Asset Float and Stock Prices: Evidence from the Chinese Stock Market*

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ABSTRACT

We use evidence from the 2005-2006 reform of the Chinese stock market to study the impact of asset float on stock prices. The reform implies that holders of nontradeable shares compensate the holders of tradeable shares in exchange for their right to sell at a future time. Usually compensation involves an increase in the float. We exploit a company-level data set to measure the price reaction of each company to both the announcement of the details of the reform and the implementation of the compensation plan, using information about the timing of suspension from trading and subsequent readmission of each stock. The setup of the reform process is useful to disentangle the relative roles of information and supply. After studying empirical asset pricing models for the Chinese stock market, we measure abnormal returns and analyze both their time series and their cross sectional properties. We find that the reform process is characterized by positive abnormal returns before the increase in supply; we also find evidence in favor of a negatively sloped demand function. The negative impact of the increase in supply is compensated by speculative behavior, proxied by volume and volatility.

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Keywords: Speculation, Chinese Stock Market, Nontradeable shares, Event study, Asset float.

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Does supply affect stock prices? The question has long been studied in the financial literature, originally by Scholes (1972) and Mikkelson and Partch (1985) in the analysis of secondary equity offerings and then by other authors looking at modifications in the composition of well known indices like the S&P500. Harris and Gurel (1986) and Shleifer (1986) find that the prices of stocks added to the S&P500 go up on average 3% on the day of inclusion. An increase in the price of a stock added to an index is not per se evidence of a downward sloping demand curve. Other factors may be at work, particularly new information about fundamentals and liquidity. Kaul, Mehrotra and Morck (2000) analyze the Canadian stock market in the context of an information-free experiment and attribute the price movements to downward sloping demand curves. Brav and Gompers (2003) exploit a situation more directly connected with changes in supply and find that prices on average drop 2% after lockup periods expire.

We use the 2005-2006 reform of the Chinese stock market as a laboratory to bring new empirical evidence to the debate about the relevance of supply in determining stock prices. The reform implies a float increase of most stocks in a market mainly populated by local retail investors. The reform, to be thoroughly described later, aims at eliminating a class of shares, defined nontradeable shares (NTS), which cannot be freely traded on the local stock markets. This is achieved through a process by which holders of nontradeable shares pay compensation to holders of tradeable shares (TS)[3]. Compensation is generally paid by increasing the amount of circulating shares and this implies an interesting possibility to directly evaluate the relation between prices and quantities.

Our empirical study exploits the design of the reform process. After initial experiments with a small number of firms, Chinese authorities publicly declared extension of the process, to be completed by the end of 2006, to all companies traded in the Shanghai and Shenzhen markets. According to the reform process, each company must respect a given schedule, including two trading suspensions and subsequent readmissions. Just before the first suspension period holders of NTS agree on the value of the compensation to be offered to the holders of TS. After a public announcement of such agreement there is a first suspension period to allow for possible corrections to the proposal, which then becomes irrevocable. During the second suspension period shareholders formally approve the proposal. At the end of the second suspension period, compensation is then immediately paid, usually in forms implying a stock float increases.

The reform is therefore characterized by an initial credible announcement on the part of the regulation authorities about the timing and the organization of the process. This initial announcement is then followed by company-specific announcements about the details of the

[3] Such compensation is consistent with the idea that the transformation of NTS into TS may damage the current holders of TS, who in the past decided to hold shares under the assumption that NTS would have never been turned into TS, see Chen and Xiong (2001).

compensation, involving a future supply shock, and a subsequent time period in which the supply shock actually takes place. We will argue that: (a) most of the relevant information should have been discounted by investors at the time of the public announcement, well before the beginning of the reform process and (b) any remaining information is revealed at the end of the (company-specific) first suspension period. This gives rise to an information-free analysis of the reaction of stock prices to new supply at the end of the second suspension period.

We are going to compare the null hypothesis of market efficiency with an alternative hypothesis featuring supply effects and speculative bubbles. This alternative hypothesis has been studied by Hong, Scheinkman and Xiong (2006), from now on HSX, who present a theoretical model assuming limited risk absorption on the part of the market. They show that under certain conditions (heterogeneous beliefs, overconfidence and short-sale constraints) prices may systematically exceed fundamental values. Contrary to the standard efficient markets theory, the model predicts a price drop following a float increase, even when such an increase has been expected. Importantly, we are able to test the prediction of the model observing the cross-sectional relation between the change in the price and the increase in the quantity of each stock (i.e. whether stock prices decrease more for stocks with larger increases in float) and not simply the relation between the level of the price and the amount of the float (i.e. whether stocks with a larger float have lower stock prices).

We analyze the 1,301 companies which joined the reform from the beginning of the process, April 2005, until February 2007, representing 98% of the companies supposed to go through the reform process. We carry out an event study and measure the abnormal performance of each stock with respect to a variety of factor models to assess the robustness of our results. In evaluating the price reaction, we correct the observed price change to account for payment of the compensation. We next study cumulative and average abnormal (corrected for compensation and risk) returns and introduce a block-bootstrap resampling useful for our sample characterized by firms whose reform overlaps in calendar time. We also study volume and volatility, which, in the model of HSX (2006), are linked to speculative activity. We finally carry out a cross sectional analysis connecting price changes, volume, volatility and other relevant variables.

Our main findings are as follows. Risk-adjusted stock prices increase substantially (and significantly) during the reform process, except for the period following the second readmission, where prices stabilize. The results are robust across factor pricing models. Volume increases substantially in all the event periods, with a particularly strong rise after the second readmission. Idiosyncratic volatility also goes up. Cross-sectionally, prices react to the surprise in the compensation assigned to the holders of the TS as well as to volume and volatility. Most importantly, the increase in asset float taking place after the second readmission is cross-sectionally associated with a decrease in prices. On average, keeping other variables constant, the increase in supply has been associated with a 5.6% price drop. These results are not compatible with standard efficient markets theory because the increase in supply was announced several days before its implementation.

After this introduction, the plan of the paper is as follows. Section 2 discusses the Chinese stock market, both from the point of view of the papers which are more relevant to our research and from an institutional point of view. The section moreover contains a description of the reform process and of the mechanics by which firms compensate shareholders. Section 3 discusses the theoretical background. Section 4 describes methodological issues, with particular reference to the structure of the event study, the test statistics and the bootstrap procedure. Section 5 describes the empirical results, among which the estimation of various multifactor models for the Chinese stock market, the event study and the cross sectional analysis. Section 6 concludes.

I. The Chinese stock market

A. Institutional setting

Chinese firms typically issue multiple classes of shares. The existence of multiple classes of shares (A-shares, B-shares, overseas listed shares, legal-person shares, State shares) can be traced back to the restructuring of State-owned enterprises (SOEs) taking place in the 1990s and to the interest on the part of the State not to totally relinquish control of firms. A-shares could be traded only by domestic investors until 2003. Since that date the possibility of trading domestic renminbi-denominated securities has been extended to Qualified Foreign Institutional Investors (QFII) but only up to a value of 5.65 billion dollars, about 1% of the stock market capitalization. B-shares are denominated in foreign currencies and until February 2001 were reserved to foreign investors[4]. Overseas listed shares are issued by Chinese companies on securities markets outside mainland China (H-shares, for those listed in Hong Kong, N-shares listed in New York, L-shares listed in London and S-shares listed in Singapore). Legal-person shares have been given, in the restructuring process of State-owned enterprises (SOEs), to domestic institutions, stock companies, non-bank financial institutions. State shares are owned by the State Council. Legal-person shares and State shares are together known as nontradeable shares. At the beginning of 2006, NTS accounted for about 63% of the total number of shares outstanding. NTS have the same cashflow and voting rights as TS.

[4] Chinese investors have to use the foreign exchange reserve in their banking accounts to buy B-shares. Overall, the market capitalization of B-shares was about 3% of the capitalization of A-shares in 2005.

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 period 1994-2003, such transfers have often involved large blocks affecting the control of the companies. The dominant 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 discount averaging 79% (86%) with respect to their floating counterpart when sale takes place through auctions (private transfers). The discount varies with some characteristics of the company: the discount is lower for large firms, firms with a high return on equity, firms with high earnings-price or book-price ratios, firms with low debt-equity ratios, firms with low stock return volatility.

To study fairness of stock valuations, Mei, Scheinkman and Xiong (2005), from now on MSX, compare the performance of A and B shares across 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. The premium is interpreted as a proxy of the bubble component of stock prices. Moreover, A-shares had an average turnover of 500% against a value of 100% for B-shares. The authors show that turnover and risk premium are cross sectionally correlated and are both positively associated with return volatility, taken as a proxy of fundamental uncertainty and as a condition for the relevance of heterogeneous beliefs. Also, the premium is negatively associated with the float of A-shares. MSX (2005) conclude that the market for A-shares is dominated by domestic speculative investors. Considering these results, the large discount associated with the transfer of NTS looks like a deserved correction for overvaluation of market prices due to irrationally exuberant domestic retail investors.[5]

B. The 2005-2006 reform

On April 29, 2005 the China Securities Regulatory Commission (CSRC) announced a pilot program to transform NTS into TS through a well-defined process. For each company, the process includes a preliminary phase and two suspension periods. In the preliminary phase, the holders of NTS discuss the compensation proposal to be submitted to the holders of TS. The company then publishes a notice to provide full details of the proposal to shareholders. From that date, that we will call time 0, trading is suspended for the first time. Within ten days, holders of NTS negotiate with the holders of

[5] Consistently with the results showing valuation inefficiency, Allen, Qian and Qian (2007) suggest that the resource allocation role of the Chinese stock market has been both limited and ineffective.

TS. If no corrections are made to the proposal, the company makes a public announcement and the shares resume trading. When revisions to the proposal are requested by holders of TS, the shares only resume trading after such revisions have been accepted and publicly announced. Once the shares resume trading (time 1), no further revisions can be made to the proposal to be submitted for shareholders approval. After this first suspension period, the shares are then suspended for a second time (time 2) after the closing date of registration for participation in shareholders' meeting. Trading is resumed again after the meeting that ratifies the completion of the reform process and at the same time the compensation is paid (time 3). The reform proposal is approved if (a) at least two-thirds of the votes totally cast by holders of NTS and holders of A-shares are in favor (b) at least two-thirds of the vote cast by holders of A-shares who participate in the meeting are in favor.

Companies undergoing reform proceed through various batches[6]. The first batch included four companies. On June 17, 2005, the CSRC initiated the second round of the program, involving 42 companies. On August 19, this second round was accomplished. On August 24, the government issued guidelines to extend the reform project to the rest of the stock market, setting a deadline for the end of 2006. Figure 1 shows the timing of the various batches as well as the number of companies included in each batch and highlights that they have been rather regular both in terms of timing (2-3 batches every month) and in terms of number of companies (about twenty in each batch)[7] since October 2005. On February 2007, 1.301 listed companies had either completed or initiated their NTS reform process.

Compensation to holders of TS can be realized through various channels: (a) new shares can be offered directly by nontradeable shareholders (b) new shares may be offered by the company to both tradeable and nontradeable shareholders (c) new shares may be offered by the company to tradeable shareholders only (d) holders of nontradeable shares may cancel part of their shares. Moreover, holders of TS may be offered compensation in cash or a certain assignment of warrants. Offers are usually expressed as a percentage of 10 tradeable shares originally held. Table I reports information showing that in some cases more than one channel is used at the same time. The typical case (79.1% of the cases) involves a direct transfer of currently nontradeable shares to the holders of tradeable shares. On average tradeable shareholders get 3.12 shares every 10 shares originally

[6] See Wan, Yuan and Ha (2005), Inoue (2005) and Jingu (2006) for detailed accounts of the institutional aspects of the reform process.

[7] In order to provide further incentives for companies to join the reform, the CSRC stated that reform-compliant companies would be given priority to raise new capital (new issues of shares and IPOs had been frozen since April 2005). To facilitate the reform, the Chinese government has also taken a series of measures to help stabilize the stock market. The legislative department also amended the Company Law and the Securities Law to perfect the legal framework concerning the capital market. At the end of January, 2006, there was a further rule change making it easier for strategic investors to buy stakes in listed companies; under the new rules the purchase of A-shares is not reserved anymore to the small group of qualified investors but is 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.

held. The second most popular method (8.9%) involves new issues that are assigned only to holders of tradeable shares. In this case tradeable shareholders get on average 5.90 shares every 10 shares originally held.

Even when compensation is paid in the form of new shares, the float remains unchanged until the second readmission. Only on the day of the second readmission the float may change because shares assigned in the compensation package can be immediately traded. However the transformation of the original NTS into TS does not immediately change the float, due to lockup periods (usually extending for one year) proposed by nontradeable shareholders as a part of the compensation, see Jingu (2006).

Table II shows that tradeable shares were on average equal to 36.21% of the overall shares before the reform. The percentage rises to 46.41% after the reform. The comparison between 36.21% and 46.41% is only an approximation to the actual current increase in supply. For example when the company offers new shares to all shareholders, respecting the initial proportions, then the percentage of TS does not change but the actual supply does. Taking into account the actual increase in supply at the level of the single company, it is possible to compute the aggregate increase in the supply of TS, amounting to 33.3%. Again starting from data for each single company it is possible to compute the remaining future increase in supply, that will allow trading of all shares after expiration of the various lockups, at 149%.

Table III reports some summary statistics. Columns two and three report the number of companies included in every batch, already described in Figure 1, as well as their trading location. Usually batches include a substantial number of companies, except for the first experimental batch, which only included 3 companies, and the last batches of our sample, when in many cases the process is still to be completed in February 2007. This means that the market can derive relevant information from the outcome of the reform of each batch and use that information to form expectations about the outcome of the reform for the following batches. We will use this insight when we try to understand the price reaction to the various announcements.

The columns between the fourth and the sixth provide information about the length of the suspension periods. On average the length of the first suspension period is 11 days and that of the second suspension period is 21 days. The second suspension lasts longer because of the various procedures which need to be put in place to inform all the shareholders before the formal vote. The average distance between the day of the first suspension period and the beginning of the second suspension is 8 trading days.

The seventh column reports the percentage of outstanding NTS for each company before the start of the reform process. The grand average is 64% and there is little difference across companies. The eighth column reports the number of shares paid on average to a shareholder holding 10 TS. The grand average is 3.2. The ninth column reports the average (over the three months preceding the start of the reform process) price-to-book value of the companies in the various batches, which is rather stable across batches and averages 2.15. The last column reports the size (as measured by the average market value measured over the three months preceding the start of the reform process for each company) of the companies and shows a downward trend from larger to smaller companies.

Figure 2 describes the price of one specific company (Baotou Huazi Intl) before, during and after the reform. In this example the stock price goes up before the first suspension, and again between the first and the second suspension. There is an upward jump upon the day of the first readmission and a downward jump upon the second readmission. Formal econometric analysis will show that this pattern is indeed the most frequent.

