

Corporate Governance and Market Segmentation: Evidence from the Price Difference between Chinese A and H Shares

Lin Guo*

Sawyer School of Management
Suffolk University
8 Ashburton Place
Boston, MA 02108
Tel: (617) 573-8388 Fax (617) 305-1755
Email: lguo@suffolk.edu

Liang Tang

Accounting & Finance Department
Harrington Hall
Bridgewater State College
Bridgewater, MA 02325
Tel: (508) 531-1395 Fax (508) 531-1121

Shiawee X. Yang

Northeastern University
College of Business Administration
Finance & Insurance Group
413 Hayden Hall
Boston, MA 02115
(617)373-8209
s.yang@neu.edu

October 2007

Abstract

This paper empirically examines the determinants of the price difference between Chinese A shares which are traded in the domestic market, and their matching H shares which are traded in the Hong Kong market. We find that Chinese firms' proportion of non-tradable shares, a measure of controlling shareholders' ability to extract private benefits, is an important factor that determines the A-H share price difference. This result is robust after controlling for factors such as differences in required returns, stock demand elasticity, market-portfolio returns, liquidity, asymmetric information, and degree of speculation between domestic and foreign markets. Our findings highlight the importance of corporate governance in explaining the price difference in segmented stock markets.

JEL Classification: G15; G34

Keywords: Market segmentation; Corporate governance; Cross-listing; Cost of capital; Liquidity

* Corresponding author.

We would like to thank James Angel, Jun Cai, Xinghai Fang, Ruyin Hu, Paul Laux, Xiaodong Liu, Wenying Lu, Yihu Shen, Guoxiang Song, Dongwei Su, Qian Sun, Xian Tang, Fenghua Wang, Xiaozu Wang, Jian Xiang, Gang Zeng, and seminar participants at the Shanghai Stock Exchange for constructive comments and suggestions, and Hua Cheng and Yan Pan for valuable research assistance. We acknowledge financial support from the Shanghai Stock Exchange. A large portion of this research was undertaken when the first author was a visiting senior financial economist at the Shanghai Stock Exchange. All errors are our own.

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Abstract

This paper empirically examines the determinants of the price difference between Chinese A shares which are traded in the domestic market, and their matching H shares which are traded in the Hong Kong market. We find that Chinese firms' proportion of non-tradable shares, a measure of controlling shareholders' ability to extract private benefits, is an important factor that determines the A-H share price difference. This result is robust after controlling for factors such as differences in required returns, stock demand elasticity, market-portfolio returns, liquidity, asymmetric information, and degree of speculation between domestic and foreign markets. Our findings highlight the importance of corporate governance in explaining the price difference in segmented stock markets.

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1. Introduction

It is not uncommon to observe that shares issued by the same company are sold at different prices in different markets because of barriers to international capital flows. Bailey, Chung and Kang (1999) document large price difference between shares restricted to local investors and otherwise identical shares available to foreign investors for eight developing countries (China, Indonesia, Korea, Malaysia, Mexico, the Philippines, Taiwan, and Thailand) and three developed countries (Norway, Singapore, Switzerland). Factors offered by researchers to explain such price differences often include differences between local and foreign investors in required returns, liquidity, demand elasticity, information, and the degree of investor speculation. However, the role of corporate governance in market segmentation has received scant attention in the literature. In this paper, we build on Giannetti and Simonov's (2006) pioneer work on investors' portfolio choice and corporate governance, and argue that there exists a link between corporate governance and market segmentation. Giannetti and Simonov find that investors' portfolio choices are related to their fear of expropriation. In particular, compared with large shareholders with large participation or management connections, small domestic investors and foreign investors are reluctant to invest in companies with weak corporate governance, and foreign investors are even more reluctant than domestic individual investors to hold stocks with higher levels of entrenchment of control. In this paper, we hypothesize that controlling shareholders' ability to extract private benefits can explain partly the price difference between shares restricted to local investors and their matching shares restricted to overseas investors. We test this hypothesis using data on the

price difference between Chinese A shares that are sold in the domestic markets and their matching H shares that are sold on the Hong Kong Stock Exchange.

Chinese firms may issue different types of tradable shares on domestic stock exchanges (either the Shanghai Stock Exchange or the Shenzhen Stock Exchange) and various overseas markets. On the domestic stock exchanges, a firm may issue A shares and B shares. The A shares can only be traded by Chinese mainland investors with the exception of certain qualified foreign institutional investors (QFII) who may also trade in the A-share market after December 2002. Although B-Share stocks were initially designated only for foreign investors, starting from February 2001, mainland investors can trade B shares in US dollars or Hong Kong dollars as well. In addition to the domestic exchanges, a Chinese company may also list its shares on the overseas markets. A Chinese firm's shares listed on the Hong Kong Stock Exchange are called H shares, while Chinese shares listed on the New York Stock Exchange and the London Stock Exchange are called N shares and L shares, respectively. Foreign-listed stocks can only be traded by foreign investors until April 2006, after which certain qualified domestic institutional investors (QDII) were allowed to invest in overseas stocks for the first time under a quota system.

For Chinese companies that issued both domestic A shares in mainland China and H shares on the Hong Kong Stock Exchange, their domestic A shares often sell at substantially higher prices than their overseas twins despite the fact that these shares have identical voting rights and cash flow rights. Compared with other countries, a unique ownership feature of listed Chinese companies is the prevalence of controlling state shares and/or legal entity shares which are non-tradable on the stock exchanges prior to April 2005.¹ The press is full of reports on how controlling non-tradable shareholders make corporate decisions to benefit themselves at the expense of public shareholders. For

¹ The time-series average of the non-tradable shares as a percentage of the number of shares outstanding for Chinese firms is about 58% during the period of 1995 to 2004 (Eun and Huang 2007).

example, an article in *The Economist* (Selling the Family Scrap-Iron, January 31, 2002) described the effect of non-tradable shares as follows:

"As long as the government, or state-owned entities, control the majority of Chinese companies' shares and cannot trade them, state enterprises are not subject to market disciplines or shareholder scrutiny. China's 1,200-odd listed companies are often badly managed, corrupt and inefficient; the shareholding public is unable to exert effective supervision."

It is well recognized that the conflicts of interests between controlling non-tradable shareholders and minority tradable shareholders have severely hindered the improvement of corporate governance of Chinese companies and negatively impacted firm performance. However, attempts by Chinese regulators to reduce non-tradable shares in 2001 failed and the sale of non-tradable shares was halted because of improper pricing of the non-tradable shares in the stock market. After a few years of discussions and review, Chinese regulators issued the "Circular on Issues relating to the Pilot Reform of Listed Companies Split Share Structure" in April 2005 to specifically address the reform of non-tradable shares and formally initiated the sale of non-tradable shares of four pilot companies in the stock market. In September 2005, the China Securities Regulatory Commission (CSRC) issued to all the listed companies the Circular on Promulgating the Administrative Measures on the Split Share Structure Reform of Listed Companies. The Chinese stock market responded positively to this new round of reforms to float the non-tradable shares.

