting in a disastrous and persistent market slump when the relatively strong Government attempted to sell 10% of their shares. In a similar vein, a union may organize a strike amongst relatively weak employees to coerce the relatively strong managers to negotiate over the terms proposed by them.

In the SSSR negotiation, the Government NTAS in each firm brought the reform proposal to the table (see Figure 3) to discuss and negotiate with the TAS holders, indicating that the Government is eager and anxious to get a deal from the TAS holders rather than the other way around. The Government spent almost three years setting up a regulation system to “flatter” the TAS owners because the Government is “bold” and “determined” (Kazakevitch et al. 2005) to complete the sale of shares. In a negotiation, it is more likely the pursued has more bargaining power than the pursing as it is easier for the pursued to leave the table. Particularly the TAS holders have been given the voting right to say “No” if they didn’t like the deal. The evidence is 72% of the sample companies (430 out of 599) revised their compensation ratios upwards by 4.7% after the negotiation.

after the reform. It was designed to maintain market stability and protect minority interests and thus it was expected to offset the oversupply price pressure.

2.2.2 Guidelines (2005)

On 8th May 2005, the SHSE, the SZSE and the China Securities Depository & Clearing Corporation Limited issued *Operational Guidelines for the Pilot Reform of the Listed Companies*¹⁶ [Guidelines (2005)]. Guidelines (2005), which was based on Notice (2005), specified the operational procedures from the 1st suspension to the 2nd resumption for the pilot reform programme, including the layout of the reform brochure.

According to Guidelines (2005), a reforming firm should suspend immediately (1st suspension) once selected by the CSRC and then communicate with the TAS owners regarding the reform proposal. When the proposal was ready, the firm should apply to resume trading (1st resumption). The firm should suspend again (2nd suspension) one day before the scheduled registration date of the shareholders' meeting. Once the reform proposal had received no less than two thirds of the votes from both the holders of TAS and NTAS, the firm should publicise the proposal and at the same time apply to resume trading (2nd resumption).

The pilot programme, directed by Guidelines (2005), contained two pilot groups. On 9th May 2005, the CSRC invited the first group of four companies to the pilot programme (pilot 1). On 20th June 2005, the CSRC initiated the second pilot programme involving 42 companies worth 10% of the SHSE and SZSE stock market capitalisation (pilot 2).

2.2.3 Measures (2005)

On 5th September 2005, the CSRC issued the *Measures on administration of split share structure reform of listed companies* [Measures (2005)], the first official document providing details about the implementation of SSSR. The CSRC also required that all firms should finish their reform by the end of 2006.

Measures (2005) followed the principles established in the pilot reform.¹⁷ In general, there was nothing new in this announcement but it summarised the pilot programmes and used them as a best practice.

The reform took place in orderly groups.¹⁸ By the end of 2006, the reform had taken place with 64 regular groups (excluding the pilot programme) involving 1290 companies that had either completed or were in the reform process.¹⁹

2.2.4 Group Announcement

The Group Announcement disclosed a portfolio of firms. This was determined in two steps.

First the stock exchanges set a deadline to accept reform proposals from companies wishing to participate. Next the stock exchanges examined all the

¹⁶ The full Chinese text is available on

http://www.chinasecurities.xinhua.org/gqfz/zcfg/t20050509_674933.htm.

¹⁷ It decentralized decision-making at the firm level, by allowing shareholders to bargain over the method and terms of the compensation. Furthermore, it safeguarded the interests of TAS holders by seeking no less than two thirds of the votes from the TAS owners, compensating them for the estimated loss due to the reform, diluted the risks by introducing a series of announcements dates, prevented market slump by banning any sale of NTAS in the twelve months following the reform and restricted any issue size in the following twenty-four months.

¹⁸ Please see Appendix 1 for the Group summary.

¹⁹ The reform was not fully completed by the end of 2006 as the Government intended. There were 40 "difficult" firms that did not successfully reform.

applying firms and removed those they thought had problems (for example, firms that didn't meet their performance requirement). The selection standards could vary with the assumed future prospects of the firms, and were adjusted all the time. The selection process indicated that the companies in the name list were confident that they were well prepared for the reform, which was confirmed by the stock exchanges which carried out scrutiny of the submitting firms and assessed the feasibilities of their proposals.

Figure 1 shows the process of the SSSR at the macro level.

Figure 1: The step-by-step Government announcements

Every firm involved had to negotiate with the public investors on the reform proposal in the first suspension stage and hold a shareholders' meeting to allow the shareholders to vote for the reform proposal in the second suspension stage. In total, there were four event dates (two suspension dates plus two resuming dates) at the individual level.

For each individual firm, a time scale was applied²⁰: Pre-suspension $\rightarrow$ 1st suspension $t_{1st-sus} \rightarrow$ 1st resumption $t_{1st-res} \rightarrow$ 2nd suspension $t_{2nd-sus} \rightarrow$ 2nd resumption $t_{2nd-res} \rightarrow$ 12 month lockup t_{12} .

²⁰

1. Pre-suspension: A reform proposal should be submitted to the board of directors by a shareholder/shareholders holding individually/collectively two-thirds of the NTAS of the listed company. The board must seek the cooperation of an external underwriting institution and of a law firm to formulate the proposal.

2. 1st suspension: Once authorized by the CSRC, the firm information, together with the other firms authorized simultaneously, would be announced as a group (Group Announcement). The firm should suspend immediately, usually one day after the Group Announcement, publicize the initial reform proposal, including date of the shareholders' meeting, a description of the reform proposal as well as the opinions of the recommending institution and the law firm.

3. 1st resumption: Within 10 days after the 1st suspension, the board should assist the owners of NTAS in adequately communicating and negotiating with the holders of TAS. Approaches include for example hosting an investor symposium, a press conference or an online road show, paying a visit to institutional investors and issuing a consultation paper. In addition, the board of directors of the listed company should publicly disclose its hotline, facsimile and e-mail address in order to widely solicit opinions from tradable shareholders so as to lay a broad shareholder foundation for the reform plan. If the proposal was acceptable to both parties, an announcement of consensus would be made and trading should resume.

4. 2nd suspension: The firm should suspend one day before the scheduled registration date of the shareholders' meeting.

5. 2nd resumption: Once the proposal won two thirds of votes from the NTAS holders and from the TAS holders, the firm should publicize the proposal and the "pass" result within two days, at the same time apply to resume trading. Once resumed, the reform was successfully implemented and the compensation would be

Figure 2 presents a typical timeline of reform process from preparation of a reform proposal to its implementation.

Figure 2: The timescale of the firm-specific events

2.3 Offer-to-get strategy

The Government *offered* compensation, called Consideration²¹, as a sweetener to *keep* the TAS owners in the market so as to maintain the market *stability*.

Consideration aimed to compensate the TAS owners for any estimated loss in the aftermath of the implementation of the reform. It played an important role in the reform package. The specific amount and type of Consideration varied from company to company as each firm was allowed to design its own proposal rather than a one-fits-all plan.

Consideration took various forms, either in shares, in cash, in pre-assigned rights, or a combination of more than one type.²²

Consideration ratios varied across firms too.²³ Many reform proposals did not provide a proper explanation of the calculation process, or they presented a proposed Consideration ratio without any explanation on how it was set.

Li and Yang (2006) reported that the reform process had characteristics of diversified Consideration methods, various Consideration bases, unbalanced Consideration levels, and frequent adjustments.

paid. If the proposal was rejected, the firm had to publicize a “fail” result within two days and apply to resume trading.

6. A 12 month lockup period was established for the holders of NTAS. The initial 12-month lockup expired on t_{12} . Furthermore, in the two years after expiration of the lock-up, holders of NTAS with more than 5% of the total issued share capital of the listed company were further prohibited from trading on the stock exchange more than 5% (10%) of the company’s total share capital within 12 (24) months.

²¹ The term Consideration appeared in Measures (2005) in Article 16 in order to “implement the compensation plan specifically designed to balance the interests of each party in the split share structure reform” but was not specified in terms of the exact definition and meaning.

²² Please see Appendix 2.1 for details.

²³ Appendix 2.1 gives details on the major approaches used by firms to calculate Consideration ratios.

In spite of the variation, Consideration took effect as long as it was approved by two thirds of the TAS owners and the NTAS owners respectively. This offer-to-get approach was regarded as innovative and unprecedented as it had never been observed elsewhere. However, a committed Government aiming for social and economic gains rather than the monetary proceeds from the issuances (Perotti and Guney 1993; Perotti 1995) may take costly action to signal its intent (Yarrow 1986). For instance, Governments across the world have underpriced the shares of SOEs in privatisation issuances by an average of 34.1% (Jones et al. 1999) to 32.1% (Huang and Levich 1999). In contrast, private firms have underpriced the shares in conventional equity issuances by 10% to 20% (Loughran and Ritter 2002; Ljungqvist 2004). The evidence supports the fact that Governments are willing to pay more than is necessary to achieve social economic gains and the Chinese Government was no different.