II. Theoretical effects

In an efficient market the reform can affect market valuations only through an impact on expectations of fundamentals. In particular, changes in supply should not be relevant for price determination. Here we briefly discuss the impact of the reform on fundamentals and then explain why our study of the effects of supply on prices is robust with respect to information revelation. We finally discuss stock pricing when the demand function slopes down, with particular reference to the Chinese stock market.

In an efficient market, the reform may affect stock prices through three relevant channels. First, by improving corporate governance and the ownership structure, it might lead to better control on the management and more efficient decisions, improving profitability and dividends and also decreasing risks. This would increase the price of stocks going through the reform. Second, the reform increases the float and that is likely to be positive for liquidity. On the basis of the results obtained by MSX (2005) on turnover, it is presumable that Chinese retail investors will actively trade the new shares. Increased trading is associated with better liquidity, which in turn positively affects prices if there is a liquidity premium. Increased liquidity may also facilitate price discovery and improve market efficiency, as shown by Chordia, Roll and Subrahmanyam (2007). Third, the resolution of uncertainty about the reform might also be a positive element for the price if there is uncertainty aversion, see e.g. Barberis and Thaler (2003). The previous (failed) attempts[8] to solve the NTS problem might have induced investors to believe that sooner or later NTS would have been

[8] In the period following September 1999, the time of the first attempt to tackle the NTS issue, the market fell about 20%. In the period following June 2001, the time of the second attempt to tackle the NTS issue, the market again fell about 20%.

transformed into tradeable shares, creating uncertainty. Resolution of uncertainty, ceteris paribus, should decrease the risk premium and be positive for the price.

Other things being equal, the reform should therefore have a positive impact on stock prices, due to expectations of increased future dividends and reduction in expected returns. However, other things are *not* equal in this reform process. In particular, the value of shares which are originally nontradeable must increase on the news that in a near future such shares will become tradeable. If the market value of the company and the supply of the two types of shares do not change, then there must be a simultaneous decrease in the price of currently tradeable shares. Improving fundamentals may therefore only partially offset an adverse effect due to changing shareholders rights. Of course the price changes of both NTS and TS also incorporate the value of the compensation paid by one class of shareholders and received by the other class, known at time 1.

When are all these fundamental-related reactions likely to take place? We stress that investors should have started to form expectations about the compensation proposals in the period (as we said earlier, at the end of August 2005) when the authorities announced extension of the reform process to the whole stock market. The announcement was judged credible due to the success of the experiments carried out with the first two batches, which suggested only minor modifications to the process originally devised[9]. All investors therefore should have reassessed fundamentals and prices before the company-specific period that we defined time 0. This is an advantage for the empirical design of our study. We are not forced to study the impact of fundamentals when analyzing the reaction of prices to the reform process. Moreover, having already adjusted to news about fundamentals, prices should have reacted only to unanticipated news about the compensation provided at time 1, when the negotiations between holders of NTS and holders of TS are over and information about compensation is completely revealed to the market.

Most importantly, compensation is assigned to the shareholders and the float shock takes place on the date of second readmission, time 3. After correcting for the compensation, prices should not react to the increase in the float if the demand function is flat, as no other information is provided[10].

The Chinese experiment is interesting also because it involves a current and a future increase in the float on the part of each company. HSX (2006) present a theoretical model assuming limited risk absorption on the part of the market, agents with heterogeneous beliefs, overconfidence, insiders

[9] In the early two batches the reform process had to originate from a unanimous request to the directors of the company from all the holders of NTS. From the third batch on the request need to be put forward by only two-thirds of the holders of NTS, see Wan, Yuan and Ha (2005).

[10] A minor reaction could take place in response to the formal approval by the shareholders, eliminating all remaining uncertainty. In practice the process is designed in such a way as to make the formal approval an act devoid of any practical importance. The history of the reform process, where virtually all of the proposals have been accepted by the shareholders, confirms this view

and short-sale constraints and show that stock prices should exceed fundamental values due to the presence of an optimism effect (only overoptimistic investors hold stocks while others cannot short them) and of a resale option effect (the possibility to sell stocks to future overoptimistic investors). The model predicts that an increase in the float has a negative effect on prices, even when it is anticipated. The float increase requires an immediate greater heterogeneity of opinions in order to sustain a certain level of prices, but also a future greater heterogeneity. The latter makes the resale option immediately less valuable. The presence of inside investors, currently constrained by a lockup period, has a positive effect on current prices, again due to overconfidence. The model fits the Chinese case and produces several implications that can be tested empirically. In particular, the model does not simply show that an *expected* float increase may negatively affect prices. It also predicts that under certain conditions other variables, like volume and volatility, should be positively correlated with stock prices.

III. Methodological issues

In what follows we describe the correction to stock prices to account for payment of the compensation, the estimation of the event study residuals and statistical inference.

A. The compensation-corrected price

On the day of payment of the compensation, price drops similarly to what happens in the case of a dividend, even regardless of any supply or fundamental effect. We therefore need to compute a compensation-corrected price to isolate any change in the price due to supply.

Compensation can be realized through various channels. The standard case is the one in which holders of NTS offer holders of TS a certain number of shares (*SH*) and/or a certain amount of Yuan (*CASH*) every 10 shares. The stock price should react in such a way that the total wealth of the tradeable shareholders does not change when the compensation is paid. This is consistent with the possibility of compensation-induced wealth redistribution across the two categories of shareholders. Total wealth redistribution may result from the payment of the compensation *and* from the change in stock prices. But redistribution of wealth across the two categories is already incorporated into prices at the latest after the initial announcement, which takes place several days before the moment of the second readmission. Here we simply assume that, given the available information set, total wealth of holders of TS should not change overnight as a reaction to payment of the compensation. Formally:

$$p_0 QTS = p_1 \left[QTS + \frac{QTS}{10} SH \right] + \frac{QTS}{10} CASH\,;$$

where p_0 is the price before the compensation payment, p_1 is the price after the payment, *QTS* is the number of TS outstanding at the beginning of the reform process.

The compensation can take place by warrants assignment as well. Galai and Schneller (1978) modify the Black-Scholes model to take into account the fact that if a warrant is exercised it increases the number of outstanding shares of the firm and thus dilutes the equity of its shareholders. Following their specification, warrant prices *W* are given by:

$$W = \left(\frac{N}{N/g + M} \right) \left[\left(S - \sum_i e^{-rt_i} + \frac{M}{N} W \right) N(d_1) - e^{-rT} x N(d_c) \right];$$

where

$$d_1 = \frac{\ln\left(\frac{S - \sum_i e^{-rt_i} D_i + (M/N)W}{x} \right) + rT}{s\sqrt{T}} + \frac{s\sqrt{T}}{2};$$

$$d_2 = d_1 - s\sqrt{T};$$

and where *S* is the stock price, *X* is the exercise price, *N* is the number of outstanding shares of stock, *M* is the number of warrants, *g* is the number of shares that can be purchased with each warrant, *r* is the risk free interest rate[11], *T* is the time until expiration, *s* is the standard deviation of the return of *S+(M/n)W* per unit time[12], *N(d)* is the cumulative normal distribution function evaluated at *d*, t_i is the time until the *i*th dividend is paid and D_i is the *i*th dividend. The value of the warrant is next multiplied by the number of options (N_W) that holders of NTS give to holders of TS every 10 shares.

B. The event study

We isolate four event windows over the event period for each stock, associated with the two dates of suspension and readmission of their shares to trading:

1. *run-up window* (window 1) starts nine days before the first suspension and ends on the suspension itself;
2. *release and post-release window* (window 2) runs from the first readmission date to eight days after the readmission. This includes the percentage change between the opening price upon readmission and the closing price of the suspension day, the percentage change between the closing price and the opening price on the readmission date and the percentage changes for the remaining 8 days;

[11] The interest rate used is the time deposit one. We took the middle rate at the specific time horizon:1 year, 15 months, 18 months or 2 years.

[12] We choose a time horizon of 12 weeks.

3. *pre-supply shock window* (window 3) runs from ten days before the second suspension to the suspension day;
4. *supply shock and post-supply shock window* (window 4) runs from the second readmission date to eight days after such date. This includes the percentage change between the opening price upon readmission and the closing price of the suspension day, the percentage change between the closing price and the opening price on the readmission date and the percentage changes for the remaining 8 days.

The event study uses the residuals from a pricing model. We experiment with several pricing models, described below. Each pricing model is estimated with data preceding the beginning of the reform process. For company i involved in the reform process we estimate a multifactor model $r_{i,t} = a_i + \sum_{k=1}^{K} b_{i,k} r_{k,t} + e_{i,t}$ using observations between *t-120* and *t-10*, where *t* is the day of the first suspension for stock i and $r_{k,t}$ is the return of the k-*th* factor-replicating portfolio[13]. Define with $a_i, b_{i,k}$ the estimated parameters. Such parameters are used to compute the estimated errors over the event windows $e_{i,t} = r_{i,t} - a_i - \sum_{k=1}^{K} b_{i,k} r_{k,t}$. Such errors are used to derive cumulative abnormal returns (CAR). In the case of windows 1 and 3 the definition is:

$$CAR_{i,0} = e_{i,0}$$
$$CAR_{i,t} = CAR_{i,t-1} + e_{i,t}, t = 1,2...T$$

where T is the length of the event window. In defining abnormal returns on the readmission day of windows 2 and 4, we notice that any new information should be incorporated into the *opening* price. We therefore measure the return on the stock on the readmission date as the difference between the opening price on that date and the closing price of the last trading day before the suspension. We define such a variable for stock i as $r_{i,S \to R}$. The distance between the readmission day and the suspension day may be long and heterogeneous across companies, ranging between few days and 3 months. This creates an asymmetry between the readmission abnormal return and the other returns of windows number 2 and 4. While the readmission abnormal return is the result of the accumulation of idiosyncratic shocks over several days of suspension, the other abnormal returns are daily. Therefore for event windows 2 and 4 we define:

$$CAR_{i,0} = r_{i,S \to R} - a_i - \sum_{k=1}^{K} b_{i,k} r_{k,S \to R}$$
$$CAR_{i,t} = CAR_{i,t-1} + e_{i,t}, t = 1,2...T$$

[13] We have also experimented with other estimation periods like *t-150/t-10* and *t-90/t-10* but results are not affected.

where $r_{k,S\to R}$ is the total rate of return for the k-th factor. We will take this into account when computing the standard errors of our test statistics to allow for the larger variance of the initial abnormal return for windows 2 and 4.

For all event windows, cumulative abnormal returns are then averaged across companies to obtain the mean cumulative abnormal residuals (*MCAR*): $MCAR_T = N^{-1}\sum_{i=1}^{N_t} CAR_{iT}$.

Before closing this section, notice that for the two event windows 2 and 3 the number of firms with active available residuals depends on the horizon analyzed within the window. In several cases the time length between the first readmission and the second suspension is shorter than ten days. Suppose that firm A the second suspension takes place six days after the first readmission. It is possible to compute six residuals which can be attributed both to the period following the first readmission and to the period preceding the second suspension. In analyzing any horizon between 1 and 6, firm A therefore actively contributes to the overall results of both event windows. However for horizons larger than or equal to 7 there are missing residuals for this firm. We follow Lynch and Mendenhall (1997) and use the same total number of firms for all the horizons within a given window, simply summing all the available residuals for each date. Therefore, computation of the mean cumulative abnormal residuals may give different results from those obtained by the computation of the mean average abnormal residuals (*MAAR*) defined as the mean across all firms of the average residuals, $MAAR_T = N^{-1}\sum_{i=1}^{N}(CAR_{iT}/T)$. Lynch and Mendenhall (1997) notice that *MCAR* assigns the same weight to each residual while *MAAR* assigns a larger weight to residuals of firms with a shorter window.

C. The bootstrap and the variance estimators

In order to test for the existence of abnormal returns we need to estimate the variance of *MCAR* and *MAAR*. Such a variance is measured in three ways. Following Campbell, Lo and MacKinaly (1997), under the assumption of independence across abnormal residuals of different firms, the variance of the *MCAR* is:

$$Var(MCAR_{it}) = N^{-2}\sum_{i=1}^{N_t} V_i \ .$$

where $V_i = i'\left(s_{e_i}^2 I + s_{e_i}^2 X_i^*(X_i' X_i)^{-1} X_i^{*'}\right)$ is the variance of the i-th company (composed of a first term that accounts for the variance of abnormal returns and a second term that allows for estimation error), X_i (X_i^*) is the matrix of regressors used in the estimation period (the event window) and i is a vector of ones. In what follows we define this variance estimate as CLM variance. In the case of windows 2 and 4, we modify the definition of the variance to allow for the difference between

$CAR_{i,0}$ and $e_{i,0}$. Assuming no autocorrelation of abnormal returns, the variance of the readmission abnormal return increases with the length of the suspension period and the definition of variance becomes $V_i = i' s^2_{e_i} \left(I + (L_i - 1)Z + X_i^* (X_i' X_i)^{-1} X_i^{*'} \right)$ where Z is a matrix of zeros except for the element *(1,1)* that is equal to *1* and where L_i is the length of the suspension period for company i.

The null hypothesis of no abnormal returns is tested by means of the statistic:

$$J_t = \frac{MCAR_{it}}{\sqrt{Var(MCAR_{it})}}$$

which is asymptotically distributed as a standard normal. The disadvantage of this estimator lies in its assuming independence of residuals across firms. Our event periods are sometimes overlapping across firms because the latter are divided in batches of companies going through the reform process over similar time frames. Campbell, Lo and MacKinlay (1997) discuss inference in event windows with clustering and notice that standard methods suffer from lack of power. We therefore compute two other estimators.

The second estimator is the cross-sectional variance (CS variance) across mean cumulative and average abnormal returns of the different companies, see Asquith (1983) and Lynch and Mendenhall (1997). Campbell, Lo and MacKinlay (1997) point out that the use of the CS variance is justified under the weaker assumption of cross sectionally uncorrelated residuals.

The third estimator is obtained by bootstrapping abnormal returns in such a way as to preserve the cross-correlation properties. For all the companies involved in the reform process we estimate a multifactor model over a common estimation period (bootstrap estimation period)[14]. The bootstrap estimation period includes 140 observations prior to September 16, 2004. Estimation of the multifactor model over the same period allows us to retrieve a matrix of residuals from which we can bootstrap while respecting the cross sectional covariance properties in calendar time. Define with $a_i^{(b)}, b_{i,k}^{(b)}$ for *i=1,2…N* companies and *k=1,2…K* factors the estimated parameters of the multifactor model. Such parameters are used to estimate abnormal returns over the bootstrap estimation window $ar_{i,t} = r_{i,t} - a_i^{(b)} - \sum_{k=1}^{K} b_{i,k}^{(b)} r_{k,t}$ .We resample these abnormal returns by respecting their typical correlation properties.

