

The Nontradable Share Reform in the Chinese Stock Market: The Role of Fundamentals*

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Abstract

Nontradable shares (NTS), an unparalleled feature of the ownership structure of Chinese listed companies, have long been considered a major hurdle to domestic financial market development. After some failed attempts, in 2005-2006 Chinese authorities have launched a structural reform program aiming at eliminating NTS. In this paper, we evaluate the stock price effects of this financial reform for 1,361 Chinese listed companies, trying to relate expected returns to changes in fundamentals. Our results show that NTS reform was beneficial for the market as a whole, and especially for those companies with lower disclosure standards. Results are consistent with the expectation of improved corporate governance enhancing the value of the firm.

Keywords: Chinese equity market, financial market development, corporate governance

JEL *Ns*: G14, G28, G32

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1. Introduction

Academic scholars have been intrigued by the economic consequences of financial reforms at least since Stigler's (1964) seminal contribution, followed by the Jarrell (1981) and Simon (1989) in-depth analyses of the effects of 1933 Security Act in the US stock market. Recently, a fundamental reform took place in one of the most active emerging markets of the world: during the 2005-2006 period, Chinese regulators eliminated, through a decentralized process, *non tradable shares* (henceforth NTS) in the capital of listed firms. NTS are a special class of shares entitling the holders to exactly the same rights assigned to the holders of tradable shares but which cannot be publicly traded. Typically, these shares belong to the State or to domestic financial institutions ultimately owned by central or local governments.

The reform marks a topical moment in the history of the Chinese stock market, being NTS long recognized by investors as one of the major hurdle to domestic financial development. After more than doubling in value throughout the program, the market rose 40% in the first four months of 2007, immediately after the completion of the NTS reform for the entire stock market.

Apparently, investors liked this reform, but why did it prove so successful? More particularly, what was the role of fundamentals in this great repricing? Under the efficient markets hypothesis, the price of a stock is given by the present value of the fundamentals. In this case, the reform could affect market valuations only through an impact on the fundamentals themselves, such as expected dividends and risk premia. In this paper, we conduct a comprehensive event study of the NTS program, trying to establish the link between the change in fundamentals triggered by the reform process and the reaction of stock prices.

We use theoretical results and empirical evidence available to restrict the number of plausible candidates associated with expected dividends and risk premia in the Chinese stock market, focusing particularly on two main channels. As to expected dividends, we will consider the effects of this legislation in terms of corporate governance improvements, given that the reform paves the way to a substantial dilution of government's ownership in firms, to an enhanced role for minority investors, and to a vibrant market for corporate control. As to risk premia, we will focus primarily on the effects of the reform in reducing illiquidity, which adversely affects the Chinese stock market.

Analyzing the role of fundamentals in the Chinese stock market is certainly an ambitious task. First, one may wonder whether fundamentals matter at all. Mei, Scheinkmann and Xiong (2005) argue that the differential between the prices of domestically traded A-shares and prices of B-hares, which

can be traded only by foreign investors, is so large and pervasive to suggest the presence of a bubble. It is thus not clear whether Chinese investors discount fundamentals when they price stocks. We acknowledge that the presence of a positive price bubble may somewhat blur the importance of fundamentals, but if the total price is equal to the fundamental price plus a bubble, then fluctuations in the bubble may blur but not eliminate the relation between fundamentals and prices. Second, the link between fundamentals and prices has to be modeled, and this may be a daunting task in the context of an emerging country such as China. However, we will not estimate a structural model for the determination of stock prices. Rather, we will consider the first difference of prices, i.e. the return process. Returns are strictly related with the jump in price following the announcement of the reform. Over a given time period, total returns should be equal to expected returns plus a surprise. Expected returns should be determined by the compensation required to the sensitivity of each stock to non diversifiable risk factors. The surprise should be associated with any new information regarding fundamentals. We will therefore exploit the various announcements of the NTS reform to study the empirical relevance of some key variables on the surprise component.

We study the implementation of the NTS reform process by isolating four event periods: the first three are common to all the stocks and follow the announcements of critical steps of the reform by official authorities. These periods should capture the early price reaction to the news incorporating changes in fundamentals. The fourth is based on the dates of the actual implementation of the reform for each individual company. By analyzing the cross section of abnormal returns around these dates, we will try to understand the real drivers of the success of the reform process.

Our results can be summarized as follows. The NTS reform had a difficult start. Indeed, the launch of the pilot program was not well received by investors as the market lost more than 4 percent during the week after its announcement. Even though the market reaction was negative, the NTS reform apparently affected market fundamentals. Our cross section regressions of returns reveal that in the early period, liquidity risk premia were significantly reduced for those companies displaying a higher proportion of NTS. After the successful completion of the two pilot programs, the official authorities announced the extension of the NTS program to the entire market within 2006. The market reacted positively to this announcement, and gained more than 7 percent in the first week. Our results suggest that at this stage investors revised their expectations on fundamentals related to the corporate governance of listed firms. Indeed, the companies which gained most at the announcement were those with lower disclosure standards, such as those with accounts certified by a local accountant. On the contrary, firms boasting a Big 4 auditor³ reported significantly lower

³ Big 4 firms are Ernst & Young, KPMG, PricewaterhouseCoopers, and Deloitte&Touche. Another large international accounting firm is the BDO international. We will also include this firm in the empirical analysis.

returns. These results are broadly consistent with the expectation of improved corporate governance driven by the NTS reform and enhancing the value of the firm. We do not observe any major effects on fundamentals at the time of the implementation of the reform at the company level, suggesting that the most part of the structural effects of the reform took place around the periods of the early announcements.

Our paper is mostly related to the event studies analyzing the effects of corporate governance reforms. In developed economies, one of the most prominent policy experiment in the field has been the enactment of the Sarbanes-Oxley Act (SOX) of 2002 aimed at improving the corporate governance of US listed firms, severely hit by high profile scandals over the 2001-2002 crisis. Several papers have studied the effects of SOX on firm value, providing mixed evidence about the costs and benefits of the reform (Jain and Rezaee, 2006; Zhang, 2006). Interestingly, Chhaocharia and Grinstein (2007) have shown that the announcement of these new rules had a significant impact on firm value, with special benefit accruing to firms which were less complaint with the rules. Johnson and Shleifer (1999) provide an interesting tale of two transition countries (Poland and the Czech Republic) about the effects stricter security legislation in terms of investor protection, showing that *ceteris paribus* these rules fostered financial market development. In emerging countries, several event studies have been conducted to evaluate the economic implications of financial liberalizations, using the first issue dates of American Depositary Receipts (ADR) programs (Bekaert and Harvey, 1998). Although related to corporate governance improvements in terms of compliance to stricter regulatory standards, ADR programs are in most cases initiated by the issuer rather than by legislative action. Furthermore, the positive effects of these improvements tend to affect domestic listed firms only indirectly, while financial reforms should have first order effects on the market as a whole. To the best of our knowledge, we could not find event studies on corporate governance reforms in emerging countries, let alone China.