3 Research Design

The classic method of the event study is applied in this paper to examine the market reactions on the relevant event days. The aim is to assess whether the gradual and offer-to-get approach reversed investors' attitudes towards large scale sale of the Government assets and whether the SSSR could be viewed as successful.

According to Campell et al. (1997), although there is no unique structure for an event study, event-study analysis can be conducted in five steps: (1) to define the event of interest and the event window, (2) to determine the selection criteria for the inclusion of a given firm in the study, (3) to model the normal returns so as to measure abnormal returns (ARs), (4) to define an estimation period to estimate the parameters of the normal performance model, (5) to design the testing framework for the ARs. Binder (1998) pointed out that the estimated ARs for sample firms were frequently used as the dependent variable in a regression with firm specific variables on the right hand side, indicating a sixth step: (6) to regress estimated ARs against potential factors.

In the following sub-section, these six steps are discussed in the context of the Chinese SSSR.

3.1 Events of interest

The previous section detailed four event dates [*Notice (2005)*, *Guidelines (2005)*, *Measures (2005)*, *Group Announcement*] at the Government level and four at the individual level [t_{1-sus} , $t_{1st-res}$, t_{2-sus} and t_{2-res}] in the SSSR, as shown in Figure 1 and Figure 2. However some event dates are confounding with other event dates or impossible to identify due to the unavailability of data.²⁴

²⁴ For example, in Figure 1, *Guidelines (2005)* was announced on 8th May, the first working day after *Notice (2005)* was launched on 29th April, as there were eight public holidays in between, and the announcement of the first pilot group was one day immediately after *Guidelines (2005)*. In addition, the sample companies staged reform in 66 groups spanning from 9th May 2005 to 31st Dec 2006. Firms arranged in the same groups started reform around the same time. The time interval between groups is 5 trading days. In the sample, on average 45 trading days were taken to complete an individual reform process, sufficiently long to allow another 9 groups to announce reforms. Previous studies have documented intra-industry information transfer between announcing and non-announcing firms in various settings such as earnings announcements (Foster 1981, Freeman and Tse 1992), dividend change announcement (Firth 1996), security offerings (Szewczyk 1992) and stock split announcement (Tawatnuntachai and D'Mello 2002). Prior research has also suggested that large firms' reactions to common information lead those of small firms (Lo and MacKinlay 1990, Brennan et al. 1993, Asthanta and Mishra 2001), especially in assessing the stock prices of non-announcing firms in the business affiliate (Huang and Chang 2009), such as cross-shareholding of listed firms, which is a

The first pilot programme was announced only one day after Guidelines (2005) and should be able to incorporate its impact. Hence Guidelines (2005) is excluded as a confounding effect.²⁵

Two firm-specific suspension days (t_{1-sus} , t_{2-sus}) must be excluded due to non-availability of data. The two resumption dates ($t_{1st-res}$, t_{2-res}) will be investigated.

Consequently, there are three Government events of interest including Notice (2005), Measures (2005), the Group Announcement, two firm-specific events of interest including the first and second resumption dates.

The unified lockup periods (12/24 months), required specifically by the CSRC for each firm involved, were announced as part of the reform proposal on $t_{1st-res}$,

voted and then publicized on t_{2-res} . They were used by the Government to alleviate agency problems²⁶ so as to help convince the TAS owners to approve the proposals (Liao, Liu and Wang 2011). Market response studies usually concentrate on the announcement day when new information is released, rather than the implementation day (Mikkelsen and Partch 1985, 1986) or other event dates when no additional information is released (Scholes 1972, Xia et al. 2010). Therefore the market is expected to react to the implied information of lockups on the announcement days ($t_{1st-res}$, t_{2-res}) rather than on the expiration days (t_{12m} , t_{24m}). As a result, the two lockup expiration days are not included.²⁷

3.2 Event window

The event window should be long enough to capture the significant effect of an event and at the same time effectively control for the confounding effects, but many empirical studies arbitrarily defined their long event windows without further explanation (McWilliams and Siegel 1997).

Confounding events are inevitable in the case of serial reforms.²⁸ Considering the noise from confounding events, a short event-window is preferred.

very common practice among China listed firms (Guo and Yakura 2009). In the scenario of China's SSSR, those results suggest that firms which made earlier reform announcements could convey information about key elements in the reform proposal and process to those non-announcing firms within the same industry, or of smaller sizes, or closely connected, synchronously affecting their security prices at that time. As a consequence, there is scope for confounding events.

²⁵ The first pilot group announcement is included for investigation, thus the event date of Guidelines (2005) is excluded for redundancy.

²⁶ The lockups are proposed to signal firm quality to overcome adverse selection problems (Brav and Gompers 2003, Brau, Lambson and McQueen 2005) or to alleviate investors' concerns about the moral hazard posed by insiders (Brav and Gompers 2003, Yung and Zender 2012).

²⁷ Empirical studies find significant negative market reactions around the IPO lockups (Field and Hanka 2001, Bradley et al. 2001) and argue that the decline around the expiration day is partly due to price pressure and partly to worse-than-expected news about insider sales. These findings support the idea that the price movements around the IPO lockup are not relevant to the "lockup expiration" which was stated in the initial IPO prospectus, but due to the additional new information around the expiration day.

Limited research has been conducted concerning the t12m and t24m dates, for example Liao, et al. (2011), who examined an event period of [-120, +20] days around the lock-up expirations. They noted that a large portion of the decrease in average CAR they found took place between day -120 and day -40 (and not at the lock-up expiration dates), with the CAR curve becoming flat after the lock-ups expire. They also documented that only around 4% of the firms chose to sell NTAS with 91 days after lockup. They suggested that negative returns are not likely to be caused by the post lock-up sales of NTAS.

²⁸ Please see Footnote 24 for details. An average interval between two consecutive groups is 5 working days, indicating an event window of (-5, +5) would involve confounding effects from two other group events. This is particularly the case since firms took an average of two months to complete the reform procedure. Therefore the outcomes of firms from a group within these two months could impact on other firms in the group.

Following Calomiris et al. (2010) and Lu et al. (2008), an event window of $(-1, +1)$ is defined, subject to data availability. However, this had to be adapted in some instances.²⁹ Table 1 summarises the event windows for all selected critical event dates.

Table 1: The event windows for all the event dates of interest

Event dates	Event window
Notice (2005) on 29 th April 2005	$(-1, 0)$
Measures (2005) on 5 th September 2005	$(-1, +1)$
Group event-dates	$(-1, 0)$
Two resumption dates	$(0, +1)$

3.3 Sample selection

As reported in the China Securities Journal (1st January 2007), 1,305 out of the 1,345 target companies were successfully restructured within 66 groups, including two pilot groups. No subsequent group was announced. All the firms tried at least once to implement the reform. Those which failed the first time could come back and start a new round of proposals to restructure. The remaining 40 firms were actually problematic and considered outliers.³⁰

The initial sample consisted of 840 companies with the availability data.³¹ The final sample consisted of 599 companies for the following reasons:

- Firms that were aged or listed less than two years prior to 29th April 2005 were deleted.³²
- Firms were back-door listed³³ within two years prior to the announcements of SSSR were removed.³⁴
- Exceptional firms that didn't conform to a general SSSR prospectus were removed.

²⁹ For example, the day after the Notice (2005) release was Saturday, 30th April 2005, followed by a seven-day Public holiday called Labours' Day from 1st May till 7th May. 8th May 2005 was a Sunday. Therefore the first trading day after Notice (2005) issuance was 9th May 2005, which overlapped the announcement of the first pilot group. Consequently the event window for Notice (2005) is $(-1, 0)$.

Usually each firm in the group would suspend trading one day subsequent to the group event-date, announcing the start of its reform and publicizing its initial proposal. As a result, an event window of $(-1, 0)$ applies for group announcements except that the event window for the first pilot group is the event day, Monday 9th May 2005.

There is no data available before the two firm-specific resumption dates; hence an event window of $(0, +1)$ applies in this situation.

³⁰ These firms tried at least twice or even three times to enter the reform process but they still failed. Therefore they are considered extreme examples.

³¹ Sina Finance records the process and operation of China Split-share Structure reform at firm-level, including reform proposal, critical dates and other details in implementation. Datastream provides trading and market data. Resset Database is China's leading provider of financial databases and software solutions for financial and investment research, where firm characteristics information is constructed in a standardized format.

³² Because data processing in an event-study requires at least two years of consistent data prior to China SSSR. The two years are essential to estimate the normal returns without the reform, which is discussed in detail later.

³³ A back-door listing company is seeking listing on exchanges by acquiring an already listed company. A back-door listed company may alter the core business of the previous one and thus lead to a discontinuity and inconsistency in firm data.

