Examining the Price Difference for Chinese A, H and N shares[*]

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Abstract

This paper empirically examines the determinants of the price difference between Chinese A shares that are restricted to domestic investors and Chinese H and N shares that can only be traded by Hong Kong and foreign investors. For 29 cross-listed firms with shares traded in both the A- and H-share (or N-share) markets, we observe large cross-sectional and time-series variations for the A-share price premiums relative to the matching H (or N) shares during the period of July 1993 to December 2003. This paper tests several theories that offer explanations to the price difference. We hypothesize that the share price difference may be explained by (1) the existence of large proportions of nontradable shares for Chinese companies, (2) difference in investment alternatives between Chinese and foreign investors, (3) market-specific investor sentiment, (4) difference in liquidity of different markets, (5) asymmetric information between domestic and foreign investors, (6) differential degrees of investor speculation, and (7) differential required returns between domestic and foreign investors. We find evidence that all the above factors are able to explain partly the A-share price premiums. Results also indicate that there is very little difference between the price levels of H and N shares, and the share price difference between H and N shares is mainly due to market-specific investor sentiments and asymmetric information between the H- and N-share investors about Chinese companies.

Examining the Price Difference for Chinese A, H and N shares

1. Introduction

For Chinese companies that issued both domestic shares (A shares) in mainland China and foreign shares in the Hong Kong Stock Exchange (H shares) or the New York Stock Exchange (N shares), their domestic shares often sell at substantially higher prices than their foreign twins despite the fact that these shares have identical voting rights and cash flow rights. This paper empirically examines the reasons for the A-share price premiums for 29 cross-listed Chinese firms during the period of July 1993 to December 2003. The paper tests several theories that offer explanations to the price difference.

We hypothesize that the share price difference may be explained by (1) the existence of large proportions of nontradable shares for Chinese companies, (2) difference in investment alternatives between Chinese and foreign investors, (3) market-specific investor sentiment, (4) difference in liquidity of different markets, (5) asymmetric information between domestic and foreign investors, (6) differential degrees of investor speculation, and (7) differential required returns between domestic and foreign investors. We find evidence that all the above factors are able to explain partly the A-share price premiums. Results also indicate that there is very little difference between the price levels of H and N shares, and the share price difference between H and N shares is mainly due to market-specific investor sentiments and asymmetric information between H- and N-share investors about Chinese companies.

This paper contributes to the literature in the following ways. First, unlike previous studies that test a small set of factors that explain the price difference between cross-listed Chinese shares, this paper examines a comprehensive set of influential factors together. For example, Wang and Jiang (2004) investigate the role of investor sentiment, liquidity, and exchange rate risk in their panel-data regressions of the A- to H-share return

difference, while factors such as differential demand elasticity, asymmetric information, and differential required returns are largely ignored. The more comprehensive approach adopted in our paper alleviates the problem of model misspecification. Second, the analysis of this paper is based on a larger and more recent sample compared with previous studies. Our sample covers all the 29 Chinese firms that cross-listed on the mainland and Hong Kong Stock Exchanges as of December 2003, while the most updated published study (Wang and Jiang 2004) I am aware of includes 16 cross-listed firms as of December 2000. Third, unlike previous studies on cross-listed Chinese shares that only examine the price difference between A and H shares, we expand our analysis to include comparisons between A and N shares and between H and N shares. Including shares cross-listed on the New York Stock Exchange facilitates comparisons between more mature markets with less market segmentation.

The paper is organized as follows. Section 2 presents the theories and testable hypotheses on the price difference. Section 3 describes the data and sample. Section 4 reports the findings. Section 5 documents the experiences of market segmentation of other countries. The paper concludes with Section 6.

2. Theories and testable hypotheses

In a perfect market, stocks of the same company with identical cash flow rights and voting rights should have the same price. However, these stocks may sell at different prices in different markets due to market segmentation resulting from imperfect competition, heterogeneous investor beliefs, investment barriers, and incomplete information. We now discuss factors affecting market segmentation from these market imperfections in turn.

2.1. 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. Their empirical evidence from Switzerland supports the predictions of the model.

The importance of differential demand elasticities is also evident in other countries. Bailey and Jagtiani (1994) find that foreign investors' lower demand elasticity explains partly the Alien to Main Board share price premiums for Thailand companies. Domowitz, Glen and Madhavan (1997) provide empirical support for the Stulz-Wasserfallen hypothesis for Mexican firms. As suggested by Sun and Tong (2000), although Chinese companies do not have the freedom to issue shares in the same strategic way as in Stulz and Wasserfallen, the idea of differential demand elasticities underlying their model can still be important to explain the phenomenon that Chinese B shares are traded at substantial discounts relative to their A share counterparts. It is reasonable to expect that the demand functions for domestic shares differ for foreign and domestic investors.

We hypothesize that mainland Chinese investors face different demand curves than foreign investors for three reasons. First, Chinese investors have fewer investment alternatives than foreign investors. Second, weak corporate governance of listed Chinese companies lessens foreign demand for Chinese shares. Third, domestic and foreign investors' demand for equity is also affected by market-specific investor sentiments. We next explain these three reasons in greater detail.

Difference in investment alternatives between Chinese and foreign investors

Because Chinese mainland investors are prohibited from buying foreign securities, and the RMB is not freely convertible under capital accounts, there are very few investment alternatives to domestic stocks for Chinese investors. Foreign investors may also lack close substitutes for investing in Chinese markets because they face unattractive investment opportunities elsewhere, or because Chinese shares offer great diversification benefits. However, foreign investors have numerous investment alternatives to Chinese stocks. It is reasonable to expect that Chinese investors' limited number of investment choices contributes to their lower demand elasticity relative to foreign investors, all else equal.

The effect of corporate governance on foreign demand

The quality of a company's corporate governance affects the attractiveness of the stock of the company. 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." Here we focus on a special governance feature of listed Chinese companies, i.e., the existence of large nontradable shares. We start from this governance feature because of its crucial role in understanding the specialness of the Chinese stock market, and because of the lack of research on the effect of nontradable shares on the price difference in the existing literature. The effects of other aspects of corporate governance on the share price difference for Chinese firms are also promising areas for future research.

It is well known that most listed Chinese companies have a large proportion of nontradable shares which mainly include state shares and legal-person shares. About two-thirds of all the shares of listed Chinese firms are nontradable. The initial capital contribution of nontradable shareholders is relatively small compared to their percentage

ownership. Nonetheless, tradable and nontradable shares have identical voting rights and cash flow rights. This ownership structure intensifies the conflicts of interests between nontradable shareholders and tradable shareholders. In general, the existence of large nontradable shares has two potential negative impacts on tradable shareholders. First, large nontradable shareholders may make corporate decisions that benefit themselves at the expense of tradable shareholders. Second, possible future conversion from nontradable shares to tradable shares may dilute the value of tradable shares.

Rational investors would therefore consider the impact of nontradable shares into the share prices they are willing to pay. Although the existence of nontradable shares may negatively affect both tradable A shares and foreign shares, the magnitude of the impact perceived by the two types of investors may be different. Foreign investors may be more familiar and comfortable with an ownership structure under which all shares can be traded at market prices. They may have carefully taken the large nontradable shares of Chinese companies into their stock evaluation. Chinese investors, on the other hand, were used to the existence of large nontradable shares from the opening of the stock market in 1990. Many Chinese investors were under the belief that nontradable state and legal person shares will remain nonmarketable for a long period of time. Chinese investors may not have fully priced the impact of nontradable shares. In addition, if the investment horizon of Chinese investors is shorter than that of foreign investors due to greater degree of speculative trading, they may be less concerned about the existence of nontradable shares than foreign investors. Thus different perceptions about nontradable shares between Chinese investors and foreign investors may contribute to different demand elasticities between domestic and foreign investors, and cause the A-share price premiums to be higher for firms with greater proportion of nontradable shares.

Market-specific investor sentiment

In a fully integrated market, only the systematic risk relative to a world market

portfolio is priced—local (or national) risks do not affect prices. Conversely, in a fully segmented market, only risk associated with the local market factor is priced. Bodurtha, Kim and Lee (1995) examine the difference between U.S. country fund's share prices and their net asset values, and find that the premium (where the share price is greater than the net asset value) of a country fund reflects the differential sentiment between the U.S. and foreign markets. Bodurtha et al. show that if investor sentiment (e.g., bullish or bearish) affects the demand for many assets in the market, then it will not be diversified away and will be priced in equilibrium.

Froot and Dabora (1999) test whether trading location matters by examining 'Siamese-twin" stock prices of three multinational companies. Twin charters imply that the twin stock prices should move in lockstep, in a ratio given by the proportional division of cash flows. However, Froot and Dabora find that the relative price of twin stocks is highly correlated with the relative stock-market indexes of the countries where the twins' stocks are traded most actively. This suggests that the market-specific investor sentiment does matter for pricing.

In this paper, we test whether the price difference among A, H and N shares can be explained by the differential investor sentiments in mainland China, Hong Kong and the U.S.

2.2. 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 hypothesize that the greater the difference in illiquidity between the A-share and foreign-share markets, the higher is the A-share premium.

2.3. Asymmetric information

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 bias may lower the share price foreigners are willing to pay for Chinese shares they have less information about. We expect that A-share price premiums are lower for larger, better-known firms for which it is easier for foreign investors to obtain information.

2.4. Differential degrees of investor speculation

Harrison and Kreps (1978) state that investors exhibit speculative behavior if the 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 and the U.S. stock markets, short sale of stocks and derivative securities are prohibited in China. Compared with the companies listed in Hong Kong and the U.S., 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 Chinese investors are more speculative than Hong Kong and

U.S. investors. In addition, because many listed companies have abysmal profitability and weak corporate governance, many Chinese investors lost confidence in 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.

2.5. Differential required returns

According to the asset pricing theory, the A-share price premium could be due to lower domestic risk-adjusted required return and/or higher expected cash flows to A-share investors. Given that A-share investors and the H- or N-share investors have the same cash flow rights, and it is hard to quantify investors' expectation of future cash flows, this paper focuses on the potential effect of differential required returns.

3. Data and Sample

Data on A shares' company name, listing date, daily share prices, daily trading volume, daily Shanghai and Shenzhen market returns, number of shares outstanding, a firm's number of tradable and nontradable shares are from the China Stock Market and Accounting Research database (CSMAR). Daily closing bid-ask spreads are provided by the Shanghai Stock Exchange and the Shenzhen Stock Exchange, depending on where the stock is listed. Daily data on closing bid-ask spreads start in August 1997 for shares listed at the Shanghai Stock Exchange, and they start in January 1999 for shares listed at the Shenzhen Stock Exchange. Data on share prices, trading volume, closing bid-ask spreads for H shares, and the daily exchange rates between the RMB and the U.S. dollar, and between the RMB and the Hong Kong dollar are from the DataStream database.

We obtain the listing date of the H shares from the web site of the Hong Kong Stock Exchange. Daily stock returns, volumes, market returns, and the number of shares outstanding for N shares are obtained from the Center for Research in Security Prices (CRSP). We get the listing dates for the N shares from the web site of the New York Stock Exchange. Closing bid-ask spreads for N shares are extracted from the New York Stock Exchange Trade and Quote (TAQ) database.

Our sample includes all the Chinese firms that have issued both A and H shares and firms that have issued both A and N shares during the period of July 1993 to December 2003. 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-, H-, or N-shares of the company, whichever is later. During our sample period, there are 29 firms that have both A and H shares, and 7 firms that have both A and N shares, and all of the 7 firms also have H shares. Table 1 reports the company name, A-share stock code, listing type, and the listing date for the 29 firms in our sample. Except for Tong Ren Tang Technologies Co. Ltd., all the firms in our sample first listed their shares overseas, and then cross listed their shares in the A-share market. Exception for Huaneng Power International Inc., each of the firms that have A, H and N shares listed its H and N shares almost simultaneously (within a 24-hour time difference). Huaneng Power International Inc. listed its N shares on Oct. 6, 1994 and then listed its H shares on January 21, 1998.