In order to describe our bootstrap assume there are only three firms, going through the reform process at different points in time of the years 2005-2007. Suppose we consider a ten-day horizon following the second readmission. Suppose that companies A, B and C are readmitted to trading respectively on January 10, January 15 and March 5. In the event study we would analyze their

[14] The bootstrap estimation period is therefore different from the estimation period used for the event study, as the latter is company-specific and includes observations between *t-120* and *t-10*, where *t* is the day of the first suspension.

cumulative returns respectively over the periods January 10-January 20, January 15-January 25 and March 5-March 15. Firms A and B have a five day overlap. Suppose we have estimated a pricing model for these three companies using data for the year 2005. In order to evaluate whether the mean cumulative abnormal residual is significantly different from zero we bootstrap from the 2005 residuals. We select a number between 1 and 241 (assuming there are 250 trading days in the year 2005), say number 102. If we extracted abnormal returns for the three companies between dates 102 and 111 we would likely overestimate the degree of cross-correlation actually occurring in 2006 because (a) in our example the abnormal residuals of company C were realized in a time period completely non-overlapping with the abnormal residuals of companies A and B and (b) A and B themselves only had a five day overlap.

To get the right degree of cross correlation we instead extract a (randomly selected) series of 10 consecutive observations from the abnormal residuals of stock A over the year 2005. We do that by randomly selecting a number between 1 and 241, say number k, from a uniform distribution and by considering the sequence of 10 residuals for firm A between k and $k+10$, selected from the bootstrap estimation period. In order to respect the cross sectional dependence between companies A and B we then consider a sequence of 10 residuals for firm B between $k+5$ and $k+15$. In such a way there is a five day overlap in the bootstrapped residuals, corresponding to the overlap that takes place among the residuals in the event windows. As to firm C, we consider 10 residuals from the bootstrap estimation period between j and $j+10$, where j is another number randomly extracted from a uniform distribution between 1 and 241. In the case of firm C there is no cross correlation to account for[15].

We now have three artificial time series of abnormal residuals for the three stocks, allowing for cross sectional covariance among them. We repeat the procedure for all the firms and obtain a simulated series of abnormal returns under the null hypothesis. We repeat the procedure 1,000 times and compute an empirical distribution of mean cumulative and average residuals. The comparison between the empirical distribution and the actual value of the tests is used for statistical inference.

We also apply the same bootstrap methodology for our statistical inference regarding volume and volatility. It is important to allow for cross correlations across stocks also for those variables, whose distribution is empirically highly non-normal.

IV. Empirical results

[15] The procedure is properly modified to estimate the variance for the readmission abnormal return of event windows number 2 and 4, which, as already discussed, is the sum of unobserved daily residuals over the suspension period. In this case the number of bootstrapped residuals varies across companies depending on the length of the suspension period. For a company which is readmitted after 13 days for example we extract 13 residuals from the bootstrap estimation period and sum them to obtain the readmission residual.

A. Data and summary statistics

We have used three data sets for our empirical work. We have collected daily data for 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 from Datastream. 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 tradeable shares of each company from Shenzhen GTA Information Technology Co Limited. Finally, Nomura Institute of Capital Market Research[16] has given to us 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 disappeared before the beginning of the reform process[17], (b) 17 companies are reported from Datastream to be suspended from trading as of February 2007 for unspecified reasons[18], (c) 26 companies were born after September 2005 so they are not used neither in the test of the pricing model nor in the event study, (d) 5 companies did not have nontradeable shares 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 finished the reform by February, 2007. We do not use all the 1,192 companies because in 94 cases we have had problems in pricing the compensation paid to shareholders and in other 89 cases the data are not fully convincing because of discrepancies across data sets in the percentage of tradeable shares before and after the reform. Excluding these 183 companies leave us with a sample of 1,009 completing the reform process between April 2005 and February 2007.

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. In what follows we will compare summary statistics for our float-weighted market index with those for the Shanghai Composite Index and the Shenzhen Composite Index. Both indices are also weighted by float.

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[16] We thank Takeshi Inoue of Nomura Institute of Capital Market Research for kindly providing us with these data.

[17] However they are included in the tests of the pricing models that we perform for the period 1998-2005.

[18] These companies are included in the tests of the pricing models when they actively trade but not in our event study.

B. Estimating multifactor models for the Chinese stock market

We experiment with several risk pricing models for the Chinese stock market. We consider a simple market model, a three factor Fama-French (1996) model including the market, a size portfolio and a value portfolio, a Wang-Xu (2004) model including the market, a size portfolio and a floating ratio portfolio, an extended Wang-Xu model including the market, a size portfolio, a floating ratio portfolio, a liquidity portfolio. Wang and Xu (2004) propose including a floating ratio portfolio as a proxy for risk of bad governance and expropriation of holders of TS. The factor replicating portfolios have been built following the methodology described by Fama and French (1996) and the liquidity portfolio has been formed using the methodology of Pastor and Stambaugh (2003).

At the beginning of each month, Shanghai (SSE) and Shenzhen (ZSE) stocks are allocated to two groups (small or big, 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. SMB is the difference between the average returns of the three small-stock portfolios (S/L,S/M, and S/H) and the average returns of the three big-stock portfolios (B/L, B/M, and B/H). HML is the difference between the average returns of the two low-BM portfolios (S/H and B/H) and the average returns of the two high-BM.

A similar methodology is applied to stocks ranked according to their floating ratio (the ratio of tradeable to nontradeable stocks for each company) to build the floating ratio portfolio (FR), which is long stocks with a high floating ratio and short stocks with a low floating ratio. We have followed Wang and Xu (2004) and have used the part of floating ratio that is orthogonal to size measured as the log of the market value. At the beginning of each month, Shanghai (SSE) and Shenzhen (ZSE) stocks are allocated to two groups (small or big, 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 float ratio groups (low, medium, or high: L, M, H) based on the bottom 30 percent, middle 40 percent and top 30 percent of the floating ratio. Value-weighted portfolio returns are then computed for each portfolio. FR is the difference between the average returns of the two high-FR portfolios and the average returns of the two low-FR.

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 $g_{i,t}$ from the regression $r^{e}_{i,d+1,t} = q_{i,t} + f_{i,t} r_{i,d,t} + g_{i,t} sign(r^{e}_{i,d,t}) \times v_{i,d,t} + e_{i,d,t+1}$ 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[19].

We test the validity of the various pricing models over the period 1/1/1998-1/4/2005, a total of 1,762 days (holidays are excluded). Scholes and Williams (1977) point out that the use of daily returns can produce several problems in estimation of factor models, like biased estimates of variance and serial correlation. We follow Dimson (1979) and include the lagged value of the market return among the independent variables[20].Our starting sample includes almost half of the total number of companies quoted in Shanghai and Shenzhen. Once a new company is listed on the market, it is added to the sample. At the end of the period there are 1,329 quoted companies.

The analysis of the pricing models uses data for the period January 1998-April 2005, before the start of the NTS reform process. We replicate our tests over 3 sub-periods (1998-2000, 2001–2002, 2003-2005) to take into account some modifications that have been made to the listing system, see Green (2004), which may affected the market as a whole. During the period 1998-2000 the majority of the listed companies went through the old planning system which was strongly influenced by the local government. Only during 2001-2002 there was considerable evidence that new policy priorities were leading to changes in the stock market[21], even though the screening procedures of listing committees still were a black box. The screening system of the government agency for listing equities has become much clearer since December 2003 and a sponsoring system was introduced in February 2004.

Table IV reports summary statistics about the factors. Panel I shows that the Shanghai and Shenzhen market indices have an almost perfect correlation. Our own index, defined in the table as market index, is also almost perfectly correlated with the two official indices. This is reassuring about the quality of the data because our own index has been built independently of the two official indices. In what follows we will therefore use our market index to compute the market return. The other factors have a fairly low correlation among themselves. The largest correlation (50%) is between the floating ratio and size. This means that large companies have a relatively high percentage of tradeable shares as also observed by Wang and Xu (2004). The value portfolio is positively correlated with the size portfolio (36%). The liquidity portfolio is weakly correlated with the other portfolios, and in most cases the sign is negative.

[19] In our estimation, most of the estimated coefficients are negative and the average value is -0.03, coherently with the intuitive meaning of the measure which associates liquidity with stock reversals.

[20] See Asness, Krail and Liew (2001) for a recent application of this technique to hedge funds.

[21] Among which the failure of industrial policy, the government's growing financial liabilities, the creation of an asset management industry for the national pension system

Panel II reports summary statistics for the whole sample, while Panel III-V explore various sub-samples. The Panels illustrate the difference among sub-periods. In particular, the market return was positive and large between 1998 and 2000, strongly negative in 2001-2002 and then mildly negative in 2003-2005. From the difference between the maximum and the minimum observations one can notice that there was some stabilization of market returns. The volatility of most risk replicating portfolios decreased over time, particularly in 2001-2002.

The factor returns are unstable across time. The average return of the size portfolio is positive in the first sub-period and negative in the third. The value portfolio is positive in the third sub-period, stable in the second and negative in the first. The return of the floating ratio portfolio is positively correlated with the return of the size portfolio. The premium of the liquidity portfolio is less variable than that of the others. Its negative sign is compatible with the existence of a liquidity premium because it is long stocks with high liquidity and short stocks with low liquidity. Overall, this empirical evidence could be compatible with the existence of a fixed risk premium or with a time-varying risk premium. We do not have enough observations to test those alternative hypotheses, but the data suggest the possibility that the Chinese markets may have gone through various stages in the different sub-samples.

To compare the performance of the various models, we consider their ability to price the returns of 33 sectors in the Chinese market. This corresponds to an "out-of-sample" testing strategy of the type suggested by Cochrane (2006). We have built the returns of the 33 sectors by using the Datastream classification which assigns each company to one sector.

Table V contains a list of the sectors as well as the results of regressions of each sector on risk factors included in what will the final specification of our study, including the market return, the market return lagged once to allow for nonsynchronous trading, the size portfolio (SMB), the floating ratio (FR) portfolio and the liquidity (HLIQMLLIQ) portfolio. The coefficients of determination are fairly high, with a minimum of 41% and six values higher than 90%. Only 5 alphas out of 33 are significantly different from 0, an element which highlights the good performance of the pricing model. The lagged market return is significant about 50% of the times. The remaining factors are also frequently relevant.

In order to formally test the asset pricing model we use a time series methodology and run an OLS regression of each sector return on the returns of the risk replicating portfolios. We then consider the constants of the various equations and use two statistical tests described by Cochrane (2006). The first is the classical Gibbons, Ross and Shanken (1989) statistic (GRS statistic) $\frac{T-N-K}{N}\left[1+\bar{f}'\Omega^{-1}\bar{f}\right]^{-1} a'\Sigma^{-1}a$. T is the number of observations, N is the number of test assets,

K is the number of factors, $\bar{f}$ is the *(K,1)* vector of sample means of the factors, Ω is the variance covariance matrix of the factors, a is the *(N,1)* vector of estimated constants from the OLS time-series regressions, Σ is the residual variance-covariance matrix i.e. the sample estimate of $Ee_t e_t' = \Sigma$. The GRS statistic is characterized by a $F_{N,T-N-K}$ distribution. This statistic assumes that errors are normally distributed, i.i.d. and homoskedastic.

It is possible to avoid the normality assumption and to allow for more general errors (correlated over time and heteroskedastic) by using the quadratic form $a'\text{var}(a)^{-1}a$, which is distributed c_N^2 where $\text{var}(a)$ is the upper-left corner of $\text{var}(\begin{bmatrix} a \\ b \end{bmatrix}) = T^{-1}d^{-1}Sd^{-1'}$ where $d = -\begin{bmatrix} 1 & \bar{f}' \\ \bar{f} & Eff' \end{bmatrix} \otimes I_N$ and S is the long run covariance matrix corrected to take into account of heteroskedasticity and autocorrelation (see Cochrane (2006) page 234). We will refer to this test as chi-square test.

Table VI presents results of the asset pricing tests, which are in our opinion generally encouraging. The market model and the Wang-Xu model perform very well over the long sample 1998-2005 while the other two models are rejected at levels between 6% and 1%. The Wang-Xu model performs worse than the other three models over 1998-2000, while all models perform very well over 2001-2002. The most recent sub-period 2003-2005 shows a predominance of the Wang-Xu model extended to allow for a liquidity portfolio even though the market model also performs well. The Fama-French model is strongly rejected but the other three models are not. The Wang-Xu model extended to allow for liquidity risk is in our opinion the most suitable candidate for determining abnormal returns in our event study.

C. Price reactions

Tables VIIA and VIIB and figure 3 report results of the CAR analysis for the 1,009 companies included in our sample. The CAR analysis was repeated using residuals from all the four pricing models considered in table VI. The results are qualitatively similar. For reasons of space we only present results for the market model and the four-factor liquidity model.

All the models give coherent estimates of the abnormal returns before the first suspension, showing that there is an abnormal increase in the price amounting to about 2.5% in the nine days before the first suspension (2.59% for the market model and 2.54% for the multifactor model). This result may be explained by the possibility of information leakage about the identities of the companies joining the various batches. While all the cumulative residuals are significant according to the CLM and the CS tests, the bootstrap more frequently rejects the null hypothesis of no significant residuals, especially in the case of the market model residuals.

On the readmission day there is a further increase in the price equal to 0.15% for the market model (not significant at 5% for the three versions of the test) 0.25% for the multifactor model (strongly significant for the bootstrap). This is of course an average number, as only 60% of the companies show an increase in the price. We expected heterogeneous reactions to the compensation announcements on the part of the various companies, which may be explained on the basis of the surprise component implicit in each announcement[22].

After the initial jump upon readmission, prices keep growing in the subsequent nine trading days, to reach a cumulative increase of 2.369%. The results are strongly significant regardless of the variance estimates used in the tests. When the interval between the first readmission and the second suspension is viewed from the point of view of the second suspension, i.e. we count ten days going backward from the date of the second suspension rather than going forward from the date of the first readmission, we find a price increase of 5.3%. This result is not independent of the one obtained for the period after the first readmission, as several companies have an horizon equal to or smaller than nine days between the two suspension periods and therefore fall in both empirical analyses. These results are a sign of strong inefficiency if they are interpreted as a delayed reaction to the details of the reform announced before the first readmission. We will return to the interpretation of these results after presenting empirical results about volume and idiosyncratic volatility and their relation with abnormal returns.

Finally, on the day of the second readmission, opening prices are on average 0.192% higher than they were when they last traded before the second suspension. According to the bootstrap this is significant at the 5% but not at the 1% level. There is a small discrepancy between the results of the market model and those of the multifactor model as the former predicts a decrease in price of 0.112% which is however not significant. When we look at the second cumulative return, including both the return between the return over the suspension period and the return of the first day of trading, closing prices on the readmission day are 0.17% higher than they were when they last traded before the second suspension. Notice that here we refer to the compensation-corrected prices. On the day of the second readmission the raw prices register a decrease of 16.7% which is however almost totally associated with payment of the compensation. Nine days after the readmission day risk-corrected prices have dropped 0.4% but this is not significant at 10%. Remember that we are describing risk-corrected returns. In particular, returns are net of market returns. The Chinese stock market has been growing strongly over all the period under consideration, so that in most cases abnormal negative returns are compatible with positive returns. Figure 3 illustrates the abnormal returns cumulatively measured since nine days before the start of the reform for each company. The

[22] In what follows we will explore the cross-sectional link between price reactions and compensation announcements, trying to estimate the surprise component.

figure highlights that nine days after the end of the reform process, corrected prices are on average 4.5% higher than they were nine days before the beginning of the process.