The paper is organized as follows. After the introduction, section 2 describes some key institutional features of the Chinese stock market and the mechanics of the NTS reform. Section 3 presents the theoretical model driving the empirical analysis. Section 4 describes the event study and section 5 presents the results. Section 6 concludes.

2. The Chinese stock market and the NTS reform

The Chinese equity market has several distinct characteristics and segmentation is certainly one of the most prominent. Chinese listed firms have multiple classes of shares outstanding: shares which

can be traded by domestic investors (A-shares), shares denominated in foreign currencies and reserved for foreign investors (B-shares), and shares of companies listed or cross-listed overseas (H-shares, for those listed in Honk Kong).⁴

Split-share structures are common around the world and typically warrant owners different rights (Faccio and Lang, 2002). An unparalleled feature of ownership structures in China is the existence of NTS entitling the holders to exactly the same voting and cash flow rights assigned to the holders of tradable shares but which cannot be publicly traded even if the company is listed. Typically these shares belong to the State or to domestic financial institutions ultimately owned by central or local governments.

Transfer of NTS has become possible since mid 1990s through irregularly scheduled auctions and over-the-counter transactions. According to Green and Black's (2003) analysis of 840 transactions taking place in the Shenzhen market in the 1994-2003 period, such transfers have often involved large blocks of shares affecting the control of the companies. The predominant sellers were State-controlled shareholding companies, and the dominant buyers were private companies. 32% (46%) of the deals were associated with a change in control in 2001 (2002). Chen and Xiong (2001) study the irregularly scheduled auctions and OTC transactions of restricted institutional shares for the period August 2000-July 2001 and find a large liquidity discount averaging 79% (86%) with respect to their floating counterpart when the sale takes place through auctions (private transfers). The discount appears related to size, return on equity, earnings-price or book-price ratios, leverage, and volatility.

NTS shares have been issued to the founders of a corporation, business partners or employees and served two main purposes: to keep firmly in government's hands the control of State-owned enterprises that were floated in the market, and to maximize IPO proceeds. Indeed, a fraction of capital was suppressed, reducing supply and pushing up the price of tradable shares. As Figure 1 shows, NTS turned out to be overwhelmingly important in the Chinese stock markets. As of February 2006, they account for 61% of the total number of shares outstanding, most of the NTS being represented by state-owned shares.

Regulatory authorities soon recognized that the predominance of NTS represented a problem for the market from several points of view. First, NTS hindered the functioning of an active market for corporate control: holders of TS are typically minority shareholders with too limited power to affect management decisions. Second, NTS made the major shareholders indifferent to stock price

⁴ Market segmentation is relevant for pricing. Mei, Scheinkman and Xiong (2005) compare the performance of A and B shares for 75 companies for the period 1993-2001, finding a 421.8% premium for A shares over B shares, regardless of equal property rights on dividends.

movements due to the impossibility to sell the shares. Third, the limited free float available made the domestic market extremely illiquid, volatile and thus prone to market manipulation and insider trading. Fourth, the huge stock overhang created by NTS threatened the feasibility of stock market reforms. Indeed, the two previous attempts at turning NTS into TS dramatically depressed stock prices. Fifth, the inefficiency of the domestic market induced many valuable Chinese companies to list overseas, Hong Kong being one of the most preferred destinations. This adversely affected domestic investors who, prevented to invest in the best companies, were stuck with holdings in the less performing local companies.

The Chinese government tried to deal with the problem of NTS on several occasions, particularly in 1999 and 2001. In the first attempt, two companies were selected to sell their state shares to the floating shareholders. The experiment was not well received by the investors and within 15 days from the announcement of the transfer program the share price of the two companies lost 40 percent. The second attempt failed badly in 2001 because the proposal envisaged an equal pricing for tradable and non-tradable shares.

In January 2004, the Chinese government mentioned officially NTS as a major hurdle for domestic financial development and stated its commitment to face it in the immediate future. On April 29 2005, the China Securities Regulatory Commission (CSRC) announced a new pilot program, inviting a first batch of four companies to transform NTS into TS by compensating existing shareholders through various instruments like bonus shares, cash compensation, and options. The main difference between the 2005 pilot program and the 1999 and 2001 attempts is that in the last reform the price of NTS is negotiated by the companies and their floating shareholders.

Amongst the four original pilot companies, only Tsinghua Tongfang failed to pass its reform proposal due to floating shareholders' discontent about compensation. On June 2005, the CSRC initiated the second round of the pilot program involving 42 companies accounting for 10% of the overall stock market value. On August 19, this second round was accomplished, with the last two companies transferring entirely their NTS to the market.

On August 24, 2005 the government issued guidelines to extend the reform share project to the rest of the stock market, setting the deadline of the process as the end of 2006. In order to provide further incentives to the companies, the CSRC encouraged all mainland-listed companies to turn nontradable into tradable shares and stated that reform-compliant companies would be given priority to raise new capital (primary issues of shares and IPOs have been frozen since April 2005).

To facilitate the reform, the Chinese government took also a series of measures to help stabilize the stock market. As we will see in detail, regulators addressed the issue of price volatility by requiring

the suspension of trading around the critical dates of the implementation of the reform, and of stock overhang, to a possible massive future supply of shares. In particular, a 12 month lockup period is established for the holders of NTS. Furthermore, in the two years after expiration of the lock-up, a holder of NTS with more than 5% of the total issued share capital of the listed company is further prohibited from trading on the stock exchange more than 5% (10%) of the company's total share capital within 12 (24) months. Furthermore, the company and the controlling shareholder are entitled to stabilize the market price of the shares for example through buy-backs (Wan, Yuan and Ha, 2005).

The legislative department amended the Company Law and the Securities Law to perfect the legal framework concerning the capital market. At the end of January 2006, a new legislation allowed strategic investors to buy stakes in listed companies; under the new rules the purchase of A-shares was not reserved any longer to the small group of qualified investors but extended to all the investors willing to buy a minimum stake of 10% of the company and hold the shares for longer than three years.

By the end of 2006, and thus within the announced deadline, the restructuring process was virtually completed: as Figure 1 shows, the overwhelming majority of listed companies eliminated NTS, making their entire capital tradable.

3. The NTS reform and fundamentals: theoretical background

In the introduction, we argued that the Chinese stock market provides us an interesting laboratory to analyze the impact of reform-induced structural changes on the value of the firm. In what follows, we will try to identify the channels linking the reform to risk premia and expected dividends using the conceptual framework developed by Campbell (1991).

