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RMB exchange rate reform and cross listed stock price disparity

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RMB EXCHANGE RATE REFORM AND CROSS LISTED STOCK PRICE DISPARITY

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MPHIL

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RMB EXCHANGE RATE REFORM AND CROSS LISTED STOCK PRICE DISPARITY

by

RONG Yuqian

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ABSTRACT

RMB Exchange Rate Reform and Cross Listed Stock Price Disparity

by

RONG Yuqian

Master of Philosophy

A growing number of Chinese corporations have been listing their shares on foreign stock markets. Hong Kong Stock Exchange (HKEX) and New York Stock Exchange (NYSE) are their major targets. Taking China's exchange rate system reform as a unique event, I examine the price disparity between A-share and H-share (or ADR) using a sample of 28 Chinese companies listed in Shenzhen, Shanghai, Hong Kong, and New York. I conduct a panel-data investigation to examine the price disparity before and after the transition from the pegged to the managed floating exchange rate.

I have obtained several important findings in this study. First, RMB exchange rate reform in 2005 has significant effect on price disparity between A-shares and H-shares and also between A-share and ADR, which shows that relaxation of the exchange rate control brings about a clear convergence of A-share price with foreign share price. This result is robust with different models. Second, we also found that currency factor has significant effect on price premium between A-shares and foreign shares. Appreciation in RMB would lead to a decrease in price premium. In addition, exchange rate reform exerts its effect whether or not we take into account the impact from the Split-share structure reform.

DECLARATION

I declare that this is an original work based primarily on my own research, and I warrant that all citations of previous research, published or unpublished, have been duly acknowledged.

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(RONG Yuqian)

Date

CERTIFICATE OF APPROVAL OF THESIS

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by

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Master of Philosophy

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1. Introduction

Over the last several decades, many companies have raised capital outside of their home countries by listing their stocks on several international exchanges. Cross-border listing issue has attracted worldwide attention. There are two interesting research directions on this topic. One is to examine the reasons why companies decide to cross-list in foreign markets. There are several reasons such as low cost of capital (Black, 1974; Errunza and Losp, 1985); increase of liquidity (Tinic and West, 1974; Foerster and Karolyi, 1998), improvement of firm's information environment (Biddle and Suadagaran, 1992) and so forth. The second is to examine the price disparity between stocks listed on home market and those in foreign market. This study falls within the second direction.

Theoretically, according to the law of one price, financial assets which claim on same cash flow should trade at same price in different markets. However, in real world, stock price is not only determined by underlying assets but also affected by the location trade because of market segmentation (Errunza and Losqm, 1985). Price disparity exists between the share classes issued by the same companies in different markets has been studied for two decades. A growing literature documents several explanations on price disparity. Using Thailand as a target, Bailey and Jagtiain (1993) document that price differential is related with liquidity, information availability and currency risk. Stulz and Wasserfallen (1995) propose that difference in demand elasticity of two share classes lead to price differential. Domowitz.et.al. (1997) find evidence that restrictions on equity ownership segment the equity market in Mexico. There is a price premium for unrestricted stock. Kim (2000) claims that US inventors bear exchange rate risk even though ADRs are denominated in US dollar.

In China, a growing number of domestic companies pursue to list their stocks on foreign stock market. Hong Kong Stock Exchange (HKEX) and New York Stock Exchange (NYSE) are their major targets. Chinese cross-border listing attracts the big attentions of academics as following reasons. Firstly, Chinese stock market is a highly segmentation market. Secondly, domestic share, A-share, issued by Chinese companies are traded at premium relative to foreign share, rather than the usual discount in other financial markets (Thailand, Finnish and Mexico). Bailey (1994) first investigates this A-share price premium which is hard to explain quantitatively. He proposes that discount can be explained by the lack of substitute investment opportunities for stock investments. Over the years, a large number of literatures have put forward various explanations for the A-share price premium. There are mainly four explanations, namely, differential demanded hypothesis (Sun and Tong, 2000), differential liquidity hypothesis (Lee and Rui, 2007; Grossmann and Ozuna 2007), asymmetric information hypothesis (Chakravarty and Wu, 1998; Chan and Ynag, 2008) and differential risk hypothesis (Karolyi and Lian, 2003; Jiang and Steven, 2004). In all four explanations, previous scholars all assume the exchange rate regime is "normal". Actually, exchange rate regime control is one of important capital control which would affect stock price. China exchange rate regime reform in July, 21 2005 provides good opportunity for us to investigate this effect. We want to see how a switch of exchange rate regime affects this well-known price disparity and those related established result.