The overall path can hardly be reconciled with rational valuation. The increase in prices before the first suspension may perhaps be explained by information leakage and speculative activity on the part of investors even though that would imply a predominant expectation of a positive compensation surprise or the belief that prices had not adjusted to the reform in the previous periods. The second phase seems to be associated with a late reaction to the new information released on the day of the first readmission. Speculative activity is likely to play a major role in these dynamics. We therefore turn to measuring the proxies for speculative activity suggested by HSX (2006), i.e. volume and idiosyncratic volatility and to link them to abnormal returns.

D. Volume and volatility

Our measure of volume is total turnover defined as the number of shares traded for a stock on a particular day. Figure 4 reports the daily total turnover of the Shanghai and Shenzhen stock markets between March 2004 and February 2007. The increase in total turnover after the beginning of the reform is clearly visible. The average turnover before the reform is equal to 256 millions units, going up to 649 millions units after the reform.

Table VIII reports the (simple) average tumover for the stocks participating in the reform process. The average is reported before, during and after the reform process. In each case we report both the absolute value of turnover and its share with respect to the total turnover of the market. For example, the absolute value of the turnover for the stocks joining the reform process one month before suspension (338 million units for the Shanghai market) is the simple average across stocks of the daily turnover in the four weeks preceding the start of the reform process. The number represents 0.10% of the total turnover of the market over the same period. Turnover however increases by 69% in the period after the first readmission (and before the second suspension) with respect to the level before the reform. The increase is 55% for the Shenzhen market and 78% for the two markets together. Volume increases by 116% in the month after the second suspension (with respect to volume before the first suspension) for each single market.

These numbers clearly indicate the existence of an increase in turnover after the reform. To study this issue in detail we compute and analyze abnormal volume, using two alternative methodologies. The first follows Brav and Heaton (1999) and Brav and Gompers (2003). We define normal volume as the mean daily volume from day *t*-120 through day *t*-11 relative to the day of the first suspension. Abnormal volume is the percentage difference between actual volume and normal volume. To eliminate the effect of outliers we set observations exceeding the 99th percentile equal to the median observation. Table IX and Figure 5[23] confirm the large increase in volume.

Table IX shows that ten days before the first suspension actual volume is 19% larger than normal volume, an increase reaching 87% the day before suspension. However the table also clearly shows that the large increase in volume is unequally distributed across firms. The median is very often negative in this sub-period, even when the mean is large. For example, five days before the first suspension, the mean abnormal volume is 29% but the median is -11%. This is a signal of non-normality of the empirical distribution and highlights the relevance of our bootstrap in evaluating the relevance of the statistics. The bootstrap shows that the average increase in volume is significant in most of the event period.

On the day of the first readmission, volume is 157% higher than normal, an increase that reduces to 55% after 10 days. On the day of the second readmission volume is 518% higher than normal, an increase that reduces to 104% after 10 days.[24] When judged by the bootstrap, increases in volume are statistically significant, especially after the second readmission.

We also compute abnormal volume following Ajinkya and Jain (1989) and Lynch and Mendenhall (1997). This is based upon the residuals of a regression of the company (capitalization corrected) volume on the market (capitalization corrected) volume $u_{it} = b_0 + b_1 u_{mt} + e_{it}$ [25]. The regression is estimated by means of generalized least squares[26]. The coefficients of the volume regressions are estimated along the same lines already described for the returns regressions, i.e. using observations between times *t-120* and *t-10*, where *t* is the day of the first suspension.

This measure is different from the one that we have presented in table IX, where normal volume was computed on the basis of what had happened before the beginning of the reform process for each company. Now the benchmark becomes the contemporaneous market volume. The large increase in market volume following the beginning of the reform process (documented in table VIII) raises the possibility that the increase in the volume of the companies going through the reform may be lower than the overall increase.

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[23] Table IX considers the same four sub-periods already studied for returns, while figure 5, for simplicity, only reports results for three periods, i.e. the period before the start of the reform process, the period after the first readmission and the period after the second readmission.

[24] We also repeat the computations for a modified abnormal volume which takes into account the increase in the float after the second readmission, but the results are very similar.

[25] The measure of volume is defined as: $u_{it} = \log[1+V_{it}]/\log[1+MV_{it}]$, where V_{it} is money volume on day *t* for stock *i*, and MV_{it} is the market value of the outstanding shares on stock *i* on day *t*.

[26] The equation is estimated on the basis of OLS to retrieve the residuals. The residual is then regressed on its own lag and the slope coefficient is used as an estimate of the AR(1) coefficient to transform the original data as in the Cochrane-Orcutt procedure. Finally, OLS is applied to the transformed data.

The cumulative residual analysis described in table X shows that companies entering the reform process have a positive abnormal volume in the period preceding the first suspension. Bootstrap-based statistical inference shows that however the increase is significant only in the two days before the first suspension. This result is coherent with that obtained from the analysis of returns for the market model, showing a significant abnormal increase in prices in the two days before the suspension. The two results together reinforce the hypothesis that the increase in prices is due to information leakage.

Volume keeps increasing relatively to the market in all sub-periods after the first readmission. A very strong increase in volume takes place after the second readmission. Ten days after the second readmission abnormal volume is as large as 28.7%.

As to volatility, we adopt two alternative measures. The first is the standard deviation of returns; the second is the price range, defined as the percentage spread between the highest and the lowest values of the stock price on any given day. The price range is a very efficient volatility estimator as emphasized by Alizadeh, Brandt and Diebold (2002). Moreover it has the advantage of providing a point estimate of volatility, contrary to what happens with the standard deviation which requires a time series of observations for its estimation.

On average the daily standard deviation of returns for a single stock is 3%, corresponding to an annualized value of about 50%. Figure 6 presents a graph of the price range across the usual sub-periods. The figure shows clearly the large and permanent increase in volatility associated with the reform. Table XI documents that the empirical distribution of the range across firms is highly non-normal, with huge differences between the mean and the median of the distribution. The table also shows that the increase in volatility is in general not statistically significant except for the day of the second readmission and the two days after that.

E. The cross section of abnormal returns

Finally, we perform a cross sectional analysis aimed at explaining the abnormal returns of stocks on the basis of volume and idiosyncratic volatility as well as control variables like the compensation surprise, size, a batch number dummy, a measure of the supply increase. The compensation surprise is included because the market price should react only to the compensation surprise on the day of the first readmission. We estimate the compensation surprise for the *i-th* company as the difference between the actual compensation (defined as the overall monetary value of the compensation package) and the time series average of the compensations paid by all the companies completing the reform process before company *i*. This is equivalent to assuming that expectations about compensation are formed on the basis of extrapolation from companies which already went through the reform. As robustness checks, we also estimate the surprise as the difference between (a) the number of tradeable shares in excess of the historical mean, ignoring other compensation channels and (b) the actual compensation and the average compensation paid by companies in the previous batch. The results are very similar.

Volume and volatility are included because of their importance in the theory of HSX (2006), according to which overvaluation caused by speculative behavior should also be associated with large volume and volatility. Volume is a reflection of differences of opinion across traders, induced by disagreement about the true value of the firm and idiosyncratic volatility is a proxy for objective uncertainty about value. We alternatively measure volatility in terms of historical standard deviation and in terms of price range but we report only the latter results as they are qualitatively similar.

A batch number dummy is included to allow for learning on the part of investors about the reaction of stock prices to details of the reform process for each company. We expect in particular that investors were more uncertain about the price reaction associated with compensations offered by companies belonging to the early batches and that the accumulation of experience made possible the recognition of patterns of reaction, perhaps not completely rational and associated with speculative activity.

Finally, the current supply increase, as measured by the percentage increase in the number of tradeable shares, is included to evaluate the relevance of limited risk absorption and negatively sloped demand functions. The current supply increase should affect prices if the demand curve slopes down. The existence of a bubble should make the float elasticity of price even larger, especially if the increase in supply is associated with a bursting of the bubble. We will return to this issue in commenting our empirical results. MSX (2005) have shown that supply is cross-sectionally negatively associated with the bubble. Here we perform a different test, as our dependent variable is not the spread between the prices of A-shares and B-shares, as in MSX (2005), but the percentage change in the price of A-shares.

We run the cross section four times, to explain the jump in prices (i) on the day of the first readmission, (ii) between the first readmission and the second suspension, (iii) on the day of the second readmission and (iv) after the second readmission. Therefore, differently from what we do earlier, we group together the periods after the first readmission and before the second suspension, and separately study the point jump upon the first and second readmissions. The returns on the two readmission days are measured in terms of percentage difference between the opening price of the readmission day and the last closing price before the suspension period. In theory one would expect all the effects to be absorbed by the opening price due to the information having been released well in advance of the readmission. However price discovery might take several hours so that it is important to evaluate robustness of the results to an alternative definition of returns. We therefore try an alternative specification where the initial return is measured in terms of the percentage difference between the closing price of the readmission day and the last closing price before the suspension period. The results of this second specification are very similar and are not reported for reasons of space. In all cases the cross section are repeated to consider as a left-hand side variable the residuals from all the four pricing models that we use. Results are reported only for the market model and the four-factor models (see table XII); the other results are similar and are available upon request.

The dummy for the batch number is significantly negative for the two readmission dates as well as for the period following the first readmission. So when prices go up on average, they tend to increase more strongly in the initial phases than at the end of the reform process. There seem to be no objective reasons associated with fundamentals that may explain such a dampening down of the reaction, except for a sort of learning phenomenon on the part of investors. One should keep in mind that the Chinese stock market (unexpectedly) performed exceptionally well during the implementation of the reform process and this may have made price discovery more difficult.

In the case of the first readmission, the sign of the compensation surprise is positive, as expected. A positive compensation shock induces investors to an upward revision in the price. Volume also has the expected sign and is strongly significant, coherently with the model of HSX (2006). Volatility has the wrong sign but is not significant. Size is significant. We also run this regression excluding size but the results do not change qualitatively. The structure of the results is fairly similar in the period between suspensions. Volatility is now significant and positive. The compensation surprise is still relevant, pointing to the possibility of delayed reactions on the part of investors.

The jump on the day of the second readmission is negatively related to the increase in the supply of tradeable shares. Other things being equal, a 1% increase in supply produces a 0.174% decrease in the compensation-corrected prices. A 33% increase in supply, corresponding to the sample value, has therefore produced, according to the linear model and keeping other variables constant, a 5.8% decrease in prices. The impact of supply is partly reversed in the period following the second readmission, where the coefficient becomes 0.032%. This means that about one fifth of the decrease in prices due to the supply shock is reversed in the few days after the shock. The supply shock is not the only relevant variable on the day of the second readmission. The batch dummy has a negative coefficient, but volatility, volume and size are all positive. Large firms therefore tend to have lower decreases in prices on the day of the second readmission. Speculation seems to have a large part as shown by the relevance of volatility and volume, coherently with HSX (2006).

In the final sub-period, following the second readmission, there is a delayed effect of the increase in supply, which contributes to partially increase prices, but nothing else is significant. These results are coherent with those of our event study showing a small downward drift in prices. After-reform stocks seem to be less interesting to speculators. As a consequence, their prices rise less than the market as a whole.

Qualitative results do not change when the returns of the four periods are redefined in order to consider the closing and not the opening price. Moreover qualitative results do not change if we include the following variables: dummy for the companies included in the first batch, dummy for the Shanghai market, dummy for companies with B-shares outstanding, squared term for compensation, squared term for increase in supply.

V. Interpretations and conclusions

To reduce segmentation in the stock market, Chinese authorities have asked companies to eliminate their outstanding nontradeable shares through a reform process involving compensation to holders of shares that were already freely tradeable on the stock market. Usually compensation usually was carried out assigning a fraction of nontradeable shares to holders of tradeable shares whit the right to immediately trade these shares in the stock market. Elimination of nontradeable shares was expected to have deep consequen ces for the market as a whole. On the positive side, it was hoped that removal of nontradeable shares might have a positive impact on liquidity and corporate governance. On the negative side, it was feared that the resulting increase in supply could have excessively decreased prices. This concern has been motivated the prohibition to immediately sell the nontradeable shares that have remained in the hands of the original owners through lock-up periods lasting at least one year.

In this paper we have carried out an event study, based on estimation of various multifactor models and statistical analyses of their abnormal returns, both from a time series and a cross sectional point of view. We have used a bootstrap methodology to allow for cross-correlation among the abnormal returns of the various companies. We have also studied volume and volatility as proxies of speculative behavior on the part of Chinese investors. Among the most relevant results are: (a) there is evidence in favor of a negatively sloped demand curve, (b) prices process have gone up significantly, both before and during the reform (c) prices have incurred a large drop on the day of the second readmission due to the payment of the compensation, but have been fairly stable after correcting for compensation, (d) volume and volatility have increased. Some of these results are hard to reconcile with market efficiency. Previous empirical analyses of the Chinese market have also found results that are difficult to explain with standard theory and suggested the existence of an important speculative component in stock prices determination of stock prices. The theoretical model of HSX (2006) can explain some of our empirical findings once we interpret increases in volume and volatility as proxies for speculative activity on the part of retail investors.

From a policy point of view our results justify the precaution of the Chinese authorities with respect to the elimination of nontradeable shares. We have measured a quantitatively important negative supply effect on prices, which other factors, like volume and volatility, have more than offset in aggregate terms with a positive price impact. Moreover, lock-ups are likely to have been very helpful in stabilizing the market, both for its reduction in the immediate supply increase and for the potentially positive effect on demand. The model of HSX (2006) shows that the expectation of future increases in supply due to selling from insiders may be beneficial to current prices when traders are overconfident. The ample future supply potentially coming from sale of nontradeable shares may therefore have been a positive and stabilizing force on the market.

Overall, the reform has been highly successful. The market has been able to absorb a 33% increase in supply with moderately negative effects on prices. The extra supply may have created an increase in demand through speculation induced by a combination of short sale constraints, behavioral biases and fundamental uncertainty. It remains to be seen whether the Chinese stock market will be able to sustain the future supply increases associated with expiration of lock-ups, which are going to be much higher than the supply shock analyzed in this paper. HSX (2006) explains why expected increases in supply may positively affect stock prices before the event and negatively affect stock prices when supply actually increases takes place. The necessity to absorb a potentially large future increase in supply in the context of a market with a downward sloping demand function may prove to be a difficult challenge for the Chinese stock market. On the other hand, participation of both domestic and foreign investors in the market is still low, so that increasing popularity of stocks may more than absorb the future increase in supply.