The price of the i -th stock should equal the expectation of dividends discounted with a factor including the riskless rate plus a risk premium:

$$P_{i,t} = E_t \sum_{j=0}^{\infty} \frac{D_{i,t+j}}{\prod_{i=0}^j (1 + rf_{t+j} + rp_{i,t+j})}$$

Equivalently, ex post returns should equal the riskless rate plus a premium plus a surprise:

$$r_{i,t+1} = E_t r_{i,t+1} + \varepsilon_{i,t+1} = rf_t + rp_{i,t} + \varepsilon_{i,t+1}$$

The surprise element usually creates unwanted noise that makes any analysis of the risk premium more difficult. In this study however we are interested mainly in the surprise component of returns.

Following Campbell (1991), it is possible to decompose the unexpected return into the sum of revisions to dividends and risk premia:

$$\begin{aligned} \varepsilon_{i,t+1} = & E_{t+1}(\sum_{j=0}^{\infty} \rho^j \Delta d_{i,t+1+j}) - E_t(\sum_{j=0}^{\infty} \rho^j \Delta d_{i,t+1+j}) - \\ & - E_{t+1}(\sum_{j=1}^{\infty} \rho^j r_{i,t+1+j}) + E_t(\sum_{j=1}^{\infty} \rho^j r_{i,t+1+j}) \end{aligned}$$

In the Chinese stock market, the reform process is likely to have altered the expectations of both dividends and risk premia. Each stock price may have reacted differently depending on stock specific sensitivity to dividends and expected returns. In our empirical analysis we will therefore estimate a cross-sectional regression of the returns of various companies using variables connected with the expected return and with the noise, i.e. with the revisions of future fundamentals.

In what follows, we will motivate theoretically the choice of the variables. Before doing this we provide an example to illustrate how relevant the effect of a change in fundamentals can be. Consider as a benchmark a present discounted value model extended for 10 years, where it is assumed that the initial dividend is equal to 100 and the rate of growth of dividends stays at 10% for the first 3 years, reduces to 9% for the following 2 years, and then further reduces linearly to 4% between year 6 and year 10. Assume a real interest rate which increases linearly from 1% to 2% over the 10 year horizon and assume a risk premium equal to 5%. We apply the dividend discount model and calculate the price as the present discounted value of dividends plus the terminal price, where the latter is found from the Gordon model. Then a reduction of 100 basis points in expected returns, due to for example to liquidity and volume effects, has a strong 51% impact on the price due to its long lasting effects. An expectation of improved future dividends, associated for example with a better corporate governance, and implying a dividend growth of 100 basis points from year 4 on (to allow for a delayed effect) has a comparable impact of 45% on prices.⁵

3.1 The effect on risk premia

In terms of risk premia, a reform increasing the quantity of TS is likely to increase the liquidity of the shares. Several contributions in finance have stressed the role of liquidity and volume effects on expected stock returns we thus expect the reform to be positive for stock prices (Glosten and

⁵ One could claim that the presence of a bubble may invalidate our empirical results. On the contrary, a bubble will just introduce bias against us, given that it may induce fluctuations in prices which are not associated with fundamentals.

Milgrom, 1985; Kyle, 1985; Amihud, 2002). However, stocks will not react homogeneously. The main beneficiaries will be those stocks that were particularly illiquid before the reform, i.e. stocks characterized by a higher proportion of NTS and/or thinly traded stocks. Cross-sectionally, we expect that the larger the proportion of NTS, the larger the positive return surprise after the announcement. Also, we expect that less traded stocks will show a larger positive surprise.

Moreover, the actual implementation of the reform eliminates the uncertainty about its timing. Indeed, past attempts to tackle NTS witnessed the commitment of Chinese authorities, but their failures had left investors with one additional source of risk. Anecdotal evidence suggests that investors have attached high relevance to the structural reform, even though they have been swayed back and forth by the fear that the reform process may adversely affect the stock market due to stock overhang and by the belief that the process may eventually be beneficial. These observations suggest an uncertain price discovery process faced by Chinese investors and such a non-diversifiable uncertainty should have been incorporated into a higher expected return. As a consequence, the elimination of such uncertainty associated with a credible announcement of the reform should have decreased the risk premium and, *ceteris paribus*, increased market valuation. Also in this case the effect is likely to be heterogeneous across stocks, depending on the quantity of NTS outstanding.

Yet the sign of the relation between the unexpected return upon the announcement and the proportion of NTS is ambiguous. The proportion of NTS may be relevant from two points of view, concerning supply effects and governance. From the point of view of supply, as we will explain later, the proportion of NTS does not change on the day of the announcements that we consider in our empirical work, as the new shares will be issued only at the end of the reform process for each company, i.e. when bonus shares are actually distributed. One should therefore not expect a relation between prices and the proportion of NTS as an indicator of supply effects. However, it is possible to conceive a behavioral model in which prices are affected. For example investors may anticipate the future supply increase and its impact on future prices (if the demand function is downward sloping, see Shleifer, 1986) and then discounting such a future impact to the present. Therefore we cannot exclude that companies with a higher proportion of NTS, for which it is expected a lower future supply increase following the reform, may show a lower downward price pressure in the various event periods studied in our research. Furthermore, the proportion of NTS may be taken as a proxy for governance. In particular, a company with a higher proportion of NTS may be regarded by investors as a company with a worse governance. This is the reason why it is important to find additional proxies, which will allow to disentangle the governance from liquidity effects.

3.2 The effect on expected dividends

Dividends depend on the profitability of the firm, which in turn depends on technical, organizational and corporate governance issues. The reform has no immediate impact on the technology and organization of the firm, but it may deeply affect incentives and corporate governance. In particular: the reform paves the way (i) to “real” privatization, namely the possibility that public shareholders – at least in non strategic sectors - will eventually float a substantial amount of secondary shares on the market, enhancing the role of minority investors in management decisions; (ii) the possibility that an enhanced stock trading will create an active market for corporate control, with mergers and acquisitions financed through shares rather than only cash. This may induce managers to more efficient actions and to improve profitability.

Obviously, a caveat is in order. The presence of tight lock-up positions for the sale of newly created TS suggests that major changes in the corporate governance will not materialize any time soon. Indeed, policy guidelines stated that the official objective of the reform is not to reduce state holdings, but just to eliminate NTS, and that in enterprises deemed strategic control will remain tightly in the hands of the government (Mattlin, 2007). Yet, the reform changed expectations about the corporate governance of the typical Chinese listed firm, and these changes in fundamentals may produce real effects on the stocks according to the initial conditions in terms of corporate governance.

Different stocks would react differently to the implementation of the reform if they are heterogeneous in terms of disclosure, transparency, and protection of minority investors. In that respect, the Chinese stock market provides an interesting environment to investigate the relation between corporate governance and the value of the firm in an emerging market. Some listed companies are very large and enjoy a strong international reputation being traded also in major foreign exchanges such as Hong Kong, New York and London. On the contrary, other companies are small or medium sized, display operating activities in mainland China and are virtually unknown to international investors.