In this paper, we use a firm's ratio of the number of non-tradable shares to its total number of shares outstanding to proxy for the ability of controlling non-tradable shareholders to expropriate wealth from minority shareholders. Chinese government's recent reforms not only highlight the importance of eliminating non-tradable shares in improving firms' corporate governance system, but also provide us with an excellent opportunity to examine the effect of corporate governance on the A to H- share price

premium. This paper examines all the 31 Chinese industrial firms that are listed on both the mainland and Hong Kong markets during the period of July 1993 to December 2006. Results indicate that Chinese firms' proportion of non-tradable shares is an important factor that determines the A-H share price difference after controlling for factors such as differences between domestic and overseas markets in required returns, stock demand elasticity, market-portfolio returns, liquidity, asymmetric information, and the degree of speculation. Consistent with our expectation, we find that in the period after Chinese regulators announced the plan to float the non-tradable shares, the proportion of non-tradable shares is no longer a significant factor in explaining the A-share price premiums. These findings suggest that controlling shareholders' ability to extract private benefits is an important factor in explaining the price difference in segmented stock markets.

Our paper contributes to the literature in the following ways. First, we examine whether the concern of expropriation—as measured by the proportion of non-tradable shares—is an important factor to explain the A-share price premiums. This sheds light on the effect of corporate governance on market segmentation. Second, while examining the effect of non-tradable shares on the A-H share price difference, this paper controls a comprehensive set of influential factors that may explain partly the A-share price premiums. Our results on the difference in the cost of capital and liquidity between the A-share and H-share markets also contribute to the cross-listing literature. In particular, we find that compared with the H-share market, the cost of capital is lower and liquidity is higher in the A-share market. This result is in contrast to the conventional wisdom that firms cross list on the market with lower cost of capital and greater liquidity. The lack of apparent advantage in the cost of capital and liquidity in the overseas markets suggests that the benefits of cross-listing for Chinese companies may lie in elsewhere, perhaps in improved corporate governance system and their positive impacts on the cost of capital and liquidity in the domestic market. Our findings suggest that a fruitful area for future

research is to ascertain the true benefits of cross-listings for Chinese companies.

Third, the analysis of this paper is based on a larger and more recent sample compared with previous studies on the A-H share price comparison. Our sample covers all the 31 Chinese industrial firms that cross-listed on the mainland and Hong Kong Stock Exchanges as of December 2006,² and our sample period includes Chinese government's recent reform on non-tradable shares. Examining the A-share price premium before and after the start of the reform allows us to ascertain the effect of corporate governance on the A-H share price difference.

The paper is organized as follows. Section 2 presents the theories and testable hypotheses. Section 3 describes the data and methods. Section 4 reports the findings. The paper concludes with Section 5.

2. Theories and testable hypotheses

2.1. The effect of expropriation on the A-share price premium

As Shleifer and Vishny (1997) define, “Corporate governance deals with the ways in which suppliers of finance to corporations assure themselves of getting a return on their investments.” An important measure of corporate-governance quality is controlling shareholders' ability to extract private benefits at the expense of minority shareholders. In this paper, we focus on a special corporate governance feature of listed Chinese companies, i.e., the existence of large non-tradable shares. Our emphasis on this governance feature is because of its unique and crucial role in understanding the specialness of the Chinese stock market, and because of the lack of research on the effect of shareholder expropriation on the price difference between restricted and unrestricted shares in the market-segmentation literature.

It is well known that most listed Chinese companies have large proportions of non-tradable shares which mainly include state-owned shares and legal-entity shares. As

² Wang and Jiang (2004) examine 16 cross-listed Chinese firms as of December 2000.

explained by Huang and Fung (2005), prior to an initial public offering, a Chinese firm is typically initialized by a promoting shareholder who holds promoter shares and is founded after a round of private placement to a few shareholders. These shareholders are usually state-owned enterprises or state-appointed asset trust entities. The process of going public by Chinese firms involved only the subscription by the public of new shares, while the state shares and legal-entity shares cannot be publicly traded on the exchanges.³ Publicly-traded and non-tradable shares have identical voting rights and cash flow rights. Prior to Chinese government's reform on non-tradable shares in April 2005, the majority of all the shares of listed Chinese firms were non-tradable, and non-tradable shareholders were typically controlling shareholders. This ownership structure intensifies the conflicts of interests between non-tradable shareholders and public minority shareholders and results in severe agency costs for Chinese companies. Controlling non-tradable shareholders may extract private benefits of control at the expense of public shareholders. For example, large controlling non-tradable shareholders in most listed firms are state government or state-owned enterprises. Managers/bureaucrats in these firms are prone to reap private benefits if they have extremely concentrated control rights but no significant cash flow rights (Shleifer and Vishny 1997). Another prevalent way to gain private benefits of control is for large non-tradable shareholders to use the funds of the listed companies without appropriate compensation to the listed firms. In addition, controlling non-tradable shareholders may decide to distribute large amount of dividends to shareholders even though the firm is experiencing severe cash-flow shortage and the cash payout is detrimental to the firm's market value. How to resolve the problems brought by large non-tradable shares has become the focal point of the development of the Chinese stock markets.

As argued by Giannetti and Simonov (2006), corporate governance does matter

³ The ownership of these non-tradable shares may be transferred to another party privately through bilateral arrangement or auctions (Huang and Fung 2005),

for investors' security selection. Giannetti and Simonov state that "corporate governance affects how a firm's value is divided between security benefits, which accrue to all shareholders pro-rata, and private benefits, which only a subset of shareholders with large participations or connections with the management can enjoy....If different categories of investors expect different returns depending on the quality of corporate governance, they should exhibit different preferences for this firm factor." In support of their argument, Giannetti and Simonov find that for Swedish listed companies, investors who enjoy only security benefits (i.e., small domestic individual investors, domestic institutional investors, and foreign individual and foreign institutional investors) are reluctant to hold stock of companies where the extraction of private benefits is expected to be large, while investors who may extract private benefits (i.e., large domestic individual investors) do not avoid companies with weak corporate governance. Furthermore, their empirical findings indicate that foreign investors appear even more reluctant than domestic individual investors to hold stocks with higher levels of entrenchment of control and greater ratio of control to cash flow rights. Because investor protection in Sweden is relatively strong and the level of law enforcement is quite high, Giannetti and Simonov predict that the fear of expropriation by large shareholders may have much greater consequences on investors' portfolio choices in environments with lower investor protection and poorer law enforcement.