³⁴ Back-listing replaces a listed firm with a new entry. The data of the replaced firm has little connection with that of the replacing firm other than the listing code. In other words, a firm newly back-door listed is no different from a firm newly-listed except that the former inherits an already-existent listing code while the later is allocated a new code. Therefore a back-door listing history within two years indicates no consistent data is available.

3.4 Measuring ARs

A number of approaches are available to calculate the normal return of a given security and then to generate ARs.³⁵

Since Fama, Fisher, Jensen and Roll (1969) [Fama et al. (1969)], the OLS market model has been widely accepted in event studies to estimate the normal return and the AR, (for example Mikkelsen and Partch 1984, 1986, Loderer et al. 1991, Errunza and Miller 2003).

In this paper, the OLS market model is used as normal return model to predict ARs.

The OLS market model is a statistical model which relates the return of any given security to the return of the market portfolio: $\varepsilon_{it} = R_{it} - \alpha_i - \beta_i R_{mt}$ where ε_{it} is the zero mean disturbance term.³⁶ This method controls for the risk (market factor beta) of the stock and the movement of the market during the event period.

The sample companies were listed either in the Shanghai or Shenzhen stock exchanges. It has been suggested that a broad-based stock index should be used for the market portfolio (FFJR 1969; Binder 1998). Therefore SHSE A-Share Index and SZSE A-Share Index were selected for firms listed in SHSE and SZSE respectively.

3.5 Estimation period

Once a normal performance model has been selected, the parameters of the model must be estimated using a subset of the data known as the estimation window.

Defining a proper estimation period usually raises three questions: (1) how many days should be included in the estimation period; (2) whether pre-event or post-event days should generate the estimation period; and (3) how to remove the possible noise from confounding events in the estimation period?

3.5.1 Length of estimation period

There is no consensus on an optimal length of estimation period in the literature on event studies. The choice of estimation period is somewhat arbitrary (Aktas 2007). By convention, the estimation period usually lasts for one year (around 240 trading days).³⁷

Another line of literature considered beta stationarity associated with estimation period length. Baesel (1974) depicted the stationarity of individual betas as an increasing function of the estimation period length. The literature supports an estimation period longer than one year, in order to achieve beta stability.³⁸

³⁵ In the literature, ARs have been measured as (1) mean-adjusted returns (2) market-adjusted returns, (3) OLS market mode: deviations (prediction errors) from the market model, (4) deviations from the one factor Capital Asset Pricing Model (CAPM) or (5) deviations from a multifactor model, such as the Arbitrage Pricing Theory (APT).

³⁶ Parameters are estimated using an estimation period sample with OLS regression. The parameter estimates and the event period stock and market index returns are then used to estimate the ARs.

³⁷ For example, the estimation period is from day -245 till day -6 relative to the event day (Ball and Brown 1980, 1985), the year ending 50 days before the event (Fama and French 1993), from day -250 till day -21 prior to the event (MacKinlay 1997), from day -250 to day -51 (Pojezny 2006), from day -250 to day -30 (Aktas 2007), from day -244 to day -6 (Ahern 2009), from day -200 to day -3 (Huang and Chang 2009) etc..

³⁸ Roenfeldt et al. (1978) investigated the effect varying the length of the second sub-period on the stability of individual security betas and found 4-year period estimation period was most reliable. Theobald (1981) showed that beta stationarity increased with the calendar period length but did not increase indefinitely. He suggested an optimal estimation period of 180 to 210 months for U.K. monthly data. Daves et al. (2000) concluded that a much shorter estimation period of two to three years was more appropriate for financial managers to use when estimating beta with daily returns. Diacogiannis and Marki (2008) showed that the

Xia et al. (2006), in a study based on Chinese daily data, suggested an estimation period of 2 years.³⁹ Therefore, in this study, the estimation period will comprise 2 years, as a compromise between the requirement of beta stationarity and the conventional preference of one year estimation period.

3.5.2 Neutralising the risks of information leakage

Considering the impact of information leakage (or rumours) before the announcement, Aktas et al. (2007) suggested 30 days can usually be excluded between the end of the estimation period and the beginning of the event period to neutralize the impact. In this paper, thirty days prior to the event day were excluded, consistent with this recommendation.

3.6 Aggregation of ARs

The AR observations must be aggregated in order to draw overall inferences for the event of interest.

To aggregate across securities and through time, it is assumed that there is no correlation across the ARs of different securities.⁴⁰

Given a sample of N securities, the individual securities' ARs can be averaged as:

$$\bar{\varepsilon}_t = \frac{1}{N} \sum_{i=1}^N \varepsilon_{it} \text{ where } \bar{\varepsilon}_t \text{ is the sample average of the } N \text{ AR on day } t.$$

Then this sample average can be aggregated through time using the same approach for an individual security. Define $\overline{CAR}_{(t_1-t_2)}$ as the cumulative average

$$\text{AR from } t_1 \text{ to } t_2 \text{ where } t_1 < t_2, \text{ then } \overline{CAR}_{(t_1-t_2)} = \sum_{t_1}^{t_2} \bar{\varepsilon}_t.$$

3.7 Hypotheses

The events of interest in this study are the release of Notice (2005) and Measures (2005), the group announcement of the list of companies, as well as the 1st and 2nd firm-specific resumptions of trading. These events comprise the complete reform process for each firm.

The hypotheses are built around the critical event dates. There is one main hypothesis for each event date studied. The event-study method is applied to estimate the average AR and the statistical tests are then used to examine whether it is significant or not. Each main hypothesis is presented with sub-hypotheses relating to various factors. Cross-sectional multiple-regressions are run to establish whether the factors have significant impacts on the firm-specific ARs. *Notice (2005)* aimed to alleviate the conflicts between the TAS and NTAS holders and to protect the TAS owners from the oversupply of shares.

Hypothesis 1: The average AR is zero.

Hypothesis 1.1: The issue size is negatively related to the firm-specific AR.

utilization of an estimation period of three years captured most of the maximum reduction in the standard error of beta estimated as compared to other periods with Athens stocks.

³⁹ They found that the mean of beta was the closest to 1 for an estimation period from 1.5 to 2 years starting from 1.5 years after the interested event. The smallest standard deviation came with an estimation window of 2 years starting from 6 weeks after the event of interest.

⁴⁰ Statistical tests can be performed to adjust for cross-sectional and time-series dependence. Please see section 4.

The companies which suffer more from agency problems are expected to welcome the Notice (2005) announcement.⁴¹

Hypothesis 1.2: Agency problems are positively related to the firm-specific AR.

Measures (2005) summarised the pilot programme and used it as a best practice to reiterate the determination of the Government to protect minority interests and hence may have a positive impact on the market.

Hypothesis 2: the average AR is positive.

Group Announcement indicated that the companies selected were self-confident and their performances were confirmed by the CSRC.

Hypothesis 3: the AR is positive.

As Jiang et al. (2008) and Li et al. (2010) indicated, the firms in earlier groups were more self-confident than those in later groups and may have faced stricter scrutiny as the stock exchanges always tried to set examples in earlier groups for future reforms in later groups.

Hypothesis 3.1: the group order is negatively related to the AR. Firms that went first would have higher ARs.

The *1st resumption day* implied that ideally the reform proposal disclosed should reflect a mutual agreement between the holders of TAS and NTAS, therefore should no surprise or response is expected from the market.

Hypothesis 4: The AR is zero.

Hypothesis 4.1: The AR is not related to Consideration size.

Hypothesis 4.2: The AR is not related to Consideration type.

The negotiation period varies across firms. During the negotiation period, the board of directors should assist the owners of NTAS in adequately communicating and negotiating with the holders of TAS using a variety of approaches⁴². If the proposal is acceptable to both parties, an announcement of consensus will be made and trading resumes (the 1st resumption date), which puts an end to the negotiation period.

Therefore the number of TAS owners contacted and their opinions sought should be positively related to the negotiation period. A short negotiation period may indicate the NTAS owners and firms made less effort and thus conducted an insufficient communication with the owners of TAS. In a shorter negotiation period, there may be some TAS holders who were not informed and who did not have the opportunity to respond to the proposals publicized.

Hypothesis 4.3: The negotiation period is negatively related to the squared ARs.⁴³

The *2nd resumption day* implied a positive impact on the markets as the compensation would be paid and the reform was successfully finished.

⁴¹ Agency problem here refers to the conflicts between the majority shareholders and the minority shareholders and therefore is proxied by the ratio of non-tradable shares to tradable shares.

⁴² The approaches include hosting an investor symposium, a press conference or an online road show, paying a visit to institutional investors and issuing a consultation paper. In addition, the board of directors of the listed company should publicly disclose its hotline, facsimile and e-mail address in order to widely solicit opinions from tradable shareholders so as to lay a broad shareholder foundation for the reform plan.