A possible proxy for heterogeneity in corporate governance is given by a dummy which identifies firms which have accounts certified by a Big 4 firm. The firms may be more likely to ensure transparency because they have a greater reputation to uphold, because they may be more independent than local firms, or because they face greater legal liability and recognizability (Michaely and Shaw, 1995; Dye, 1993). Importantly, previous research in emerging countries has

shown that significantly better stock price performance is associated with firms boasting indicators of higher disclosure quality, such as a Big Four auditor (Mitton, 2002).

In the Chinese stock market, we found 33 listed firms audited by Ernst & Young, 15 by KPMG, 43 by PricewaterhouseCoopers, and 19 by Deloitte & Touche. Another international firm who takes a big share in auditing service is the BDO international: they provide CPA service to 50 listed firms in China. We also identified 72 listed firms who are audited by certified public accountants affiliated of Hong Kong. We will attach to this group of 232 firms a Big 4 dummy which should be capture sensitivity to higher corporate governance standards.

4. The event study

4.1 Event history

The anecdotal evidence reported above suggests that the market reacted to the announcement and implementation of the reform process. Something new and interesting about the fundamentals of the Chinese stock market may thus be learnt from the price reactions of the various stocks to the NTS program. But when exactly has this critical information been released? Indeed, since April 2005, investors had several chances to use new information to repricing stocks. In what follows, we will describe the history of the reform process, and identify the windows that we will use in our event study.

The first critical window is represented by the period immediately following the first announcement of the pilot program, i.e. April 29, 2005. However, at that stage the credibility of commitment by public authorities to eliminate NTS was weak given that after the first failed attempts the government quickly halted the program. At the time, a real concern was that a bad market reaction could scrap the reform entirely. Moreover, there were other sources of uncertainty: the timing of extension of the reform to the whole market, the choice of the compensation mechanism devised by the government, and the size of the potential overhang associated with the supply increase.

Not surprisingly, the early reaction by the market was negative. The date of April 29, 2005, corresponds to the beginning of an extended period of weakness bringing the index from 1,169 on April 28 to 1,013 on June 3. This period includes May 9, the day of the first suspension of trading of the four pilot companies included in the first batch. The China Daily, on the basis of interviews with Chinese security analysts, reported on May 10 that “some investors worried that they may not get sufficient compensation...but some investors also bought actively on stocks that market rumors

said might become the next pilot firms to try the nontradable share sell-off scheme. The short-term impact of the news of the nontradable share flotation could be limited as regulators will not allow all nontradable shares to flood the market in one go... But in the long run, the flotation of these shares may push down average price/earnings ratios and further polarize share prices”.

The second fundamental event window starts on June 21, the announcement date of the extension of the reform process to a large and representative second batch of 42 companies. This second announcement is particularly important as it is evidence of the increased credibility and momentum gained by the NTS reform. By confirming the negotiation mechanism tested in the first batch, this announcement provided clues on the compensation for tradable shareholders. Yet at this stage the timing of the extension of the process to the whole listing was still completely uncertain. On June 21, Dow Jones Newswires reports that “investors have reacted warmly to a large expansion in China's trial program to float NTS, interpreting the bigger-than-expected size and scope of the second batch of firms tapped to participate as a sign of the government's commitment to, and confidence in, the reform process”. The market went up almost 3% on June 20, after the announcement about the second batch made over the previous week-end of the 18th and 19th of June. But then the market lost about 10% between the end of June and early July.

The third important date is August 24, 2005, when investors learnt that the initial experiments had been successful and that the government was planning to extend the NTS reform gradually to the entire market and to accomplish it by the end of 2006. This is certainly one of the fundamental event dates to study the reaction of companies to the reform. However, two sources of uncertainty remained. The first concerned the exact dates of implementation of the reform for each company, even though investors knew that all firms were to be involved in a relatively short time span (16 months). However, the NTS reform should yield structural effects on fundamentals. When fundamentals improve permanently for the foreseeable future, one should observe a strong reaction in prices. The second was related to the fact that some companies could fail to restructure the split capital structure lacking resources to compensate holders of tradable shares.

Finally, one possibility is that investors reacted on a case-by-case basis at the, updating expectations on fundamentals when each company entered the NTS process, and when detailed information about the compensation was available. To consider this possibility, one has to refer to the complex guidelines outlined by the CSRC and released on September 5, 2005 (CSRC, 2005). The conversion of NTS should follow the following procedure:⁶

1. holders of NTS request the board of directors to start the reform process;

⁶ See Jingu (2006) and Wan, Yuan and Ha (2005) for more detailed descriptions of the process.

2. the board must seek for the cooperation of an external sponsoring institution and of a law firm to draft the proposal. The sponsor must consult the stock exchange about the feasibility of the proposal⁷ and arrange a meeting with the relevant market shareholders;
3. date t_0 : the board of directors then publicizes the date of the shareholders' meeting, a description of the reform proposal as well as the opinions of the recommending institution and the law office. Trading in the shares of the stock is immediately suspended;
4. within date $t_0 + 10$ the board of directors and holders of NTS interact with holders of TS to receive comments and suggestions and form an opinion about the overall evaluation of the proposal;
5. if no change is carried out then there is a public announcement and trading is resumed (date t_1), otherwise changes may be made to the original proposal and some more days may pass before resumption of trading. Importantly, proposals cannot be modified again after trading is restarted;
6. registration starts for the shareholders' meeting (date t_2) and trading is suspended for the second time;
7. the shareholders' meeting is held. The proposal needs a qualified majority of two-thirds of the participants. If the proposal is accepted the board must publicize the timetable for actual implementation of the reform. Trading is restarted after completion of the reform (date t_3).

The reform process is organized around two periods of trading suspension which differ greatly in terms of length and amount of price sensitive information produced. In particular, the first period includes all the negotiations between tradable and non tradable shareholders, and ends with the first disclosure of the compensation required. The second period only includes the formal approval of the plans on the part of the shareholders which can generally be taken for granted: in fact, no change to the agreed proposal can be made during the second period. In the empirical analysis, we will thus focus on the first period.

To summarize, our event study will be based on four windows, based on the following critical dates: i) the announcement date of the first pilot program; ii) the announcement date of the second pilot program; iii) the announcement date of the extension of the NTS reform to the entire market; iv) the company-specific announcement date of implementation of the reform.

⁷ The stock exchange neither "approves" the proposal nor provides any judgment on the amount of the proposed compensation, but just advises the company on the technical aspects of the proposal.

4.2 Data

We have used three data sets for our empirical work. We have collected from Datastream daily data for the 1,440 companies listed in the Shanghai Stock Exchange and in the Shenzhen Stock Exchange regarding market value, price to book, opening and closing price, higher and lower price, return index, turnover by volume. In order to build risk factors based on float (rather than on capitalization) we have also purchased data about the time-series of the number of tradable shares of each company from Shenzhen GTA Information Technology Co Limited. Finally, Nomura Institute of Capital Market Research provided us with detailed information about the compensation plan of each company.