In this study, we try to answer three questions: firstly, how does the old exchange rate regime affect the price premium of A-share? Secondly, how does the exchange rate regime reform in July 2005 affect the price premium of A-share? We want to

investigate whether relaxation of exchange rate regime control lead to price converge of A-share and foreign share. Lastly, how does the A-share price premium differ before and after reform? Base on the findings of first two questions, we want to analyze how exactly currency factor affect on price premium before and after reform.

This paper contributes in the following two aspects. In the first place, the current literatures offer little evidence on the effect of exchange rate regime reform on A-share premium. Previous findings ignore the effect of exchange rate regime on A-share price premium by assuming it constant. This paper considers this reform factor into price premium which provide new explanation for Chinese A-share price premium puzzle. Secondly, Instead of B-share, H-share and ADR are used as study targets. Because B-share is allowed to hold by domestic investors since 2001, H-share and ADR still could be only held by foreign investors. H-share and ADR are more appropriate targets for us to study market segmentation. On the other hand, B-shares are still issued in Mainland China financial market. ADR and H-shares are issued in foreign country (location), they are more appropriate targets for studying location trade.

The rest of the thesis is organized as follows. In Section 2, we discuss background of Chinese stock market and unique event, exchange rate regime reform. Section 3 reviews the previous literatures related with price disparity in cross-listed stock share both foreign case and Chinese case. All literatures are categorized into four groups which are differential liquidity hypothesis; asymmetric information hypothesis; differential demand hypothesis and differential risk level hypothesis. Section 4 describes data and each variable in details. Panel-unit root and Panel co-integration results are reported in Section 5. Section 6 discusses the Benchmark Model

specification. Section 7 reports and interprets empirical results and robustness check. Conclusion and summary are presented in Section 8.

2. Background

2.1. Special Event in 2005- China exchange rate reform

Before 21 July 2005, China adopted a so-called official unified managed floating exchange rate regime. Under this regime, RMB was pegged with US dollar and heavily regulated by government. The bank of China (BOC) controlled the bulk of the retail foreign exchange transactions. On the other hand, People's Bank of China purchased almost 70% of the foreign exchange volume (Lin and Schramm, 2003). Under this condition, the RMB to the US dollar was maintained at constant level. It was a de-facto fixed exchange rate regime since 1993. Under this exchange rate regime, RMB was considered as a highly undervalued currency by other countries, and Chinese government has been under great pressure to revalue its currency and reform its exchange rate regime since then.

On July 21, 2005, Chinese government announced adoption of a managed floating exchange rate regime, based on market supply and demand, under which the exchange rate of the RMB would be managed in relation to a basket of currencies. It aims to improve the structure of socialist market economy and fully strengthen the role of financial market in allocating recourse (People's Bank of China). Under this new regime, RMB exchange rate immediately revalue bilateral rate by 2.1%, moving it from RMB 8.28 per USD to RMB 8.11 per USD. This new currency regime ended the decade-long fixed exchange rate regime and the RMB is no longer pegged to US dollar. After the reform, the Chinese exchange rate is more flexible and the RMB is allowed to move within a 0.3% band against the currency basket on a daily basis. Only one year after reform, the RMB/USD exchange rate appreciated over 5.5% (YI,

2008). Figure 1 provides the RMB over USD bilateral nominal exchange rate from 1998 to 2010. It shows a large decrease in exchange rate from reform date to the end of 2005. It means a large appreciation of RMB after the announcement of managed floating exchange rate regime. This reform was seen as a perception of RMB exchange rate revaluation, and it would have great influence on Chinese economy and even world economy.

2.2. Chinese equity market

In order to promote the healthy and stable development of socialist market economy and optimize the allocation of capital resources, the State Council authorized the People's Bank of China (PBC) to approve the establishment of the Shanghai Stock Exchange (SSE) in December 1990. Next year, China continued to establish Shenzhen Stock Exchange (SZSE) officially.

Currently, there are two types of shares traded in SSE and SZSE, A-share and B-share. The A-shares and B-shares are identical besides the different in ownership. The A-shares refer to those that are dominated and traded in Renminbi and restricted to domestic investors. The B-shares refer to foreign shares which are traded in foreign currency, it only available to foreign investors before February 2001.

Due to some historical reasons, A-shares can be classified as tradable shares and non-tradable shares. Both types have equal rights and obligations. Because the majorities of A-shares are issued by state-own enterprises, take Sinopec Shanghai Petrochem (Code: 600688) as an example, its shares including state shares, legal person shares, employee share and public share. In these four types, only public share are tradable shares. As shown in Figure 2, over 50% of total share outstanding is

non-tradable shares, and only 10% of total share is A-share tradable share. In order to deal with problem caused by the existence of non-tradable shares, China Security Regulatory Commission launched the Split-share structure reform in April 2005. The reform is designed to float the non-tradable legal person shares through the open market. The legal person shares could under the reform program and be converted to tradable A-shares. The converted A-shares are subject to a lockup period, which means holders of legal person shares are not allowed to sell these shares in the window of time. The lockup period usually lasts 12 months to 48 months. By the end of 2010, only 10 companies have not entered into reform program.