Table 2 reports the summary statistics for the 29 firms by each share class. A-share daily premiums relative to H or N shares at time t for firm i are defined as:

$$PREM_{AH,it} = (P_{A,it} - P_{H,it}) / P_{H,it} \quad \text{and}$$

$$PREM_{AN,it} = (P_{A,it} - P_{N,it}) / P_{N,it},$$

where $P_{A,it}$, $P_{H,it}$, and $P_{N,it}$ are the closing A-, H- and N-share prices in RMB for firm i at time t, respectively. Because N shares prices are quoted on a per American Depositary Receipt (ADR) basis, we divide the RMB price of 1 ADR by the number of

shares in each ADR to get $P_{N,it}$.   Several 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 41.61% for China Southern Airlines to 1107.85% for Jilin Chemical Industrial Co. Ltd.   Second, there is very little difference in price between H shares and N shares.   The analyses in this paper will therefore emphasize the price differences between A and H shares, and between A and N shares.   Third, the overall daily turnover is much higher for the A-share market than the H- or N-share market, indicating the A-share market is more speculative and more liquid.   Fourth, the average relative bid-ask spread is much lower for the A shares than the H or N shares. This suggests that the trading costs are much lower in the A-share market for these companies.   Table 3 reports the number of tradable A, H, N and nontradable shares as a percentage total number of shares as of December 31, 2003 for the 29 firms.   Overall, the number of H shares accounts for the majority of the tradable shares, and the percentage of nontradable shares ranges from 34.04% to 75.71% with an average of 55.48%.

Figure 1 plots the A-share price premium relative to H shares over the period of 1993 to 2003 for each of the 29 firms.   These premiums exhibit very large variations over time and across the firms.   Figure 2 plots the monthly A-share premiums relative to H shares for the average of the 29 firms.   We observe that the average A-share premium reached its lowest point of −20% (in fact an A-share price discount) in July 1994.   It then increased over time and reached its highs of 1279% in March 1999 and 1245% in December 2000. In December 2003, the average A-share premium dropped to 137%. We next explain these large time- and firm-varying A-share premiums with both time-series and panel-data analyses.

4. Empirical results

4.1. Time-series analysis of the share price difference

4.1.1. Time-series tests of the differential required returns hypothesis

If the share price premiums reflect differential required returns between domestic and foreign investors, they may be able to forecast differences in realized returns between domestic and foreign investors. As in Bailey and Jagtiani (1994), we expect a negative association between the A-share price premium at time t-1 and the realized difference between A-share and H-share returns at time t. Table 4 reports estimates of the time-series regressions of realized A- to H-share (A- to N-share, and H- to N-share) return differences on the natural log of lagged share price premiums. We correct for first-order serially-correlated residuals using the Prais-Winsten (1954) transformed regression estimator.

Table 4 shows that the coefficients on the lagged share price premium are all negative. For the regression of the difference between A- and H-share returns, 16 out of the 29 firms had significantly negative coefficient on the lagged A- to H-share price premium. For the return difference between A and N shares, 6 out of the 7 firms had significantly negative coefficient on the lagged A- to N-share price premium. For the return difference between H and N shares, all the 7 firms had significantly negative coefficient on the lagged H- to N-share price premium. Note that the H- to N-share price premium, $PREM_{HN,it}$, is calculated as $(P_{H,it} - P_{N,it}) / P_{N,it}$. These results suggest that, for the majority of the companies that cross listed in both mainland China and Hong Kong or New York, differential required returns between domestic and foreign investors can explain part of the share price premiums.

4.1.2. Investor sentiment and stock returns

We now examine whether the stock returns of the cross-listed companies are affected by both the world market portfolio and the home and local market investment sentiment.

Ideally, the world market portfolio we use should measure the 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 except for ADRs) to proxy for the world 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 world market portfolio. The U.S. market portfolio returns thus serve two purposes in this paper: they measure both the world market portfolio returns and the U.S. market portfolio returns.

To examine whether the stock returns are affected by market-specific investor sentiment, we regress each firm's A-share (H-share and N-share) returns on the value-weighted NYSE/AMEX/NASDAQ market portfolio returns, the Hang Seng Index returns, and the Shanghai or Shenzhen market returns depending on where the A share is traded. The regressions are specified as follows:

$$r_{A,it} = a_{A,i} + b_{A,US,i}US_t + b_{A,HK,i}HK_t + b_{A,CH,i}CH_t + m_{A,it}, \tag{1}$$

$$r_{H,it} = a_{H,i} + b_{H,US,i}US_t + b_{H,HK,i}HK_t + b_{H,CH,i}CH_t + m_{H,it}, \tag{2}$$

$$r_{N,it} = a_{N,i} + b_{N,US,i}US_t + b_{N,HK,i}HK_t + b_{N,CH,i}CH_t + m_{N,it}, \tag{3}$$

where $r_{A,it}$, $r_{H,it}$, and $r_{N,it}$ are the A-, H- and N-share returns for firm i on day t, respectively. US_t is the U.S. 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. $\alpha_{A,i}$, $\alpha_{H,i}$ and $\alpha_{N,i}$ are constant terms, the coefficients on the market returns are βs, and $\mu_{A,it}$, $\mu_{H,it}$ and $\mu_{N,it}$ are random error terms.

Table 5 reports the beta coefficients of the regressions of the A-, H- and N-share returns for each of the 29 firms. It shows that for all the A-share stocks, their betas on

the Chinese market returns are significantly positive at the 1% level. However, only 2 firms have statistically significant Hong Kong market beta, and only 3 firms have significant U.S. market betas. This suggests that A-share stocks are traded in severely segmented markets, and most of them do not have significant exposure to the Hong Kong and the U.S. markets. This 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, Table 5 shows that their Hong Kong market betas are all significantly positive, and 21 out of the 29 firms also have significantly positive Chinese market beta. All but three H shares' U.S. 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 in Wang and Jiang (2004).

For the seven N-share stocks, Table 5 indicates that their U.S. market betas and Hong Kong market betas are all significantly positive, and the U.S. market betas are greater than the Hong Kong market betas for 3 out of the 7 stocks. In addition, 4 stocks also have significantly positive Chinese market betas. This suggests that the majority of the N shares are exposed to the risks in all the three markets, and N shares can also be used for international diversification purpose.

In summary, the results on market betas suggest that the cross-listed stocks are all traded in segmented markets, and A-, H- and N-share returns are influenced by market-specific investor sentiments. We next examine how different investor sentiments, along with other previously discussed factors, can explain the time-varying

share price premiums for each company.

4.1.3. Time-series regressions of share price premiums on various factors

This section performs time-series regressions of share price premiums on various explanatory variables to test the hypotheses described in Section 2.   Potential factors to explain the share price differences include: (1) differential required rate of returns, (2) the proportion of nontradable shares, (3) differential demand elasticities, (4) market-specific investor sentiment, (5) liquidity and transaction costs, (6) asymmetric information, and (7) differential degrees of investor speculation.   We next discuss the proxy variables for each factor in turn.

Differential required returns

The asset pricing model suggests that differences in A-share and H-share multifactor betas yield differences in A-share and H-share required returns and, thus A- and H-share price differences.   The same logic applies to the A- and N-share, H- and N-share price differences.   Similar to Bailey and Jagtiani (1994), we estimate $\beta_{A,US}$ - $\beta_{H,US}$ with time-series regressions of the difference in each firm's A- and H-share returns on the three market portfolio returns. $\beta_{A,HK}$ - $\beta_{H,HK}$ and $\beta_{A,CH}$ - $\beta_{H,CH}$ are estimated similarly. However, these estimated beta differences are not time-varying, we can only include them as explanatory variables in our cross-sectional regressions of the share price premiums.   But recall that we have tested the differential required rate of return argument with the time-series test in Section 4.1.1.

Proportion of nontradable shares

The nontradable hypothesis maintains that different perceptions on nontradable shares between Chinese investors and foreign investors cause the A-share price premiums to be

higher for firms with greater proportion of nontradable shares. We could use the proportion of nontradable shares in the time-series regressions to explain the A-share price premiums relative to the H and N shares. However, for most Chinese firms in our sample, the lack of change of their proportions of nontradable shares over time makes it infeasible to include this variable in the time-series regressions. We can only include it as an explanatory variable in our cross-sectional regressions of the share price premiums.

Investment alternatives

The hypothesis of differential demand elasticities states that A-share price premiums increase with the difference in the demand elasticity between the foreign-share and the A-share markets. As in Sun and Tong, we use the amount of government issues to proxy for the amount of investment substitutes for the A-share stocks. Greater government bond issues should be associated with higher demand elasticity for Chinese investors, all else equal. Similar to Stulz and Wasserfallen (1995) and Domowitz et al. (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 shares.[1] We expect the A-share price premiums relative to H and N shares to decrease with both the amount of government bond issues and the ratio of A shares to H plus N shares outstanding.

Market-specific investor sentiment

To examine the impact of market-specific investor sentiment on the share price premiums, we include the U.S., Hong Kong and Chinese market portfolio returns in the regressions of the share price premiums.

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[1] None of the 29 cross-listed firms in our sample issued B shares.

<u>Differential degrees of speculative trading</u>

We use share turnover and stock return variance 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. Because more speculative trading tends to be associated with higher return volatility, we also use the daily return variance to proxy for the degree of speculative trading in each market. However, because the Shanghai and Shenzhen markets impose a ±10% daily limit on stock returns, the observed daily variance of Chinese stocks may have understated the degree of speculative trading for Chinese investors.

To investigate the role of investor speculation in the share price premiums, we include relative daily turnover (the ratio of the turnovers of the two markets) and relative return variance (the ratio of the variances of the two markets) in the regressions to explain the share price premiums. A-share (H-share or N-share) daily turnover is defined as the ratio of A-share (H-share or N-share) daily trading volume to the number of A (H or N) shares outstanding. Daily return variance is calculated as the squared market-model residuals estimated from equations (1) to (3). We expect the share price premiums to increase with the relative share turnover rate and the relative return variance.

<u>Liquidity</u>

As in Amihud and Mendelson (1986), 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, A-to N-share spread, and H- to N-share spread to measure the relative liquidity for different markets. Our liquidity hypothesis maintains that the A- to

H-share (A- to N-share, or H- to N-share) price premiums decrease with the ratio of A- to H-share (A- to N-share, or H- to N-share) spread.

Asymmetric information

We use a firm's total market value of equity to proxy for the asymmetric information between domestic investors and foreign investors. We expect that the A-share price premiums and the H- and N-share price difference 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 large traders, and firm size may also proxy for the extent of market manipulation.

Tables 6 reports each firm's time-series regression of the natural log of the A- to H-share price premiums on the U.S., Hong Kong, and Chinese market index returns, the ratio of A- to H-share turnover, the ratio of A- to H-share bid-ask spread, the log of the ratio of A- to H-share variance, the log of the amount of government bond issue, and the one-day lagged value of A- to H-share price premium. The lagged value of the share price premium is included as a regressor in this admittedly *ad hoc* specification to control for omitted variables. Domowitz et al. (1997), Sun and Tong (2000) also use the lagged dependent variable in their share price premium regressions. Results are similar if we use the A- to H-share price premiums without the log form. Heteroskedasticity-consistent t statistics are reported in brackets. The regressions correct for first-order serially-correlated residuals using the Prais-Winsten (1954) transformed regression estimator.