We cannot completely use the original sample of 1,440 companies for various reasons: (a) 62 companies disappear before the beginning of the reform process, (b) 17 companies are reported from Datastream to be suspended from trading as of February 2007 for unspecified reasons, (c) 26 companies were listed after September 2005 so they are not used because of their short trading history, (d) 5 companies do not have NTS even before the beginning of the reform process. This leaves us with a sample of 1,330 companies. 1,301 of these have entered the reform process by February 2007; 1,192 have accomplished the reform by February, 2007.⁸ In the empirical analysis of the first three event windows, we will use all the companies for which we data is available (1,361 firms, worth 96 percent of total market capitalization). In the fourth event windows based on company specific information, the total number of firms will be reduced to a minimum of 1,182 accounting for 90.8 percent of total market capitalization.

We choose as interest rate the middle rate of the three-month time deposit rate. We compute a market index by considering the actual float of each company. This is important in view of the large difference between float and capitalization caused by the existence of NTS. A capitalization index would include the quantity of both TS and NTS to compute the weights assigned to the various stocks and would provide a measure not reflecting current market conditions. Wang and Xu (2004) also compute a float-weighted market index. We use the Shenzhen GTA Information Technology Co Limited data in order to build a float-weighted market index and float-weighted risk factors. Table 1 presents the timing of the implementation and the size of the NTS reform, which kicked off on May 9, 2005⁹ with the four companies of the first batch (Tsingua Tongfang, Hebei Jinniu Energy

⁸ We do not use all the 1,192 companies because in 183 cases the data are not fully convincing due to discrepancies across data sets in the percentage of tradable shares before and after the reform.

⁹ May 9, 2005 is the day of the implementation for the first batch of the NTS reforms, which was first announced on April 29. Table 1 reports the initial day of implementation for all batches.

Resources, Shanghai Zi Jiang Enterprise Group, and Sany Heavy Industry). Three out of four companies accomplished successfully the transfer program in 37 days on average. They were followed by a second batch involving 42 companies. The duration of the programs of this batch ranged from 35 to 60 days, with an average of approximately of 47 days. The program then spread out gradually to the entire market. As of February 2007, 67 batches were launched. On average, there are 19 companies per batch and the average duration of process is 44 days.

The percentage of tradable shares before the reform was equal to 36% on average, with a minimum of 3.54%, a maximum of 79%, and a standard deviation across firms was 11.61%. After the reform the average proportion of tradable shares is about 46%. The actual free float did not increase dramatically due to the presence of various lock-up periods which will expire 1-2 years after the restructuring. The remaining 54% will thus become fully tradable at the end of their respective lock-up periods

Compensation played an important role in the NTS reform package and took various forms such as cash, warrants, stock splits, and most frequently bonus shares. The terms of the compensation varied from company to company but it 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 Net Asset Value once all shares were tradable and established the number of (existing) NTS to be transferred to tradable shareholders as a compensation for this loss. For example, suppose that the market value of a company is 100 renminbi before and 80 renminbi after the reform, and that there are 10 TS and 10 NTS outstanding. TS lose 10 renminbi and investors will be made indifferent by receiving 2.5 NTS per 10 NTS shares owned.

We have been able to find detailed information about the compensation plan for 1230 companies which have initiated the reform process by the end of February, 2007.¹⁰ In 1124 cases, compensation took the form of free distribution of bonus shares. In other 52 cases, compensation was supplemented by payment of cash. In the remaining cases, it takes the form of stock splits, options or pure cash payment. We can thus conclude that in the large majority of cases TS shareholders have been compensated by means of bonus shares.

Table 1 reports the average bonus ratio per batch. Companies in the first batch transferred on average 3 shares per 10 shares to tradable shareholders in order to make all their shares tradable, while those involved in the second 3.49 distributed shares per 10 shares. In the subsequent batches, the bonus ratio remained quite close to the values established in the two pilot programs, with an average per batch of 2.95.

¹⁰ We thank Takeshi Inoue (Nomura Institute of Capital Market Research) for kindly providing us with these data.

4.3 The testing strategy

Our analysis aims at explaining the cross section of returns in the various event periods by use of some explanatory variables capturing variations in fundamentals. Our theoretical model implies we should explain the shock to returns while controlling for risk premia. Which variables are relevant of course depends on the pricing model and on how risk is accounted for by Chinese investors.

The literature on empirical asset pricing in China is not well developed. Wang and Xu (2004) propose a model including the market, size and a floating ratio factor, which is a portfolio built by buying long firms with a high floating ratio (by the ratio between tradable and nontradable shares) and selling short firms with a low floating ratio.¹¹ Beltratti and Caccavaio (2007) augment this model with a liquidity factor of the Pastor-Stambaugh (2003) type. Liquidity seems logically to be a relevant risk factor for the Chinese stock market characterized by many illiquid stocks.

Our empirical strategy resembles that of Brennan, Chordia and Subrahmanyam (1998): (a) run time series regression of the excess return of each company on the risk factors in order to estimate excess returns (b) run a cross sectional regression of excess returns on the characteristics among which governance in order to verify whether they have been priced in our event periods. However, the goal of Brennan, Chordia and Subrahmanyam (1998) is to test whether non-risk characteristics have marginal exploratory power relative to the arbitrage pricing theory benchmark and therefore they run a time series of cross sectional regressions. Our goal is instead to verify whether in specific episodes some particular characteristics associated with fundamentals have had a particular role in explaining abnormal stock returns. Therefore we run cross sectional regressions for specific event periods.

In the first step, the risk factors that we use are the market, a book-to-market factor (HML in the Fama and French (1996) terminology) and a liquidity factor:

$$r_{i,t} - r_{f,t} = \beta_{i,M} r_{M,t} + \beta_{i,PTB} r_{PTB,t} + \beta_{i,L} r_{L,t} + \varepsilon_{i,t}$$

The model is consistent with the findings of Wang and Xu (2003) and Beltratti and Caccavaio (2007). We follow Beltratti and Caccavaio (2007) in building the risk factors¹². At the beginning of each month, Shanghai (SSE) and Shenzhen (ZSE) stocks are allocated to two groups (small or big,

¹¹ Wang and Xu (2004) interpret it as a proxy for corporate governance. However from an ex ante point of view good governance should be associated with lower expected returns but from an ex post view good governance may be associated with higher realized average returns if investors are positively surprised by improvements in governance.

¹² Importantly, all the risk factors are built starting from the actual float of the companies and not from the capitalization. This is particularly important in China given the widespread use of NTS.