Chinese equity market has expanded dramatically. As at the end of 2009, SSE and SZSE boated over 1880 listed companies with a combined market capitalization of RMB 24.07 trillion (USD 3.59 trillion), which was 390 times the market value in 1991.

Although the Chinese Stock market has grown rapidly, it still cannot satisfy the faster growing demand for capital. Besides, there are other benefits associated with cross-border listing, such as an increase in liquidity and low cost of capital. Chinese companies never stop looking for ways to go into foreign capital markets in order to finance their expansion, reform, and restructuring. Hong Kong Stock Exchange (HKEX) and New York Stock Exchange (NYSE) are often their priority choices.

2.3. Foreign shares

2.3.1. H-share

As one of international financial center in the Asia region, Hong Kong has a long well-established and more transparent stock market compared to Mainland China.

Based on a special link with Mainland China, Hong Kong provides an important venue for Chinese firms to raising capital. In 1993, the first H-share, Tsingtao Brewery listed on the Hong Kong Stock Exchange (HKEx) and received 110 times over-subscription. In later the same month, Shanghai Petrochemical was also listed on HKEx and cross-listed on the New York Stock Exchange as ADR (American depository receipts). With the success of the Tsingtao Brewery, numerous Chinese firms, especially State-own enterprises list their shares on HKEx. By the end of November 2010, 124 companies had issued H shares on the HKEx Main Board and 36 companies on Growth Enterprise Market with a combined market capitalization HKD 5.26 trillion (USD 676.8 billion) . Among the 124 companies listed on Main Board, 66 have issued A-shares on the Shanghai or Shenzhen Stock Exchanges, and 21 of them also listed on New York Stock Exchanges as ADR.

There are other type shares with China concept called Red chips. It refers to the stock of Mainland China companies which are incorporate in Hong Kong and these companies are organized directly or indirectly by the department or corporation concern of Mainland China. By the end of November 2010, there are total 122 companies issued on HKEx with market capitalization over HKD 4.3 trillion (USD 558.2 billion). Table 1 provides market capitalization of H-share and Red chips in Main Board. By the end of 2009, it is over 25% of whole market capitalization of whole Hong Kong market. If we consider red chips, the percentage would be almost half of total market value.

2.3.2. American Depositary Receipt

Beside initial public offering in overseas, Chinese firms can also list their shares in foreign stock markets through the use of Deposit Receipts (DP). One of the most

common types of DP is ADR (American Depositary Receipt). ADR refers in particular to a certain amount of shares of non-US firm trade in US stock market. It represents the same claim on the underlying company as the shares trading in the home market, adjusted for the depository ratio. All transactions including buying the shares, dividend payments and capital gains are done in U.S Dollars. ADRs can be traded as easily as American shares for US investors on the secondary market. It helps US investors to archive international diversification without having direct access to foreign stock market. On the other hand, Stocks that trade using ADR have more liquidity than stocks that trade on the foreign exchange alone. ADRs may trade on exchanges such as the NYSE, or they may trade over-the-counter on the NADAQ. By the end of 2009, there are over 200 Chinese firms' ADRs listed on US stock market.

2.3.3. B-share

As we mentioned before, companies incorporated in Mainland China can issue two types of shares in China equity market. In order to attract foreign capital, companies issue B-share in either Shanghai Stock Exchange or Shenzhen Stock Exchange. There are 54 B-shares listed on the SHSE and 54 B-shares listed on SZSE by the end of 2010. Before 2001, B-share is only allowed to hold by foreign investors. In order to enhance the liquidity of the B-share market, Chinese Securities and Regulator Commission (CSRC) announced that Chinese residents can trade B-shares through foreign currency account after 19 February, 2001. This regulatory triggered a dramatic decline of B-share price discount relative to A-share price (Karolyi and Li, 2003; Lee et al., 2007). In this study, we exclude B-shares from our sample because

of this lifting of restrictions. We only consider H-share and ADR because they are still only allowed to trade by foreign investors.

3. Literature Review

Internationally, when price disparity exits between two classes of same shares, the one accessible by foreign investors is traded on premium relative to the one held by domestic investors, such as in Thailand, Finland and Mexico (Bailey, 1993; Hietala, 1989; Domowitz, 1997). However, in Chinese case, domestic share A-share is trading at premium as compared to foreign share. China's A-share price premium puzzle attracts attention from scholars and researchers all over the world. Bailey (1994) first investigates A-share price premium and he proposes this premium can be explained by the lack of substitute investment opportunities for stock investments.