In the spirit of Giannetti and Simonov, we expect that investors are less willing to hold the shares of Chinese firms whose controlling shareholders have greater ability to extract private benefits. Giannetti and Simonov (2006) use three proxies for the quality of corporate governance: (1) the ratio of control to cash flow rights of the principal shareholder, (2) the control premium, defined as the difference between price per share paid for a control block and the price quoted in the market after the sale announcement, and (3) a dummy variable measuring the extent to which controlling shareholders use corporate control instruments to limit takeovers. However, for the 32 Chinese firms, the

controlling shareholders are typically state government or state-owned enterprises. As Shleifer and Vishny (1997) point out, "while in theory these firms are controlled by the public, the de facto control rights belong to bureaucrats. These bureaucrats can be thought of having extremely concentrated control rights, but no significant cash flow rights because the cash flow ownership of state firms is effectively dispersed amongst the taxpayers of the country." Thus the measure of the ratio of control to cash flow rights as used in Giannetti and Simonov is not suitable for the case of Chinese companies. Moreover, information necessary to calculate the control premium and the control dummy employed by Giannetti and Simonov is not available for the Chinese firms due to lack of takeover activities and anti-takeover measures as described in their paper. Instead, we use the ratio of the number of non-tradable shares to total number of shares outstanding to proxy for a firm's potential of expropriation. Given the heightened concern of Chinese investors and regulators to the problems intensified by the existence of non-tradable shares, we believe the proportion of non-tradable shares is a reasonable measure of controlling shareholders' ability to extract private benefits.

As suggested by Wang and Jiang (2004), due to language barriers, different accounting standards, and the lack of reliable information about the local firms, foreign investors may have an information disadvantage about Chinese companies than do domestic Chinese investors, and they may be less willing to hold shares they are not familiar with. This home bias⁴ may further lower the share price foreigners are willing to pay for Chinese shares they have less information about. If foreign investors are more reluctant than domestic individual investors to hold stocks of companies where the extraction of private benefits is expected to be large, (as the case for Swedish listed firms), we expect the A-share price premiums to be higher for firms with greater proportions of non-tradable shares, all else equal.

⁴ Investors' preference for local stocks has been a well-documented characteristic of international equity portfolios (see French and Poterba 1991, and others).

We also expect that after the initiation of Chinese government's reform to completely float the non-tradable shares for all the listed Chinese companies in April 2005, investors' expectation that all the non-tradable shares will be floated in the future renders the proportion of non-tradable shares an insignificant factor in explaining the A-share price premium in the period after April 2005.

3. Data and methods

Data on company name, A shares' listing date, daily share prices, daily trading volume, daily Shanghai and Shenzhen value-weighted market returns, number of shares outstanding, daily closing bid-ask spreads and a firm's number of tradable and non-tradable shares are obtained from the China Stock Market and Accounting Research database (CSMAR) and the Bloomberg database. Data on share prices, trading volume, closing bid-ask spreads for H shares, and the daily exchange rates between the RMB and the Hong Kong dollar are from the Bloomberg database. All the stock returns are adjusted for dividends and stock splits. We obtain the listing date of the H shares from the web site of the Hong Kong Stock Exchange. U.S. value-weighted market portfolio returns (including all the NYSE, AMEX and NASDAQ stocks) are extracted from the Center for Research in Security Prices (CRSP).

Our sample includes all the Chinese firms that have issued both A and H shares during the period of July 1993 to December 2006. July 1993 is selected as the starting point because it is the time when the first Chinese overseas listing occurred. In order to compare prices from different markets, the sample period for each firm starts on the listing date of A or H shares of the company, whichever is later. During our sample period, there are 31 firms that have both A and H shares. Table 1 reports the company name, A-share stock code, and the listing dates for the 31 firms in our sample. Except for the ZTE Corporation, all the firms in our sample first listed their shares overseas, and

then cross listed their shares in the A-share market.

We test our hypotheses with random-effects generalized least squares regressions of A-share price premiums on various explanatory variables to test the hypotheses described in Section 2. We now discuss the proxy variables for the factors used to explain the A-share price premium in turn.

Differential required returns

The asset pricing model suggests that differences in A-share and H-share multifactor betas may yield differences in A-share and H-share required returns and, thus A- and H-share price differences. Adapted from Hietala (1989),⁵ we estimate the betas using the market models as specified below.

We regress each firm's A- and H-share returns on the NYSE/AMEX/NASDAQ market portfolio returns (proxying for the global market portfolio returns), the Hang Seng Index returns, and the Shanghai or Shenzhen stock market returns depending on where the A share is traded. Ideally, the global market portfolio returns should be used to measure market performance of all the countries. The Morgan Stanley Capital International All Country World Index (MSCI's ACWI) is such an index that is designed to measure equity market performance in the global developed and emerging markets. However, the daily series of MSCI's ACWI starts in July 1999. Using this world market portfolio measure will force us to drop a large number of observations. Instead, this paper uses the U.S. value-weighted market portfolio returns (including all the NYSE, AMEX and NASDAQ stocks) to proxy for the global market portfolio. In fact the correlation coefficient between MSCI's ACWI returns and the U.S. market portfolio returns is 0.91, suggesting the U.S. market portfolio is a good proxy for the global market portfolio. The regressions are specified as follows:

⁵ Hietala (1989) uses market models to estimate the betas of the restricted and unrestricted stocks of Finnish companies, and then tests whether the premium of the unrestricted stock is because of foreign investors' lower required rate of return.

$$r_{A,it} = \alpha_{A,i} + \beta_{A,GM,i} GM_t + \beta_{A,HK,i} HK_t + \beta_{A,CH,i} CH_t + \mu_{A,it}, \quad (1)$$

$$r_{H,it} = \alpha_{H,i} + \beta_{H,GM,i} GM_t + \beta_{H,HK,i} HK_t + \beta_{H,CH,i} CH_t + \mu_{H,it}, \quad (2)$$

where $r_{A,it}$ and $r_{H,it}$ are the A- and H-share returns for firm i on day t , respectively. GM_t is the global market portfolio returns on day t , HK_t is the Hang Seng Index returns on day t , and CH_t is the Shanghai or Shenzhen A-share market returns on day t . $\alpha_{A,i}$ and $\alpha_{H,i}$ are constant terms, the coefficients on the market returns are β s, and $\mu_{A,it}$ and $\mu_{H,it}$ are random error terms.⁶ The correlation coefficients of the portfolio returns in different markets are as follows: Shanghai and Shenzhen, 0.9894, Shanghai and global market, -0.0340, Shenzhen and global market, -0.0335, Shanghai and Hong Kong, 0.0828, Shenzhen and Hong Kong, 0.0807, Hong Kong and global market, 0.1688. Similar to Bailey and Jagtiani (1994), we estimate differences in betas, i.e., $\beta_{A,GM} - \beta_{H,GM}$, $\beta_{A,HK} - \beta_{H,HK}$, and $\beta_{A,CH} - \beta_{H,CH}$ with time-series regressions of the difference in each firm's A- and H-share returns on the three market portfolio returns.

Market portfolio returns

Similar to Bodurtha, Kim and Lee (1995), we use a multifactor framework to examine the impact of market portfolio returns on the share price premiums.⁷ We include the global, Hong Kong and Chinese market portfolio returns as explanatory variables to examine the impact of market-specific returns on the share price premiums.