⁴³ Initially proposed by Beaver (1968), the squared ARs were used in many studies to measure the size of the ARs regardless of the sign, such as Landsman and Maydew (2002).

However the price behaviour on ex-dividend day has been widely observed to fall by approximately the amount of dividend, which suggests that the price at the 2nd resumption of trading may drop by the amount of the Consideration.

Hypothesis 5: The AR is negative.

Hypothesis 5.1: Consideration size is negatively related to the AR.

4 Results and Analysis

This section presents and discusses the market reactions to the different event dates, as well as the regression results.⁴⁴

4.1 Events of interest at the Government level

Table 2 presents the event effects in terms of the ARs and cumulative ARs (CAR) over the event windows⁴⁵ around the events of interest at the Government level. The results of three significance tests are provided as well⁴⁶. The regression results are provided in Appendix 4.1 and 5.2.

Table 2: The ARs and CARs around the event dates at the Government level

Part A: Notice (2005)	AR(-1)	AR(0)	CAR(-1,0)	
Average	0.006	-0.003	0.003	
BW	1.449	-0.686	0.441	
MP	8.512**	-3.713**	10.582**	
Rank	1.698*	-0.726		
Sample size	599	599	599	
Part B: Measures (2005)	AR(-1)	AR(0)	AR(1)	CAR (-1, 1)
Average	0.01	0.012	0.008	0.03
BW	2.49*	2.988**	1.992*	4.312**
MP	14.256**	17.162**	11.931**	24.974**
Rank	0.873	1.297	0.937	
Sample size	553	553	553	553
Part C: Group Announcement	AR(-1)	AR(0)	CAR (-1,0)	
Average	0.005	0.008	0.013	
BW	1.353	1.922*	1.891*	
MP	8.295**	11.486**	11.396**	
Rank	0.714	1.220		
Sample size	599	599	599	

A test statistic with one star on the upper right corner (*) indicates significance at the 5% level while those with two stars (**) indicate significance at the 1% level

BW: the crude dependence adjustment test (Brown and Warner 1980)

MP: the time-series adjustment test (Mikkleson and Partch 1988)

Rank: the rank test (Corrado 1989)

The Mikkleson and Partch (MP) test is designed to adjust for time-series dependence but assuming cross-sectional independence. The Brown and Warner

⁴⁴ Only selected results are shown and analysed in this article. Please see Appendix 4 for the full regression results.

⁴⁵ Please refer to Table 1.

⁴⁶ Please refer to Appendix 3 for more details.

(BW) test is designed to control for cross-sectional dependence but assuming time-series independence.

The events of interest at the Government level are supposed to simultaneously affect many companies and subsequently the cross-sectional dependence over the event windows could be large, which casts doubt on the highly significant results obtained with the MP test. The results from the MP test should be used with caution.

The problem of time-series dependence is not serious, indicating that the BW test is more reliable than the MP test.

The non-parametric rank test examines whether the position of the ARs in event-window are significantly away from the centre position over the combined period (estimation period plus event period). As the rank test is free of distribution and does not require independence across securities or over time, it provides a robust alternative to BW and the MP tests.⁴⁷

4.1.1 Notice (2005)

In Table 2 Part A, the average AR across securities on the day before the release of Notice (2005) is positive (0.6%) and significant at the 1% level according to the MP test and at the 5% level according to the rank test but insignificant according to the BW test. The rank test suggests there is probably some information leakage.

On the event day, the average AR is -0.3%. Both the BW test and the rank test report insignificance, supporting Hypothesis 1.

The average CAR over the event window (-1, 0) is 0.3%, insignificant according to the BW test, which also supports Hypothesis 1.

The movement from the positive return on day -1 to negative return on day 0 indicates that investors were initially drawn towards the good news with regard to protecting minority interests but then there was a downward reaction as investors contemplated the negative news of large sales of NTAS. Together this led to a statistically insignificant effect.

In Appendix 4.1, the coefficient of issue size is negative (-0.09) but statistically insignificant due to a p-value of 0.56, indicating the market was not sensitive to the price pressure from selling the NTAS, thus leading to a rejection of Hypothesis 1.1. It may be that the trading restrictions eased the investors' fear of the Government dumping shares. Lu et al. (2008) found a significant negative effect. However there are some flaws in their choice of event window and estimation window which may impair their results.⁴⁸

Consistent with Hypothesis 1.2, agency problems have a statistically significant and positive relationship with the ARs, indicating that the TAS owners welcomed the announcement. Lu et al. (2008), using a sample of companies included in the China Securities Index 300, found a significant negative effect during their event period (-1, 0), one day before 29th April 2005, attributed it to the fear of a dilution effect based on past experience in 2001 even though the Chinese Government was promising to protect the minority traded shareholders. They used an estimation

⁴⁷ Appendix 3 explains the three tests in detail.

⁴⁸ Companies were suspended from the start day of the individual reform and there was no trading for a while, indicating there was no price available on that day (event day) and the subsequent day. They didn't explain how they managed to calculate the 2-day and 3-day CARs around the individual company's announcement to commence the reform, in the absence of data. Second their event window and estimation window overlapped on day -1 relative to the event day. This may affect the estimation of parameters and calculation of t statistics, leading to biases in results.

period of only 6 months before the event which may bias their estimations of parameters and the final results. The China Securities Index 300 comprises the largest 300 companies listed on Chinese stock markets, which may also affect their results as larger companies may be more vulnerable to the reform.

4.1.2 Measures (2005)

This event day has never been considered in the literature. It led the reforms for all the remaining firms which were not involved in the pilot programme and should be carefully investigated.

In Table 2 Part B, the sample size is reduced from 599 to 553 as the firms in the pilot programme are excluded.

The ARs are 1%, 1.2% and 0.8% on day -1, day 0 and day 1. According to the BW test finds, the ARs are significant at the 5% level on day -1 and day 1 and significant at the 1% level on the event day, which leads to a rejection of the null of no abnormal performance and an acceptance of Hypothesis 2. The positive ARs persist over the 3-day event window, indicating that the information was leaked before the event day and remained at a significant level after the event day.

These ARs on single days in the event window are significantly different from the estimated mean of zero according to the parametric BW and MP tests. But the nonparametric rank test doesn't report any significance, indicating the ranked-positions of these single-day ARs are not significantly different from the centre position (the mean rank) over the combined period which covers both estimation period and event window.

The average CAR (-1, 1) is 3%, significant at the 1% level in both the BW test and the MP test, indicating the null of no abnormal performance is rejected at the release of Measures (2005), which is consistent with Hypothesis 2. Investors seemed to react positively to the efforts made by the CSRC to show its determination to protect minority interests.

4.1.3 Group announcement

Table 2 Part C shows the average AR at various group announcements, associated with tests of significance.

Firms in the same group were announced on the same day, which indicates that event-clustering is inevitable and the MP test may reject the null too frequently. Consistent with Hypothesis 3, the 2-day event-window CAR (-1, 0) is significantly positive (1.3%) at the 5% level according to the BW test. The AR is 0.5% on day -1 and insignificant, indicating there is no information leakage. The event-day AR is 0.8%, reported significant at the 5% level by the BW test. The rank test doesn't report significance of the single-day ARs on day -1 and day 0, indicating the ranked-positions of these two ARs are not statistically far from the ranked-position of the medium.

The results suggest that the investors were happy with the news that their firms were in the final list. Figure 3 shows the average CAR (-1, 0) curve at the 66 group announcements.

Figure 3: The average CAR curve at the group announcements

Generally speaking, this CAR curve is volatile with a maximum above 6% and a minimum below -4% while the average CAR (-1, 0) is positive (1.3%), consistent with the findings in Ren et al. (2009). What is clear is that there is no pattern in the time series to suggest that there was any learning through time from the successful implementation of the scheme.

From Appendix 4.2, the group order has a coefficient close to zero (0.00005) and is insignificant due to a p-value of 0.653, which rejects Hypothesis 3.1. The investors did not see later entry into the reform as an indication of lower self-confidence. Ren et al. (2009) also reported a positive CAR around group announcement.

4.2 Events of interest at the firm specific level

Table 3 shows the ARs and the CARs around the firm-specific resumptions of trading, associated with the significance tests results. The regression results are presented in Appendix 4.3, 5.4 and 5.5.

Table 3: The ARs and CARs around the event dates at the firm-specific level

Part A: The 1st resumption day	AR(0)	AR(1)	CAR (0, 1)
Average	0.031	0.012	0.043
BW	7.819**	2.957**	6.222**
MP	44.281**	17.499**	35.593**
Rank	2.952**	0.852	
Part B: The 2nd resumption day	AR(0)	AR(1)	CAR (0, 1)
Average	-0.14	-0.006	-0.145
BW	-34.826**	-1.395	-20.912**
MP	-205.068**	-7.755**	-122.612**
Rank	-5.853**	-1.341	

A test statistic with one star on the upper right corner (*) indicates significance at the 5% level while two stars (**) indicate significance at the 1% level
 BW: Crude dependence adjustment test (Brown and Warner 1980)
 MP: Time-series adjustment test (Mikkleson and Partch 1988)
 Rank: the rank test (Corrado 1989)

The resumption day varies from company to company since it is firm-specific, indicating the event-clustering may not be that serious. But event-clustering is still

not uncommon.⁴⁹ Therefore the MP test which does not control for cross-sectional dependence should still be used with caution.