Previous studies provide several hypotheses or explanations on this A-share price premium puzzle. Jiang (2003) concludes them as the differential liquidity hypothesis, asymmetric information hypothesis, differential demand hypothesis and the differential risk hypothesis. Before reviewing the main four hypotheses, exchange rate regime control which is one of important capital controls should be primary considered.

3.1. Currency factor

Using Japan and US as samples, Gultekin et al. (1989) get evidence that capital controls by government are the source of international capital market segmentation. It leads to difference of stock risk between the Japanese and U.S capital markets. Eun and Jang (1997) investigate firms which cross-listed on the New York, London and Tokyo market and they find that exchange rate is an important factor as a transmission mechanism by affecting overseas stock price instead of home market price.

Assuming exchange rate regime control constant, previous studies provide evidence that currency factor is one of important factors to lead price differential. Domowithz et al. (1997) show that higher perceptions of exchange rate risk which implies less foreign investment and hence lower premium between foreign and local price in Mexico financial market. Kim et al. (2000) get evidence that exchange rate factor affect ADR daily return. They imply that US inventors bear exchange rate risk even though ADRs are denominated in US dollar. Sun and Tong (1999) use two indirect variables to proxy for currency risk factor because authors considered highly regulated of official RMB exchange rate on sample period. They find out that inflation rate and China's foreign reserve (DFXR) have significant relationship with price difference between A- and B-share. Instead of using bilateral exchange rate, Wang and Jiang (2003) use average exchange rates of six countries around China, as a proxy for the expected devaluation of the RMB. Authors show that this proxy is not significant at time serial analysis for Chinese A- and H-share price disparity, but significantly positive in a panel analysis which in consistent with Domowithz (1997). Arquette, et al (2007) and Tom, et al (2007) show renminbi non-deliverable forward contract rate, a proxy for expected exchange rate fluctuation, play an important role in determining the price disparity. Exchange rate effect explains over 40% of price difference.

3.2. Differential Liquidity hypothesis

Lower liquidity and higher trading costs also induce cross-listed stocks price disparity. Both Kamara(1994) and Gardiol et.al (1997) get evidence that illiquidity affects security values and hence illiquid securities offer lower price. Pontiff (1996) uses a sample of closed fund to investigate effect of dividends and transactions cost

on mispricing of fund. He shows two variables as a proxy for transactions costs – inverse of the stock price, log market value– are significant impact on ADR mispricing. Following Pontiff, Grossmann and Ozuna (2007) use a panel framework to examine 74 ADRs from nine countries, their findings support that both transaction costs and holding costs play significant role in ARD mispricing.

Findings of previous studies concerning Chinese case have been mixed. Chen et al (2001) find the price disparity between A-share and B-share is due to illiquid B-share market. Their findings support that relatively illiquid B-shares are related with higher expected return and lower price. Wang and Jiang (2003) propose higher daily trading volume of H-share would cause price disparity between A-share and H-share smaller. It supports liquidity hypothesis, which is documented as relative liquid H-share would trade in higher price. While, Karolyi and Li (2003) investigate A-share price premium relative to B-share price based on a unique regulatory change in 2001 which Chinese residents are allowed to trade B-share. They get evidence that decline in premium around this regulatory event is unrelated to the liquidity.

3.3. Asymmetric information hypothesis

Asymmetric information hypothesis proposes that foreign investors get less information than local investors because of language barriers or unacquainted cultural. Previous studies show that larger firm which provides greater financial disclosure and less information asymmetry would have lower price disparity. Kang and Stulz (1997) investigate shares of Japanese firms held by non-Japanese investors. Their finding claims that foreign investors intend to hold more shares in larger manufacturing industry. Chakravarty and Wu (1998) focus on informationasymmetry

effect on B-discount. They find that A share returns are more likely to lead B share returns, on average, rather than the other way around. Authors use English media coverage as a proxy for information asymmetry. It shows more media coverage leads to less A-share price premium. Arquette, et al (2007) use total market capitalization to control information asymmetry problem and find that A-share price premium as compared to H-share or ADR is highly related with firm size. Karolyi and Li (2003) use A-share and B-share as targets and get evidence that foreign investors have less information asymmetry than domestic investors for larger firm by controlling other hypotheses. Tom et.al (2007) use both market capitalizations of free-floating shares and total market capitalizations of all shares to proxy for information asymmetry, they find first proxy is more related with price disparity between A-share and H-share.