S or B) based on whether their market value (MV) during the previous month is below or above the median MV for the specific market. Then the stocks are sorted in three book-to-market (BM) groups (low, medium, or high: L, M, H) based on the bottom 30%, middle 40% and top 30% of the book-to-price ranking. Value-weighted portfolio returns are then computed for each portfolio. HML is the difference between the average returns of the two low-BM portfolios (S/L and B/L) and the average returns of the two high-BM (S/H and B/H).

Similarly, we build a liquidity portfolio (HLIQMLLIQ) after ranking stocks on the basis of the liquidity indicator of Pastor and Stambaugh (2003). The liquidity measure for stock i in month t is the estimate $\gamma_{i,t}$ from the regression:

$$r_{i,d+1,t}^e = \theta_{i,t} + \phi_{i,t} r_{i,d,t} + \gamma_{i,t} \text{sign}(r_{i,d,t}^e) \times v_{i,d,t} + \varepsilon_{i,d,t+1};$$

where the dependent variable is the excess return on the stock on day d in month t and the regressors are respectively the return on the stock in the previous day of the month and a variable obtained from the multiplication of the sign of the excess return and the volume of the stock. The indicator proxies liquidity by an estimate of the return reversal. Our liquidity factor is long stocks with high liquidity and short stocks with low liquidity.

The equation is estimated using daily data for the year preceding the event period. Potential instability of the beta coefficient is therefore taken care of by means of different estimation samples.¹³

In the second step, we estimate the abnormal return on each stock as the residual of the equation:

$$r_{i,t}^* = r_{i,t} - r_{f,t} + \beta_{i,M} r_{M,t} - \beta_{i,PTB} r_{PTB,t} - \beta_{i,L} r_{L,t}$$

Finally, we use these residuals in a cross sectional analysis. We run the following regression of excess returns on various characteristics:

$$r_{i,t+1}^* = \gamma_0 + \gamma_1 \log Volume_{it} + \gamma_2 Volatility_{it} + \gamma_3 \log Size_{it} + \gamma_4 Big4_{i,t} + \gamma_5 Float_{i,t} + \varepsilon_{i,t+1}$$

where $\log Volume$ is the mean of the daily log of one plus the ratio between volume and size (in other words, it is a size-corrected volume), $Volatility$ is the standard deviation of the residuals from the regression used to compute the abnormal returns, i.e. including for the market, book-to-market and liquidity portfolios, $Size$ is the mean of the daily log of the market value (using only tradable shares), $Big 4$ is the corporate governance dummy, i.e. taking the value 1 for firms with a international CPA, and $Float$ is the ratio by value between tradable shares and NTS.

¹³ The regressions for computing the abnormal returns were estimated using daily data for 250 days preceding the periods studied in the cross section. We allowed for thin trading by following Dimson (1979).

The cross section is run for the four different periods discussed above. Each time we run the cross section with weekly data for the four weeks following the announcement date. Under the null hypothesis the characteristics of the firms should not be correlated with the abnormal return for each company. Our hypothesis is that any correlation found in the data can be explained on the basis of a systematic relation between each characteristic and the shock associated with the announcement of the reform process.

5. Empirical results

Table 2 presents the first results of our event study. Panel A refers to the first announcement of the pilot program of the NTS reform on April 29, 2005. Revealingly, the market return was negative for three out of the four weeks following the announcement. At the aggregate level, the beneficial effects of the reform were thus not perceived. However, the Big 4 dummy and the floating ratio are negative and statistically significant in the first week. This is as expected: better firms, characterized by higher quality accounts and a higher liquidity due to a larger proportion of tradable shares had lower returns than worse firms. The other characteristics are sometimes significant, except for size which is significantly negative from the second to the fourth week. Larger firms had worse returns than smaller firms. Size is correlated with the quality of governance, as larger firms were likely to have better accounts and better procedures in place. It is therefore conceivable that size is a substitute for the other variables. It is reassuring that the sign of the coefficient is coherent with the impact that governance and the floating ratio had in the first week after the initial announcement.

A similar market reaction is reported in the weeks after June 21, 2005, i.e. after the announcement of the second round of the pilot program (Panel B). The market is in positive territory only in the first week after the announcement, but then it falls significantly. In this window though the governance dummy is not significant while the floating ratio is negative and significant. A similar results is reported as size. In this window, the reduction in the liquidity discount appears particularly relevant. Size-corrected volume is significant only in the third week whereas idiosyncratic volatility is negative and significant in the first and the third week.

Panel C studies the period following August 24, arguably the most relevant moment to expect a reaction of prices to the reform. Indeed, the market went up three weeks out of four, gaining more than 4 percent over the first week. The governance dummy is now strongly significant and negative not only in the first week, as expected, but also in the third and fourth week. Volume is significant only in the third week and volatility in the fourth week. Size is always negative and significant and

the floating ratio is never significant. Importantly, the floating ratio is insignificant, confirming the predominance of the corporate governance over the liquidity effect.

In Table 3 analyze the cross section of abnormal returns after the company-specific date of readmission following the first suspension. In the first two columns of the table, the abnormal return is alternatively measured starting from the opening price and the closing price of the readmission day. In these regressions, the governance dummy is not significant, regardless of the definition of returns, while the floating ratio and size are significant only when using the closing price. In this last case, while the effect of corporate governance seems already completely discounted, we still report a positive effect of liquidity on risk premia in the regressions. Volatility is negatively associated with returns regardless of the definition while volume is not significant. In the regressions of the ten-day return after the readmission, volume is also significant, the floating ratio changes sign, while the governance dummy remains insignificant.

Overall, our econometric results provide strong support to the claim that the NTS reform modified fundamentals: Chinese investors altered their company valuation to take into account the possible long run effect of the reform of the stock market. To put it simply, we find that in the most critical dates, the market soared, and that around this event windows the price of firms with a bad corporate governance increased relatively to the price of those with better standards. From these results, we conclude that the expectation of improved corporate governance enhanced the value of the firms.

6. Conclusions

The NTS reform marked a turning point in the financial landscape in China. The effect on the stock market has been impressive. Market outlook had been negative or stagnating for several years but it has started to improve strongly towards throughout the implementation of the reform and thereafter. Prices has risen so much that many observers were concerned about the existence of a bubble. Yet, the Chinese stock market is almost completely closed to foreign investors: only a small number of qualified buyers are allowed to buy shares in negligible quantities. Moreover, before 2007 domestic investors were not allowed to invest abroad. The large increase in prices in the presence of a limited increase in supply due to the compensation paid to holders of tradable shares suggests a large shift in the domestic demand for stocks. Such a move would have not materialized if investors did not trust in the beneficial effects injected by the reform.

In this paper, we have tried to assess the reaction of stock prices to the NTS reform, with particular regard with periods following important announcements on the part of the Chinese authorities. We documented that despite a difficult start, the reform gained momentum after the most important

announcement, namely the one about extension of the reform to the market as a whole. After this announcement, the market started to boom and as we write this ride is not over yet.