4.2.1 *The 1st resumption day*

The AR on the event day is 3.1%, which is significant according to all three tests. The AR on day +1 is 1.2%, significant according to the BW test and the MP test, indicating the event effect persists after the event day. The rank test statistic suggests insignificance which means the ranked-position of the AR is not statistically significantly different from the ranked-position of the median. The CAR (0, 1) is 4.3%, significant with the BW test and the MP test. Conclusively, Hypothesis 4, which predicts zero abnormal performance, is rejected. The publication of the reform proposal on the 1st resumption day, which should be a mutual agreement between the holders of TAS and NTAS, is actually a positive surprise to the market. In other words, there were uninformed investors, possibly non-participating investors who didn't participate in the discussion. The reform proposals, especially the level of Consideration, offered more than was expected. Significant positive returns at 1st resumption day have been observed by other scholars too, such as Beltratti and Bortololli (2006), Lu et al. (2008) and Firth et al. (2010).

In earlier studies, Beltratti and Bortololli (2006) argued that the expectation of improved corporate governance outweighed the price pressure from the large-scale non-tradable-shares disposals and thus resulted in positive returns. This was a strange argument given that the process was not about improved governance rather it was about protecting the interests of minorities.

Lu et al. (2008) argued that investors reacted positively due to the inclusion of compensation in this reform process. However they later found no relation between the level of Consideration and share market response, suggesting that investors perceived the Consideration to be fair and adequate, which contradicted their argument.

Firth et al. (2010) argued that the final terms of the compensation were better than expected and/or there was a palpable relief that the firm could now move forward and management could concentrate on improving operating performance. They also found the Consideration level is a significant and positive determinant of the announcement effect. Their conclusion can be viewed as a combination of Beltratti and Bortololli (2006) and Lu et al. (2008).

Ideally, investors should agree on the reform proposal before the 1st trading resumption. Also due to the lock-up period, no government shares could be traded at this stage. In this sense, there should be no surprise in the market. But all the empirical results so far have demonstrated that the market did respond positively at the 1st resumption day. This suggests that the results were dominated by TAS investors who did not have the opportunity to respond to the consultation and who found the proposals to be more beneficial than expected.

This explanation is supported by the findings in the regression analysis. In Appendix 4.3, it is shown that the negotiation period has a significant and negative relationship with the ARs, which is consistent with Hypothesis 4.3. The shorter negotiation period, the less effort made by the NTAS owners to communicate with the TAS owners, the stronger the market reaction to the

⁴⁹ (1) Firms in the same group may have great chance to share the same 1st resumption day; (2) The five-working-day group interval may increase the chance for firms in different groups to have the same 1st resumption day. For instance, 599 sample companies have 207 1st resumption dates. On average, approximately every 3 sample companies share the same 1st resumption dates.

information disclosed at the 1st resumption day. Lu et al. (2008) also produced similar findings.

In addition, the Chinese stock market is labelled as a “highly-speculative” market (Wong, 2006) where there are many short-run arbitrageurs. The positive response from the non-participating investors may be exaggerated by temporary speculative behaviour in the market.

In Appendix 4.4, the adjusted Consideration ratio⁵⁰ has a positive (0.034) but insignificant (p-value = 0.42) coefficient, which means there is no relationship between the level of Consideration and share market response. In other words, the investors perceived the Consideration to be fair and adequate, consistent with Hypothesis 4.1 and findings of Lu et al. (2008). However Firth et al. (2010) reported a significant and positive coefficient. They focused on firms that have offered shares as the sole Consideration and selected an estimation period which only included 60 trading days. Therefore their conclusion may be biased. Furthermore the Consideration type didn’t affect the market reaction at the 1st resumption day either, consistent with Hypothesis 4.2. Lu et al. (2008), however, reported a significant relationship. But their sample size was too small to be convincing.⁵¹

4.2.2 The 2nd resumption day

The AR is -14% on the event day, significant at the 1% level according to all three tests. On day +1, this negative return almost vanished, with -0.6% insignificant in both the BW test and the rank test. The CAR (0, 1) of -14.5% is dominated by the negative AR on day 0 and is significant according to both the BW and the MP test. Generally speaking, the result supports Hypothesis 5.

This critical final date has previously been missed in previous studies of the China SSSR, possibly intentionally because it seems bizarre to have a negative return of such magnitude. Only Beltratti and Bortololli (2006) talked about this large decline on the 2nd resumption day and argued it was due to stock trading from the ex-bonus record date, which was quite obscure. They provided no further explanations or evidence.

As Hypothesis 5 indicates, the return should fall by the amount of Consideration, but the decline may be reduced by the positive effect of the good news implied on the 2nd resumption day, the successful completion of the reform plan. The difference between the estimated AR based on Consideration and the true AR is the premium, which reflects the real market response.

The average adjusted Consideration level is 0.295⁵² share for every TAS held, which indicates a decline in return by 22.78%⁵³ and leads to an estimated AR of -23%⁵⁴. The real AR on the 2nd resumption day is -14%. Therefore there is an approximate premium of 9%. The empirical results are consistent with the implications of Hypothesis 5.

Moreover, as shown in Appendix 4.5, the Consideration ratio has a negative coefficient (-0.758), which is significant at the 1% level due to a very small p-

⁵⁰ Appendix 5 lists formulas to adjust Consideration ratios in different styles to equivalent bonus shares.

⁵¹ Lu et al. (2008) included 3 sample companies which paid Consideration in cash, 1 sample company which used warrant type and 22 sample companies which selected combination type, which indicates their results from Consideration type dummies are not very convincing.

⁵² This number is in Appendix 4.4 and 5.5.

⁵³ The formula to compute the estimated return assuming a drop by Consideration:

$$E(R_{i0}) = 1/(1 + Con_i) - 1;$$

⁵⁴ The formula to compute the estimated AR: $E(AR_{i0}) = E(R_{i0}) - \alpha_i - \beta_i R_{m0}$.

value of 3.35E-08, consistent with Hypothesis 5.1. It indicates every one share Consideration would make the AR drop by 0.758%, an additional support of the view that the AR would fall by the approximately the amount of Consideration.

4.3 A full story

Figure 4 depicts the CAR curve following the timeline from the release of Notice (2005) by the CSRC, to the firm-specific completion of reform on the 2nd resumption day. The solid line represents the estimated CAR curve after adjusting the Consideration ratio and the dotted line represents the real CAR curve without any adjustment.

Figure 4: CAR curve following the timeline

At the 2nd resumption day, although the average CAR from the sample firms appeared to reduce (the dotted line) it actually didn't. If the Consideration effect was removed, the market moved upwards instead (the solid line) and the estimated CAR was as high as 9%, which is the ultimate value of the SSSR and indicates a market success of the program.

4.3.1 Summary of results

At the first Government announcement [Notice (2005)], there was no distinct market reaction, which indicates that the aim of maintaining the market stability set by the Government was achieved. It was a remarkable success especially in comparison to the dramatic price drop after Measures (2001).

At the second critical Government announcement [Measures (2005)], there was an average AR about 3%, indicating the market was optimistic after seeing the successful experiment in the pilot programme.

At the group announcement, the AR fell to about 1%, indicating the market was calming down but still confident.

At the 1st resumption day, the AR climbed up to approximately 5%, suggesting the TAS owners were not all involved in the negotiation. The reform proposals were greater than expected by the market. In other words, the Government appeared to be prepared to over-compensate the TAS owners.

At the 2nd resumption day, the estimated CAR was as high as 9%, which was a perfect finish to the process.

Generally speaking, the total market was positive during the SSSR, in contrast to the market crash following the aborted effort in 2001 to reduce the Government shares.

5 Conclusions

This paper investigated the market reactions around all five critical event dates (three at the Government level and two at the firm-specific level) during the SSSR and identified the underlying dynamics. Previous studies have failed to investigate all announcements and consequently they have presented an incomplete picture of the reform process. Also in this paper, the event-study method is adapted to the context of Chinese SSR, modifying the arbitrary application in previous studies. The results show that the SSSR, with the aim of selling off the Government ownership in the listed SOEs, reversed the negative market reaction after the aborted proposals announced in Measures (2001). The Government learnt lessons from the failure. The interests and rights of the TAS owners were better dealt with and protected than in 2001. Overall, the objectives of the reform process (to protect market laws, contribute to the stability and development of the market and genuinely protect the lawful rights and interests of investors, in particular public investors) set by the Government in Opinions (2004) and Notice (2005), were achieved. It can be concluded that the SSSR was a success.