3.4. Differential demand hypothesis

Demand functions for shares differ between foreign and domestic investors in the terms of price elasticity (Stulz and Wasserfallen, 1995). Sun and Wilson (2000) follow model set up by Stulz and wasserfallen (1995) to explain A-B premium puzzle based on differential demand hypothesis. Using a sample of 45 firms from 1994 to 1998, their finding shows that increase in number of H-share firms and red-chip firms would lead to larger A-share price premium. Authors interpret it as H-shares and Red-chips are good substitutes for B-shares. Bergstom and Tong (2001) use tradable A-share outstanding over B-share outstanding as a proxy for A-share supply and find that there is a negative relationship between share outstanding and price disparity. Gordan and Li (2003) argue that market segmentation and limit investment opportunities caused by legal restriction. Domestic investors have

inelastic demands for equity due to insufficient supply, pushing up the price of the A-shares. Karolyi and Li (2003) use B-share outstanding over total share outstanding as a proxy for differential demand. Although share outstanding is considered as supply rather than demand, they argue that more B-shares outstanding put downward pressure on B-share prices. That means more share outstanding of B-share would cause lower B-share price and higher price disparity.

3.5. Differential risk level hypothesis

The differential risk level hypothesis suggests that different levels of risk between domestic investors and foreign investors would also lead to different prices.

Hietala (1998) gets evidence that the smaller the beta of foreign shares relative to domestic shares, the larger foreign premium. It means higher foreign price is due to lower risk. By investigating Main and Alien Board stock price in Thailand, Bailey and Jagtiani (1993) propose that differential risk attitude between investors would explain price difference. Foreign investors enjoy relatively low cost of capital than locals investors, so they have lower required returns on investments.

However, in Chinese case, Ma (1996) provides empirical result that greater the A-share beta relative B-share beta, the lager A-share price premium. Author proposes that higher risk, higher price for A-share. He explains it as less investment opportunities for domestic investors. Lack of investment opportunities in Mainland China makes domestic inventors take more risk in A-share market. Sun and Tong (2000) provide empirical evidence that relative higher A-share market volatility cause larger A-share price premium. Authors conclude it as speculative behavior of

the local Chinese. Lee (2007) also reports that relative risk which is represented by systematic risk measure beta mainly explain the discounts.

However, Karolyi and Lian (2003) find no relationship between volatility ratio and B-share discount in both univariate model and multivariate model. They only find modest explanation power of momentum as a new proxy for risk on their finding. Jiang and Steven (2004) also reject differential risk level hypothesis by using residual based risk measurement.

3.6. Market condition

Market condition may induce investors to generate different perceptions, resulting in different prices for the same capital asset between two markets. Bodurtha et al. (1995) show that differential condition between two markets causes closed-end country funds to generate premium. By using return on market index as a proxy for market condition, Suh (2003) finds that price spreads of emerging markets vary with US market returns but not with domestic market returns, implying that investors' valuation in the US market outweighs domestic market. Hence, different market conditions affect investors' perceptions, resulting in price deviation between domestic stocks and their ADRs.

3.7. Discussion and summary

All previous studies related with price disparity are divided into these four categories. By using different sample and time period, previous scholars find each hypothesis has certain explanation power on this price disparity issues. In this study, we focus on the exchange rate regime reform and currency factor after controlling these four hypotheses.

4. Sample and Data Variables Description

4.1. Sample

We begin sample selection with all companies issue both A-share and foreign share. Chinese companies which are cross-listed on foreign stock exchange without A-share are not included in sample. Such as China Telecom (00728. hk; CHA) which is a Chinese company listed on both Hong Kong Stock Exchange and New York Exchange rate. However, it does not list on Mainland China equity market, so we exclude it from our sample. We get 65 companies which listed both on A- and H-share (or ADR). 37 companies are excluded because either their A-share listing date or foreign share listing date is after 2005, reform year. Then we get 28 companies in our A-H sample. In addition, eleven of these companies also issue ADR in New York Stock Exchange[1]. In these 11 companies, three companies are eliminated for very low trading frequency of ADR. We get eight companies in our A-share and ADR sample. Majority of companies are in manufacturing industry and very few numbers of companies are in other industries. Besides, our sample does not have any financial companies. So we have to focus on firm-level analysis.

The whole sample here consisted of 28 Chinese companies and full sample period runs from 1998.12.16 to 2010.7.28 on a weekly basis. We have daily data on returns, but when we calculate real exchange rate, we need CPI data which is monthly or quarterly only. Applying the CPI data for 25 days in the calculation of the real exchange rate could well be misleading. On the other hand, choosing monthly returns

[1] There is no company issue both A-share and ADR without listing in Hong Kong stock market before 2005.

could miss a lot of volatility information during the 25 days. So we choose weekly data, it would balance the potential problems in is using CPA data for too many occasions against the benefit of keeping informative change in returns. Restricted from STATA data record requirement, we contain 52 weeks for each sample year. The data used in this study are mainly from DataStream and CEIC. Table 2 shows the names and description of these 28 companies. We tabulate the companies by the alphabetical order in their names. There are 22 companies from the Shanghai Stock Exchange (SSE) and 6 companies from Shenzhen Stock Exchange (SZSE).