Shares offered by holders of nontradeable shares (a)	Shares offered by the company to all shareholders (b)	Shares offered by the company to holders of tradeable shares (c)	Cancellation of shares on the part of holders of nontradeable shares (d)	Cash (e)	Options (f)	Number of cases	Percentage of cases
3.12						798	79.1%
2.40	2.76					22	2.2%
1.18		3.00				13	1.3%
1.98				6.50		44	4.4%
2.00					1.00	10	1.0%
2.39	4.12			1.91		3	0.3%
1.54	3.00				1.47	1	0.1%
1.20	10.00			41.32	48.00	1	0.1%
1.15		1.75		0.93		2	0.2%
2.00			8.00	4.36		1	0.1%
1.00				9.55	3.07	2	0.2%
	3.29					5	0.5%
		5.90				90	8.9%
			6.35			1	0.1%
			6.07	1.86		5	0.5%
				14.06		10	1.0%
					0.99	1	0.1%
TOTAL						1009	100.0%

Table I. Compensation Channels. Compensation to holders of originally tradeable shares can be realized through various channels: (a) new shares can be offered by holders of nontradeable shares to holders of tradeable shares (b) new shares may be offered by the company to holders of both tradeable and nontradeable shares (c) new shares may be offered by the company to holders of tradeable shares (d) holders of nontradeable shares may cancel part of their shares (e) holders of original tradeable shares may be offered compensation in cash (f) holders of original tradeable shares may be offered warrants. Offers are expressed as a number of shares every 10 tradeable shares originally held (columns a,b,c), as the proportion of shares which is cancelled every 10 shares (d), cash (e) or warrant (f) values every 10 tradeable shares originally held. The table contains the mean value of compensation as well as the number of cases and the percentage.

	Mean	Median	Minimum	Maximum	Standard Deviation
Percentage of tradeable shares before the reform	36.21	35.81	3.54	78.89	11.61
Percentage of tradeable shares after the reform	46.41	46.65	5.13	87.80	13.71

Table II. Amount of Tradeable Shares. The table reports summary statistics (mean, median, minimum, maximum and standard deviation) about percentages of tradeable shares before and after the reform process.

Batch	Number of companies		Number of days			Compensation		Companies Characteristics		Batch	Number of companies		Number of days			Compensation		Companies Characteristics	
	Shangahi SE	Shenzhen SE	After first suspension	Between Suspensions	After second suspension	Percentage of NTS	Number of shares	Price-to-book	Market value		Shangahi SE	Shenzhen SE	After first suspension	Between Suspensions	After second suspension	Percentage of NTS	Number of shares	Price-to-book	Market value
	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)	(X)		(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)	(X)
1	2	1	3	15	20	69	3.00	3.05	4,736	35	17	7	13	8	25	60	2.72	1.93	1,350
2	27	14	12	14	16	68	3.49	2.63	6,570	36	15	11	11	8	29	60	2.78	1.88	1,289
3	12	28	8	6	18	66	3.60	2.47	2,681	37	10	8	12	10	24	60	2.80	2.62	1,161
4	13	25	10	6	17	66	3.23	2.53	1,289	38	13	8	10	7	24	60	2.74	2.20	2,113
5	13	8	8	6	15	67	3.21	2.44	3,103	39	10	10	10	16	27	64	2.83	2.24	1,756
6	12	8	8	10	18	62	3.46	2.32	2,521	40	25	11	11	9	30	60	3.15	2.10	1,609
7	13	8	9	10	19	65	3.26	2.68	2,079	41	19	10	12	29	24	56	2.56	2.24	1,205
8	12	5	9	9	21	62	2.94	1.95	2,176	42	4	3	13	23	19	57	2.21	3.09	871
9	10	7	11	10	24	61	3.53	1.85	1,856	43	5	4	10	22	31	63	2.76	3.67	3,353
10	14	4	9	7	24	67	2.96	1.94	2,936	44	4	3	10	11	25	62	3.11	1.77	1,147
11	12	8	8	7	20	67	3.23	2.41	3,503	45	3	2	12	37	21	69	2.58	3.86	1,728
12	9	8	10	7	21	67	3.17	2.22	2,229	46	3	2	8	21	28	53	3.10	3.35	1,147
13	13	8	10	6	33	64	3.28	2.07	1,813	47	6	1	9	29	33	65	2.79	3.08	1,573
14	13	7	10	7	22	65	3.15	2.13	1,842	48	3	3	13	37	25	68	2.95	2.49	72,942
15	12	8	9	6	23	66	3.14	2.02	1,436	49	5	0	8	23	31	67	2.63	2.94	1,325
16	16	11	8	5	21	65	3.64	2.57	4,711	50	5	2	15	12	25	54	1.90	2.64	2,328
17	19	19	8	7	20	62	3.47	1.75	1,789	51	5	1	11	4	21	60	2.21	1.77	1,879
18	11	9	8	9	21	64	3.41	1.91	1,630	52	3	1	10	13	31	66	2.73	3.43	945
19	7	6	11	5	19	64	3.38	2.28	4,361	53	8	3	11	6	22	64	3.53	3.58	2,671
20	14	8	9	8	22	66	3.42	1.67	2,405	54	3	2	12	12	9	78	2.73	3.03	8,660
21	20	26	10	8	20	62	3.27	1.86	2,540	55	2	1	11	5	26	43	1.47	3.55	3,113
22	24	14	10	6	19	61	2.89	1.90	2,726	56	3	3	23	14	25	65	2.54	1.92	488
23	27	12	12	6	19	64	3.26	1.76	2,302	57	3	0	16	8	15	69	3.26	2.76	2,067
24	38	10	16	6	22	64	2.97	2.08	3,938	58	4	2	12	14	19	58	2.87	2.18	1,103
25	31	16	16	9	20	64	3.22	2.00	3,249	59	8	4	13	7	16	65	2.97	3.11	1,118
26	13	12	13	7	20	61	2.89	1.73	1,497	60	7	5	12	4	19	61	2.43	3.08	2,282
27	19	8	16	16	20	65	2.96	2.00	1,527	61	4	3	15	13	20	60	2.41	3.01	1,352
28	31	10	16	10	20	60	2.95	1.77	1,796	62	7	3	13	9	22	53	2.81	2.41	2,606
29	16	7	18	10	19	61	2.93	1.68	3,519	63	6	5	17	7	18	61	2.83	2.16	1,046
30	9	6	12	8	27	61	2.56	2.66	2,271	64	8	3	16	4	15	64	2.34	2.25	1,382
31	18	6	15	8	22	63	3.69	2.14	977	65	4	18	14	6	14	63	2.54	2.44	1,505
32	22	12	14	9	21	60	3.33	2.30	1,237	66	4	0	5	6	23	63	2.86	2.50	701
33	14	14	14	10	22	60	3.14	2.34	1,356	67	13	12	15	7	12	57	2.81	2.73	1,292
34	18	4	15	15	26	60	2.84	2.15	1,229	Mean	16	11	11	8	21	64	3.20	2.15	2,524

Table III. Summary Statistics. The table contains summary statistics about the companies included in every batch. Column (I) reports the batch number, columns (II) and (III) report the total number of companies included in every batch divided by their trading location i.e. the Shanghai Stock Exchange and the Shenzhen Stock Exchange. Column (IV), (V) and (VI) provide information about the length (in days) of the first suspension period, the length after the first readmission period and the length of the second suspension period. Column (VII) reports the percentage of non-tradeable shares before the start of the reform process. Column (VIII) reports the average number of shares paid to a shareholder holding 10 tradeable shares. Column (IX) and (X) report the average price to book value and the marked value (computed from day t-25 through t-1 relative to the day of the first suspension) of the companies in the various batches.

PANEL A: Factor correlation	Shanghai Comp	Shenzhen Comp	Market Index	Size	Value	Floating ratio	Liquidity
Shanghai Comp	1	0.98	0.99	0.16	0.33	0.10	-0.10
Shenzhen Comp		1	0.99	0.22	0.31	0.19	-0.08
Market Index			1	0.20	0.30	0.18	-0.09
Size				1	0.36	0.50	0.15
Value					1	0.08	0.03
Floating ratio						1	0.11
Liquidity							1
PANEL B: Factor summary statistics (From Jan 1998 to Apr 2005)							
Mean return	0.01	-0.01	0.03	0.02	0.00	0.01	-0.07
Median return	-0.01	0.00	0.04	0.04	-0.01	0.02	-0.06
Minimum return	-8.36	-8.32	-8.17	-3.03	-3.48	-1.83	-3.98
Maximum return	9.86	9.68	9.81	2.66	3.74	1.91	2.19
Standar deviation of return	1.42	1.50	1.47	0.58	0.63	0.36	0.47
Total return	-5.02	-27.23	45.67	51.39	-4.50	8.35	-72.45
PANEL C: Factor summary statistics (From Jan 1998 to Dec 2000)							
Mean return	0.09	0.08	0.14	0.10	-0.02	0.05	-0.10
Median return	0.04	0.08	0.11	0.10	0.00	0.05	-0.07
Minimum return	-8.36	-8.32	-8.17	-2.24	-3.48	-1.52	-2.14
Maximum return	9.05	9.07	9.19	2.38	3.74	1.91	2.19
Standar deviation of return	1.50	1.59	1.56	0.62	0.84	0.36	0.53
Total return	69.89	63.13	149.79	104.68	-13.71	44.37	-49.34
PANEL D: Factor summary statistics (From Jan 2001 to Dec 2002)							
Mean return	-0.08	-0.09	-0.07	0.01	0.00	0.00	-0.04
Median return	-0.02	-0.04	-0.01	0.00	-0.02	0.01	-0.05
Minimum return	-6.33	-6.59	-6.61	-1.60	-1.97	-1.66	-3.98
Maximum return	9.86	9.68	9.81	2.66	2.16	1.07	1.61
Standar deviation of return	1.46	1.57	1.54	0.43	0.46	0.27	0.42
Total return	-35.46	-39.70	-32.91	3.72	-2.50	1.81	-18.12
PANEL E: Factor summary statistics (From Jan 2003 to Apr 2005)							
Mean return	-0.02	-0.05	-0.02	-0.06	0.02	-0.05	-0.07
Median return	-0.07	-0.06	-0.05	-0.01	0.00	-0.04	-0.06
Minimum return	-3.88	-4.99	-4.62	-3.03	-1.69	-1.83	-1.92
Maximum return	5.81	5.33	5.37	1.67	1.57	1.26	1.56
Standar deviation of return	1.26	1.28	1.28	0.61	0.43	0.40	0.42
Total return	-12.23	-25.46	-12.28	-29.13	13.28	-26.90	-33.41

Table IV. Risk Factors. The table contains summary statistics about the risk factors. The factors are: the Shanghai market index, the Shenzhen market index, our float-weighted market index, a size portfolio, a value portfolio, a floating ratio portfolio, a liquidity portfolio. Panel A reports correlations, Panel B reports summary statistics (mean, median, minimum, maximum, standard deviation, total performance) over the whole sample, Panel C to E report summary statistics over three sub-samples. The data in Panel B-E refer to daily percentage returns except for the total return which refers to the return over the whole sub-sample.

Sectors	R squared	Alpha	Market	Lagged market	SMB	FR	HLIQMLLIQ
Aerospace & Defense	0.44	0.067	0.865	0.178	-0.231	0.767	0.527
		(0.054)	(0.051)***	(0.058)***	(0.181)	(0.262)***	(0.246)**
Automobiles & Parts	0.74	-0.053	1.057	0.076	-0.44	-0.031	0.053
		(0.032)*	(0.034)***	(0.030)**	(0.106)***	(0.143)	(0.111)
Banks	0.66	-0.025	1.133	-0.094	-0.86	-0.152	-0.275
		(0.044)	(0.049)***	(0.040)**	(0.156)***	(0.208)	(0.152)*
Beverages	0.71	0.025	0.749	0.004	0.262	-0.075	-0.242
		(0.027)	(0.026)***	(0.027)	(0.103)**	(0.144)	(0.112)**
Chemicals	0.94	0.017	1.035	-0.002	0.129	-0.337	-0.043
		(0.013)	(0.014)***	(0.015)	(0.047)***	(0.063)***	(0.052)
Construction & Materials	0.94	-0.027	1.024	0.028	0.085	0.185	0.227
		(0.014)*	(0.015)***	(0.015)*	(0.050)*	(0.065)***	(0.051)***
Electricity	0.8	0.005	0.967	0.046	-0.292	-0.728	0.147
		(0.025)	(0.027)***	(0.027)*	(0.097)***	(0.133)***	(0.099)
Electronic, Electrical Equip.	0.88	0.021	1.131	0.012	0.211	0.189	0.127
		(0.024)	(0.022)***	(0.024)	(0.075)***	(0.099)*	(0.096)
Food & Drug Retailers	0.63	0.04	0.807	0.109	0.287	-0.43	0.174
		(0.034)	(0.031)***	(0.038)***	(0.122)**	(0.162)***	(0.134)
Food Producers	0.91	-0.033	0.948	-0.002	0.181	0.359	-0.002
		(0.018)*	(0.017)***	(0.017)	(0.057)***	(0.081)***	(0.061)
Forestry & Paper	0.83	-0.03	0.9	0.067	0.281	0.172	0.02
		(0.025)	(0.019)***	(0.026)***	(0.073)***	(0.116)	(0.086)
Gas, Water & Multiutilities	0.77	-0.037	1.037	-0.052	-0.061	-0.07	0.175
		(0.030)	(0.030)***	(0.027)*	(0.103)	(0.127)	(0.110)
General Financial	0.64	0.021	1.407	-0.031	-0.5	0.56	-0.024
		(0.057)	(0.056)***	(0.059)	(0.177)***	(0.244)**	(0.183)
General Industrials	0.87	0.017	1.09	-0.049	0.145	0.605	0.061
		(0.025)	(0.024)***	(0.024)**	(0.076)*	(0.100)***	(0.081)
General Retailers	0.9	0.009	0.948	0.027	0.08	0.479	0.099
		(0.019)	(0.016)***	(0.016)*	(0.053)	(0.080)***	(0.060)*
Healthcare Equipment, Services	0.71	-0.006	0.976	0.001	0.703	-0.15	-0.271
		(0.037)	(0.037)***	(0.034)	(0.128)***	(0.177)	(0.138)*
Household Goods	0.75	-0.008	0.972	0.028	0.045	0.147	0.153
		(0.033)	(0.025)***	(0.037)	(0.149)	(0.198)	(0.138)
Industrial Engineering	0.93	0.008	0.998	0.05	0.25	-0.151	-0.017
		(0.014)	(0.015)***	(0.014)***	(0.046)***	(0.071)**	(0.053)
Industrial Metals	0.77	0.006	1.064	0.015	-0.324	-0.758	0.181
		(0.030)	(0.028)***	(0.029)	(0.097)***	(0.125)***	(0.108)*
Industrial Transportation	0.82	0.039	0.89	-0.05	-0.237	-0.53	-0.281
		(0.022)*	(0.022)***	(0.024)**	(0.080)***	(0.115)***	(0.097)***
Leisure Goods	0.7	-0.011	1.167	0.052	-0.329	0.76	0.222
		(0.041)	(0.036)***	(0.049)	(0.124)***	(0.189)***	(0.188)
Media	0.59	0.069	1.079	0.009	-0.072	0.507	0.171
		(0.050)	(0.043)***	(0.046)	(0.140)	(0.204)**	(0.160)
Mining	0.81	-0.015	1.077	-0.026	-0.104	-0.538	-0.109
		(0.028)	(0.023)***	(0.025)	(0.097)	(0.126)***	(0.086)
Mobile Telecommunications	0.53	-0.036	1.06	-0.113	-0.331	-0.658	-0.301
		(0.052)	(0.060)***	(0.079)	(0.188)*	(0.270)**	(0.230)
Oil & Gas Producers	0.6	0.003	1.014	-0.053	-0.554	-1.045	0.081
		(0.046)	(0.050)***	(0.053)	(0.161)***	(0.214)***	(0.190)
Oil Equipment & Services	0.41	0.095	0.861	-0.152	-0.022	-0.271	-0.52
		(0.056)*	(0.052)***	(0.063)**	(0.195)	(0.271)	(0.204)**
Personal Goods	0.94	-0.02	0.919	0.013	0.322	0.176	0.126
		(0.014)	(0.013)***	(0.013)	(0.046)***	(0.062)***	(0.046)***
Pharmaceuticals, Biotechnology	0.81	0.006	0.86	0.094	0.168	0.127	0.239
		(0.024)	(0.025)***	(0.026)***	(0.091)*	(0.118)	(0.104)**
Real Estate	0.89	-0.033	1.019	0.059	0.221	0.346	0.105
		(0.021)	(0.020)***	(0.022)***	(0.071)***	(0.098)***	(0.071)
Software & Computer Services	0.79	0.005	1.073	-0.007	0.515	0.256	0.021
		(0.034)	(0.035)***	(0.034)	(0.106)***	(0.157)	(0.118)
Support Services	0.83	0	1.003	-0.036	0.33	0.2	-0.08
		(0.026)	(0.023)***	(0.025)	(0.080)***	(0.117)*	(0.089)
Technology Hardware & Equip.	0.81	0.021	1.257	-0.073	0.425	0.232	0.055
		(0.036)	(0.034)***	(0.038)*	(0.110)***	(0.162)	(0.137)
Travel & Leisure	0.76	0.003	1.016	-0.016	-0.046	-0.057	0.03
		(0.031)	(0.031)***	(0.030)	(0.112)	(0.144)	(0.118)