The results demonstrate that both the tradable and non-tradable shareholders were indifferent to the Consideration size publicized in the reform proposal at the 1st resumption day, indicating the negotiation suspension stage worked effectively and led to a mutual agreement between the two parties. The firms with a shorter negotiation period (indicating less effort to communicate with the tradable shareholders) saw stronger market reactions, in either a negative or positive direction. Finally the firms in later groups didn't learn from the earlier groups as examples, since the ARs around a sequence of group announcements fluctuated rather than followed a downward pattern.

This paper contributes to the literature providing the latest empirical evidence on the Chinese SSSR. It supports the view that a gradual and experimental approach is critical to the success of large scale reform in a transitional economy. The gradual approach which saw many successes in the Chinese overall reform proved to be very effective in the SSSR, which was carefully guided by official document releases, trialled via the pilot programme, then extended to the firms in groups over two years. At the firm-level, each reforming firm gradually implemented the SSSR through two stages.

This paper also sheds light on the approaches the Governments should take to deal with difficulties in the financial crisis. The offer-to-get approach, never observed elsewhere, showed the determination and the intent of the Government to achieve social economic gains in the long run rather than short-term profits. Minimising the damage, solving perceived problems, maintaining the markets and stabilising society should be prioritised, even at a cost to the Government. Otherwise, if the proposals failed the Government and the whole country could end up paying much more to correct the mistake and solve the problem.

Appendix

Appendix 1: Details of the 66 reforming groups

Group	No.	Group date	Interval in days	Group	No.	Group date	Interval in days
1	40	Sep 12 05	N/A	33	26	May 21 06	5
2	32	Sep 18 05	6	34	30	May 28 06	5
3	22	Sep 26 05	8	35	20	Jun 4 06	5
4	23	Oct 9 05	13	36	21	Jun 11 06	5
5	21	Oct 16 05	5	37	24	Jun 18 06	5
6	18	Oct 23 05	5	38	36	Jun 25 06	5
7	18	Oct 30 05	5	39	32	Jul 2 06	5
8	20	Nov 6 05	5	40	8	Jul 9 06	5
9	20	Nov 13 05	5	41	12	Jul 16 06	5
10	17	Nov 20 05	5	42	8	Jul 23 06	5
11	22	Nov 27 05	5	43	8	Jul 30 06	5
12	19	Dec 4 05	5	44	9	Aug 6 06	5
13	21	Dec 11 05	5	45	8	Aug 13 06	5
14	27	Dec 18 05	5	46	6	Aug 20 06	5
15	38	Dec 22 05	4	47	8	Aug 27 06	5
16	19	Dec 30 05	5	48	8	Sep 3 06	5
17	13	Jan 8 06	5	49	7	Sep 10 06	5
18	24	Jan 15 06	5	50	5	Sep 17 06	5
19	46	Jan 22 06	5	51	11	Sep 24 06	5
20	38	Feb 12 06	5	52	6	Oct 8 06	14
21	39	Feb 19 06	5	53	6	Oct 15 06	5
22	49	Feb 26 06	5	54	7	Oct 22 06	5
23	46	Mar 5 06	5	55	5	Oct 29 06	5
24	25	Mar 12 06	5	56	7	Nov 5 06	5
25	28	Mar 19 06	5	57	12	Nov 12 06	5
26	41	Mar 26 06	5	58	14	Nov 19 06	5
27	25	Apr 2 06	5	59	7	Nov 26 06	5
28	16	Apr 9 06	5	60	10	Dec 3 06	5
29	26	Apr 16 06	5	61	11	Dec 10 06	5
30	35	Apr 23 06	5	62	12	Dec 17 06	5
31	28	May 7 06	14	63	22	Dec 24 06	5
32	23	May 14 06	5	64	32	Dec 31 06	5

Source: <http://finance.sina.com.cn/stock/chinaggzw/index.shtml>

Appendix 2: Consideration

Appendix 2.1: Consideration forms

Consideration took various forms and could be used in different combinations.

The most popular forms are:

- *Shares Transfer (ST)*: the owners of NTAS give away certain NTAS to the holders of TAS. The existing investors of TAS receive free shares in proportion to their ownership in a firm from the corresponding owners of NTAS. But in ST, these shares are available to the existing shareholders for free and transferred from the NTAS instead of new shares. Effectively, an implementation of ST indicates a reduction of NTAS with zero revenues. Suppose an investor receives a consideration ratio of C_{ST} per share held by the TAS owners and there are NT non-tradable A shares and T tradable A shares in a company, an application of ST can reduce the NTAS of this company by $T \times C_{ST}$.
- *Cash Payment (CP)*: the owners of NTAS pay Consideration in cash to the holders of TAS. Under this approach, there is no change in the shareholding structure but at the cash cost of the NTAS owners. NTAS owners opting for this payment method didn't want to give away the shares and instead they paid RMB C_{CP} per share the TAS owners own. In other words, they valued the shares that they would otherwise have paid under SP at $T \times C_{CP}$.
- *Recapitalization of retained earnings (RI)*: a listed company capitalizes its retained earnings and issue new equity shares. The owners of NTAS pay the holders of tradable shares the new equity shares they receive from the company. Under this approach, the number of total shares increases by $(1 + T / NT \times C_{RI})$ times. Retained earnings capitalized are unavailable for future dividends. Therefore this approach is more of a wealth transfer from the future investors to the existing investors than from the NTAS owners to TAS owners.
- *European Put Warrants Transfer (PWT)*: the TAS holders have the right to put (sell) an underlying share to the NTAS holders at a certain strike price on or before a specified date at zero premium. Only when the exercise price (K_{PWT}) is greater than the market price around the mature date ($P_{at-maturity}$), will the put warrant be exercised. Under this approach, the NTAS owners are required to pay Consideration of $T \times (K_{PWT} - P_{at-maturity})$ to the TAS owners on or before the expiry date. PWT protects the TAS owners when the market price falls below the exercise price. Usually a put warrant is sold at a certain price, which reduces the warrant holder's payoff by the cost. However in the case of China SSSR, the transfer of put warrant to the TAS holders is free of charge. The profit range for the TAS owners is $(0, K_{PWT})$ as the market price of share drops. Different from the approaches of ST, CP and RI, PWT brings the post-market factor into consideration.
- *European Call Warrants Transfer (CWT)*: The TAS holders have the right to buy the underlying share for an agreed price, on or before a specified date at zero premium. Only when the exercise price (K_{CWT}) set up front is lower than the market price around the mature date ($P_{at-maturity}$), will the call warrant be exercised. Under this approach, the NTAS owners are required to pay Consideration of $T \times (P_{at-maturity} - K_{CWT})$ to the TAS owners on or before the expiry date. CWT allows the TAS owners to share profits when the market price rises up above the exercise price. Like PWT, CWT is free of charge for the TAS holders and the profit range is $(0, +\infty)$ as the market price of share increases.
- *Share Split (SS)*: the owners of NTAS pay the holders of TAS the shares under their name from share split. A stock split increases the number of shares in a public company. Under this approach, the number of total shares increases by $(1 + T / NT \times C_{SS})$ times. Compared to RI, the firm value is the same while the par value of the stock decreases.

The payments through ST, RI and SS implied a reduced state shareholding while the others didn't. RI and SS increased the number of total shares outstanding. RI increased firm value as well but SS didn't. Except for CWT and PWT which indicated the use of a real post-event price in a certain period, the others estimated a post-reform price.

Appendix 2.2: Valuation of Consideration

The calculation of Consideration varied from company to company based on different assumptions. Many reform proposals didn't provide a proper explanation of the calculation process or presented a proposed Consideration ratio without any explanation on how it was set. Li and Yang (2006) reported that FCR process has characters of diversified Consideration ways, various Consideration bases, unbalanced Consideration levels, frequent adjustments.

Consideration was generally based on the assumption of a substantial price drop in the aftermath of the implementation of the reform. Each company thus estimated its price/earning ratio or NAV once all shares were tradable and calculated, 1st the loss the TAS owners would incur as a result of the share price decline and 2nd the number of bonus shares the NTAS holders would have to offer to in order to offset the loss. To illustrate, see the process below:

1. $Value_{pre-event} = T \times P_{pre} + NT \times P_{NT} \Rightarrow Loss_{for-TAS} = (P_{pre} - P_{post}) \times T$ where T is the number of tradable shares and NT is the number of non-tradable shares, P_{pre} is the market share price before the event and P_{post} is the market share price after the event.
2. Suppose C refers to the bonus share received for by each TA held, therefore $(P_{pre} - P_{post}) \times T = C \times T \times P_{post} \Rightarrow C = \frac{(P_{pre} - P_{post})}{P_{post}}$, indicating TAS would receive $\frac{P_{pre} - P_{post}}{P_{post}}$ shares for every premarket TA held. This is the basic model for the calculation of Consideration.