Differential degrees of speculative trading

Harrison and Kreps (1978) state that investors exhibit speculative behavior if the

⁶ These regression specifications are close to those of Wang and Jiang (2004). They regress daily returns of A-share (H-share) returns on Chinese mainland stock market index returns, Hong Kong market index returns (Hang Seng Index returns), and the percentage change in the exchange rate between RMB and Hong Kong dollars. The coefficients on the change of exchange rate are mostly insignificant in their regressions.

⁷ To test whether investor sentiment plays a role in the U.S.-traded closed-end foreign country fund premium, Bodurtha et al. (1995) estimate a time-series regression of the changes in the closed-end foreign country fund premiums on a global market index, U.S. market returns, exchange rate changes, and a domestic closed-end fund premium index. They interpret a significantly positive coefficient on the U.S. market returns as evidence that supports the investor sentiment hypothesis.

right to resell a stock makes them willing to pay more for it than they would pay if obliged to hold it forever. Under the assumptions of heterogeneous investor expectations, risk neutrality, and no short sales of stock, Harrison and Kreps show that an investor can bid up the price of the stock in anticipation of future opportunities for selling it to other investors, at higher prices than the investor himself would be willing to pay. If an equilibrium price is to be found, it must exceed what any investor would be willing to pay for the stock if obliged to hold it forever.

Unlike the Hong Kong stock markets, short sale of stocks and derivative securities are prohibited in mainland China. Moreover, many listed Chinese companies have poor information disclosure, resulting in more diverse investor beliefs about the value of a company. In the spirit of Harrison and Kreps, we expect that mainland Chinese investors are more speculative than foreign investors. In addition, because many listed companies have abysmal profitability and weak corporate governance, many Chinese investors lost confidence in the long-term holding of Chinese stocks. This also contributes to the speculative fever in the Chinese stock markets. We thus expect that the more speculative the A-share market relative to other markets, the greater is the A-share price premium.

We use share turnover to measure the degree of speculative trading in each market. Although share turnover may also proxy for liquidity, the astonishingly high average annual share turnover of about 500%, which is even higher than the 365% turnover rate of American DotCom firms in their heyday, and five times the turnover rate of the typical NYSE stock (Mei, Scheinkman and Xiong 2004), suggests that share turnover rate captures the degree of speculative trading in Chinese stock markets. However, because the Shanghai and Shenzhen markets impose a $\pm 10\%$ daily limit on stock returns, the observed daily variance of Chinese stocks may have understated the degree of speculative trading for Chinese investors. We expect the share price premiums to increase with the relative share turnover rate.

Differential demand elasticities

Unlike the perfect-competition assumption in the traditional capital asset pricing models (CAPM) of Sharpe (1964) - Lintner (1965) - Mossin (1966), in a segmented market, domestic and foreign investors often face different downward-sloping demand curves. Stulz and Wasserfallen (1995) assume that the demand curve for a firm's shares is downward sloping because there are no perfect substitutes for the securities the firm offers for either domestic or foreign investors. They show that if foreign investors have a demand for domestic shares that is less price elastic than the demand from domestic investors, a firm seeking financing by issuing shares will find it advantageous to price discriminate by selling shares at higher prices to foreign investors.

The hypothesis of differential demand elasticities states that A-share price premium may be explained by the smaller demand elasticity of A shares relative to H shares. Similar to Stulz and Wasserfallen (1995) and Domowitz and Madhavan (1997), we also use a firm's ratio of the number of restricted shares (A shares) to the number of unrestricted shares (H and N shares) outstanding to measure the relative supply of restricted stocks.⁸ We expect the A-share price premiums to decrease with the ratio of A shares to H plus N shares outstanding.

Liquidity

Amihud and Mendelson (1986) find that the observed market return increases with the stock's relative bid-ask spread. This positive relation reflects the compensation required by investors for their trading costs. It is reasonable to expect that investors would pay lower prices for stocks with greater illiquidity. We thus expect that the greater the difference in illiquidity between the A-share and foreign-share markets, the higher is

⁸ None of the 31 cross-listed firms in our sample issued B shares.

the A-share premium.

As in Amihud and Mendelson, we use the quoted relative bid-ask spread to measure liquidity. The relative bid-ask spread here is the daily closing difference between the ask and the bid prices divided by the bid-ask midpoint. We use the ratios of A- to H-share spread to measure the relative liquidity for different markets, and expect the A-share price premiums to decrease with the ratios of A- to H-share spread.

Asymmetric information

Following Bailey and Jagtiani (1994) and Bailey, Chung and Kang (1999), we use a firm's total market value of equity to proxy for the asymmetric information between domestic investors and foreign investors. The total market value used in our panel-data regression (see Table 5) is extracted from the CSMAR database, and it is the cross product of the A-share price multiplied by the total number of shares of the firm (including both tradable and non-tradable shares). We also use the market value of tradable shares (i.e., A, H and N shares) as an alternative proxy for asymmetric information, and the results are qualitatively the same as the ones under the total market value of equity. We expect that the A-share price premiums are lower for larger firms for which it is easier for foreign investors to obtain information. However, it is possible that stocks of larger firms are harder to be manipulated by speculative traders, and firm size may also proxy for the extent of market manipulation.

4. Empirical results

Figure 1 plots the monthly A-share premiums for the average of the 31 firms. We observe that the average A-share premium reached its lowest point of 5% in April 1994. It then increased over time and reached its highs of 1393% in March 1999. In December 2006, the average A-share premium dropped to 67%.

Table 2 reports the summary statistics for the 31 firms by each share class. A-share daily premium relative to H shares at time t for firm i is defined as:

$$\text{PREM}_{\text{AH},it} = (P_{\text{A},it} - P_{\text{H},it}) / P_{\text{H},it}$$

where $P_{\text{A},it}$ and $P_{\text{H},it}$ are the closing A- and H-share prices in RMB for firm i at time t , respectively. Three facts from Table 2 are conspicuous. First, the share price premiums vary widely across different companies. The average A-share premium relative H shares ranges from 6.30% for ZTE Corp. to 814.19% for Shandong Xinhua Pharmaceutical Co. Second, the overall daily turnover is much higher for the A-share market (2.11%) than the H-share market (0.97%), indicating the A-share market is more speculative and more liquid.⁹ Third, the average relative bid-ask spread is much lower for the A shares (0.25%) than that of the H shares (1.64%). This suggests that the trading costs are much lower in the A-share market for these companies. Table 3 reports the numbers of tradable A share, foreign shares (H and N shares), non-tradable shares, and floated shares from previously non-tradable shares as a percentage total number of shares from 1993 to 2006 for the 31 firms. Overall, the number of H shares accounts for the majority of the tradable shares, and the percentage of non-tradable shares ranges from 28.47% in 2006 to 57.38% in 1998. Table 4 reports the share type information for each individual company at the end of 2004 and 2006, i.e., one year before and after the start of the non-tradable share reform in 2005. We observe that there is large cross sectional variation in the percentage of non-tradable shares at the end of 2004. One year after the start of the reform on non-tradable shares, the percentage of non-tradable shares dropped sharply to an average of 11.98%, with 23 companies having completely floated their non-tradable shares.