Table V. Sectors. The table contains a list of the 33 sectors which are used to test the pricing models as well as returns obtained from application of a factor pricing model including the market return (Market), the market return lagged (Lagged market), the size (SMB) portfolio, the floating ratio (FR) portfolio and the liquidity portfolio (HLIQMLLIQ). The pricing model is estimated over the period January 2003-April 2005, using daily data. The second column reports the R^2 of the regression, the third column reports the value of the estimated intercept of the regression (alpha), the columns from the fourth to the eighth report the estimated sensitivities to the risk factors, robust standard errors in parentheses, *significant at 10%, ** at 5%, *** at 1%.

H_0: Pricing errors are jointly equal to 0		Market model	Fama and French	Wang and Xu	Wang and Xu with liquidity replicating portfolio
Periods	P-values				
from: January 1998	Chi2	0.12	0.02	0.00	0.06
to: April 2005	GRS	0.15	0.03	0.00	0.01
from: January 1998	Chi2	0.09	0.26	0.00	0.05
to: December 2000	GRS	0.29	0.42	0.03	0.03
from: January 2001	Chi2	0.49	0.12	0.18	0.72
to: December 2002	GRS	0.65	0.56	0.49	0.61
from: January 2003	Chi2	0.06	0.00	0.27	0.26
to: April 2005	GRS	0.12	0.02	0.27	0.48

Table VI. Tests of Multifactor Models. The table compares the following asset pricing models: the simple market model, the Fama-French including the market portfolio, a size portfolio (SMB) and a value portfolio (HML), the Wang-Xu model including the market portfolio, a size portfolio (SMB), a floating ratio portfolio (FR) and an extended Wang-Xu model which includes the market portfolio, a size portfolio (SMB), a floating ratio portfolio (FR), a liquidity portfolio (HLIQMLLIQ). Risk replicating portfolios are computed following the methodology introduced by Fama and French (1996). The liquidity-replicating portfolio (HLIQMLLIQ) is built following Pastor and Stambaugh (2003). The models are compared in terms of their ability to price returns from the 33 sectors described in table V. Under the null hypothesis all the pricing error are jointly equal to zero. P-values are computed both assuming that errors are correlated over time and heteroskedastic (chi square test) and assuming that errors are normally distributed, i.i.d. and homoskedastic (GRS test). Testing is performed over the long sample 1998-2005 and over the sub-samples 1998-2000, 2001-2002, 2003-2005.

Market model	MCAR	CLM variance	Cross sectional variance	Bootstrap	MAAR	CLM variance	Cross sectional variance	Bootstrap	Percentage of positive abnormal residuals
Before first suspension	0.017	0.295	0.396	0.494					45%
	0.291	0.000	0.003	0.271					50%
	0.456	0.000	0.000	0.247					51%
	0.514	0.000	0.000	0.240					52%
	0.462	0.000	0.002	0.303					51%
	0.621	0.000	0.000	0.294					54%
	1.107	0.000	0.000	0.065					56%
	1.769	0.000	0.000	0.000					59%
	2.590	0.000	0.000	0.000					62%
After first readmission	0.146	0.259	0.276	0.080	0.146	0.259	0.276	0.080	59%
	-0.938	1.000	1.000	1.000	-0.469	1.000	1.000	1.000	52%
	-0.036	0.559	0.552	0.615	-0.012	0.556	0.550	0.612	53%
	0.632	0.007	0.015	0.001	0.153	0.010	0.019	0.001	54%
	1.182	0.000	0.000	0.000	0.235	0.000	0.000	0.000	57%
	1.554	0.000	0.000	0.000	0.264	0.000	0.000	0.000	57%
	1.836	0.000	0.000	0.000	0.281	0.000	0.000	0.000	59%
	1.956	0.000	0.000	0.000	0.282	0.000	0.000	0.000	59%
	2.081	0.000	0.000	0.000	0.286	0.000	0.000	0.000	61%
	2.186	0.000	0.000	0.000	0.290	0.000	0.000	0.000	60%
Before second suspension	2.321	0.000	0.000	0.000	2.321	0.000	0.000	0.000	42%
	3.217	0.000	0.000	0.000	1.609	0.000	0.000	0.000	50%
	3.851	0.000	0.000	0.000	1.284	0.000	0.000	0.000	57%
	4.362	0.000	0.000	0.000	1.112	0.000	0.000	0.000	58%
	4.718	0.000	0.000	0.000	1.000	0.000	0.000	0.000	59%
	4.940	0.000	0.000	0.000	0.941	0.000	0.000	0.000	60%
	5.131	0.000	0.000	0.000	0.915	0.000	0.000	0.000	61%
	5.222	0.000	0.000	0.000	0.900	0.000	0.000	0.000	61%
	5.321	0.000	0.000	0.000	0.893	0.000	0.000	0.000	63%
	5.318	0.000	0.000	0.000	0.882	0.000	0.000	0.000	67%
After second readmission	-0.112	0.639	0.616	0.699	-0.112	0.639	0.616	0.699	50%
	-0.151	0.681	0.648	0.669	-0.075	0.681	0.648	0.669	50%
	-0.559	0.956	0.911	0.881	-0.178	0.948	0.901	0.875	46%
	-0.812	0.992	0.972	0.910	-0.190	0.988	0.962	0.893	45%
	-0.955	0.997	0.987	0.875	-0.176	0.994	0.977	0.860	45%
	-0.960	0.997	0.985	0.851	-0.143	0.992	0.970	0.832	46%
	-1.000	0.997	0.988	0.856	-0.124	0.991	0.971	0.829	45%
	-1.000	0.997	0.987	0.851	-0.106	0.988	0.963	0.826	46%
	-1.023	0.997	0.989	0.844	-0.093	0.985	0.960	0.806	45%
	-0.870	0.989	0.972	0.800	-0.066	0.951	0.909	0.762	44%

Table VIIA. Event Study Conducted on the Residuals from the Market Model. The table reports results of the mean cumulative abnormal returns and the mean average abnormal returns for the 1,009 companies included in the sample. The event study is performed on the residuals from a market model. For each company the model is estimated over a period including observation between t-120 and t-10 where t is the day of the first suspension. The estimated parameters are then used to compute the abnormal returns over the event windows. The abnormal returns are summed to form cumulative abnormal returns (CAR). CARs are then averaged across companies to obtain the mean cumulative abnormal residuals (MCAR). MCARs are computed for the 9 days before the first suspension, the ten days after the first suspension, the ten days before the second suspension, and the ten days after the second readmission (more precisely, the return between the price recorded on the second suspension and the opening price, the return of the first day measured as the difference between the closing and the opening and the returns for 8 subsequent days). Mean average abnormal returns (MAAR), defined as the mean across all firms of the average residuals for each firm, are computed for 10 days after the second suspension and 10 days before the second suspension. The null hypothesis of no abnormal returns is tested (a) under the assumption of independence across abnormal residuals of different firms following Campbell, Lo and MacKinlay (1997) (CLM variance) (b) under the assumption of no correlation across abnormal residuals (CS variance) and (c) using a general bootstrap analysis (bootstrap). The table presents the p-values for all the procedures and the percentage of abnormal positive returns.

Wang and Xu with liquidity replicating portfolio	MCAR	CLM variance	Cross sectional variance	Bootstrap	MAAR	CLM variance	Cross sectional variance	Bootstrap	Percentage of positive abnormal residuals
Before first suspension	0.015	0.310	0.409	0.481					48%
	0.207	0.000	0.024	0.077					48%
	0.361	0.000	0.002	0.029					52%
	0.501	0.000	0.000	0.024					54%
	0.489	0.000	0.001	0.042					52%
	0.634	0.000	0.000	0.026					52%
	1.075	0.000	0.000	0.000					54%
	1.642	0.000	0.000	0.000					58%
	2.544	0.000	0.000	0.000					63%
After first readmission	0.254	0.127	0.149	0.001	0.254	0.127	0.149	0.001	60%
	-0.764	0.999	0.999	1.000	-0.382	0.999	0.999	1.000	51%
	0.151	0.267	0.286	0.184	0.051	0.263	0.283	0.178	53%
	0.814	0.001	0.002	0.000	0.199	0.001	0.003	0.000	55%
	1.367	0.000	0.000	0.000	0.273	0.000	0.000	0.000	56%
	1.714	0.000	0.000	0.000	0.299	0.000	0.000	0.000	57%
	1.987	0.000	0.000	0.000	0.315	0.000	0.000	0.000	59%
	2.126	0.000	0.000	0.000	0.319	0.000	0.000	0.000	57%
	2.261	0.000	0.000	0.000	0.324	0.000	0.000	0.000	59%
	2.369	0.000	0.000	0.000	0.328	0.000	0.000	0.000	61%
Before second suspension	2.288	0.000	0.000	0.000	2.288	0.000	0.000	0.000	43%
	3.206	0.000	0.000	0.000	1.603	0.000	0.000	0.000	49%
	3.862	0.000	0.000	0.000	1.287	0.000	0.000	0.000	57%
	4.373	0.000	0.000	0.000	1.115	0.000	0.000	0.000	58%
	4.686	0.000	0.000	0.000	0.993	0.000	0.000	0.000	60%
	4.913	0.000	0.000	0.000	0.936	0.000	0.000	0.000	63%
	5.114	0.000	0.000	0.000	0.912	0.000	0.000	0.000	63%
	5.219	0.000	0.000	0.000	0.898	0.000	0.000	0.000	63%
	5.312	0.000	0.000	0.000	0.891	0.000	0.000	0.000	65%
	5.309	0.000	0.000	0.000	0.879	0.000	0.000	0.000	66%
After second readmission	0.192	0.268	0.320	0.025	0.192	0.268	0.320	0.025	50%
	0.170	0.296	0.345	0.100	0.085	0.296	0.345	0.100	50%
	-0.214	0.746	0.688	0.915	-0.068	0.736	0.680	0.911	48%
	-0.460	0.918	0.849	0.996	-0.111	0.908	0.838	0.992	48%
	-0.604	0.963	0.909	1.000	-0.116	0.954	0.898	1.000	47%
	-0.648	0.970	0.919	0.997	-0.102	0.959	0.905	0.995	48%
	-0.675	0.972	0.928	0.998	-0.091	0.960	0.912	0.997	48%
	-0.643	0.963	0.915	0.994	-0.074	0.944	0.894	0.988	49%
	-0.608	0.951	0.902	0.988	-0.061	0.924	0.873	0.976	49%
	-0.400	0.858	0.801	0.905	-0.033	0.801	0.753	0.846	50%

Table VIIB. Event Study Conducted on the Residuals from the Wang-Xu Model with Liquidity Replicating Portfolio. The table reports results of the mean cumulative abnormal returns and the mean average abnormal returns for the 1,009 companies included in the sample. The event study is performed on the residuals from a Wang-Xu three factor model (market, size and floating ratio portfolios) extended to allow for a liquidity-replicating portfolio. For each company the model is estimated over a period including observation between t-120 and t-10 where t is the day of the first suspension. The estimated parameters are then used to compute the abnormal returns over the event windows. The abnormal returns are summed to form cumulative abnormal returns (CAR). CARs are then averaged across companies to obtain the mean cumulative abnormal residuals (MCAR). MCARs are computed for the 9 days before the first suspension, the ten days after the first suspension, the ten days before the second suspension, and the ten days after the second readmission (more precisely, the return between the price recorded on the second suspension and the opening price, the return of the first day measured as the difference between the closing and the opening and the returns for 8 subsequent days). Mean average abnormal returns (MAAR), defined as the mean across all firms of the average residuals for each firm, are computed for 10 days after the second suspension and 10 days before the second suspension. The null hypothesis of no abnormal returns is tested (a) under the assumption of independence across abnormal residuals of different firms following Campbell, Lo and MacKinlay (1997) (CLM variance) (b) under the assumption of no correlation across abnormal residuals (CS variance) and (c) using a general bootstrap analysis (bootstrap). The table presents the p-values for all the procedures and the percentage of abnormal positive returns.

	Before first suspension		After first readmission			After second readmission		
	Turnover	Percentage	Turnover	Percentage	Percentage change	Turnover	Percentage	Percentage change
Shanghai	338	0.10%	600	0.17%	78%	737	0.19%	118%
Shenzen	320	0.16%	495	0.23%	55%	677	0.32%	111%
Total	331	0.06%	560	0.10%	69%	714	0.12%	116%

Table VIII. Turnover. The table reports the simple average turnover (millions of shares traded for a stock on a particular day) for the stocks participating in the reform process. The average is reported for the month before the reform process, for the period between the two suspensions and for the month after the reform process. The table reports the absolute value of turnover, its share with respect to the total turnover of the market (Percentage) and its increment (Percentage change) with respect to the average value computed over the month before the first suspension.