Table 6 shows that the coefficients of the Heng Seng index return and the Shanghai or Shenzhen market index returns are statistically significant for all the firms in our sample. But the coefficients of the U.S. market returns are only statistically significant for 6 firms, and these coefficients are much smaller in magnitude compared with those of the Hong Kong and the Chinese market returns. As expected, this suggests that the A-

to H-share price premiums are strongly influenced by investor sentiments in the Hong Kong and Chinese markets, but not the U.S. market.

Table 6 also indicates that the coefficient on the ratio of A- to H-share turnover is significantly positive for 15 firms, and the coefficient on the ratio of A- to H-share variance is significantly positive for 7 firms in the sample. This suggests that for the majority of the firms, their time-varying A- to H-share price premiums can be partly explained by the greater degree of speculative behavior in the A-share market.

We also observe that most of the coefficients on the ratio of A- to H-share bid-ask spread are negative, with 14 of them statistically significant. This suggests that for these 14 firms, their A-share price premiums tend to decrease when their A-share markets become less liquid relative to their H-share markets. In addition, Table 6 shows that most of the coefficients on the amount of government bond issue are negative, with 14 of them statistically significant, providing support for the differential demand elasticities hypothesis.

Table 7 reports the time-series regressions of the natural log of the A- to N-share price premiums for each of the 7 firms that have both A and N shares. The coefficients of all the three market returns are statistically significant for all the firms in our sample. As expected, this suggests that the A- to N-share price premiums are strongly influenced by investor sentiments in the U.S., Hong Kong and Chinese markets. In addition, we observe that the coefficients on the relative share turnover are significantly positive for 6 out of the 7 firms, suggesting that differential degrees of speculative trading is an important factor to explain the A- to N-share price premiums. The ratio of bid-ask spread is only significant at the 10% level for 1 firm, and the amount of government bond issue is significant for 2 firms in our sample. These findings suggest that liquidity as measured by the trading costs and the size of the government bond are not important factors to explain the time-varying A- to N-share price premiums.

Table 8 reports the time-series regressions of the natural log of the H- to N-share

price premiums for each of the 7 firms that have both H and N shares. It shows that the H- to N-share price premiums are mainly explained by the investor sentiments in the U.S. and the Hong Kong markets.

In summary, combining our time-series analysis from Sections 4.1.1 to 4.1.3, we conclude that market-specific investor sentiment is the most important factor in explaining the changes in share price premium over time. There is evidence that factors such as differential required returns, differential degrees of speculative trading, differential demand elasticities and liquidity are also useful to explain the A-share price premiums relative to H and N shares.

4.2. Cross-sectional time-series analysis of the share price difference

Now we turn to the panel-data regressions to examine the determinants of the share price premiums. Table 9 reports the random-effect generalized least squares (GLS) regressions of the share price premiums on all the factors discussed earlier. Panels A, B and C of Table 9 report the regression results that explain the A- to H-share, A- to N-share, and H- to N-share premiums, respectively.

For the regression of the A- to H-share price premiums, the coefficients on $\beta_{A,HK}$ - $\beta_{H,HK}$ and $\beta_{A,CH}$ - $\beta_{H,CH}$ are significantly negative. This is consistent with the hypothesis that the A- to H-share price premium 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 U.S. market returns is only significant at the 10% level with a much smaller coefficient. This suggests that the sentiments of the Hong Kong and Chinese investors play an important role in explaining the variation of the A- to H-share premiums. Moreover, the coefficients on the relative share turnover and the relative share variance 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, supporting the liquidity hypothesis. The significantly negative coefficient on the government bond variable lends support to the differential demand elasticity hypothesis. However, the ratio of A shares to H plus N shares outstanding is insignificant, suggesting a firm's relative supply of A shares versus foreign shares is not associated with the A-share premium. Panel A also shows that a firm's A- to H-share premium increases significantly with its proportion of nontradable shares. This result supports the view that different perceptions about nontradable shares between A-share investors and H-share investors cause the A-share price premiums to be higher for firms with greater proportion of nontradable shares. Moreover, the significantly negative coefficient on the firm-size variable is consistent with the asymmetric information hypothesis that the A-share price premiums are lower for larger firms whose information is more accessible to foreign investors.

Now we turn to the panel data regression of the A- to N-share premium in Panel B. Except for the beta differences, the A- to N-share price premiums can be explained by similar factors that explain the A- to H-share price premiums. The insignificant coefficients on the beta differences are inconsistent with the differential required returns hypothesis.

Panel C of Table 9 reports the panel-data regression of the H- to N-share price premiums. We drop the government bond variable and the ratio of the number of A shares to the number of H plus N shares outstanding because these variables do not measure different demand elasticities between the H- and N-share investors. Results indicate that the H- and N-share price difference is largely explained by the market portfolio returns of the three markets. Moreover, larger firms experience smaller price difference between H and N shares. Although the coefficients on $\beta_{A,CH} - \beta_{H,CH}$ and the variance ratio are statistically significant, their signs are hard to explain. These results suggest that the major explanation for the price difference between the H and N shares is

market-specific investor sentiment and asymmetric information. The insignificance of the relative share turnover, the ratio of H- to N-share bid-ask spread, and the proportion of nontradable shares may suggest that H-share and N-share markets have similar degrees of investor speculation, similar levels of transaction costs, and similar views about nontradable shares.

In summary, our time-series and panel data analyses suggest that the determinants of the A- to H-share price premiums are very similar to those of the A- to N-share price premiums. We find evidence that all the seven factors considered in this paper are able to explain partly the A-share price premiums. Results also indicate that the H- and N-share price difference is mainly due to different investor sentiments of different markets, and due to asymmetric information between H- and N-share investors about Chinese firms.

5. Experiences from other countries

This section reviews studies that examine the price difference between a firm's restricted shares that are available only to domestic investors and its unrestricted shares that are available to foreign investors. Our focus is on comparisons between restricted and unrestricted shares that have identical voting rights and cash flow rights.[2]

The Swiss experience

Stulz and Wasserfallen (1995) examine the price difference for 19 Swiss firms that have both restricted R shares and unrestricted U shares from January 2, 1985 to December 27, 1989. The restricted shares are only available to domestic investors, and the unrestricted U shares are only available to foreign investors. All of these firms had two types of U shares at the beginning of 1985: U shares with voting rights (bearer shares)

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[2] Kunz and Angel (1996) perform a thorough analysis on the price difference for classes of shares with different voting rights.

and U shares without voting rights (participation certificates).

Stulz and Wasserfallen develop and test a theory on why self-imposed foreign ownership restriction exists. Their model shows that if the demand functions for domestic shares differ for foreign and domestic investors, a firm seeking financing by issuing shares will find it advantageous to price discriminate between the two classes of buyers be selling shares at different prices to domestic and foreign investors. In particular, price discrimination with a higher price for unrestricted shares takes place only if the demand from foreign investors is less price-elastic than the demand from domestic investors.

The empirical evidence of their paper indicates that world betas do not matter for the pricing of unrestricted shares. Further, even controlling for betas, there is evidence that asset supplies (as measured by total face value of unrestricted shares/face value of restricted shares) matters. In addition, Stulz and Wasserfallen (1995) closely examine the case of a Swiss firm, Nestle. They find that following the announcement of Nestle that it would allow foreign investors to buy registered shares with a limit of 3% for any investor, there was a 25% fall in the value of unrestricted shares during the week of the announcement. It suggests that an increase in the supply of unrestricted shares leads to a fall in their price because foreign investors have a downward-sloping demand curve for U shares. However, the dramatic loss in value of the U shares takes place against an increase in the market value of Nestle of 10% as measured by the total value of all three categories of shares. Hence the Nestle announcement increases firm value as we would expect.

The Finnish experience

Hietala (1989) examines the price difference between restricted and unrestricted stocks in the Finnish stock markets. The restricted Finnish stocks are not allowed to be sold to foreign investors, while the unrestricted Finnish stocks are allowed to be owned

by both Finnish and foreign investors. In all other respects restricted and unrestricted shares are identical: they have equal voting rights and equal rights to monetary distributions. Exceptions for insurance companies, at most 20% of the shares of any Finnish company are allowed to be owned by foreign investors. Prior to 1983, the restriction on foreign investors' holdings of Finnish stocks were not binding, and domestic investors owned all the restricted shares and most unrestricted shares. There was a common price for both stocks. From 1983, demand for unrestricted shares from foreign investors surged. From January 1984, the HSE began to quote companies' unrestricted and restricted stocks separately.

In addition, Finnish investors were not allowed to invest in foreign securities before January 1, 1986 without special permission from the Bank of Finland.   No short selling was allowed for the stocks listed on the HSE, and, due to the lack of an options market in Finland before 1988, it was difficult for an investor to try to even approximate a short position in any restricted or unrestricted Finnish stock.

 Hietala's (1989) sample includes 23 companies that had both restricted and unrestricted stocks listed for the period of January 1984 to June 1985. The premium is calculated as the difference between unrestricted and restricted prices divided by the restricted price. Hietala finds that the mean monthly premiums on unrestricted stocks range from 11.7% in April 1985 to 41% in June 1984. The author tests whether an unrestricted stock is traded at a price premium relative to the corresponding restricted stock is because foreign investors require a lower rate of return on this stock than domestic investors do. The paper's empirical evidence supports this view.

The Mexican Experience

Domowitz, Glen and Madhavan (1997) examine the price difference for Mexican A series stocks and B series stocks. For a nonfinancial Mexican company, the A series shares are open only to Mexican individuals or Mexican-controlled institutions. Shares

have full voting rights and must collectively represent the majority of voting rights.   The
B Series shares are open to all investors, regardless of nationality.   B Series shares have
full voting rights, but cannot collectively represent the majority of voting shares.

Domowitz et al. examine 24 equity series on a daily basis and 46 equity series on a
weekly basis issued by 21 Mexican firms over the period 1990-1993. They find that the
average B-series premium relative to A series ranges from 4.13% in 1990 and increases to
12.44% in 1992 before falling to 9.90% in 1993.   They test whether the B-series
premium arise from the following two sources: (1) differences in the relative valuation of
cash flows by domestic and foreign investors, combined with price discrimination by
domestic entrepreneurs as described by Stulz and Wasserfallen (1995), and (2)
differences in the liquidity of the market for restricted and unrestricted shares.

Their empirical results provide support for the Stulz-Wasserfallen hypothesis,
emphasizing the relative scarcity of unrestricted shares. The price premium is positively
related to proxies for foreign demand and is negatively related to the relative supply of
unrestricted shares measured by the ratio of the firm's unrestricted to total shares
outstanding. However, a proxy for relative liquidity in the two series--the ratio of
unrestricted to total trading volumes—cannot explain the time-series and cross-sectional
patterns in observed premiums.

The Thai experience

Bailey and Jagtiani (1994) examine the price difference between shares traded on the
Main Board and the Alien Board for the same companies for the period of January 1988
to December 1992.   Thai investors faced severe restrictions or outright prohibitions on
foreign currency transaction, foreign securities investment, and foreign currency
derivatives during most of the sample period. Domestic investors trade shares on the
Main Board.   Foreign investors have been prohibited from borrowing local currency and
cannot take majority ownership of Thai corporations. They trade shares on the Alien

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Board.   Main and Alien Board shares are identical in all other respects, such as dividends, voting rights, and procedures for settlement and registration.