We first estimate the beta coefficients of the regressions of the A- and H-share returns for each of the 31 firms as specified in equations (1) and (2). It shows that for all the A-share stocks, their betas on the Chinese market returns are significantly positive at

⁹ A-share (or H-share) daily turnover is defined as the ratio of A-share (or H-share) daily trading volume to the number of A (or H) shares outstanding.

the 1% level. However, only 2 firms have statistically significant Hong Kong market beta, and only 3 firms have significant global market betas. This suggests that most of the A-share stocks do not have significant exposure to the Hong Kong and global markets. Our result on Hong Kong market betas corroborates the findings in Wang and Jiang (2004). They find that for the 16 Chinese firms that cross listed in both mainland China and Hong Kong before September 28, 2001, their Hong Kong market betas are also not statistically significant from zero.

For the H shares, their Hong Kong market betas are all significantly positive, and 21 out of the 31 firms also have significantly positive Chinese market beta. All but three H shares' global market betas are not significantly different from zero. In addition, all the Hong Kong market betas are much greater than the Chinese market betas for the H shares, indicating that H shares behave more like Hong Kong stocks than mainland Chinese stocks. However, the significant exposure of the Chinese market betas suggests that international investors can use H-shares to achieve cross-market diversification. This result again confirms the findings of Wang and Jiang (2004).

In summary, the results on market betas suggest that the relation between A-share returns and the different markets is considerably different from the relation between H-share returns and the different markets. The distinct behavior between A and H shares suggest that the cross-listed stocks are traded in segmented markets.

Now we turn to the panel-data regressions to examine the determinants of the share price premiums. Table 5 reports the random-effect generalized least squares (GLS) regressions of the A-share price premiums on all the factors discussed earlier. The first column of the coefficient estimates shows the regression of the A-share price premium on the proportion of non-tradable shares without any control variables. The second column reports the regression results with other control variables. The coefficients on nontradable share ratios for both regressions are positive and significant at the 1 percent level. This result supports our hypothesis that A-share price premium increases with a firm's

proportion of non-tradable shares.

The third column in Table 5 adds an additional explanatory variable in the regression: the cross product of D_{2005} and the proportion of non-tradable shares. D_{2005} equals 1 if the observation is from the period after April 29, 2005, when the reform on non-tradable shares was officially started; it equals 0 otherwise. The significantly positive coefficient on the non-tradable share variable indicates a positive relation between non-tradable shares and A-share price premium for the period prior to the reform, and the significantly negative coefficient on the cross product of D_{2005} and the proportion of non-tradable shares suggests that the relation reversed in direction after Chinese firms started to float the non-tradable shares. We also perform a Wald test to examine whether the sum of the coefficients of on these two variables is different from zero. The F-statistics from this test indicate that the sum of the coefficients is insignificant. This suggests that investors' expectation on the floatation of all the non-tradable shares renders the proportion of non-tradable shares an insignificant factor in explaining the A-share price premium after April 2005. Overall, the results on non-tradable shares are consistent with the view that controlling shareholders' potential to extract private benefits is an important factor to explain the A and H-share price difference.

Table 5 also shows that the coefficients on most of the control variables have the expected signs. The significantly negative coefficients on $\beta_{A,CH} - \beta_{H,CH}$ are consistent with the hypothesis that the A-share premiums can be explained partly by the lower returns required by A-share investors. In addition, the coefficients on the Hong Kong and Chinese stock market returns are statistically significant at the 1% level with the expected signs, while the coefficient on the global market returns is significantly negative at the 1% level. This suggests that the stock market movements in Hong Kong, China and the world play an important role in explaining the variation of the A-share price premiums. Moreover, the coefficients on the relative share turnover are all significantly positive, supporting the view that A-share market's greater degree of investor speculation

contributes to the A-share price premium. Results also indicate that the coefficient on the ratio of A- to H-share bid-ask spread is significantly negative, consistent with the view that investors would pay lower prices for stocks with greater illiquidity. The significantly negative coefficient the ratio of A shares to H plus N shares outstanding suggests that the differential demand elasticity between domestic and foreign investors play an important role in explaining the A-share price premiums. Moreover, the significantly negative coefficient on the firm-size variable is consistent with the asymmetric information hypothesis, which states that the A-share price premiums are lower for larger firms whose information is more accessible to foreign investors. The result on firm size also corroborates the findings of Bailey and Jagtiani (1994) and Bailey, Chung and Kang (1999).

5. Conclusions

This paper empirically examines whether investors' concern of expropriation plays a role in explaining the A to H-share price difference. For the 31 Chinese companies that have listed their shares on both the domestic Chinese market and the overseas Hong Kong market, we observe large cross-sectional and time-series variations for the A-share price premiums relative to their matching H shares. Our empirical results indicate that the A-share premiums are larger for firms with greater proportions of non-tradable shares. This finding supports the view that foreign investors are more reluctant than Chinese investors to hold stocks of companies where the extraction of private benefits is expected to be large, and the lack of foreign demand for stocks of firms with poor corporate governance contributes to the A-share price premium.

Our results also indicate that differences between domestic and foreign investors in required returns, degree of speculative trading, demand elasticity, liquidity and information are also useful in explaining the A-share price premiums.

Our findings are of interest to regulators, corporate managers, and investors. The results that the A-share price premiums change with the proportion of non-tradable shares suggest that Chinese stock prices are greatly influenced by the demand and supply of common stocks. Our findings also indicate that corporate governance improvement that can better protect the interests of public shareholders may contribute to lower A-share price premiums.

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Figure 1: Average monthly A-share premiums(%) relative to H shares