We have used a company level data set to study the cross sectional reaction of the prices of the Chinese companies. We have accounted for risk premia using state-of-the art models for the Chinese market trying to understand the link between the company-level unexpected return and variables related to fundamentals. The two key variables capturing the change in fundamentals such as the ratio of tradable shares before the reform and especially the presence of an international auditor appear to be significantly and negatively connected with the unexpected returns, confirming the role of corporate governance in the value of the firm.

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Figure 1. Outstanding Shares of Chinese Listed Companies by Class, February 2006

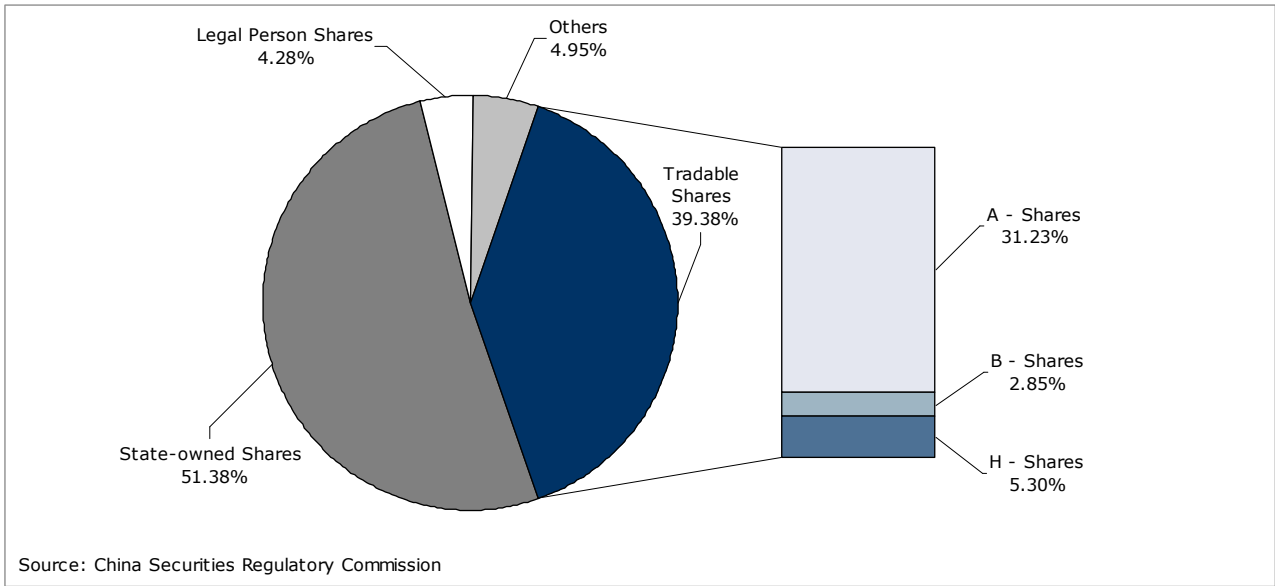


Figure 2. Market Performance and Progress of NTS Reform

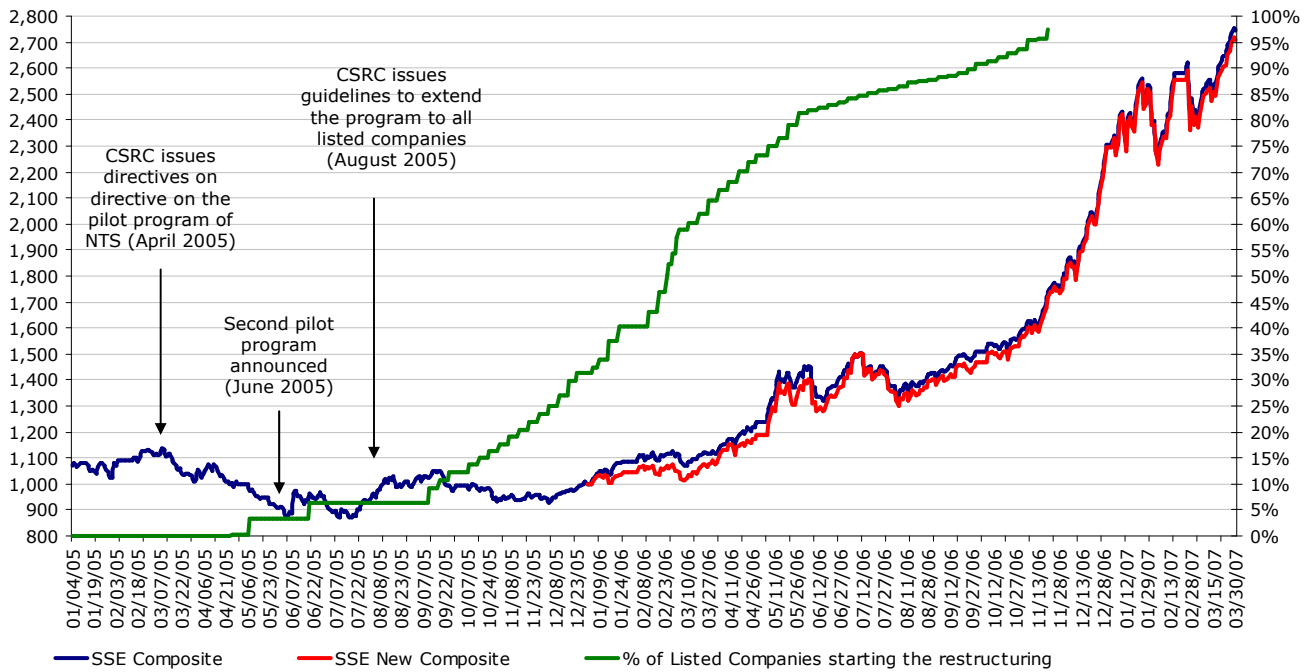


Table 1. Implementation of the NTS Reform Process

Batch #	Launch Date	# of companies completing NTS process by February 2007	Average duration of NTS Process (days)	Average % of NTS outstanding before the reform	Average Bonus Ratio
1	05/09/05	3	37.67	69.33	3.00
2	06/20/05	41	41.93	67.95	3.49
3	09/12/05	40	32.38	65.95	3.60
4	09/19/05	38	32.34	66.16	3.23
5	09/26/05	21	28.43	66.54	3.21
6	10/10/05	20	36.10	61.85	3.46
7	10/17/05	21	38.00	65.09	3.26
8	10/24/05	17	38.44	61.61	2.94
9	10/31/05	17	44.41	61.40	3.53
10	11/07/05	18	39.50	66.80	2.96
11	11/14/05	20	34.75	67.44	3.23
12	11/21/05	17	37.59	67.31	3.17
13	11/28/05	21	48.52	64.16	3.28
14	12/05/05	20	39.45	65.30	3.15
15	12/12/05	20	37.68	66.00	3.14
16	12/19/05	27	33.96	65.29	3.64
17	12/23/05	38	35.39	61.88	3.47
18	01/04/06	20	37.97	63.54	3.41
19	01/09/06	13	34.38	63.63	3.38
20	01/16/06	22	39.27	66.25	3.42
21	01/23/06	46	38.36	62.36	3.27
22	02/13/06	38	34.92	61.40	2.89
23	02/20/06	39	37.26	63.82	3.26
24	02/24/06	48	43.21	64.26	2.97
25	02/27/06	47	44.51	64.20	3.22
26	03/01/06	25	39.48	60.68	2.89
27	03/03/06	27	52.93	65.47	2.96
28	03/06/06	41	45.59	60.08	2.95
29	03/13/06	23	47.30	61.37	2.93
30	03/20/06	15	46.60	60.62	2.56
31	03/27/06	24	44.71	63.29	3.69
32	04/03/06	34	44.38	59.97	3.33
33	04/10/06	28	45.80	60.20	3.14
34	04/17/06	22	55.17	60.28	2.84
35	04/24/06	24	46.07	60.34	2.72
36	04/28/06	26	49.00	60.10	2.78
37	05/08/06	18	45.67	59.69	2.80
38	05/15/06	21	41.05	59.54	2.74
39	05/22/06	20	52.69	63.95	2.83
40	05/29/06	36	50.64	60.29	3.15
41	06/05/06	29	64.52	55.81	2.56
42	06/12/06	7	55.69	56.65	2.21
43	06/19/06	9	63.57	63.07	2.76
44	06/26/06	7	45.83	61.91	3.11
45	06/30/06	5	69.60	68.87	2.58
46	07/03/06	5	57.60	52.80	3.10
47	07/10/06	7	71.45	64.60	2.79
48	07/17/06	6	75.33	67.95	2.95
49	07/24/06	5	62.60	67.39	2.63
50	07/31/06	7	51.88	53.88	1.90
51	08/07/06	6	36.40	60.27	2.21
52	08/14/06	4	54.92	65.61	2.73
53	08/21/06	11	38.73	63.86	3.53
54	08/28/06	5	32.80	77.52	2.73
55	09/04/06	3	40.67	43.08	1.47
56	09/11/06	6	61.67	65.34	2.54
57	09/18/06	3	39.00	68.87	3.26
58	09/25/06	6	45.20	58.47	2.87