Abnormal volume	Mean	Median	Standard deviation	Percentage of positive residuals	P-value
Before first suspension	19.251	-15.088	3.115	42%	0.103
	24.197	-8.381	3.425	45%	0.074
	36.511	-1.082	3.912	49%	0.037
	40.177	2.494	4.081	52%	0.028
	40.472	6.665	3.854	53%	0.016
	29.760	-11.388	3.846	44%	0.035
	38.082	-3.709	3.937	48%	0.014
	43.655	3.063	3.751	52%	0.009
	57.778	13.575	4.330	57%	0.003
	87.613	29.152	4.901	61%	0.000
After first readmission	157.377	85.934	7.577	70%	0.000
	131.947	44.044	7.091	67%	0.000
	117.368	40.452	7.599	63%	0.002
	103.122	37.119	6.847	63%	0.000
	87.608	25.924	6.977	61%	0.001
	73.517	15.514	7.429	56%	0.000
	59.336	10.779	7.522	53%	0.001
	58.533	7.864	8.088	52%	0.001
	62.154	5.248	9.267	53%	0.000
	55.460	4.478	9.607	52%	0.001
Before second suspension	105.006	39.115	5.927	65%	0.025
	89.019	21.658	6.200	57%	0.023
	80.373	13.092	6.196	54%	0.013
	55.030	-15.405	6.768	44%	0.023
	44.769	-20.770	7.205	43%	0.008
	39.666	-28.452	9.091	40%	0.007
	44.938	-15.131	8.616	44%	0.003
	55.558	-17.555	12.237	41%	0.005
	39.085	-8.763	10.125	46%	0.004
	55.498	0.436	12.100	51%	0.001
After second readmission	518.223	393.321	14.878	98%	0.000
	222.883	153.672	8.224	87%	0.000
	159.582	93.421	7.089	79%	0.000
	141.981	78.916	6.625	78%	0.000
	136.312	73.953	8.934	75%	0.000
	124.066	66.730	6.881	73%	0.000
	119.398	59.873	6.401	72%	0.000
	115.604	54.276	6.255	72%	0.000
	112.065	54.600	6.332	70%	0.000
	104.233	45.379	5.686	69%	0.000

Table IX. Percentage Abnormal Volume. The table presents the abnormal volume computed following Brav and Heaton (1999) and Brav and Gompers (2003). The sample is composed of 1,154 companies involved in the reform process form April 2005 through February 2007. Abnormal volume is the percentage difference between actual volume and normal volume, where normal volume is defined as the mean daily volume from t-120 through day t-11 relative to the day of the first suspension. The measure of volume is the turnover by volume expressed as the number of shares traded for a stock on a particular day. The periods considered are: ten days before the first suspension, ten days after first suspension, ten days before the second suspension and ten days after the second readmission. Table presents the mean, the median, and the standard deviation. P-values are computed by using the bootstrap distribution.

Volume	MCAR	CLM variance	Cross sectional variance	Bootstrap	MAAR	CLM variance	Cross sectional variance	Bootstrap	Percentage of positive abnormal residuals
Before first suspension	0.073	0.990	0.795	0.644					56%
	1.145	0.055	0.286	0.309					57%
	1.717	0.027	0.268	0.262					58%
	2.928	0.000	0.088	0.167					59%
	3.092	0.001	0.183	0.223					59%
	3.495	0.002	0.217	0.225					58%
	4.574	0.000	0.075	0.147					58%
	6.074	0.000	0.011	0.023					59%
	9.160	0.000	0.000	0.000					61%
After first readmission	3.509	0.000	0.000	0.000	3.509	0.000	0.000	0.000	78%
	5.823	0.000	0.000	0.000	2.917	0.000	0.000	0.000	80%
	8.035	0.000	0.000	0.000	2.741	0.000	0.000	0.000	79%
	10.221	0.000	0.000	0.000	2.720	0.000	0.000	0.000	77%
	11.072	0.000	0.000	0.000	2.617	0.000	0.000	0.000	76%
	11.515	0.000	0.000	0.000	2.537	0.000	0.000	0.000	75%
	11.879	0.000	0.000	0.000	2.510	0.000	0.000	0.000	72%
	12.060	0.000	0.000	0.000	2.484	0.000	0.000	0.000	70%
	12.402	0.000	0.000	0.000	2.491	0.000	0.000	0.000	67%
	12.456	0.000	0.000	0.000	2.472	0.000	0.000	0.000	65%
Before second suspension	2.075	0.000	0.000	0.000	2.075	0.000	0.000	0.000	93%
	4.763	0.000	0.000	0.000	2.387	0.000	0.000	0.000	87%
	7.192	0.000	0.000	0.000	2.493	0.000	0.000	0.000	85%
	9.305	0.000	0.000	0.000	2.560	0.000	0.000	0.000	81%
	10.639	0.000	0.000	0.000	2.641	0.000	0.000	0.000	77%
	11.868	0.000	0.000	0.000	2.745	0.000	0.000	0.000	76%
	12.792	0.000	0.000	0.000	2.823	0.000	0.000	0.000	72%
	13.486	0.000	0.000	0.000	2.873	0.000	0.000	0.000	72%
	14.193	0.000	0.000	0.000	2.922	0.000	0.000	0.000	74%
	15.150	0.000	0.000	0.000	2.991	0.000	0.000	0.000	73%
After second readmission	8.555	0.000	0.000	0.000	8.555	0.000	0.000	0.000	99%
	13.103	0.000	0.000	0.000	6.573	0.000	0.000	0.000	95%
	15.797	0.000	0.000	0.000	5.425	0.000	0.000	0.000	92%
	18.581	0.000	0.000	0.000	4.873	0.000	0.000	0.000	90%
	20.614	0.000	0.000	0.000	4.392	0.000	0.000	0.000	87%
	22.206	0.000	0.000	0.000	3.998	0.000	0.000	0.000	85%
	24.115	0.000	0.000	0.000	3.761	0.000	0.000	0.000	83%
	25.990	0.000	0.000	0.000	3.581	0.000	0.000	0.000	82%
	27.236	0.000	0.000	0.000	3.372	0.000	0.000	0.000	80%
	28.748	0.000	0.000	0.000	3.230	0.000	0.000	0.000	78%

Table X. Abnormal Volume from the Ajinkya and Jian (1989) Model. The table reports results of the mean cumulative and average abnormal volume analyses for the 1009 companies included in the sample. The event study is performed on the residuals from the Ajinkya and Jian (1989) model. For each company involved in the stock reform process the model is estimated over a period including observations between t-120 and t-10, where t is the day of the first suspension. The estimated parameters are then used to compute the abnormal volume over the event windows. Abnormal volumes are summed to form cumulative abnormal volume and then averaged across companies to obtain the mean cumulative abnormal volume residuals (MCAV). MCAV are computed for nine days before the first suspension, ten days after the first suspension, ten days before the second suspension and ten days after the second readmission. Mean average abnormal volume (MAAV) is defined as the across firms mean average residuals. MAAV is computed for the ten days after the second suspension and the ten days first the second suspension. The null hypothesis of no abnormal volume is tested (a) under the assumption of independence across abnormal residuals of different firms following Campbell, Lo and MacKinlay (1997) (CLM variance) (b) under the assumption of no correlation across abnormal residuals (CS variance) and (c) with a general bootstrap analysis (bootstrap). Table presents the p-values for all the procedures and the percentage of abnormal positive volume.

Abnormal price range	Mean	Median	Standard deviation	Percentage of positive residuals	P-value
Before first suspension	0.160	-0.279	0.065	44%	0.258
	0.122	-0.295	0.066	43%	0.247
	0.411	-0.442	0.078	43%	0.180
	0.325	-0.165	0.070	48%	0.219
	0.278	-0.255	0.071	44%	0.229
	0.145	-0.346	0.067	43%	0.238
	0.400	-0.080	0.071	48%	0.166
	0.457	-0.161	0.077	47%	0.158
	0.473	0.009	0.071	50%	0.139
	0.798	0.108	0.079	52%	0.143
After first readmission	1.027	1.013	0.110	62%	0.125
	0.438	0.025	0.082	50%	0.172
	0.447	-0.075	0.080	49%	0.165
	0.546	-0.109	0.084	48%	0.117
	0.447	-0.196	0.099	46%	0.119
	0.320	-0.285	0.110	43%	0.101
	0.254	-0.292	0.122	42%	0.067
	0.152	-0.459	0.133	42%	0.055
	0.370	-0.269	0.149	43%	0.050
	0.036	-0.373	0.149	42%	0.055
Before second suspension	0.523	-0.111	0.084	47%	0.190
	0.173	-0.271	0.084	44%	0.263
	0.044	-0.386	0.091	44%	0.255
	-0.579	-0.927	0.096	38%	0.608
	-0.585	-0.889	0.109	36%	0.696
	-0.690	-0.961	0.127	37%	0.785
	-0.413	-0.636	0.145	39%	0.798
	-0.344	-0.777	0.165	37%	0.825
	-0.353	-0.704	0.184	37%	0.860
	0.028	-0.146	0.199	48%	0.062
After second readmission	6.537	4.930	0.182	95%	0.000
	2.033	1.350	0.093	72%	0.034
	1.241	0.611	0.089	60%	0.078
	0.979	0.420	0.078	59%	0.089
	0.931	0.399	0.080	58%	0.099
	0.815	0.289	0.079	54%	0.143
	0.806	0.250	0.078	55%	0.135
	0.794	0.139	0.080	53%	0.135
	0.634	0.112	0.077	53%	0.138
	0.765	0.267	0.076	55%	0.114

Table XI. Percentage Abnormal Price Range. The table presents the abnormal price range. The sample is composed of 1,154 companies involved in the reform process form April 2005 through February 2007. Abnormal price range is the percentage difference between actual price range and normal price range, where normal price range is defined as the mean daily price range from t-120 thought day t-11 relative to the day of the first suspension. The measure of price range is expressed as (Higher price – Lower price)/Lower price for a particular day. The periods considered are: ten days before the first suspension, ten days after first suspension, ten days before the second suspension and ten days after the second readmission. The Table presents the mean, the median, and the standard deviation. P-values are computed by using the bootstrap distribution.

		First readmission	After first readmission	Second readmission	After second readmission
Market model	Batch number	-0.074 (0.016)***	-0.025 (0.020)	-0.141 (0.026)***	-0.026 (0.025)
	Compensation surprise	0.013 (0.005)**	0.013 (0.006)**		
	Percentage increase in tradeable shares			-0.148 (0.032)***	0.048 (0.022)**
	Price range	-0.099 (0.074)	0.684 (0.264)***	0.078 (0.093)	0.795 (0.267)***
	Volume	45.770 (5.695)***	-0.996 (8.281)	67.29 (9.580)***	9.193 (9.539)
	Market value	0.167 (0.317)	0.267 (0.394)	2.604 (0.481)***	-0.273 (0.352)
	Constant	-46.524 (6.768)***	-0.921 (8.901)	-83.753 (11.560)***	-13.882 (10.373)
	R-squared	0.16	0.02	0.13	0.04
Wang and Xu model with liquidity replicating portfolio	Batch number	-0.061 (0.016)***	-0.040 (0.020)**	-0.155 (0.029)***	-0.031 (0.024)
	Compensation surprise	0.012 (0.005)**	0.011 (0.005)**		
	Percentage increase in tradeable shares			-0.174 (0.035)***	0.032 (0.022)
	Price range	-0.158 (0.098)	0.649 (0.261)**	0.155 (0.094)*	0.752 (0.267)***
	Volume	44.609 (5.436)***	-1.257 (7.903)	68.035 (10.494)***	8.368 (8.963)
	Market value	-0.666 (0.318)**	-0.107 (0.371)	2.112 (0.553)***	-0.486 (0.349)
	Constant	-39.949 (6.373)***	2.276 (8.363)	-80.694 (12.468)***	-10.582 (9.603)
	R-squared	0.15	0.02	0.12	0.03

Table XII. Cross Sectional Analysis. Table presents the results for cross sectional analyses where the independent variables are the batch number, the compensation surprise, the percentage increase in tradeable shares, price range, volume and market value. The batch number is a dummy representing the batch in which the company is included. The compensation surprise for the *i*-th company is the difference between the actual compensation (defined as the overall monetary value obtained from the product of the number of shares offered to the holders of tradeable shares and the price of the shares plus the value of cash plus the value of warrants) and the time series average of the compensations paid by all the companies completing the reform process before company *i*. The price range is the percentage spread between the higher and the lower price of the stock. The measure of volume is defined as: $\log[1+ V_{it}] / \log[1+ MV_{it}]$, where V_{it} is money volume on day t for stock i, and MV_{it} is the market value of the outstanding shares on stock i on day t. Market value is measured as the log of MV_{it}. The cross section is run to explain the jumps in prices on the first readmission (I), the residual return between the first and the second readmission (II), the residual return on the second readmission (III) and after the second readmission (VI). Jumps are the residuals alternatively obtained from the market model and from the Wang-Xu model with liquidity-replicating portfolio. When analyzing the jump on the first readmission, the dependent variable is computed from the price on the last day of transaction before the first suspension and the readmission price while price range, volume and market value are computed on the day of the first readmission. When analyzing the jump between the first and the second suspension, price range, volume and market value are computed as the mean value of the variables over the days between the first and the second suspension. When analyzing the jump on the second readmission, the dependent variable is computed from the price on the last day of transaction before the first suspension and the readmission price while price range, volume and market value are computed on the day of the second readmission. When analyzing the jump after the second readmission, price range and log volume are computed as the mean value of the variables over the days after the second readmission. Robust Standard Errors are reported in parentheses. Significance levels are denoted by (*) for 10 percent, (**) for 5 percent and (***) for 1 percent. Table reports number of observations and R-squared.