4.2. Data and variables

4.2.1. Dependant variable

We use A-share premium as dependent variable in this study. We follow Froot et al. (1998) to specify the dependent variable, A-share price premium[2]. PREM denotes the A-share premium relative to foreign share.

$$\mathrm{PREM} = \log(\mathrm{P}_\mathrm{A}^*) - \log(\mathrm{P}_\mathrm{H})$$

$$\mathrm{PREM} = \log(\mathrm{P}_\mathrm{A}^*) - \log(\mathrm{P}_\mathrm{ARD})$$

$$\mathrm{P}_\mathrm{A}^* = \mathrm{P}_\mathrm{A} / (\mathrm{RMB/HKD})$$

$$\mathrm{P}_\mathrm{A}^* = \mathrm{P}_\mathrm{A} / (\mathrm{RMB/USD}) * \text{ADR conversion ratio}$$

Considering the premium in our comparison of two prices, A-share prices originally denominated in RMB are converted to foreign currency[3]. A-share, H-share and ADR

[2] Some other specifications are also available, such as A-share price over foreign share price. But we would like to consider percentage change in consistency with our independent variable specification.

[3] A-share price is converted to Hong Kong dollar in A-H sample; A-share price is converted to US dollar adjusted by conversion ratio in A-ADR sample.

price are Wednesday closing prices for each week. Exchange rate is bilateral exchange rate between RMB and foreign currency and we also choose Wednesday daily exchange rate as weekly exchange rate. The ADR conversion ratio is the ratio of one ADR share to the equivalent number of underlying shares. A-share is trading at premium if PREM is great than zero and discount otherwise.

4.2.2. Independent variable

4.2.2.1. Currency effect

Previous studies show that currency factor has certain effect on price disparity between cross-listed shares (Sun and Wilson, 1999; Tom et al, 2007). Following both Chan et al. (2008) and Arquette et al. (2007), we use percentage change in exchange rate as currency factor. It defined as current weekly exchange rate over previous weekly exchange rate then minus one. We use both nominal exchange rate and real exchange rate to calculate currency factor. Since, fluctuation of nominal exchange rate has been reduced because of RMB pegged with USD before the reform. It is interesting to note that the effect of real exchange rate on A-share price premium. Real exchange rate is calculated after correcting the nominal rate with the consumer price indices (CPI) of each country. As CPI is only available once a month, we calculate four weekly real exchange rates in one month by using the same CPI data. In different samples, we use different foreign exchange rates. In A-share and H-share sample, RMB over HKD exchange rate is considered. In A-share and ADR case, we consider both RMB/USD exchange rate and HKD/USD exchange rate. As we introduce in Section 2, ADR represents a single share, or multiple shares of the foreign stock. In our case, underlying share of ADR is H-share instead of A-share. Thus, HKD

over USD exchange rate should be considered. We use six kinds of currency effect in this study.

4.2.2.2. Control variables

There are several popular hypotheses are used to explain price disparity between A-share and counterpart foreign share.

Differential Liquidity hypothesis: Previous studies use different methods to measure stock liquidity. Jiang (2004) used daily H-share turnover (trading volume/ total number of H-shares outstanding) as a proxy. Sun and Tong (2000) used trading volume (volB/VolA) as liquidity factor. Following Lee (2008), we use A-share turnover rate over foreign share turnover rate to stand for liquidity factor ($\mathrm{Turnover_A}/\mathrm{Turnover_H}$). Share turnover rate is calculated as weekly trading volume of A-share (foreign share) over total A-share (foreign share) outstanding. We use relative turnover rate instead of foreign share turnover rate to capture the situation of both A-share and foreign share liquidity which is more considerable. In addition, number of A-share outstanding is quite lager than number of foreign share outstanding for most companies. So, trading volume is not a good proxy to compare the liquidity between A-share and foreign share. A-share turnover rate over foreign share turnover rate can perfectly capture the relative liquidity of A-share. There would be a positive relationship between liquidity factor and A-share price premium. Higher liquidity A-share would trade at higher price than foreign share. It would make A-share price premium larger.

Asymmetric information hypothesis: Most previous studies use market capitalization as a proxy for asymmetric information because larger companies will

have more information and get more analysts to study their stock (Sun and Tong, 2000; Karolyi and Li, 2003; Chan and Kwok, 2005). Some researchers use total market capitalization of firm to proxy this hypothesis, while others use A-share tradable stock market capitalization as a proxy. In this study, we follow the first group by using total market capitalization of a firm including all shares it issued. As we introduced in Section 2, the large part of A-shares are non-tradable share before the 2006, Chinese Split Share Structure Reform. After the reform, the number of tradable stock of most companies would change dramatically, especially from 2007 to 2010. It could not capture the information asymmetry situation. That is why we choose total market capitalization to proxy for asymmetric information hypothesis in this study. The asymmetric information factor should have a negative relationship with A-share price premium. Larger firm would have better information disclosure, hence smaller price disparity between A-share and foreign share.