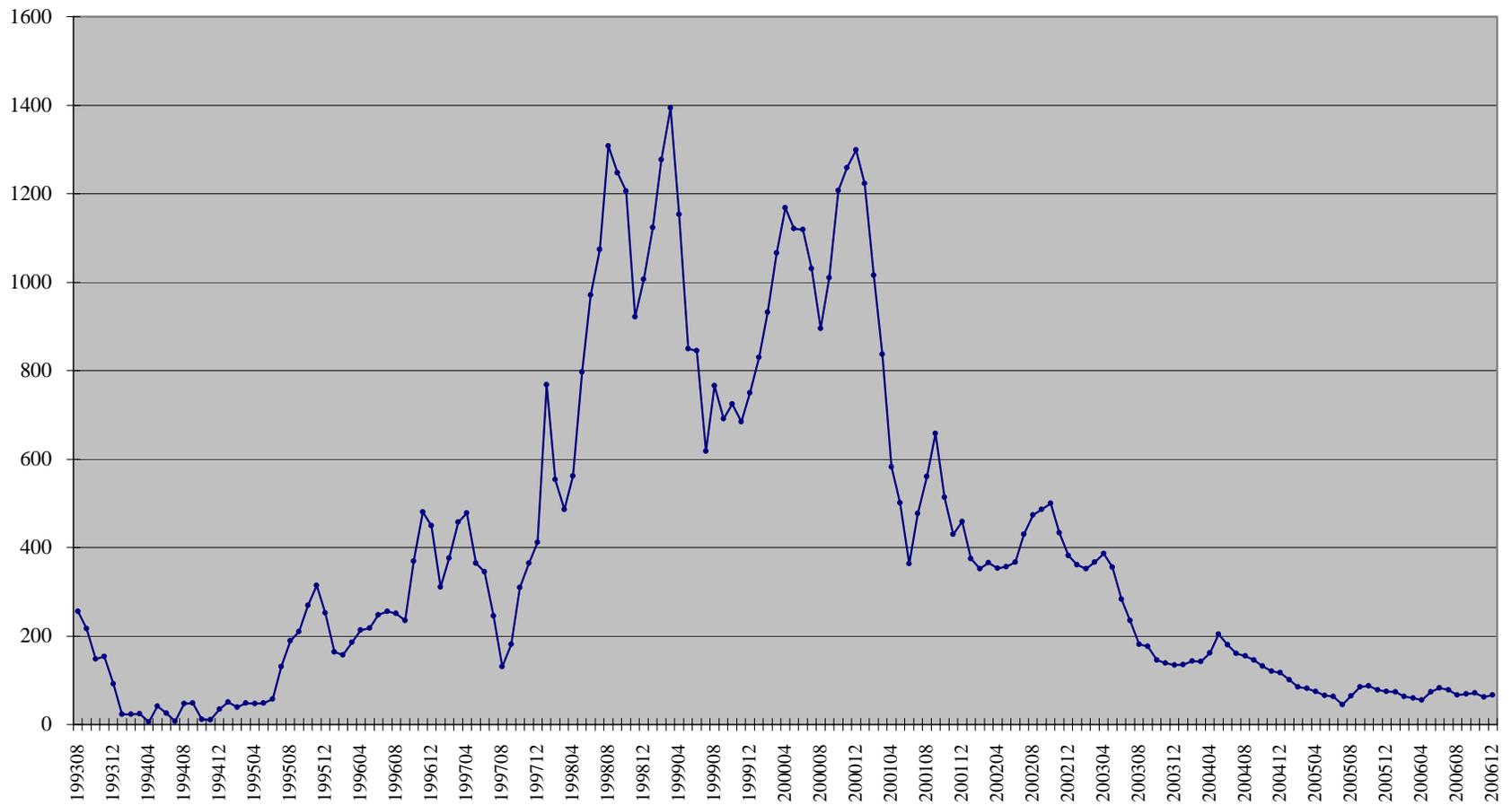


Table 1

A-share stock code, company name, listing type, and listing date for 31 industrial firms that have both A and H shares as of December 31, 2006

A-share code	Company Name	A-share listing date	H-share listing date
000063	ZTE Corp	19971118	20041209
000585	Northeast Electric Development Co Ltd	19951213	19950706
000618	Jilin Chemical Industrial Co Ltd	19961015	19950523
000666	Jingwei Textile Machinery Co Ltd	19961210	19960202
000756	Shandong Xinhua Pharmaceutical Co Ltd	19970806	19961231
000898	Angang New Steel Co Ltd	19971225	19970724
000921	Guangdong Kelon Electrical Holdings Co Ltd	19990713	19960723
600011	Huaneng Power International, Inc	20011206	19980121
600012	Anhui Expressway Co Ltd	20030107	19961113
600026	China Shipping Development Co Ltd	20020523	19941111
600027	Huadian Power International	20050203	19990630
600028	China Petroleum & Chemical Corporation	20010808	20001019
600029	China Southern Airlines Co Ltd	20030725	19970731
600115	China Eastern Airlines Corporation Ltd	19971105	19970205
600188	Yanzhou Coal Mining Co Ltd	19980701	19980401
600332	Guangzhou Pharmaceutical Co Ltd	20010206	19971030
600362	Jiangxi Copper Co Ltd	20020111	19970612
600377	Jiangsu Expressway Co Ltd	20010116	19970627
600548	Shenzhen Expressway Co Ltd	20011225	19970312
600585	Anhui Conch Cement Co Ltd	20020207	19971021
600600	Tsingtao Brewery Co Ltd	19930827	19930715
600685	Guangzhou Shipyard International Co Ltd	19931028	19930806
600688	Sinopec Shanghai Petrochemical Co Ltd	19931108	19930726
600775	Nanjing Panda Electronic Co Ltd	19961118	19960502
600806	Jiaoda Kunji High-Tech Co Ltd	19940103	19931207
600808	Maanshan Iron & Steel Co Ltd	19940106	19931103
600860	Beiren Printing Machinery Holdings Ltd	19940506	19930806
600871	Sinopec Yizheng Chemical Fibre Co Ltd	19950411	19940329
600874	Tianjin Capital Environmental Protection Co Ltd	19950630	19940517
600875	Dongfang Electrical Machinery Co Ltd	19951010	19940606
600876	Luoyang Glass Co Ltd	19951031	19940708

Table 2 Summary statistics for each of the 31 firms

A-share premium relative to H shares is defined as $(P_A - P_H) / P_H$. A-share (or H-share) daily turnover is defined as trading volume divided by the number of A (or H) shares outstanding. Market value is the product of share price and the number of shares outstanding. Relative bid-ask spread equals $200 \times (\text{ask price} - \text{bid price}) / (\text{ask price} + \text{bid price})$.

A-Share Stock Code	Company Name	Sample Starting Date	Share Class	Average Share Price in RMB	Average A-Share premium	Average Daily Return	Standard Deviation of Daily Return	Average Daily Volume	Average Daily Turnover	Average Market Value in RMB	Average Relative Bid-Ask Spread
000063	ZTE Corp	20041209	A	29.45	6.30%	0.1154%	2.3508%	4466174	0.0127	10153.800	0.1255%
			H	27.66							0.0931%
000585	Northeast Electric Development Co Ltd	19951213	A	5.12	648.89%	0.0430%	3.4972%	2644250	0.0269	514.159	0.2845%
			H	0.85							0.1112%
000618	Jilin Chemical Industrial Co Ltd	19961015	A	6.05	642.77%	0.0167%	3.0577%	2472485	0.0205	808.210	0.2623%
			H	1.15							0.1373%
000666	Jingwei Textile Machinery Co Ltd	19961210	A	6.86	696.60%	0.0039%	2.7295%	1941052	0.0205	869.731	0.2223%
			H	1.45							0.1435%
000756	Shandong Xinhua Pharmaceutical Co Ltd	19970806	A	8.66	814.19%	0.0026%	2.4616%	656052	0.0162	396.024	0.2547%
			H	1.30							0.0519%
000898	Angang New Steel Co Ltd	19971225	A	3.82	262.71%	0.0718%	2.2083%	10810633	0.0175	3009.088	0.2575%
			H	2.21							0.1877%
000921	Guangdong Kelon Electrical Holdings Co Ltd	19990713	A	9.32	375.70%	-0.0626%	2.2153%	2350724	0.0143	1276.670	0.2267%
			H	2.32							-0.0596%
600011	Huaneng Power International, Inc	20011206	A	6.30	46.11%	0.1021%	2.8650%	7275768	0.0239	2325.156	0.1677%
			H	4.72							0.1116%
600012	Anhui Expressway Co Ltd	20030106	A	5.54	67.85%	0.1848%	3.7079%	6445992	0.0244	1530.005	0.2063%
			H	3.76							0.1471%
600026	China Shipping Development Co Ltd	20020523	A	7.10	78.62%	0.1282%	2.4847%	11547017	0.0324	2690.296	0.1745%
			H	5.00							0.1989%
600027	Huadian Power International	20050202	A	3.02	33.31%	0.2310%	4.5595%	23099500	0.0409	1780.808	0.3394%
			H	2.28							0.0899%
600028	China Petroleum & Chemical Corporation	20010808	A	4.28	86.63%	0.0802%	2.0668%	40605240	0.0144	12765.640	0.2436%
			H	2.78							0.1496%
600029	China Southern Airlines Co Ltd	20030710	A	3.91	36.37%	0.1306%	2.8549%	24579623	0.0246	3905.703	0.3055%
			H	2.83							0.0983%
600115	China Eastern Airlines Corporation Ltd	19971105	A	4.31	306.62%	0.0042%	2.2123%	4803417	0.0157	1305.633	0.2992%
			H	1.17							0.0725%
600188	Yanzhou Coal Mining Co Ltd	19980701	A	5.82	199.06%	0.0588%	2.2457%	3758602	0.0201	1574.097	0.1946%
			H	3.08							0.1503%
600332	Guangzhou Pharmaceutical Co Ltd	20010205	A	8.62	307.50%	0.0468%	2.6168%	1158985	0.0134	716.756	0.1999%