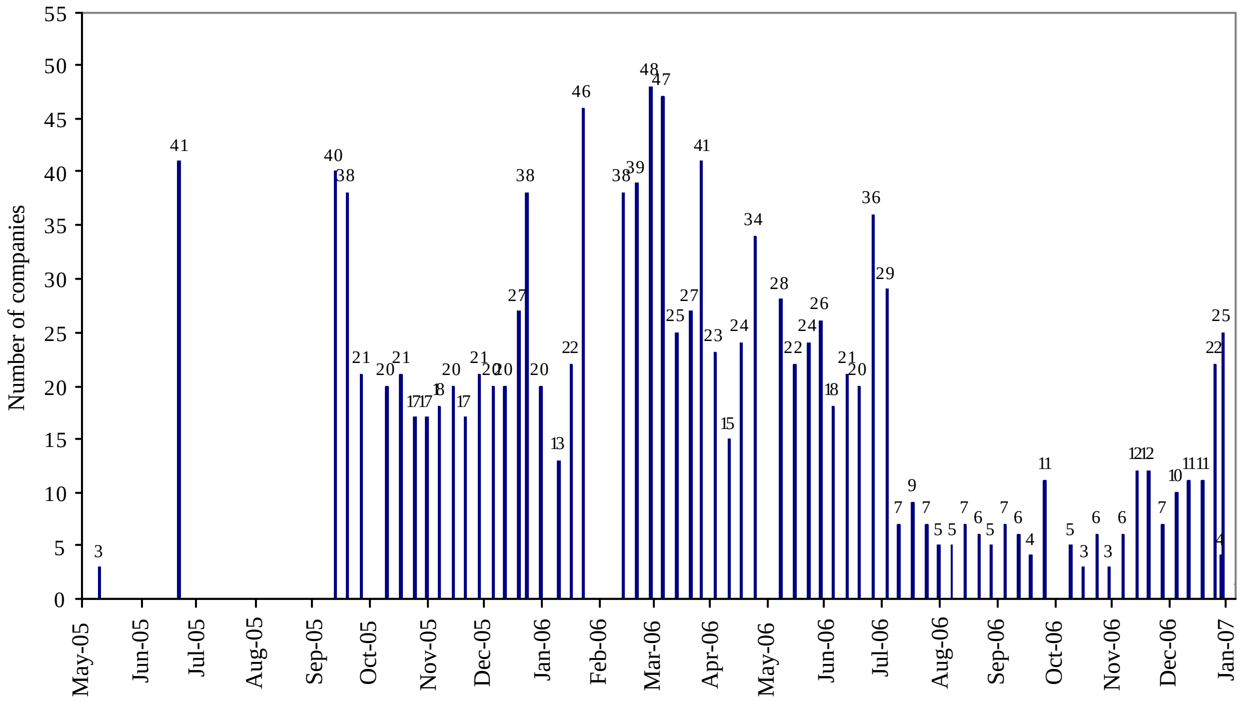

Figure 1. Batches of Companies. The figure reports the timing of the various batches and the number of companies entering each batch.

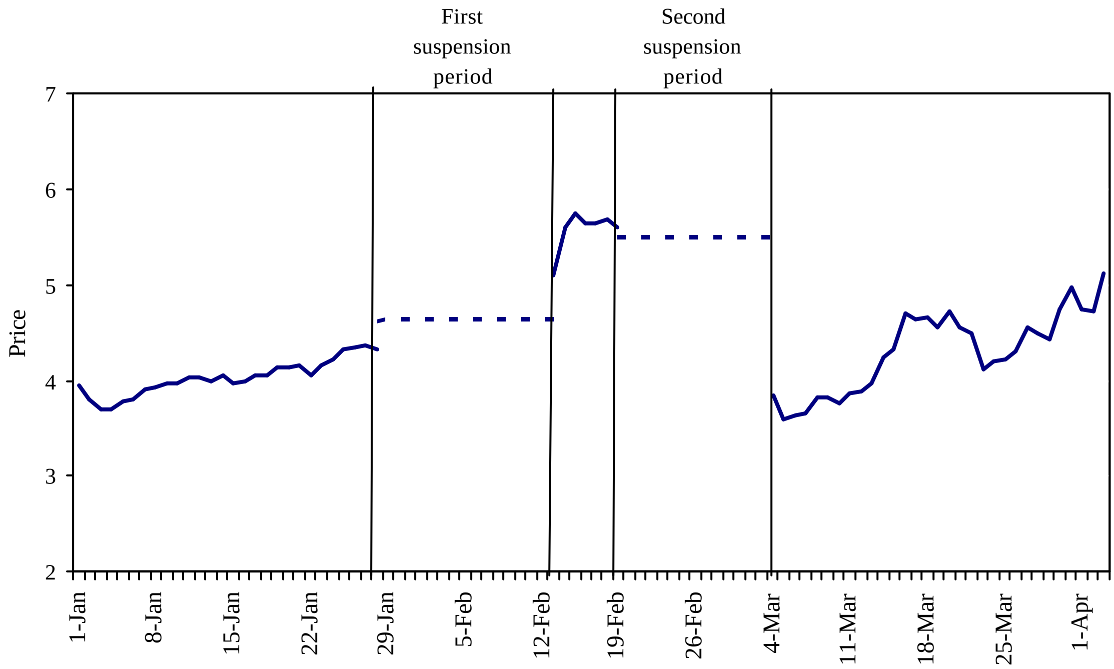

Figure 2. Baotou Huazi International Price. The figure shows the behaviour of the price for Baotou Huazi International during the reform process.

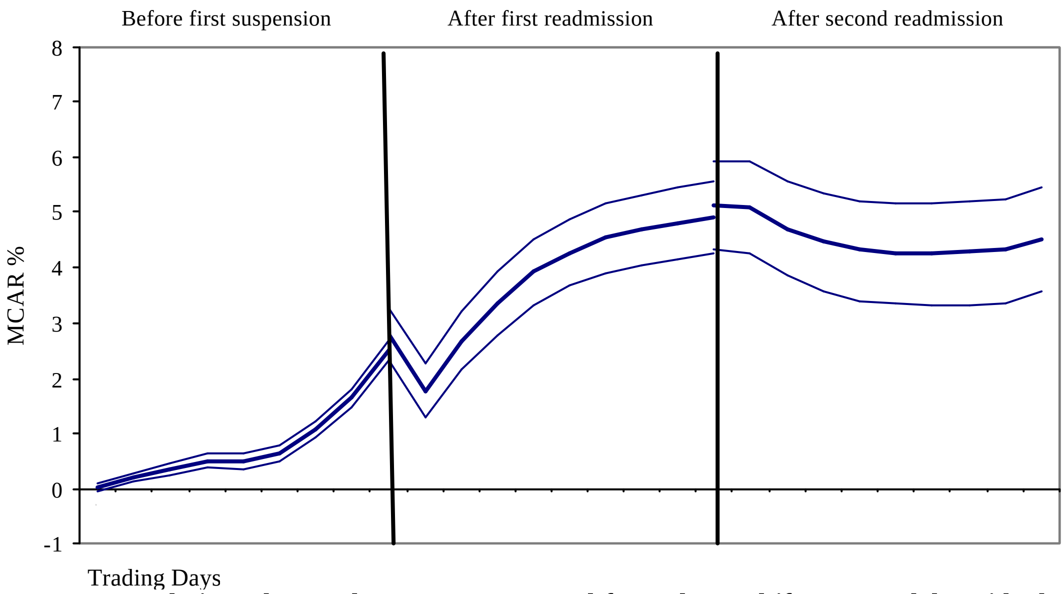

Figure 3. Mean Cumulative Abnormal Returns Computed from the Multifactor Model Residuals. The figure reports result of the MCAR analysis for the 1009 companies included in our sample. Residuals are computed from the Wang-Xu three factor model (market, size and floating ratio portfolios) extended to allow for a liquidity-replicating portfolio. The figure shows the MCAR and a 95% confidence interval obtained from the CS variance. The cumulative residuals are computed with respect to nine days before the beginning of the reform process, that is ten days before the first suspension for each company. The first interval (referred to as "before first suspension" in the picture) refers to ten days before the first suspension. The second interval ("after first readmission") refers to ten days after the first readmission. The third interval ("after second readmission") refers to the return measured between the closing price before the second suspension and the opening price after the second readmission, the return measured between the opening price after the second readmission and the closing price of the same day and to eight days after the day of the second readmission.

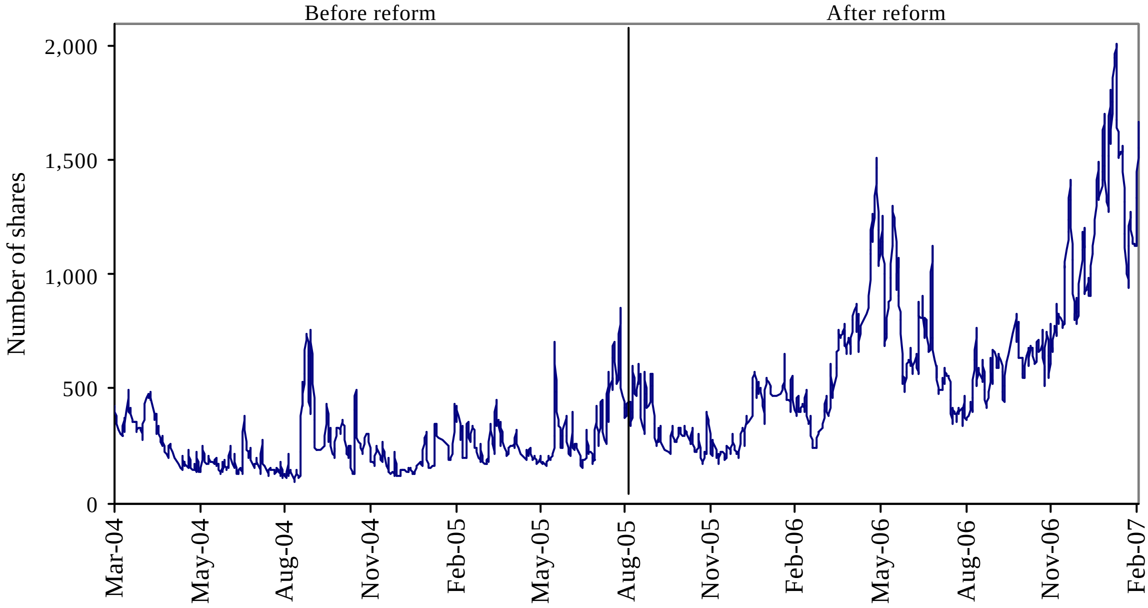

Figure 4. Daily Turnover. The figure reports the daily total turnover (number of shares traded for a stock on a particular day expressed in millions) of the Shanghai and Shenzhen stock markets between March 2004 and September 2006.

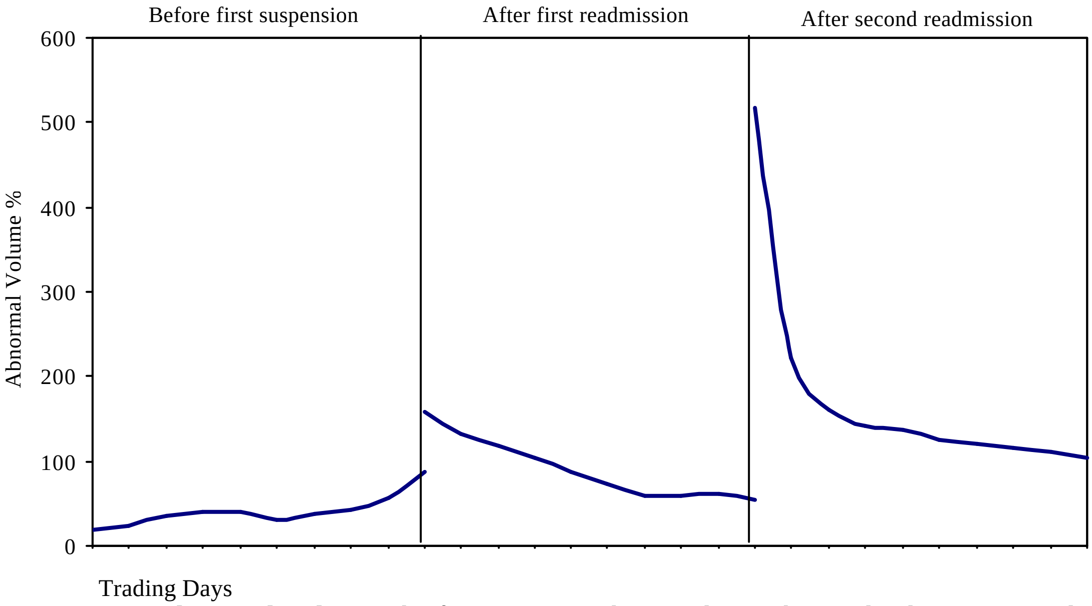

Figure 5. Percentage Abnormal Volume. The figure presents the cumulative abnormal volume computed as in Brav and Heaton (1999) and Brav and Gompers (2003). The sample is composed of 1,154 companies involved in the reform process from April 2005 through February 2007. Abnormal volume is defined as the percentage difference between actual volume and normal volume, where normal volume is defined as the mean daily volume in trading from t-120 thought day t-11 relative to the day of the first suspension. The abnormal volumes are summed to form cumulative abnormal volume. The periods considered are: ten days before the first suspension, ten days after first suspension and ten days after the second readmission.

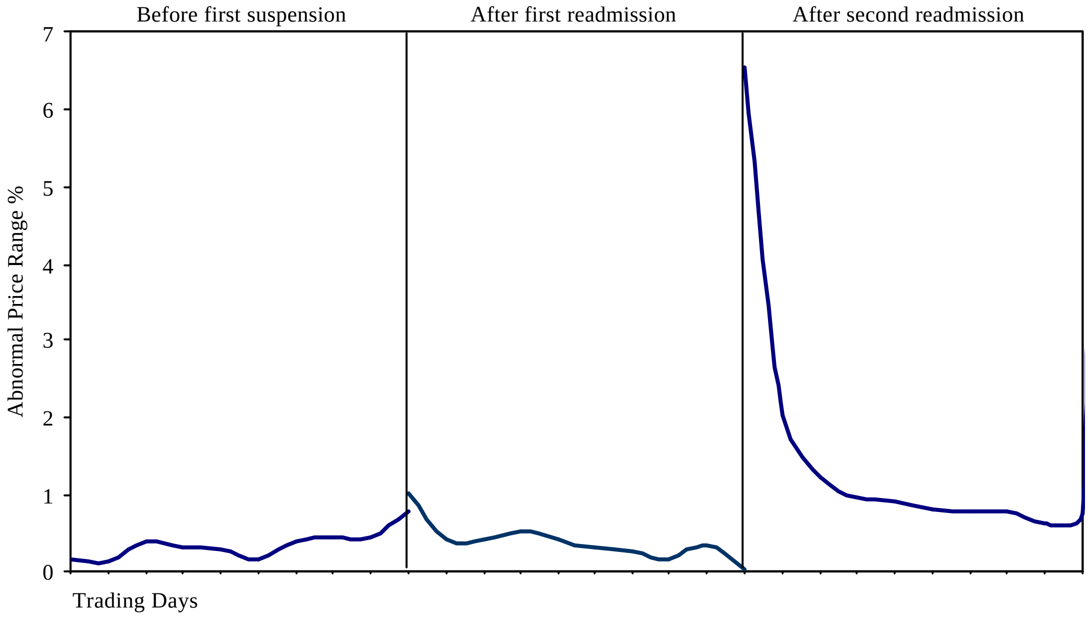

Figure 6. Percentage Abnormal Price Range. The figure presents the abnormal price range computed as in Brav and Heaton (1999) and Brav and Gompers (2003). The sample is composed of 1,154 companies involved in the reform process from April 2005 through February 2007. Abnormal high–low spread is the percentage difference between actual price range and the normal price range, where the normal price range is defined as the mean daily price range from t-120 thought t-11 relative to the day of the first suspension. Price range is defined as (Higher price – Lower Price)/Lower price) for a particular day. The periods considered are: ten days before the first suspension, ten days after first suspension and ten days after the second readmission.

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