The valuation of Consideration depends on the estimation of P_{post} , which, generally speaking, is determined by how each firm estimated its post-event P/E ratio or NAV.

Various Considerations forms may differ in presenting Considerations but in general follows the idea that the value before and after the event should be the same and Consideration should compensate for the aftermarket loss to the TAS owners. Shown below are the theoretic valuation of Considerations for various Consideration forms (on per share basis) although in most proposals the details were not available.

- Consideration for Share Transfer: $C_{ST} = \frac{(P_{pre} - P_{post})}{P_{post}} = \frac{P_{pre}}{P_{post}} - 1$
- Derivation of Consideration for Recapitalised Issuance:
 $Value_{pre-event} = T \times P_{pre} + NT \times P_{NT}$
 $Value_{post-event} = (T + NT + T_{RT} + NT_{RT}) \times P_{post}$, where T_{RT} / NT_{RT} is the number of additional shares from the recapitalised earnings allocated proportionally to the holders of TAS / NTAS.
 $P_{pre} \times T - P_{post} \times (T_{RT} + T) = C_{RI} \times T \times P_{post}$
 $C_{RI} = \frac{P_{pre} \times T - P_{post} \times T_{RT} - P_{post} \times T}{T \times P_{post}} = \frac{P_{pre}}{P_{post}} - \frac{T + T_{RT}}{T}$
- Derivation of Consideration for Share Split:
 $Value_{pre-event} = T \times P_{pre} + NT \times P_{NT}$
 $Value_{post-event} = (T + NT) \times P_{post} / R_{SS}$, where R_{SS} is share split ratio.
 $P_{pre} \times T - T \times P_{post} / R_{SS} = C_{SS} \times T \times P_{post}$
 $C_{SS} = \frac{P_{pre} \times T - P_{post} \times T / R_{SS}}{T \times P_{post}} = \frac{P_{pre}}{P_{post}} - \frac{1}{R_{SS}}$

- Derivation of Consideration for Cash Payment: $Value_{pre-event} = T \times P_{pre} + NT \times P_{NT}$
 $Value_{post-event} = (T + NT) \times P_{post}$

$$(P_{pre} - P_{post}) \times T = C_{CP} \times T$$

$$\Rightarrow C_{CP} = P_{pre} - P_{post}$$

In a proposal using PWT / CWT as Consideration, a strike price instead of a Consideration is provided. The potential aftermarket loss to the holders of TAS depends on the maturity price in the future ($P_{at-maturity}$) rather than the market price immediately after the event (P_{post}).

- Derivation of Consideration for Put Warrant: $Value_{pre-event} = T \times P_{pre} + NT \times P_{NT}$
 $Value_{post-event} = (T + NT) \times P_{at-maturity}$
 $(P_{pre} - P_{at-maturity}) \times T = \text{Max}(0, K_{PWT} - P_{at-maturity}) \times C_{PWT} \times T$, subject to $C_{PWT} \times T$ is no more than the maximum shares the warranties holders can sell.
 $\Rightarrow C_{PWT} = \frac{(P_{pre} - P_{at-maturity}) \times T}{\text{Max}(0, K_{PWT} - P_{at-maturity}) \times T} = \frac{(P_{pre} - P_{at-maturity})}{\text{Max}(0, K_{PWT} - P_{at-maturity})}$
Put warrant won't be exercised if $K_{PWT} < P_{at-maturity}$

Put warrant will be exercised if $K_{PWT} > P_{at-maturity}$, therefore $\Rightarrow C_{PWT} = \frac{P_{pre} - P_{at-maturity}}{K_{PWT} - P_{at-maturity}}$

- Derivation of Consideration for Call Warrant: $Value_{pre-event} = T \times P_{pre} + NT \times P_{NT}$
 $Value_{post-event} = (T + NT) \times P_{at-maturity}$
 $(P_{pre} - P_{at-maturity}) \times T = \text{Max}(0, P_{at-maturity} - K_{CWT}) \times C_{CWT} \times T$, subject to $C_{CWT} \times T$ is no more than the maximum shares the warranties holders can buy.
 $\Rightarrow C_{CWT} = \frac{(P_{pre} - P_{at-maturity}) \times T}{\text{Max}(0, P_{at-maturity} - K_{CWT}) \times T} = \frac{(P_{pre} - P_{at-maturity})}{\text{Max}(0, P_{at-maturity} - K_{CWT})}$
Call warrant won't be exercised if $P_{at-maturity} < K_{CWT}$
Call warrant will be exercised if $P_{at-maturity} > K_{CWT}$, therefore
 $\Rightarrow C_{CWT} = \frac{P_{pre} - P_{at-maturity}}{P_{at-maturity} - K_{CWT}}$

Appendix 2.3: Summary of the sample Consideration

Consideration Plan	Total	%	Average raw Consideration ratio
Shares Transfer (ST) only	439	73.46	0.307 share per TAS
Cash Payment (CP) only	6	1.00	¥1.1 ($\approx$ £0.073) per TAS
Recapitalisation Issues (RI) only	92	15.19	0.58 share per TAS
Put/Call Warrant Issues (P/C) only	1	0.17	0.8 share per TAS
Share Split (SS) only	5	0.83	0.63 share per NTAS
Combinations	Total		
	56	9.36	N/A
	CP + P/C + ST	1	0.17
	CP + ST	27	4.51
	CP + RI	1	0.17
	RI + P/C	3	0.50
	RI + ST	14	2.34
	P/C + ST	10	1.67
Total	599		

Appendix 3: Statistical tests

There are three statistical tests employed in this paper.

1. BW: the crude dependence adjustment test (Brown and Warner 1980)
2. MP: the time-series adjustment test (Mikkleson and Partch 1988)
3. Rank: the rank test (Corrado 1989)

Even relatively moderate cross-sectional dependence could cause Type I errors (Salinger 1992, Aktas et al. 2007, Kothari and Warner 2007, Kolar and Pynnönen 2010). Event clustering is a big problem in the SSSR. The MP test, which assumes cross-sectional independence, therefore should be carefully treated when there is serious cross-sectional dependence.

A large residual autocorrelation could lead to Type I errors. Figure below shows the histogram of the 1-day lag residual autocorrelations from the estimation periods for all the sample companies, with a step of 0.05.

The sample autocorrelation converges around 0.025 with a maximum of 0.25. Generally speaking, the problem of time-series dependence is not very serious, indicating the BW test, which assumes time-series independence, may make fewer Type I error and is more likely to give better significance.

The rank test examines whether the position of the ARs in event-window are significantly away from the centre position over the combined period (estimation period plus event period). As the rank test is free of distribution and doesn't require independence across securities or over time, it provides a robust alternative to BW and the MP tests.

Appendix 4: The results of cross-sectional multiple regressions

Appendix 4.1: The regression results for the event of Notice (2005)

	<i>Average</i>	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept		0.011	0.044	0.256	0.798
IS	0.002	-0.090	0.161	-0.561	0.575
AP	1.771	0.004	0.002	2.248	0.025
ST		-0.009	0.006	-1.542	0.124
ID		-0.006	0.003	-2.025	0.043
LP		-0.004	0.003	-1.325	0.186
FS	21.22	0.00009	0.002	0.046	0.963
CG	0.296	0.002	0.016	0.147	0.883
EPS	0.168	-0.030	0.011	-2.871	0.004
VOL	1.954	0.001	0.0004	2.486	0.013

R Square: 0.042

F statistic: 2.858*, significant at the 5% level.

Regress Model 1:

$$CAR_{i-Notice} = \alpha + \beta_1 IS_i + \beta_2 AP_i + \beta_3 LP_i + \beta_4 ID_i + \beta_5 ST_i + \beta_6 CG_i + \beta_7 FS_i + \beta_8 EPS_i + \beta_9 VOL_i$$

IS (Issue Size): the value of NTAS divided by the pre-announcement market capitalization;

AP (Agency Problem): the ratio of NTAS to TAS to proxy for the agency problems between the TAS and NTAS holders;

ST (Share Type): a dummy equal to 1 if issuing only A-shares and zero if issuing dual shares, like A and B shares or A and H shares;

ID (Industry Dummy): a dummy equal to 1 if in the manufacturing industry and zero otherwise;

LP (Listing Place): a dummy equal to 1 if listed in SHSE and zero if listed in SZSE;

FS (Firm Size): the logarithm of market capitalization;

CG (Corporate Governance): the percentage of independent directors in the board;

EPS (Firm Performance): earnings per share released in the financial reports preceding the reform;

VOL (Firm Risk): the standard deviation of daily stock returns during the estimation period.