Bailey and Jagtiani (1994) compute the Alien Board price premium as the natural log of the ratio of Alien Board and Main Board share prices of the same firm. For the 27 firms in their sample, there is considerable cross-sectional and time-series variation in the average price premiums. The average monthly Alien Board price premium ranges from –0.1% to 53%. Bailey and Jagtiani test the following four explanations for the behavior of Alien Board price premiums. (1) The Alien Board premium is due to a lower foreign risk-adjusted required return.   (2) Foreign demand curves for Thai equities may be downward-sloping.   (3) Foreign investors will offer relatively high prices for relatively liquid Alien Board listings. (4) Alien Board price premiums are higher for larger, better-known firms for which it is easiest for foreign investors to acquire or produce information.   Their cross-sectional evidence is consistent with the downward-sloping demand, liquidity, and information theories, but is inconsistent with the hypothesis that a higher Alien Board beta should yield a higher required return and thus a lower Alien Board price premium. This suggests that forces other than required return differentials affect the cross-sectional variation in Alien Board price premiums.   However, their time-series analysis suggests that differences in risk loadings and risk premiums explain some (but not completely) of the time-series behavior of the price differences.

The eleven-country experience

Bailey, Chung and Kang (1999) study factors that affect the price difference between restricted shares and unrestricted shares for eight developing countries (China, Indonesia, Korea, Malaysia, Mexico, the Philippines, Taiwan, and Thailand) and three developed countries (Norway, Singapore, Switzerland) for the period of January 1988 to February 1996.   The foreign premium is defined as the difference between unrestricted and restricted prices divided by the restricted price.   They find that the foreign premiums

vary widely through time and across countries. Except for China, the average monthly premiums are positive, and are particularly large for several Southeast Asian countries including Indonesia (32.9%), Malaysia (29.2%), Singapore (32.4%), the Philippines (32.6%) and Thailand (24.8%).

Bailey et al. test two explanations to explain the foreign premiums (1) differential required rates between domestic and foreign investors, and (2) increase in foreign demand for unrestricted shares driving up foreign premiums for those securities. Their empirical results suggest that differences in required return of investors of different nationalities cannot comprehensively explain the foreign-share premiums. However, their findings lend support to the foreign demand explanation. In particular, they find that increased flows of funds into internationally-oriented U.S. mutual funds are associated with larger foreign premiums. Moreover, good information in the form of a high country credit rating or large firm size is associated with larger foreign premiums. Finally, the foreign premiums increase with the ratio of unrestricted to restricted share turnover, suggesting that foreign investors pay more for liquidity.

In summary, experiences from the aforementioned foreign countries strongly suggest that the differential demand elasticities between domestic and foreign investors is a critical factor that influence the foreign share price premiums. There is also support that difference in required returns between domestic and foreign investors explain some but not every country's foreign share price premium. Factors of liquidity and information quality can also explain the price difference between restricted and unrestricted shares for some of the countries.

6. Conclusions

This paper empirically examines the determinants of the price difference between Chinese A shares that are restricted to domestic investors and Chinese H and N shares

that can only be traded by Hong Kong and foreign investors. For the 29 cross-listed firms, we observe large cross-sectional and time-series variations for the A-share price premiums relative to the matching H and N shares. This paper tests several theories that may explain the A-share price premiums.

The results of our firm-by-firm time-series analysis indicate that market-specific investor sentiment is the most important factor in explaining the changes in share price premium over time. There is evidence that differential required returns, differential degrees of speculative trading, differential investment alternatives and liquidity are also useful in explaining the time-varying A-share price premiums.

Results from our cross-sectional and time-series regressions confirm the usefulness of the factors of market-specific investor sentiment, differential degrees of speculative trading, differential investment alternatives and liquidity in explaining the A-share price premiums. In addition, the panel-data regression results support the view that different perceptions about nontradable shares between A-share investors and H-share investors cause the A-share price premiums to be higher for firms with greater proportion of nontradable shares. In addition, we find that the A-share price premiums are lower for larger firms. This is consistent with the view that information asymmetry between domestic and foreign investors is less severe for larger firms whose information is more accessible to foreign investors. However, our panel-data regressions only provide weak support for the differential required return hypothesis. The beta differences are only negatively related to the A- to H-share price premiums, not the A- to N-share price premiums.

Our findings are of interest to regulators, issuing firms and investors. Results suggest that investing in H and N shares help international investors diversify their portfolios. In spite of the diversification benefits, we find that on average, domestic investors have lower required returns than foreign investors. This suggests that in general, Chinese companies cannot obtain lower cost of capital by listing overseas. In

addition, the lower transaction costs of the A-share markets compared with the H- and N-share markets imply that seeking greater liquidity is not the motive for Chinese companies to cross list their stocks. These results contrast with the conventional wisdom that firms cross list overseas to benefit from a lower cost of capital and greater liquidity. These findings help us understand the roles of government policies and investor/firm behavior in the A-share premiums.

In addition, the results that the A-share price premiums change with the availability of investment alternatives, market sentiment, and the proportion of nontradable shares suggest that Chinese stock prices are greatly influenced by the demand and supply of common stocks. Our findings also indicate that improved corporate governance in the form of lower proportions of nontradable shares and better information disclosure contribute to lower A-share price premiums. The evidence that the A-share price premiums is affected by the differential degrees of speculative trading suggests that polices that discourage investor short-term behavior will help lower the A-share price premiums.

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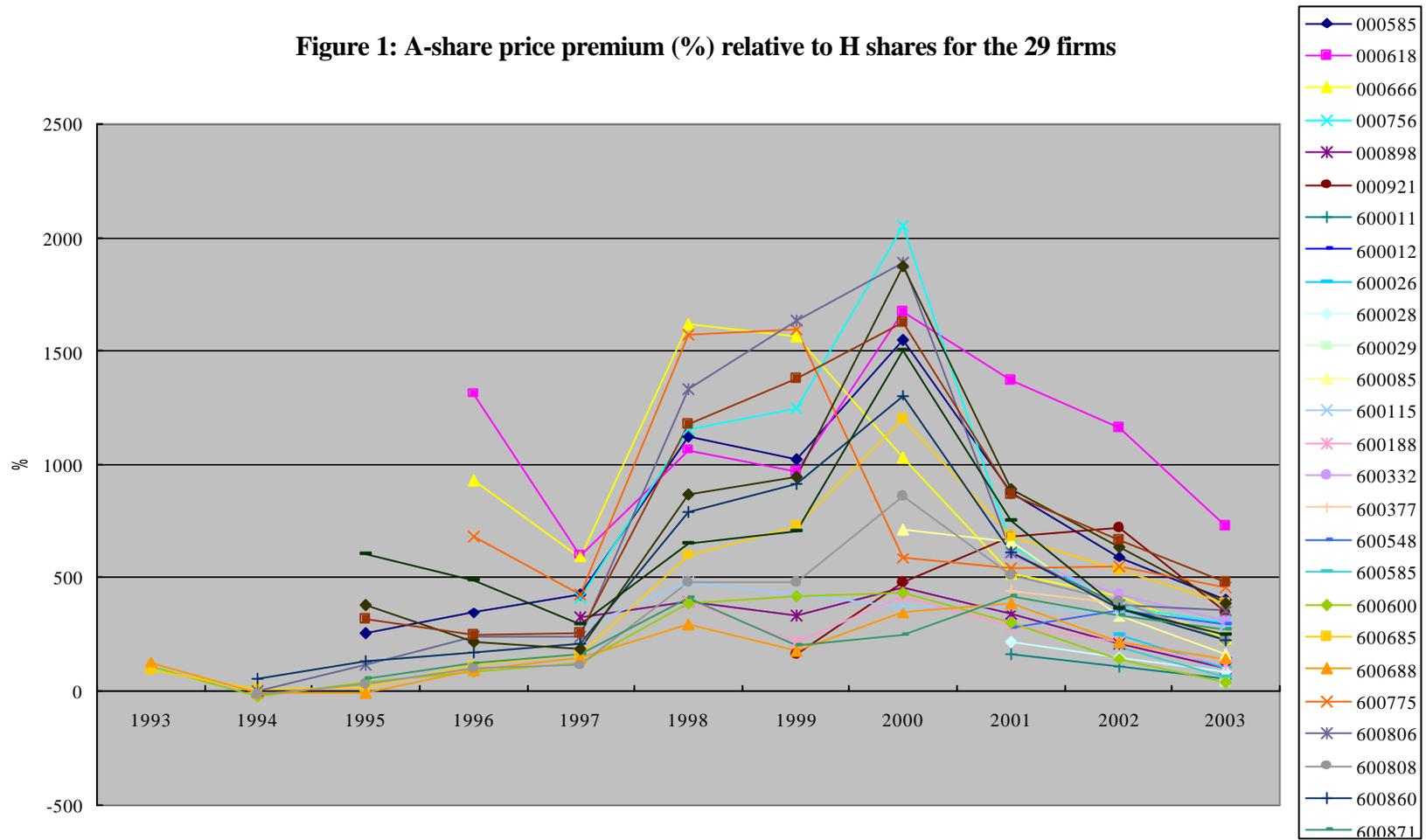**Figure 1: A-share price premium (%) relative to H shares for the 29 firms**

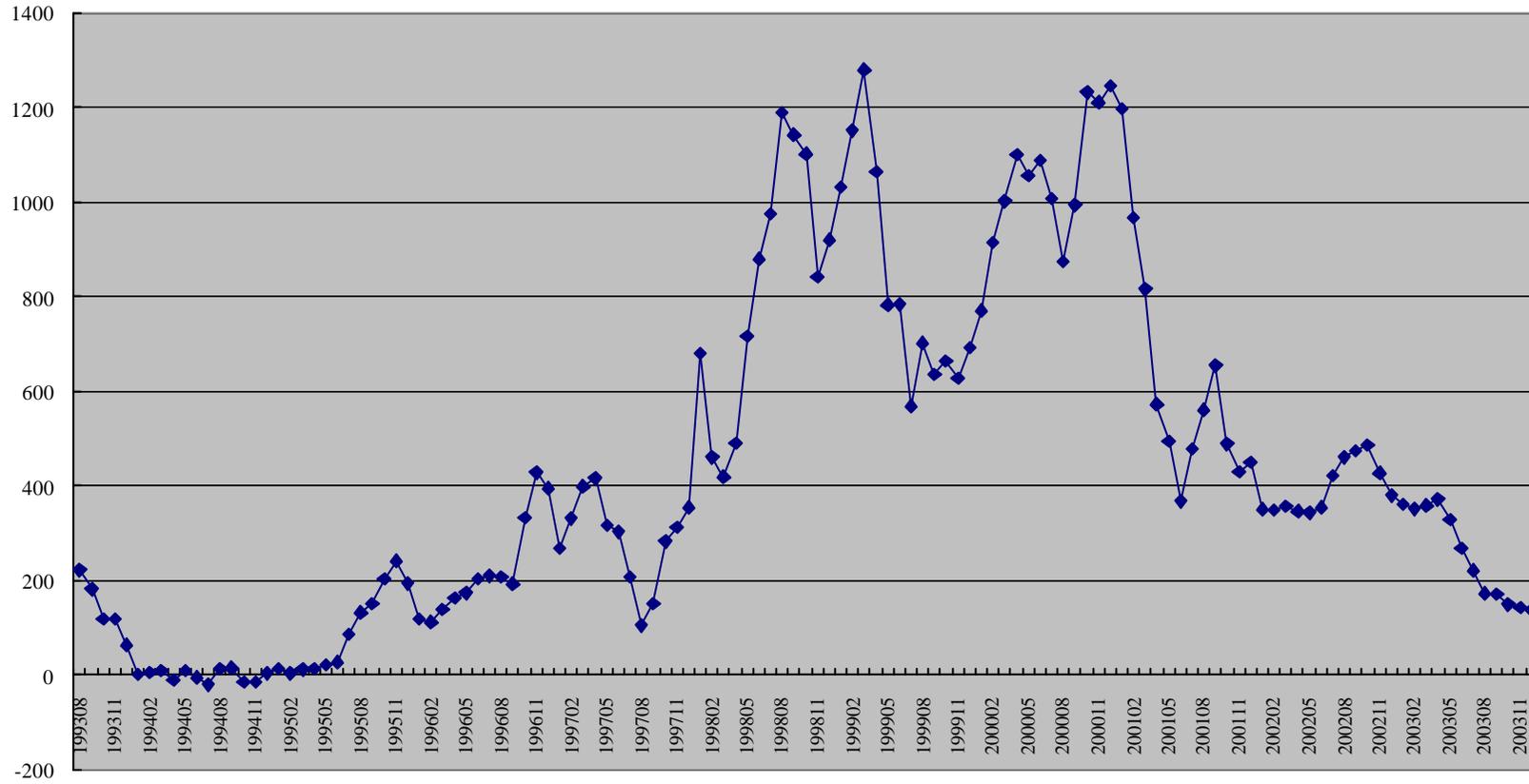**Figure 2: Average monthly A-share premiums(%) relative to H shares**

Table 1
A-share stock code, company name, listing type, and listing date for 29 firms that have both A and H shares or both A and N shares prior to December 31, 2003.