Differential demand hypothesis: In empirical analysis, demand effect is captured by the number of shares outstanding in the literature. Previous studies usually use share outstanding to present the relative demand factor (Sun and Willison, 1999; Darrat et al., 2006; Chan et al., 2005). They proposed that more share outstanding of foreign share would have downward pressure on foreign share price. It would make A-share price premium larger. Because share outstanding are preliminary determined by supply shares of firm, we use supply effect to describe this hypothesis. In Chinese case, foreign share outstanding over total share outstanding is commonly used as a proxy for supply (Karolyi and Li, 2003). However, it is not a good proxy. Large part of total A-share outstanding of each firm is untradeable shares which are not allowed to trade in secondary market. After the reform, untradeable shares are gradual

allowed to trade in secondary market and hold by individual investors. So, only tradable A-share can be consider as supply of share. By considering this Split share structure reform effect, we use ratio of number of H-share over total number of tradable A-shares and H-shares as a proxy for the relative availability of foreign shares issued by each companies (Lee et al. 2007). So, it is calculated as $\mathrm{No}_{\mathrm{H}}/\mathrm{No}_{\mathrm{H+TradeableA}}$.

Differential risk hypothesis: As to the issue of different choice of measurements of risk level, scholars have discussed widely and insightfully. The argument point focuses on systematic risk, idiosyncratic risk or total risk. Some scholars use systematic beta to proxy risk. Ma (1996) uses beta to stand for different risk and only use cross-sectional framework. Karolyi et al. (2003) use 30-day daily stock returns to calculate a monthly beta. In our study, we consider panel framework by using weekly data, so beta measurement is not available for our high frequency data. On the other hand, Chan and Kwok (2005) imply that volatility of shares is more appropriate to use to measure risk in emerging market.

Following Sun and Tong (2000), we use standard deviation of stock return. In their study, they use one-month standard deviation of daily returns on share. Because weekly data is higher frequency, we use rolling standard deviation method instead of 5-day standard deviation method. Following Schwert, G.W (2002), we use simple rolling standard deviation to measure 10-week standard deviation of A-share returns. It defined as standard deviation of previous 10-week weekly stock return. One of advantages of using rolling standard deviation is to capture weekly period volatility of stock instead of intra-week volatility. As differential risk level hypothesis proposed,

larger A-share price premium is due to relative higher risk of A-share, so the sign of risk factor should be positive.

Market conditions: Market index is widely used as a proxy for market conditions. It captures the different sentiment between two markets. Shanghai composite index price is used for Mainland China market, Hang Seng index for Hong Kong market and S&P 500 index for USA market. We use Shanghai composite index instead of Shenzhen index, because that most of companies in our sample are from Shanghai Stock Market and Shanghai composite index is widely used to reflect the overall trend of China stock market. Similarly, S&P 500 is chosen because that it is the most widely followed index of American stocks and it is considered as a bellwether for the American economy. Better market condition would induce higher share price, so larger market condition factor would cause larger A-share price, hence make A-share price premium larger.

Table 3 provides the summary of data description of each hypothesis and variable measurement. Following Tom et al. (2007), we use PREM to stand for A-share premium relative to foreign share, CUR for currency factor; INF for asymmetric information hypothesis; SUP for differential demand hypothesis; MC for market condition; LQ for differential liquidity hypothesis and RD for differential risk level hypothesis.

Table 4 reports summary statistics for all the variables used in the model. Panel A is A-share to H-share premium sample and panel B is A-share to ADR premium. Authors report the means, standard deviations, minimum and maximum value of each variable. The average price premium in A-H sample is about 1.0352. The positive number means that A-share price is higher than H-share price. In A-ADR sample, the average

price premium is 0.6455, the A-ADR price premium is less than A-H price premium. The standard deviations of PREM are over 0.5 in both samples. It shows that degrees of price difference across the firms are spread out over quite some range.