			H	2.55		0.1381%	2.7859%	1252869	0.0057	566.429	1.2881%
600362	Jiangxi Copper Co Ltd	20020111	A	6.55	169.23%	0.1404%	2.6542%	8250569	0.0337	1667.772	0.1803%
			H	3.58		0.1968%	3.1250%	22137349	0.0178	4695.073	0.7439%
600377	Jiangsu Expressway Co Ltd	20010115	A	7.61	233.20%	0.0696%	2.6756%	2539218	0.0157	1257.307	0.2144%
			H	3.01		0.1260%	2.2428%	6532224	0.0053	3895.434	0.8918%
600548	Shenzhen Expressway Co Ltd	20011225	A	5.81	187.16%	0.0424%	2.1919%	3330876	0.0264	759.018	0.2398%
			H	2.53		0.1151%	1.9395%	3771468	0.0050	2003.043	0.9050%
600585	Anhui Conch Cement Co Ltd	20020207	A	10.57	52.61%	0.1538%	2.4152%	3123684	0.0156	2168.243	0.2391%
			H	8.78		0.2213%	3.0129%	2993402	0.0073	3636.148	0.8889%
600600	Tsingtao Brewery Co Ltd	19930830	A	7.18	174.15%	0.0532%	2.8792%	1930373	0.0147	1212.373	0.1974%
			H	4.14		0.0906%	3.5492%	1295813	0.0035	2032.195	1.4361%
600685	Guangzhou Shipyard International Co Ltd	19931029	A	5.47	381.00%	0.0967%	3.3740%	2604363	0.0204	723.803	0.2542%
			H	2.06		0.1425%	4.1909%	1219437	0.0077	334.531	2.3673%
600688	Sinopec Shanghai Petrochemical Co Ltd	19931110	A	3.77	185.99%	0.0587%	2.8121%	12693615	0.0179	2953.572	0.2717%
			H	1.67		0.0912%	3.6110%	21883535	0.0099	4222.697	1.0286%
600775	Nanjing Panda Electronic Co Ltd	19961118	A	10.01	657.81%	0.0238%	2.8642%	1058940	0.0211	507.833	0.2331%
			H	1.78		0.1387%	4.7930%	3068930	0.0127	407.575	1.6029%
600806	Jiaoda Kunji High-Tech Co Ltd	19940110	A	5.84	573.03%	0.0988%	3.7677%	1749344	0.0292	406.197	0.2317%
			H	1.41		0.1028%	4.4475%	275129	0.0042	101.701	3.8885%
600808	Maanshan Iron & Steel Co Ltd	19940215	A	2.78	301.29%	0.0632%	2.9561%	12741776	0.0207	1998.289	0.3421%
			H	1.27		0.0872%	3.8459%	25482103	0.0147	2599.964	1.1590%
600860	Beiren Printing Machinery Holdings Ltd	19940506	A	5.90	550.00%	0.0509%	3.3234%	1380525	0.0246	363.815	0.2421%
			H	1.34		0.0574%	3.3952%	470533	0.0047	168.485	2.5894%
600871	Sinopec Yizheng Chemical Fibre Co Ltd	19950411	A	4.57	250.09%	0.0747%	3.0563%	4724416	0.0236	949.324	0.2683%
			H	1.47		0.0909%	4.0118%	21320497	0.0152	2185.902	0.9422%
600874	Tianjin Capital Environmental Protection Co Ltd	19950703	A	5.73	567.23%	0.0554%	2.7831%	2622703	0.0234	685.916	0.3195%
			H	1.28		0.1276%	4.3072%	4347331	0.0128	466.411	1.5946%
600875	Dongfang Electrical Machinery Co Ltd	19951010	A	9.16	603.31%	0.0761%	2.8109%	1268870	0.0206	599.735	0.2015%
			H	3.40		0.1860%	4.2985%	1152514	0.0068	589.236	2.4094%
600876	Luoyang Glass Co Ltd	19951031	A	5.99	689.23%	0.0062%	2.8789%	1184315	0.0226	300.694	0.3153%
			H	1.03		0.0535%	4.2340%	1939028	0.0078	242.833	2.5492%
Total			A	6.32	394.32%	0.0587%	2.8921%	5326187	0.0211	1508.051	0.2470%
			H	2.42		0.1130%	3.7825%	10113247	0.0097	2989.569	1.6392%

Table 3

Average numbers of tradable A, H, N, non-tradable shares, and the floated shares from formerly non-tradable shares as a percentage total number of shares from 1993 to 2006 for the 31 firms.

year	Percentage of tradable A shares	Percentage of Tradable H shares	Percentage of Tradable N shares	Percentage of Nontradable Shares	Percentage of Floated Shares from Formerly Non-Tradable Shares
1993	11.20%	33.63%	2.25%	52.92%	0.00%
1994	13.73%	29.19%	1.14%	55.94%	0.00%
1995	13.52%	29.57%	0.74%	56.16%	0.00%
1996	11.47%	30.80%	0.63%	57.10%	0.00%
1997	9.76%	32.07%	0.80%	57.36%	0.00%
1998	9.29%	32.25%	1.08%	57.38%	0.00%
1999	9.86%	32.47%	1.51%	56.15%	0.00%
2000	11.11%	32.62%	0.99%	55.28%	0.00%
2001	12.61%	31.30%	0.50%	55.59%	0.00%
2002	12.07%	32.01%	0.42%	55.50%	0.00%
2003	12.67%	31.98%	0.37%	54.98%	0.00%
2004	12.86%	32.06%	0.47%	54.61%	0.00%
2005	13.21%	31.58%	0.42%	54.63%	0.16%
2006	15.16%	31.51%	0.38%	28.47%	24.48%
Average	12.32%	31.75%	0.64%	51.68%	3.61%

Table 4 Average numbers of tradable A, H, N, non-tradable shares, and the floated shares from formerly non-tradable shares as a percentage total number of shares for each of the 31 firms.