A-share code	Company Name	Types of stock listed	A-share listing date	H-share listing date	N-share listing date
000585	Northeast Electric Development Co Ltd	H/A	19951213	19950706	
000618	Jilin Chemical Industrial Co Ltd	H/N/A	19961015	19950523	19950522
000666	Jingwei Textile Machinery Co Ltd	H/A	19961210	19960202	
000756	Shandong Xinhua Pharmaceutical Co Ltd	H/A	19970806	19961231	
000898	Angang New Steel Co Ltd	H/A	19971225	19970724	
000921	Guangdong Kelon Electrical Holdings Co Ltd	H/A	19990713	19960723	
600011	Huaneng Power International, Inc	H/N/A	20011206	19980121	19941006
600012	Anhui Expressway Co Ltd	H/A	20030107	19961113	
600026	China Shipping Development Co Ltd	H/A	20020523	19941111	
600028	China Petroleum & Chemical Corporation	H/N/A	20010808	20001019	20001018
600029	China Southern Airlines Co Ltd	H/N/A	20030725	19970731	19970730
600085	Tong Ren Tang Technologies Co Ltd	H/A	19970625	20001031	
600115	China Eastern Airlines Corporation Ltd	H/N/A	19971105	19970205	19970204
600188	Yanzhou Coal Mining Co Ltd	H/N/A	19980701	19980401	19980331
600332	Guangzhou Pharmaceutical Co Ltd	H/A	20010206	19971030	
600377	Jiangsu Expressway Co Ltd	H/A	20010116	19970627	
600548	Shenzhen Expressway Co Ltd	H/A	20011225	19970312	
600585	Anhui Conch Cement Co Ltd	H/A	20020207	19971021	
600600	Tsingtao Brewery Co Ltd	H/A	19930827	19930715	
600685	Guangzhou Shipyard International Co Ltd	H/A	19931028	19930806	
600688	Sinopec Shanghai Petrochemical Co Ltd	H/N/A	19931108	19930726	19930726
600775	Nanjing Panda Electronic Co Ltd	H/A	19961118	19960502	
600806	Jiaoda Kunji High-Tech Co Ltd	H/A	19940103	19931207	
600808	Maanshan Iron & Steel Co Ltd	H/A	19940106	19931103	
600860	Beiren Printing Machinery Holdings Ltd	H/A	19940506	19930806	
600871	Sinopec Yizheng Chemical Fibre Co Ltd	H/A	19950411	19940329	
600874	Tianjin Capital Environmental Protection Co Ltd	H/A	19950630	19940517	
600875	Dongfang Electrical Machinery Co Ltd	H/A	19951010	19940606	
600876	Luoyang Glass Co Ltd	H/A	19951031	19940708	

Table 2 Summary statistics for each of the 29 firms
A-share premium relative to H and N shares is defined as $(P_A - P_H) / P_H$ and $(P_A - P_N) / P_N$, respectively. A-share (H-share or N-share) daily turnover is defined as trading volume divided by the number of A (H or N) shares outstanding. Market value is the product of share price and the number of shares outstanding. Relative bid-ask spread equals 200 x (ask price – bid price)/(ask price + bid price).

Stock code	Company name	Share class	Sample starting date	Average share price in RMB	Average A-share premium (%)	Average daily return (%)	Standard deviation of daily return (%)	Average daily volume	Average No. of shares outstanding	Average Daily turnover	Average market value (in RMB millions)	Average relative bid-ask spread (%)
000585	Northeast Electric Development Co Ltd	A	19951213	6.09		0.0404	4.0064	2171883	95811387	0.0288	539.230	0.2270
		H		0.87	800.05	0.0849	5.2377	3904958	257950000	0.0151	225.633	2.2973
000618	Jilin Chemical Industrial Co Ltd	A	19961015	8.53		0.0585	3.4019	2018983	122929344	0.0219	753.072	0.2226
		H		0.82	1107.85	0.0553	5.1098	18747661	964777984	0.0194	794.299	1.5925
		N		0.82	1117.64	0.0503	4.8966	1907543	195085003	0.0109	171.426	2.1293
000666	Jingwei Textile Machinery Co Ltd	A	19961210	9.15		-0.0187	2.8910	1365717	108133468	0.0226	855.906	0.1983
		H		1.38	855.80	0.1385	4.7351	2006152	180047896	0.0112	247.445	2.2349
000756	Shandong Xinhua Pharmaceutical Co Ltd	A	19970806	11.31		-0.0143	2.5401	391148	40522044	0.0179	423.942	0.2179
		H		1.48	924.72	0.0370	3.8472	950910	149608355	0.0064	221.509	2.3615
000898	Angang New Steel Co Ltd	A	19971225	3.91		0.0323	2.0517	6778875	520012712	0.0154	2061.441	0.2735
		H		1.16	306.70	0.1318	4.4132	20314144	890000000	0.0228	1033.089	1.2276
000921	Guangdong Kelon Electrical Holdings Co Ltd	A	19990713	13.07		-0.0882	1.9674	1261352	138201133	0.0101	1642.767	0.1472
		H		2.86	504.34	0.0399	4.1235	4330180	459590016	0.0094	1315.311	1.1423
600011	Huaneng Power International, Inc	A	20011206	13.50		0.0811	1.8413	2989536	146604999	0.0204	1978.966	0.1386
		H		7.93	80.53	0.2833	2.3751	19241260	1507225182	0.0128	11983.590	0.7751
		N		7.95	80.42	0.2748	2.4087	2093121	234018729	0.0098	1783.896	0.2320
600012	Anhui Expressway Co Ltd	A	20030107	5.47		0.1409	2.2165	10174122	249999999	0.0407	1367.278	0.1935
		H		2.26	145.12	0.2433	2.5741	4679135	493009984	0.0095	1116.070	0.9904
600026	China Shipping Development Co Ltd	A	20020523	6.03		0.2005	2.3242	13015098	350000000	0.0372	2110.965	0.1850
		H		2.79	156.61	0.3215	2.7719	9861913	1296000000	0.0076	3612.139	0.8122
600028	China Petroleum & Chemical Corporation	A	20010808	3.59		0.0586	1.6451	28127311	2557038648	0.0114	9141.649	0.2859
		H		1.62	136.62	0.2142	2.2269	49879378	16780480512	0.0030	27209.800	0.8871
		N		1.62	136.61	0.2146	2.5958	8839878	915146807	0.0085	1617.856	0.5322
600029	China Southern Airlines Co Ltd	A	20030725	4.19		0.2005	1.4725	31278270	999999994	0.0313	4188.679	0.2570
		H		2.97	41.61	0.3022	2.8297	14125223	1174177024	0.0120	3490.053	0.9679
		N		2.98	41.11	0.4100	3.0868	880837	73902830	0.0116	222.110	1.1909
600085	Tong Ren Tang Technologies Co Ltd	A	20001031	32.69		0.0215	1.5640	607447	93559574	0.0066	1844.286	0.1909
		H		8.13	405.17	0.2023	2.7470	605049	72800000	0.0083	591.576	1.3932
600115	China Eastern Airlines Corporation Ltd	A	19971105	4.80		0.0024	2.1765	4021793	297679325	0.0136	1426.547	0.2383
		H		1.05	380.02	0.0023	3.9750	19673609	1566948992	0.0126	1643.272	1.1767
		N		1.05	381.17	0.0199	3.5297	1708945	154114135	0.0105	144.069	1.6111

Code	Company Name	Class	Date									
600188	Yanzhou Coal Mining Co Ltd	A	19980701	9.09		0.0650	2.2251	1880486	128372161	0.0178	1199.144	0.1927
		H		2.82	266.72	0.1454	3.9567	8618140	931589300	0.0093	2691.278	1.0842
		N		2.83	265.42	0.1637	3.8838	245730	86451220	0.0087	184.645	1.2197
600332	Guangzhou Pharmaceutical Co Ltd	A	20010206	11.14		-0.0946	1.9448	783660	78000000	0.0100	868.932	0.1564
		H		2.13	441.99	0.1577	3.1968	1554367	219900000	0.0071	467.914	1.3316
600377	Jiangsu Expressway Co Ltd	A	20010116	10.12		0.0767	1.8653	2102526	150000000	0.0140	1518.624	0.1800
		H		2.37	357.00	0.1976	2.4680	5808498	1222000000	0.0048	2900.429	1.0386
600548	Shenzhen Expressway Co Ltd	A	20011225	8.22		0.0533	1.8764	3613946	104479000	0.0346	859.145	0.1753
		H		2.00	325.71	0.1254	2.0839	4859566	747500032	0.0065	1497.563	0.8653
600585	Anhui Conch Cement Co Ltd	A	20020207	7.84		0.1424	1.7074	3326170	199999999	0.0166	1567.973	0.1905
		H		4.22	125.50	0.3535	3.1765	2622661	366122838	0.0071	1578.557	1.1652
600600	Tsingtao Brewery Co Ltd	A	19930827	7.23		0.0347	3.0846	1772994	125974188	0.0157	947.234	0.1827
		H		3.50	189.54	0.0836	3.8488	1381503	349840415	0.0039	1237.844	1.5930
600685	Guangzhou Shipyard International Co Ltd	A	19931028	5.09		0.0565	3.4363	2524873	124812476	0.0205	634.606	0.2288
		H		1.65	431.29	0.0354	4.3339	1201214	157398000	0.0076	259.132	2.6570
600688	Sinopec Shanghai Petrochemical Co Ltd	A	19931108	3.90		0.0507	2.9959	11781865	689154396	0.0167	2696.495	0.2669
		H		1.73	176.48	0.0809	3.8769	20076982	2137067647	0.0091	3542.059	1.0832
		N		1.73	176.48	0.0745	3.5899	3338678	354757713	0.0110	615.156	0.8864
600775	Nanjing Panda Electronic Co Ltd	A	19961118	11.62		0.0116	2.7663	732284	45401760	0.0179	561.969	0.2070
		H		1.80	815.92	0.1605	5.3440	3349869	242000000	0.0138	436.798	1.6844
600806	Jiaoda Kunji High-Tech Co Ltd	A	19940103	7.13		0.0807	3.8818	1889475	59563095	0.0318	426.368	0.2035
		H		1.55	672.04	0.0290	4.7504	272471	65000000	0.0042	101.002	3.4791
600808	Maanshan Iron & Steel Co Ltd	A	19940106	3.13		0.0564	3.1053	11538254	587018633	0.0198	1844.148	0.3214
		H		1.22	314.72	0.0254	4.1608	23791931	1732929024	0.0137	2107.000	1.2416
600860	Beiren Printing Machinery Holdings Ltd	A	19940506	7.03		0.0611	3.5003	1199342	51224027	0.0250	361.970	0.2132
		H		1.69	487.96	0.0543	3.6461	591036	100000000	0.0059	168.980	2.4643
600871	Sinopec Yizheng Chemical Fibre Co Ltd	A	19950411	5.02		0.0729	3.1833	5076120	200000000	0.0254	1003.735	0.2303
		H		1.67	251.42	0.0401	4.3636	21529614	1393336506	0.0154	2313.637	0.9952
600874	Tianjin Capital Environmental Protection Co Ltd	A	19950630	6.47		0.0724	2.9295	2315456	109456599	0.0227	709.387	0.2770
		H		1.12	621.62	0.1202	4.8246	5206609	340000000	0.0153	379.095	1.7584
600875	Dongfang Electrical Machinery Co Ltd	A	19951010	7.63		0.0127	2.8788	1171302	60000000	0.0195	457.747	0.2134
		H		1.39	736.48	0.1096	4.6154	1166948	170000000	0.0069	235.699	2.7436
600876	Luoyang Glass Co Ltd	A	19951031	6.84		-0.0237	2.8987	1062860	49356486	0.0216	336.815	0.2451
		H		1.08	821.16	0.0208	4.6765	2396876	250000000	0.0096	269.308	2.3256
Total		A		7.51		0.0384	2.9592	3851423	222754105	0.0205	1147.442	0.2221
		H		1.89	511.30	0.0891	4.2566	8748834	873315032	0.0104	1543.842	1.7714
		N		1.99	407.97	0.1009	3.8069	2524731	270310822	0.0103	505.429	1.2640

Table 3
Number of tradable A, H, N and nontradable shares as a percentage total number of shares as of December 31, 2003 for the 29 firms.