59	09/29/06	12	36.83	65.20	2.97
60	10/09/06	12	33.95	60.56	2.43
61	10/16/06	7	47.16	59.76	2.41
62	10/23/06	10	43.33	53.50	2.81
63	10/30/06	11	41.44	60.71	2.83
64	11/06/06	11	34.15	64.12	2.34
65	11/15/06	22	32.96	62.53	2.54
66	11/13/06	4	34.08	62.78	2.86
67	11/20/06	25	33.18	57.09	2.81
Total		1,301	44.15	62.65	2.95

Table 2. Cross section regressions of abnormal returns at NTS announcement dates**Panel A. First round of the pilot program, April 29, 2005**

Weeks after announcement	[1]	[2]	[3]	[4]
Big 4 dummy	-1.557 (0.547)***	0.208 (0.296)	-0.165 (0.395)	-0.477 (0.458)
Float	-0.034 (0.015)**	0.007 (0.008)	0.016 (0.010)	0.02 (0.012)*
Log of Size	0.128 (0.237)	-0.438 (0.125)***	-0.653 (0.164)***	-0.971 (0.194)***
Volatility	-0.147 (0.475)	-0.192 (0.210)	1.581 (0.354)***	0.481 (0.408)
Log of Volume	1.701 (0.834)**	-0.524 (0.301)*	0.422 (0.622)	-0.166 (0.623)
Constant	0.563 (1.944)	3.357 (0.931)***	1.211 (1.453)	5.165 (1.760)***
Obs.	1361	1361	1361	1361
R-squared	0.02	0.01	0.07	0.04
Market Return	-4.05%	-1.62%	1.98%	-2.17%

Panel B. Second round of the pilot program, June 21, 2005

Weeks after announcement	[1]	[2]	[3]	[4]
Big 4 dummy	0.528 (0.329)	0.576 (0.526)	0.187 (0.452)	-0.117 (0.566)
Float	-0.021 (0.009)**	-0.017 (0.014)	-0.021 (0.012)*	0.001 (0.013)
Log of Size	-0.522 (0.146)***	-0.885 (0.215)***	0.303 (0.188)	0.257 (0.196)
Volatility	-0.804 (0.277)***	-0.203 (0.512)	-2.216 (0.375)***	0.627 (0.449)
Log of Volume	0.406 (0.452)	-0.527 (0.877)	2.005 (0.479)***	-0.143 (0.690)
Constant	5.253 (1.113)***	7.269 (1.809)***	0.844 (1.539)	-3.689 (1.635)**
Obs.	1361	1361	1361	1361
R-squared	0.02	0.02	0.04	0.00
Market Return	2.65%	-10.38%	-5.19%	-2.68%

Panel C. Extension of NTS reform to the market, August 24, 2005

Weeks after announcement	[1]	[2]	[3]	[4]
Big 4 dummy	-0.958 (0.384)***	-0.063 (0.466)	-0.993 (0.365)***	-0.794 (0.407)*
Float	-0.014 (0.012)	0.004 (0.011)	0.01 (0.010)	0.018 (0.013)
Size	-0.451 (0.155)***	-0.595 (0.181)***	-0.445 (0.148)***	-1.353 (0.224)***
Volatility	-0.319 (0.339)	0.252 (0.386)	0.557 (0.317)*	2.891 (0.500)***
Log of Volume	-0.218 (0.448)	-0.775 (0.561)	-1.583 (0.439)***	-0.293 (0.578)
Constant	4.838 (1.400)***	4.69 (1.530)***	2.911 (1.235)**	4.031 (1.886)**
Obs.	1361	1361	1361	1361
R-squared	0.01	0.01	0.03	0.14
Market Return	7.18%	0.04%	5.15%	-6.32%

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 3. Abnormal returns at implementation of NTS reform at the company level

	First readmission [open price]	First readmission [close price]	10 days after first readmission
Big 4 dummy	-0.522 (0.915)	-0.400 (0.905)	-1.029 (0.878)
Float	-0.034 (0.021)	-0.042 (0.021)*	0.066 (0.031)**
Log of Size	-0.489 (0.355)	-0.643 (0.347)*	-0.646 (0.445)
Volatility	-2.581 (0.698)***	-2.887 (0.676)***	4.18 (1.154)***
Log of Volume	-0.42 (0.914)	-0.687 (0.919)	-5.873 (1.491)***
Constant	10.362 (2.949)***	11.427 (2.893)***	1.339 (3.966)
Obs.	1230	1230	1182
R-squared	0.03	0.03	0.04

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%