A-Share Stock Code	2004 (before the reform on non-tradable shares)					2006 (after the reform on non-tradable shares)				
	Percentage of tradable A shares	Percentage of Tradable H shares	Percentage of Tradable N shares	Percentage of Nontradable Shares	Percentage of Formerly Non-Tradable Shares that have been scheduled to Float	Percentage of tradable A shares	Percentage of Tradable H shares	Percentage of Tradable N shares	Percentage of Nontradable Shares	Percentage of Formerly Non-Tradable Shares that have been scheduled to Float
000063	30.31%	19.35%	0.00%	50.33%	0.00%	50.90%	16.69%	0.00%	0.00%	32.41%
000585	16.44%	29.54%	0.00%	54.02%	0.00%	20.55%	29.54%	0.00%	0.00%	49.91%
000618	5.52%	26.64%	1.66%	66.17%	0.00%	N/A	N/A	N/A	N/A	N/A
000666	33.04%	29.94%	0.00%	37.01%	0.00%	37.65%	29.94%	0.00%	0.00%	32.40%
000756	16.65%	32.80%	0.00%	50.55%	0.00%	22.48%	32.80%	0.00%	0.00%	44.72%
000898	25.39%	30.06%	0.00%	44.55%	0.00%	17.75%	15.00%	0.00%	0.00%	67.25%
000921	19.61%	46.33%	0.00%	34.06%	0.00%	19.61%	46.33%	0.00%	34.06%	0.00%
600011	1.88%	39.27%	2.89%	55.96%	0.00%	5.29%	24.88%	1.83%	0.00%	68.00%
600012	15.07%	29.72%	0.00%	55.20%	0.00%	18.09%	29.72%	0.00%	0.00%	52.19%
600026	10.52%	38.97%	0.00%	50.51%	0.00%	10.52%	38.97%	0.00%	50.51%	0.00%
600027	N/A	N/A	N/A	N/A	N/A	12.29%	23.77%	0.00%	0.00%	63.95%
600028	3.16%	18.93%	2.18%	75.73%	0.00%	4.04%	18.93%	2.18%	0.00%	74.85%
600029	22.45%	26.36%	1.78%	49.40%	0.00%	22.45%	26.36%	1.78%	49.40%	0.00%
600115	6.06%	31.68%	1.61%	60.65%	0.00%	6.06%	31.68%	1.61%	60.65%	0.00%
600188	5.82%	39.60%	0.55%	54.03%	0.00%	7.29%	39.68%	0.35%	0.00%	52.68%
600332	9.62%	27.12%	0.00%	63.26%	0.00%	12.50%	27.12%	0.00%	0.00%	60.38%
600362	8.63%	43.41%	0.00%	47.96%	0.00%	9.69%	47.93%	0.00%	0.00%	42.38%
600377	2.98%	24.26%	0.00%	72.77%	0.00%	3.93%	24.26%	0.00%	0.00%	71.81%
600548	4.79%	34.28%	0.00%	60.93%	0.00%	9.99%	34.28%	0.00%	0.00%	55.73%
600585	15.93%	34.50%	0.00%	49.57%	0.00%	15.93%	34.50%	0.00%	0.00%	49.57%
600600	18.87%	38.38%	0.00%	42.75%	0.00%	18.02%	50.07%	0.00%	0.00%	31.91%
600685	25.57%	31.82%	0.00%	42.61%	0.00%	32.47%	31.82%	0.00%	0.00%	35.71%
600688	9.70%	31.40%	2.96%	55.94%	0.00%	9.70%	31.40%	2.96%	55.94%	0.00%
600775	8.85%	36.95%	0.00%	54.20%	0.00%	11.95%	36.95%	0.00%	0.00%	51.10%
600806	24.49%	26.53%	0.00%	48.98%	0.00%	24.49%	26.53%	0.00%	48.98%	0.00%
600808	9.29%	26.85%	0.00%	63.86%	0.00%	12.45%	26.85%	0.00%	0.00%	60.70%
600860	17.06%	23.70%	0.00%	59.24%	0.00%	23.55%	23.70%	0.00%	0.00%	52.76%
600871	5.00%	35.00%	0.00%	60.00%	0.00%	5.00%	35.00%	0.00%	60.00%	0.00%
600874	8.46%	25.56%	0.00%	65.98%	0.00%	11.65%	25.55%	0.00%	0.00%	62.80%
600875	13.33%	37.78%	0.00%	48.89%	0.00%	16.93%	37.78%	0.00%	0.00%	45.29%
600876	7.14%	35.71%	0.00%	57.14%	0.00%	10.14%	35.71%	0.00%	0.00%	54.14%
Mean	13.39%	31.75%	0.45%	54.41%	0.00%	16.11%	31.12%	0.36%	11.98%	40.42%

Table 5 Random-effects generalized least squares estimates of the regressions of the natural log of the share price premiums on the specified variables (t-statistics are reported in brackets). D_{2005} equals 1 if the observation is from the period after April 29, 2005; and 0 otherwise.

Proportion of Nontradable Shares	1.6959** [85.00]	0.6291** [33.61]	1.0383** [63.51]
$D_{2005} \times$ Proportion of Nontradable Shares			-1.3465** [134.62]
$b_{A,GM} - b_{H,GM}$		0.8921* [2.16]	0.7053 [1.73]
$b_{A,HK} - b_{H,HK}$		0.077 [0.48]	0.0099 [0.06]
$b_{A,CH} - b_{H,CH}$		-1.1587** [5.18]	-0.9156** [4.16]
Global Market Return		-1.2325** [5.98]	-0.8471** [4.79]
Heng Seng Index Return		-0.9587** [5.94]	-0.7441** [5.38]
Shanghai or Shenzhen Market Return		-0.0569 [0.34]	0.6386** [4.49]
Ratio of A- to H-share Turnover		0.0174** [3.09]	0.0186** [3.86]
Ratio of A- to H-share Bid-Ask Spread		-0.4330** [48.17]	-0.2828** [36.30]
Log (Total Market Value)		-0.5801** [110.54]	-0.5259** [115.85]
No. of A shares / No. of H and N shares		-0.7603** [40.16]	-0.6110** [37.36]
Constant	0.2187* [2.23]	6.8325** [30.36]	5.9774** [27.11]
No. of Observations	61515	50485	50485
R-squared	0.0772	0.5406	0.6530

*, and ** indicate significant at the 5% and 1% levels, respectively.