Stock code	Company name	Percentage of tradable A shares	Percentage of tradable H shares	Percentage of tradable N shares	Percentage of nontradable shares
000585	Northeast Electric Development Co Ltd	16.48	29.52	0.00	54.00
000618	Jilin Chemical Industrial Co Ltd	5.52	26.62	1.66	66.20
000666	Jingwei Textile Machinery Co Ltd	33.11	29.97	0.00	36.92
000756	Shandong Xinhua Pharmaceutical Co Ltd	16.67	32.81	0.00	50.52
000898	Angang New Steel Co Ltd	25.39	30.05	0.00	44.56
000921	Guangdong Kelon Electrical Holdings Co Ltd	19.64	46.32	0.00	34.04
600011	Huaneng Power International, Inc	2.35	24.47	3.60	69.58
600012	Anhui Expressway Co Ltd	15.07	29.72	0.00	55.21
600026	China Shipping Development Co Ltd	10.51	39.04	0.00	50.45
600028	China Petroleum & Chemical Corporation	3.16	18.96	2.18	75.71
600029	China Southern Airlines Co Ltd	22.47	26.30	1.78	49.44
600085	Tong Ren Tang Technologies Co Ltd	24.63	18.00	0.00	57.37
600115	China Eastern Airlines Corporation Ltd	6.06	31.72	1.61	60.61
600188	Yanzhou Coal Mining Co Ltd	6.23	35.33	0.60	57.84
600332	Guangzhou Pharmaceutical Co Ltd	9.62	27.13	0.00	63.26
600377	Jiangsu Expressway Co Ltd	2.98	24.21	0.00	72.82
600548	Shenzhen Expressway Co Ltd	4.77	34.28	0.00	60.95
600585	Anhui Conch Cement Co Ltd	15.94	34.50	0.00	49.56
600600	Tsingtao Brewery Co Ltd	18.87	38.40	0.00	42.74
600685	Guangzhou Shipyard International Co Ltd	25.51	31.78	0.00	42.71
600688	Sinopec Shanghai Petrochemical Co Ltd	9.70	31.41	2.95	55.94
600775	Nanjing Panda Electronic Co Ltd	8.85	36.95	0.00	54.20
600806	Jiaoda Kunji High-Tech Co Ltd	24.49	26.53	0.00	48.98
600808	Maanshan Iron & Steel Co Ltd	9.30	26.82	0.00	63.88
600860	Beiren Printing Machinery Holdings Ltd	17.06	23.70	0.00	59.24
600871	Sinopec Yizheng Chemical Fibre Co Ltd	5.00	35.00	0.00	60.00
600874	Tianjin Capital Environmental Protection Co Ltd	8.42	25.56	0.00	66.02
600875	Dongfang Electrical Machinery Co Ltd	13.33	37.78	0.00	48.89
600876	Luoyang Glass Co Ltd	7.14	35.71	0.00	57.14
Average		13.39	30.64	0.50	55.48

Table 4 Forecasting return difference with share price premiums

This table reports time-series regressions of the return difference on the log of lagged share price premium. Heteroskedasticity-consistent t statistics are reported in brackets. The regressions correct for first-order serially-correlated residuals using the Prais-Winsten (1954) transformed regression estimator.

Stock code	$r_{A,t} - r_{H,t}$				$r_{A,t} - r_{N,t}$				$r_{H,t} - r_{N,t}$			
	Log(Prem$_{AH,t-1}$)	Constant	N	R^2	Log(Prem$_{AN,t-1}$)	Constant	N	R^2	Log(Prem$_{AH,t-1}$)	Constant	N	R^2
000585	-0.0051**	0.0096*	1760	0.0024								
	[2.15]	[1.87]										
000618	-0.0096**	0.0236**	1471	0.0047	-0.0083**	0.0207**	1471	0.0038	-0.4546***	0.0034***	1471	0.2490
	[2.37]	[2.29]			[2.06]	[2.06]			[9.43]	[3.92]		
000666	-0.0027	0.0043	1644	0.0011								
	[1.29]	[1.01]										
000756	-0.0024	0.0044	1494	0.0013								
	[1.47]	[1.27]										
000898	-0.0043	0.0049	1394	0.0016								
	[1.47]	[1.33]										
000921	-0.004	0.0051	983	0.0021								
	[1.33]	[0.96]										
600011	-0.0127**	0.0052	440	0.0109	-0.0118**	0.005	440	0.0099	-0.3664***	-0.0001	440	0.1768
	[2.24]	[1.61]			[2.11]	[1.48]			[6.70]	[0.19]		
600012	-0.0192	0.0161	230	0.0067								
	[1.14]	[1.08]										
600026	-0.0039	0.002	382	0.0017								
	[0.80]	[0.41]										
600028	-0.0072	0.0046	514	0.0048	-0.0066	0.0045	514	0.0036	-0.4847***	-0.0002	514	0.2442
	[1.35]	[0.97]			[1.34]	[1.02]			[6.36]	[0.32]		
600029	-0.1303***	0.0440***	101	0.0742	-0.1301***	0.0436***	101	0.0746	-0.5948***	-0.002	101	0.2891
	[2.89]	[2.81]			[3.06]	[2.92]			[6.93]	[1.42]		
600085	-0.0009	-0.0007	739	0.0002								
	[0.33]	[0.19]										
600115	-0.0201***	0.0310***	1338	0.011	-0.0167***	0.0259***	1338	0.0085	-0.3445***	0.0012**	1338	0.1746
	[3.80]	[3.90]			[3.20]	[3.29]			[13.09]	[2.09]		
600188	-0.0072*	0.0079*	1196	0.0035	-0.0063*	0.0072*	1196	0.003	-0.2750***	-0.0005	1196	0.1430
	[1.94]	[1.78]			[1.80]	[1.69]			[9.73]	[0.95]		
600332	-0.0160***	0.0238***	684	0.0186								
	[2.97]	[2.82]										
600377	-0.0041	0.0049	689	0.0015								
	[0.86]	[0.68]										
600548	-0.0045	0.0059	464	0.0015								
	[0.81]	[0.72]										
600585	-0.0024	-0.0006	440	0.001								
	[0.56]	[0.16]										
600600	-0.0030*	0.0023	2449	0.002								
	[1.93]	[1.36]										
600685	-0.0026**	0.0036*	2416	0.0019								
	[2.06]	[1.69]										
600688	-0.0038**	0.0029	2246	0.0024	-0.0034*	0.0027	2246	0.0021	-0.3233***	0.0002	2246	0.1708
	[2.14]	[1.53]			[1.94]	[1.43]			[6.59]	[0.63]		
600775	-0.0058**	0.0104*	1662	0.0032								
	[2.08]	[1.80]										

600806	-0.0028**	0.0053**	2359	0.0022
	[1.97]	[2.13]		
600808	-0.0028**	0.0034*	2358	0.0021
	[1.99]	[1.80]		
600860	-0.0034**	0.0051*	2290	0.0026
	[2.13]	[1.87]		
600871	-0.0070**	0.0084**	2047	0.0037
	[2.22]	[2.08]		
600874	-0.0047*	0.0081	1999	0.0022
	[1.70]	[1.51]		
600875	-0.0025	0.0038	1930	0.0011
	[1.38]	[1.06]		
600876	-0.0025	0.0046	1905	0.0011
	[1.26]	[1.09]		

*, **, and *** indicate significant at the 10%, 5%; and 1% levels, respectively.

Table 5 Estimates of market betas
This table reports the betas for the U.S., Hong Kong and Chinese A-share markets for the A-, H- and N-share returns. The starting date for each firm's beta estimation is listed in Table2. The beta estimation period for each firm ends on December 31, 2003.

stock code	A-share return					H-share return					N-share return				
	$\beta_{A,US}$	$\beta_{A,HK}$	$\beta_{A,CH}$	N	R^2	$\beta_{H,US}$	$\beta_{H,HK}$	$\beta_{H,CH}$	N	R^2	$\beta_{N,US}$	$\beta_{N,HK}$	$\beta_{N,CH}$	N	R^2
000585	0.0062	0.0269	1.0185***	1745	0.2475	-0.0307	0.9748***	0.1828***	1746	0.126					
	[0.13]	[0.86]	[17.37]			[0.25]	[11.64]	[2.97]							
000618	0.0031	0.0025	1.0081***	1566	0.3203	-0.0627	0.9883***	0.2629***	1567	0.152	0.5905***	0.4403***	0.1826***	1567	0.0691
	[0.07]	[0.07]	[24.90]			[0.57]	[12.90]	[4.25]			[5.04]	[3.82]	[2.96]		
000666	0.0169	-0.0003	1.1048***	1627	0.461	0.0789	0.8200***	0.1765***	1628	0.12					
	[0.45]	[0.01]	[32.77]			[0.85]	[9.94]	[2.58]							
000756	-0.0103	-0.0454*	1.0507***	1477	0.411	0.0177	0.6782***	0.2759***	1478	0.138					
	[0.26]	[1.65]	[27.52]			[0.23]	[8.04]	[4.06]							
000898	0.0036	0.0309	0.8075***	1380	0.3506	0.0361	1.0324***	0.3598***	1380	0.197					
	[0.08]	[0.97]	[22.56]			[0.36]	[12.56]	[4.92]							
000921	0.0107	-0.0172	0.9052***	972	0.4119	0.0736	0.7309***	0.1706*	973	0.08					
	[0.31]	[0.49]	[19.85]			[0.76]	[8.10]	[1.86]							
600011	-0.0355	0.0471	0.9008***	469	0.4275	-0.1635**	0.6084***	0.0046	470	0.086	0.2938***	0.4222***	0.0077	470	0.0743
	[0.77]	[1.05]	[15.69]			[2.00]	[6.45]	[0.06]			[3.57]	[4.99]	[0.10]		
600012	0.0303	-0.0623	1.4233***	224	0.5771	0.0637	0.9737***	0.0106	225	0.161					
	[0.30]	[0.84]	[12.20]			[0.41]	[6.44]	[0.07]							
600026	0.0303	-0.0343	1.2122***	374	0.4059	-0.0193	1.1517***	0.1635	375	0.22					
	[0.38]	[0.40]	[13.49]			[0.24]	[11.41]	[1.39]							
600028	0.0214	0.0315	0.8015***	545	0.5343	0.0264	0.5723***	0.1047	546	0.121	0.4509***	0.3138***	0.0975	546	0.1008
	[0.62]	[0.89]	[16.02]			[0.35]	[7.13]	[1.65]			[4.57]	[3.59]	[1.57]		
600029	0.0005	0.1624	0.8047***	105	0.3438	0.5638*	1.0983***	-0.0988	106	0.208	1.1256**	1.2974***	-0.21	106	0.2903
	[0.00]	[1.57]	[6.51]			[1.81]	[4.51]	[0.50]			[2.57]	[4.49]	[1.06]		
600085	0.0004	-0.0387	0.7768***	725	0.4593	-0.0172	0.4076***	0.2105***	724	0.054					
	[0.01]	[1.15]	[18.89]			[0.20]	[5.07]	[3.24]							
600115	-0.0094	0.0615**	0.9392***	1418	0.413	0.0847	1.0096***	0.1789***	1419	0.22	0.5366***	0.6610***	0.1149*	1419	0.1787
	[0.28]	[2.52]	[27.31]			[1.06]	[14.01]	[2.70]			[7.10]	[11.22]	[1.79]		
600188	-0.0331	0.0006	1.0120***	1267	0.4706	0.032	0.6797***	0.0784	1268	0.085	0.2378***	0.5374***	0.1505**	1268	0.0714
	[0.91]	[0.02]	[30.16]			[0.33]	[8.86]	[1.10]			[2.59]	[7.62]	[2.32]		
600332	0.014	-0.0114	1.1252***	669	0.6499	0.2077**	0.5103***	0.4448***	670	0.106					