Appendix 4.2: The regression results for the event of Group Announcement

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	-0.092	0.044	-2.093	0.037
GO	0.00005	0.0001	-0.45	0.653
ST	-0.004	0.006	-0.679	0.497
ID	-0.001	0.003	-0.259	0.796
LP	0.002	0.003	0.471	0.638
FS	0.005	0.002	2.369	0.018
CG	0.027	0.018	1.48	0.139
EPS	0.005	0.012	0.46	0.646
VOL	0.0004	0.0005	0.867	0.386
R square: 0.0234				
F statistic: 1.768				

Regression Model 2:

$$CAR_{i-Group} = \alpha + \beta_1 GO + \beta_2 LP_i + \beta_3 ID_i + \beta_4 ST_i + \beta_5 CG_i + \beta_6 FS_i + \beta_7 EPS_i + \beta_8 VOL_i$$

GO (Group Order): the ascending order of groups, starting from the 1st pilot group ranked 1, ending up with the last group announced at the end of Dec 2006 ranked 66;

ST (Share Type): a dummy equal to 1 if issuing only A-shares and zero if issuing dual shares, like A and B shares or A and H shares;

ID (Industry Dummy): a dummy equal to 1 if in the manufacturing industry and zero otherwise;

LP (Listing Place): a dummy equal to 1 if listed in SHSE and zero if listed in SZSE;

FS (Firm Size): the logarithm of market capitalization;

CG (Corporate Governance): the percentage of independent directors in the board;

EPS (Firm Performance): earnings per share released in the financial reports preceding the reform;

VOL (Firm Risk): the standard deviation of daily stock returns during the estimation period.

Appendix 4.3: The regression results for the event of 1st resumption (Part A)

	<i>Average</i>	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept		0.008	0.001	6.445	0
NP	17.656	-0.00008	0.00002	-3.61	0.0003
OC	0.221	-0.003	0.003	-1.075	0.283
GO		0.00002	0.00003	0.509	0.611
ST		-0.001	0.002	-0.508	0.612
ID		-0.002	0.001	-1.726	0.085
LP		0.0004	0.001	0.354	0.723
FS	21.22	-0.001	0.001	-1.015	0.311
CG	0.296	0.004	0.005	0.693	0.488
EPS	0.168	-0.006	0.003	-1.766	0.078
VOL	0.018	0.00004	0.00014	0.296	0.768

R square: 0.0383

F statistic: 2.44**, significant at the 1% level

Regression Model 3:

$$CAR_{i-1-res}^2 = \alpha + \beta_1 NP_i + \beta_2 OC_i + \beta_3 GO_i + \beta_4 FS_i + \beta_5 LP_i + \beta_6 ID_i + \beta_7 ST_i + \beta_8 CG_i + \beta_9 EPS_i + \beta_{10} VOL_i$$

NP (Negotiation Period): the length of the negotiation period, measured in days;

OC (Ownership Concentration): the logarithm of the number of shareholders;

GO (Group Order): the ascending order of groups, starting from the 1st pilot group ranked 1, ending up with the last group announced at the end of Dec 2006 ranked 66;

ST (Share Type): a dummy equal to 1 if issuing only A-shares and zero if issuing dual shares, like A and B shares or A and H shares;

ID (Industry Dummy): a dummy equal to 1 if in the manufacturing industry and zero otherwise;

LP (Listing Place): a dummy equal to 1 if listed in SHSE and zero if listed in SZSE;

FS (Firm Size): the logarithm of market capitalization;

CG (Corporate Governance): the percentage of independent directors in the board;

EPS (Firm Performance): earnings per share released in the financial reports preceding the reform;

VOL (Firm Risk): the standard deviation of daily stock returns during the estimation period.

Appendix 4.4: The regression results for the event of 1st resumption (Part B)

	Average	Coefficients	Standard Error	t Stat	P-value
Intercept		0.158	0.095	1.653	0.099
CS	0.295	0.034	0.042	0.807	0.42
CD		0.016	0.012	1.293	0.196
ST		0.001	0.013	0.054	0.957
ID		-0.013	0.007	-1.808	0.071
LP		-0.001	0.007	-0.123	0.902
FS	21.22	-0.006	0.004	-1.269	0.205
CG	0.296	0.021	0.039	0.531	0.595
EPS	0.168	-0.05	0.025	-1.97	0.049
VOL	1.954	0.001	0.001	1.046	0.296
R square: 0.019					
F statistic: 1.27					

Regression Model 4B:
$$CAR_{i-1-res} = \alpha + \beta_1 CS_i + \beta_2 CD_i + \beta_3 FS_i + \beta_4 LP_i + \beta_5 ID_i + \beta_6 ST_i + \beta_7 CG_i + \beta_8 EPS_i + \beta_9 VOL_i$$

CS (Consideration size): adjusted on the same scale according to Appendix 5;

CD (Consideration dummy): equal to 1 if Consideration is paid in cash, warrant, or combination including cash or warrant and 0 otherwise;

ST (Share Type): a dummy equal to 1 if issuing only A-shares and zero if issuing dual shares, like A and B shares or A and H shares;

ID (Industry Dummy): a dummy equal to 1 if in the manufacturing industry and zero otherwise;

LP (Listing Place): a dummy equal to 1 if listed in SHSE and zero if listed in SZSE;

FS (Firm Size): the logarithm of market capitalization;

CG (Corporate Governance): the percentage of independent directors in the board;

EPS (Firm Performance): earnings per share released in the financial reports preceding the reform;

VOL (Firm Risk): the standard deviation of daily stock returns during the estimation period.

Appendix 4.5: The regression results for the event of 2nd resumption

	Average	Coefficients	Standard Error	t Stat	P-value
Intercept		1.028	0.294	3.504	0.0005
CS	0.295	-0.758	0.135	-5.597	3.35E-08
AP	21.22	-0.005	0.012	-0.373	0.71
ST		-0.176	0.04	-4.398	1.30E-05
ID		0.032	0.022	1.432	0.153
LP		0.029	0.023	1.253	0.211
FS	21.22	-0.039	0.013	-2.904	0.004
CG	0.296	0.06	0.12	0.499	0.618
EPS	0.168	-0.024	0.077	-0.311	0.756
VOL	1.954	-0.00034	0.003	-0.108	0.914

R square: 0.105

F statistic: 7.685**, significant at the 1% level

Regression Model 5:

$$CAR_{i-2-res} = \alpha + \beta_1 CS_i + \beta_2 AP_i + \beta_3 IS_i + \beta_4 LP_i + \beta_5 ID_i + \beta_6 ST_i + \beta_7 CG_i + \beta_8 FS_i + \beta_9 EPS_i + \beta_{10} VOL_i$$

CS (Consideration size): adjusted on the same scale according to Appendix 5;

AP (Agency Problem): the ratio of NTAS to TAS to proxy for the agency problems between the TAS and NTAS holders;

ST (Share Type): a dummy equal to 1 if issuing only A-shares and zero if issuing dual shares, like A and B shares or A and H shares;

ID (Industry Dummy): a dummy equal to 1 if in the manufacturing industry and zero otherwise;

LP (Listing Place): a dummy equal to 1 if listed in SHSE and zero if listed in SZSE;

FS (Firm Size): the logarithm of market capitalization;

CG (Corporate Governance): the percentage of independent directors in the board;

EPS (Firm Performance): earnings per share released in the financial reports preceding the reform;

VOL (Firm Risk): the standard deviation of daily stock returns during the estimation period.

Appendix 5: Conversion of original Considerations ratios into equivalent shares offered (Formula)

Consideration Plan	Consideration Valuation	Equivalent shares offered
Shares Transfer (ST)	$C_{ST} = \frac{P_{pre} - P_{post}}{P_{post}}$	$C'_{ST} = C_{ST}$
Recapitalisation Issues (RI)	$C_{RI} = \frac{P_{pre}}{P_{post}} - \frac{T_{RT} + T}{T}$	$C'_{ST} = C_{RI} \left/ \left(\frac{T_{RT} + T}{T} \right) \right.$
Share Split (SS)	$C_{SS} = \frac{P_{pre}}{P_{post}} - \frac{1}{R_{SS}}$	$C'_{ST} = C_{SS} / R_{SS}$
Cash Payment (CP)	$C_{CP} = P_{pre} - P_{post}$	$C'_{ST} = C_{CP} / P_{post}$
Put Warrant Issues (PWT)	$C_{PWT} = \frac{P_{pre} - P_{at-maturity}}{K_{PWT} - P_{at-maturity}} \text{ if exercised}$	$C'_{ST} = C_{PWT}$
Call Warrant Issues (CWT)	$C_{CWT} = \frac{P_{pre} - P_{at-maturity}}{P_{at-maturity} - K_{CWT}} \text{ if exercised}$	$C'_{ST} = C_{CWT}$

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