	[0.41]	[0.35]	[29.63]			[2.33]	[4.72]	[5.37]							
600377	0.1045**	-0.0539	0.6045***	674	0.2096	-0.0134	0.5945***	0.1642***	675	0.114					
	[2.42]	[1.14]	[9.99]			[0.19]	[7.39]	[2.83]							
600548	0.005	-0.0052	0.9345***	459	0.4811	0.022	0.6054***	0.0972*	459	0.114					
	[0.13]	[0.08]	[21.51]			[0.26]	[6.88]	[1.81]							
600585	0.0288	0.0307	0.8844***	433	0.4254	0.1278	0.8308***	0.3110**	434	0.11					
	[0.77]	[0.53]	[13.00]			[1.24]	[6.18]	[2.08]							
600600	0.0388	0.0125	0.9668***	2423	0.6112	0.0238	0.7730***	0.0377	2424	0.129					
	[1.20]	[0.61]	[27.51]			[0.31]	[12.00]	[1.42]							
600685	0.0127	0.0024	1.0474***	2387	0.5908	0.0234	0.7676***	0.0853***	2388	0.104					
	[0.32]	[0.09]	[29.80]			[0.25]	[12.93]	[3.41]							
600688	0.0524	-0.006	0.9116***	2373	0.5877	-0.0094	0.9489***	0.0486**	2374	0.19	0.7021***	0.4888***	0.0512**	2374	0.1229
	[1.42]	[0.27]	[29.76]			[0.10]	[18.19]	[2.26]							
600775	0.0302	0.0383	0.9399***	1642	0.3416	-0.0885	0.9806***	0.2084***	1643	0.127					
	[0.73]	[1.07]	[24.95]			[0.85]	[11.50]	[2.67]							
600806	-0.0419	0.0369	1.0928***	2335	0.4998	0.1283	0.5588***	0.0528	2336	0.047					
	[0.83]	[1.11]	[28.85]			[1.36]	[7.71]	[1.33]							
600808	0.0676	-0.0018	0.9186***	2334	0.544	0.0115	1.0209***	0.1229***	2335	0.201					
	[1.28]	[0.07]	[23.60]			[0.13]	[15.33]	[4.90]							
600860	-0.0325	0.0001	1.1072***	2260	0.6245	0.031	0.6673***	0.0759***	2261	0.107					
	[0.96]	[0.01]	[40.66]			[0.35]	[10.55]	[2.76]							
600871	0.0925**	-0.013	1.1357***	2028	0.5119	-0.0882	0.9559***	0.1441***	2029	0.154					
	[2.55]	[0.52]	[22.63]			[1.06]	[14.20]	[2.94]							
600874	0.0813*	0.009	0.9686***	1977	0.3585	-0.137	1.0054***	0.1788***	1978	0.142					
	[1.93]	[0.32]	[27.48]			[1.47]	[13.37]	[2.67]							
600875	0.0351	0.0302	1.1054***	1910	0.4863	0.0279	0.7408***	0.1974***	1911	0.091					
	[0.99]	[1.19]	[36.93]			[0.27]	[10.07]	[3.64]							
600876	0.0008	-0.0256	1.0013***	1890	0.3895	-0.0084	0.8812***	0.2200***	1891	0.124					
	[0.02]	[0.78]	[29.11]			[0.09]	[11.16]	[3.95]							

*, **, and *** indicate significant at the 10%, 5%; and 1% levels, respectively.

Table 6 Time-series regressions of A- to H-share price premiums on various factors

This table reports the time-series regressions of the natural log of the A- to H-share price premiums on the specified variables. Heteroskedasticity-consistent t statistics are reported in brackets. The regressions correct for first-order serially-correlated residuals using the Prais-Winsten (1954) transformed regression estimator.

Stock code	000585	000618	000666	000756	000898	000921	600011	600012	600026	600028	600029	600085	600115	600188	600332
U.S.market return	-0.2645	-0.113	-0.1777	-0.0886	-0.1872*	-0.0975	0.1502	-0.0879	0.0702	0.0163	-0.7387*	0.0086	-0.1768**	0.0344	-0.2493**
	[1.46]	[0.89]	[1.57]	[0.92]	[1.81]	[0.99]	[1.52]	[0.49]	[0.63]	[0.18]	[1.99]	[0.09]	[1.98]	[0.34]	[2.51]
Heng Seng Index return	-0.8818***	-0.7231***	-0.6515***	-0.6260***	-0.8954***	-0.7026***	-0.5939***	-1.0204***	-1.2007***	-0.5075***	-0.7924***	-0.4394***	-0.9025***	-0.6211***	-0.5564***
	[7.12]	[7.79]	[6.63]	[7.03]	[9.60]	[7.34]	[5.67]	[6.55]	[10.26]	[5.84]	[2.88]	[4.89]	[11.28]	[7.74]	[4.99]
Shanghai or Shenzhen market return	0.6106***	0.6975***	0.7881***	0.6609***	0.3923***	0.7253***	0.8104***	1.3197***	1.1293***	0.6458***	0.8419***	0.5943***	0.6412***	0.8686***	0.6824***
	[4.25]	[6.70]	[8.05]	[7.24]	[4.60]	[7.06]	[7.50]	[8.45]	[7.80]	[9.62]	[3.34]	[8.71]	[7.55]	[9.65]	[6.72]
Ratio of A- to H-share turnover	0.0001**	0.0004***	0.0001***	0.0000	0.0044***	0.0000	0.0010***	0.0001	0.0002***	0.0006***	0.0021**	0.0001	0.0015***	0.0004	0.0002
	[2.38]	[2.73]	[2.59]	[1.13]	[7.09]	[0.08]	[3.76]	[0.63]	[3.07]	[4.01]	[2.10]	[1.39]	[4.23]	[1.64]	[1.36]
Log (ratio of A- to H-share variance)	0.0001	0.0008	0.0009*	0.0003	0.0006*	0.0008	0.0000	-0.0001	0.0000	-0.0002	0.0003	0.0000	0.0006*	0.0002	-0.0001
	[0.10]	[1.60]	[1.79]	[0.70]	[1.80]	[1.54]	[0.03]	[0.22]	[0.05]	[0.60]	[0.27]	[0.10]	[1.84]	[0.44]	[0.15]
Ratio of A- to H-share bid-ask spread	-0.0788***	-0.0246**	-0.0002	-0.0107**	0.0097	-0.0082	-0.0087	0.0101	0.0223**	-0.0167	-0.0123	-0.0008	-0.0557***	0.0061	-0.0155***
	[3.49]	[2.11]	[0.02]	[2.25]	[0.69]	[1.21]	[1.54]	[0.68]	[2.03]	[1.26]	[0.33]	[0.29]	[3.88]	[1.06]	[2.62]
Log (government bond issue amount)	-0.0360***	-0.0006	-0.0236**	-0.0202**	-0.0221***	-0.0164***	0.0172		-0.1526	-0.0146		-0.0344***	-0.0065*	-0.009	-0.014
	[3.11]	[0.09]	[2.19]	[1.97]	[2.74]	[2.61]	[0.77]		[1.17]	[1.11]		[2.70]	[1.66]	[1.44]	[1.06]
Log(Prem$_{AH,t-1}$)	0.9744***	0.9865***	0.9874***	0.9912***	0.9847***	0.9970***	0.9828***	0.9769***	0.9836***	0.9898***	0.8384***	0.9876***	0.9697***	0.9910***	0.9756***
	[160.39]	[233.43]	[224.00]	[302.61]	[224.25]	[349.90]	[150.84]	[64.47]	[159.71]	[143.11]	[17.07]	[209.47]	[174.31]	[223.99]	[136.32]
Constant	0.3689***	0.0418	0.2230**	0.1897**	0.1992***	0.1462***	-0.1427	0.0167	1.3375	0.1375	0.0540**	0.3129***	0.1121***	0.0843	0.1602
	[3.34]	[0.69]	[2.27]	[2.03]	[2.77]	[2.80]	[0.72]	[1.35]	[1.17]	[1.17]	[2.53]	[2.71]	[2.93]	[1.50]	[1.31]
Number of Observations	847	930	1010	1013	1072	899	428	213	355	498	96	664	1257	1100	616
R^2	0.9913	0.9868	0.9951	0.9971	0.9911	0.9938	0.9881	0.9632	0.9951	0.9905	0.8368	0.9963	0.979	0.988	0.9878

Table6 (continued)

Stock code	600377	600548	600585	600600	600685	600688	600775	600806	600808	600860	600871	600874	600875	600876
U.S.market return	0.1343	-0.0099	-0.1338	0.0114	-0.0319	-0.0036	0.1327	-0.2880*	-0.0553	-0.107	0.1591	0.2202**	-0.1099	-0.1284
	[1.55]	[0.12]	[1.26]	[0.12]	[0.25]	[0.03]	[1.11]	[1.69]	[0.53]	[0.80]	[1.59]	[2.04]	[0.84]	[1.10]
Heng Seng Index return	-0.6700***	-0.5676***	-0.7843***	-0.7844***	-0.7377***	-0.9536***	-0.9213***	-0.6087***	-1.0046***	-0.7773***	-0.9189***	-1.0285***	-0.7503***	-0.8976***
	[6.96]	[5.18]	[5.82]	[8.57]	[8.61]	[12.69]	[10.81]	[4.27]	[11.00]	[8.23]	[11.54]	[11.57]	[9.31]	[9.93]
Shanghai or Shenzhen market return	0.3884***	0.8000***	0.6489***	0.8295***	0.7693***	0.6396***	0.6131***	0.6496***	0.3309***	1.0059***	0.6874***	0.5090***	0.7290***	0.6004***
	[4.64]	[10.48]	[5.08]	[9.95]	[7.72]	[6.78]	[5.09]	[4.41]	[3.69]	[10.14]	[7.10]	[4.01]	[7.13]	[5.25]
Ratio of A- to H-share turnover	0.0000	0.0000	0.0003*	0.0000	0.0000*	0.0022***	0.0001	0.0000	0.0013***	0.0000	0.0018***	0.0001	0.0000***	0.0000
	[1.36]	[0.86]	[1.85]	[0.58]	[1.91]	[3.71]	[1.45]	[1.61]	[4.97]	[0.70]	[5.77]	[0.84]	[2.94]	[1.18]
Log (ratio of A- to H-share variance)	0.0001	0.0003	0.0008*	0.0004	0.0014***	0.0003	0.0003	0.0000	0.0012***	0.0004	0.0007	0.0008*	0.0008	0.0006
	[0.29]	[0.95]	[1.66]	[0.98]	[2.78]	[0.87]	[0.57]	[0.06]	[2.94]	[0.90]	[1.51]	[1.88]	[1.50]	[1.32]
Ratio of A- to H-share bid-ask spread	-0.0168***	0.0024	-0.0042	-0.0184***	-0.0924***	-0.0257**	-0.0105	-0.0044	-0.0174	-0.0197***	-0.0306***	-0.0132**	-0.0330***	-0.0102
	[3.64]	[0.65]	[1.12]	[2.88]	[4.82]	[2.30]	[1.15]	[0.28]	[1.04]	[2.65]	[3.75]	[2.36]	[2.62]	[1.17]
Log (government bond issue amount)	-0.0146	-0.1482*	-0.1625	-0.0134**	-0.0001	-0.0013	-0.008	-0.0127*	-0.0100**	-0.0124**	-0.0015	-0.0051	-0.0080*	-0.0105*
	[1.54]	[1.94]	[1.09]	[2.56]	[0.02]	[0.32]	[1.41]	[1.70]	[2.15]	[2.32]	[0.30]	[0.85]	[1.67]	[1.87]
Log($Prem_{AH,t-1}$)	0.9890***	0.9923***	0.9897***	0.9926***	0.9867***	0.9883***	0.9917***	0.9933***	0.9906***	0.9906***	0.9934***	0.9936***	0.9934***	0.9909***
	[180.67]	[172.72]	[135.73]	[370.26]	[281.96]	[227.73]	[265.89]	[248.65]	[277.49]	[330.46]	[207.98]	[320.09]	[341.31]	[260.43]
Constant	0.1449*	1.3040*	1.4256	0.1238***	0.0388	0.0288	0.0857*	0.1186*	0.1028**	0.1231**	0.0263	0.0585	0.0858**	0.1095**
	[1.68]	[1.95]	[1.09]	[2.68]	[0.88]	[0.78]	[1.66]	[1.78]	[2.32]	[2.52]	[0.65]	[1.09]	[2.01]	[2.08]
Number of Observations	625	432	412	1326	1237	1311	1236	836	1349	1151	1341	1279	1224	1256
R^2	0.9897	0.9908	0.9947	0.9951	0.9918	0.9859	0.9907	0.9927	0.993	0.9947	0.9839	0.9941	0.9933	0.9925

*, **, and *** indicate significant at the 10%, 5%; and 1% levels, respectively.

Table 7 Time-series regressions of A- to N-share price premiums on various factors

This table reports the time-series regressions of the natural log of the A- to N-share price premiums on the specified variables. Heteroskedasticity-consistent t statistics are reported in brackets. The regressions correct for first-order serially-correlated residuals using the Prais-Winsten (1954) transformed regression estimator.

Stock code	000618	600011	600028	600029	600115	600188	600688
U.S.market return	-0.6781***	-0.2554**	-0.4259***	-1.0195**	-0.6377***	-0.2271**	-0.6851***
	[5.42]	[2.56]	[3.80]	[2.27]	[7.99]	[2.31]	[6.30]
Heng Seng Index return	-0.3281***	-0.4086***	-0.2560***	-1.0002***	-0.6217***	-0.5573***	-0.4669***
	[3.05]	[4.28]	[2.68]	[3.14]	[9.43]	[6.77]	[4.35]
Shanghai or Shenzhen market return	0.7530***	0.8123***	0.6234***	1.1635***	0.7640***	0.8550***	0.7687***
	[7.36]	[7.78]	[8.65]	[4.68]	[9.41]	[9.30]	[8.65]
Ratio of A- to N-share turnover	0.0000**	0.0001**	0.0005***	0.0012***	0.0001*	0.0000	0.0002***
	[2.32]	[2.22]	[2.73]	[3.14]	[1.67]	[0.92]	[4.27]
Log (ratio of A- to N-share variance)	0.0008	0.0000	-0.0002	-0.0005	0.0005	0.0002	0.0007*
	[1.64]	[0.11]	[0.52]	[0.60]	[1.61]	[0.56]	[1.81]
Ratio of A- to N-share bid-ask spread	-0.0104*	-0.0011	-0.0003	0.0001	-0.0019	-0.0028	-0.0026
	[1.79]	[1.37]	[0.32]	[0.05]	[0.65]	[0.90]	[1.59]
Log (government bond issue amount)	0.0013	0.0055	-0.0178		-0.0114***	-0.0138**	-0.0048
	[0.19]	[0.26]	[1.52]		[2.78]	[2.18]	[1.15]
$Log(Prem_{AN,t-1})$	0.9922***	0.9831***	0.9862***	0.8294***	0.9809***	0.9883***	0.9924***
	[235.84]	[151.80]	[144.03]	[17.68]	[193.98]	[210.36]	[263.01]
Constant	0.0096	-0.0386	0.1639	0.0529***	0.1258***	0.1312**	0.0499
	[0.15]	[0.21]	[1.55]	[3.38]	[3.20]	[2.27]	[1.36]
Number of Observations	870	434	503	96	1196	987	1336
R^2	0.9863	0.9877	0.9919	0.8312	0.9789	0.9889	0.9871

*, **, and *** indicate significant at the 10%, 5%; and 1% levels, respectively.

Table 8 Time-series regressions of H- to N-share price premiums on various factors

This table reports the time-series regressions of the natural log of the H- to N-share price premiums on the specified variables. Heteroskedasticity-consistent t statistics are reported in brackets. The regressions correct for first-order serially-correlated residuals using the Prais-Winsten (1954) transformed regression estimator.

Stock code	000618	600011	600028	600029	600115	600188	600688
U.S.market return	-0.6778***	-0.3547***	-0.4450***	-0.1766	-0.4026***	-0.1983***	-0.6058***
	[6.12]	[7.05]	[6.13]	[0.83]	[7.08]	[3.11]	[10.66]
Heng Seng Index return	0.3971***	0.0623	0.1076**	-0.0085	0.2481***	0.1164**	0.3448***
	[3.67]	[1.31]	[2.19]	[0.06]	[4.64]	[2.15]	[5.64]
Shanghai or Shenzhen market return	0.0734*	-0.0137	0.0284	0.1318	0.0876**	-0.019	0.0202
	[1.73]	[0.32]	[0.86]	[0.90]	[2.15]	[0.37]	[1.28]
Ratio of H- to N-share turnover	0.0000	0.0001	0.0001	0.0008	0.0000	0.0000	0.0001
	[0.46]	[0.70]	[0.27]	[1.37]	[1.42]	[0.38]	[0.74]
Log (ratio of H- to N-share variance)	-0.0004	-0.0001	0.0002	-0.0001	-0.0002	-0.0004	-0.0006***
	[1.05]	[0.57]	[0.64]	[0.12]	[0.87]	[1.01]	[2.71]
Ratio of H- to N-share bid-ask spread	-0.0011*	-0.0001	0.0000	-0.0004	-0.0005	-0.0004	-0.0002
	[1.87]	[0.81]	[0.14]	[0.90]	[1.51]	[1.60]	[1.16]
Log(Prem$_{HN,t-1}$)	0.5992***	0.5342***	0.4464***	0.2951***	0.6515***	0.7195***	0.6205***
	[16.43]	[10.55]	[5.03]	[3.09]	[25.61]	[22.51]	[28.21]
Constant	0.0047***	0.0001	-0.0004	-0.0035	0.0024***	0.0002	0.0006
	[3.96]	[0.17]	[0.49]	[1.54]	[3.22]	[0.26]	[1.18]
Number of Observations	1360	428	500	95	1223	995	2061
R^2	0.4087	0.3751	0.3434	0.1235	0.4507	0.5297	0.4549

*, **, and *** indicate significant at the 10%, 5%; and 1% levels, respectively.

Table 9 Cross-sectional time-series regressions of the share price premiums

This table reports the 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.

Panel A: A- to H-share price premium		Panel B: A- to N-share price premium		Panel C: H- to N-share price premium	
$\beta_{US, A}$ - $\beta_{US,H}$	-0.001	$\beta_{US, A}$ - $\beta_{US,N}$	-0.0006	$\beta_{US, H}$ - $\beta_{US,N}$	0.0032
	[0.32]		[0.09]		[0.85]
$\beta_{HK, A}$ - $\beta_{HK, H}$	-0.0035*	$\beta_{HK, A}$ - $\beta_{HK, N}$	0.0091	$\beta_{HK, H}$ - $\beta_{HK, N}$	0.0058
	[1.85]		[1.13]		[1.50]
$\beta_{CH, A}$ - $\beta_{CH,H}$	-0.0037**	$\beta_{China, A}$ - $\beta_{China,N}$	-0.0225	$\beta_{China, H}$ - $\beta_{China,N}$	0.0207**
	[2.04]		[1.53]		[2.25]
U.S.market return	-0.0401*	U.S.market return	-0.5299***	U.S.market return	-0.4856***
	[1.93]		[13.55]		[21.46]
Heng Seng Index return	-0.8261***	Heng Seng Index return	-0.4918***	Heng Seng Index return	0.2847***
	[53.45]		[16.43]		[17.69]
Shanghai or Shenzhen market return	0.6899***	Shanghai or Shenzhen market return	0.7955***	Shanghai or Shenzhen market return	0.0382***
	[35.52]		[21.92]		[2.62]
Ratio of A- to H-share turnover	0.0000*	Ratio of A- to N-share turnover	0.0000**	Ratio of H- to N-share turnover	0.0000
	[1.92]		[2.26]		[0.21]
Log (ratio of A- to H-share variance)	0.0007***	Log (ratio of A- to N-share variance)	0.0005***	Log (ratio of H- to N-share variance)	-0.0004***
	[8.02]		[3.30]		[3.42]
Ratio of A- to H-share bid-ask spread	-0.0120***	Ratio of A- to N-share bid-ask spread	-0.0012**	Ratio of H- to N-share bid-ask spread	-0.0001
	[7.43]		[2.04]		[1.56]
Log (government bond issue amount)	-0.0068***	Log (government bond issue amount)	-0.0072***		
	[6.23]		[2.74]		

No. of A shares / No. of H and N shares	-0.0016	No. of A shares / No. of H and N shares	0.0203		
	[1.23]		[1.41]		
Proportion of nontradable shares	0.0106**	Proportion of nontradable shares	0.0531***	Proportion of nontradable shares	0.0061
	[2.43]		[2.63]		[0.75]
Log(total market value)	-0.0017***	Log(total market value)	-0.0056***	Log(total market value)	-0.0012**
	[4.09]		[2.69]		[2.18]
$Log(Prem_{AH,t-1})$	0.9944***	$Log(Prem_{AN,t-1})$	0.9944***	$Log(Prem_{HN,t-1})$	0.5560***
	[1964.07]		[716.13]		[56.56]
Constant	0.0911***	Constant	0.1524***	Constant	0.0181**
	[8.09]		[3.18]		[2.43]
Observations	26013	Observations	5422	Observations	6662
R^2	0.9956	R^2	0.9968	R^2	0.3599

*, **, and *** indicate significant at the 10%, 5%; and 1% levels, respectively.