5. Preliminary Test

5.1. Panel Unit Root Test

Levin, et al. (2002) provide the evidence that the power the panel-based unit root test is dramatically higher, compared to performing a separate unit root test for each individual time series. There are several unit-root tests, such as LLC (Levin, Lin and Chu, 2002), IPS (Im, Pesaran and Shin, 1997, 2003), and Fisher-type (Maddala and Wu, 1999 and Choi, 2001). In general, panel unit root is based on the following univariate regression:

$$y_{it} = \rho_i y_{it-1} + \gamma_i X_{it} + u_{it,} \qquad \text{Equation 1}$$

Where i =1, 2,…, N is individual, t =1,2,…,T stands for time series. X_{it} is the deterministic component that could be zero, one, the fixed effects or individual trend and u_{it} is the stationary process. If the coefficient ρ_i=1, y_i is suggested to be nonstationary and have a unit root; while if ρ_i <1, series y_i is weakly trend-stationary. The LLC, Breitung, and Hadri test (2002) assume that the coefficient $\rho_i = \rho$ for all i which means y_{it-1} is homogeneous across all cross-section units of the panel and that individual processes are cross-sectional independent.

The IPS approach is used in this study to test unit root. Firstly, it allows for individual unit root processes which relax the restrictive assumption of the LLC test. Secondly, it is more reasonable test which proposes ρ_i is a heterogeneous coefficient of y_{it-1} and may vary across cross-sections. In addition, it also relaxes

the assumption that T is same for all cross section units and overcomes the shortcoming of LLC which requires a balanced panel.

5.2. Panel Cointegration Test

Cointegration test is used as a mechanism to examine the existence long term relationships of two or more time series. If there does exist a causal relationship among each variable in the long-term, the series are called cointegrated. One of the most prevail approach is Pedroni (1999) procedure It is the residual-based tests for the null of no cointegration for panels in which the estimated slope coefficients are permitted to vary across individual members of the panel. This approach includes seven different test statistics. Each of them evaluates the null hypothesis of no cointegration against both the homogeneous and heterogeneous alternatives. Among the seven statistics, four are based on pooling the residuals of the regression along the within-dimension of the panel, and the other three are based on pooling the residuals of the regression along the between-dimension of the panel. The principle involves is first to estimate the hypothesized cointegration relationship separately for each individual panel section and then to pool the resulting residuals for conducting the panel tests.

Table 5 and Table 6 show the results of panel unit root test and panel co-integration test in both samples. All variables are proved to be stationary at I (1). Cointegration results confirm the existence of Cointegration relationship amongst each variable.

6. The Panel Benchmark Model

6.1. Exchange rate regime reform effect

Some previous studies use event study analysis to investigate unique event effect. However, we only have 28 companies in our A-H sample and 8 companies in our A-ADR sample. There are not enough firms to use this approach. In this study, following Tom et al. (2007), we employ a panel framework to analyze Exchange rate regime reform effect. This approach allows us to analyze both the cross-sectional and time-series factors. The Benchmark Model 1 is as following:

$$\mathbf{PREM}_{it} = \alpha_0 + \alpha_1 \mathbf{Reform}_t + \alpha_2 \mathbf{INF}_{it} + \alpha_3 \mathbf{SUP}_{it} + \alpha_4 \mathbf{MC}_{it} + \alpha_5 \mathbf{LQ}_{it} + \alpha_6 \mathbf{RD}_{it} + \varepsilon_{it}$$

Benchmark Model 1

Where $\mathbf{PREM}_{it}$ is the A-share price premium discussed in Section 3. i and t denoted the individual company and time. The right hand side of the Model 1 includes the one key variable and five control variables. $\mathbf{Reform}_t$ is the key dummy variable, it equals to one after 21 July 2005, and zero otherwise. The dummy variable allows us to investigate whether the exchange rate regime change has an effect on A-share price premium. We expected a negative sign of this dummy variable as two reasons. Firstly, exchange rate regime control is source of price disparity of A-share and foreign share. This disparity would decrease after the relaxation of exchange rate regime restriction. Secondly, this reform would heighten the confidence of market expectation on RMB appreciation in long term. More valuable of RMB would increase value of renminbi-denominated asset in foreign currency, hence increase H-share (ADR) price and make A-share price premium smaller. $\mathbf{INF}_{it}$ is information asymmetry, we use total market capitalization in foreign currency. The sign of $\mathbf{INF}_{it}$

should be negative because larger company should have better information disclosure, hence smaller A-share price premium. $\mathbf{SUP_{it}}$ stands for differential demand hypothesis, we use ratio of number of H-share outstanding over total A-share tradable share and H-share outstanding. Differential demand hypothesis proposes that more shares outstanding of foreign share would have down pressure on foreign share price and increase A-share price premium. On the other hand, increasing in number of tradable A-share outstanding would lead A-share price decrease, hence smaller A-share price premium. So $\mathbf{SUP_{it}}$ would have a positive relationship with dependent variable. $\mathbf{MC_{it}}$ is market condition, Shanghai composite index price over Hang Seng index price (or S&P 500 index price). We expect a positive sign of this variable. Since relatively better market condition of A-share would induce relative higher A-share price, hence make A-share price premium larger. It also controls the different economic conditions between two locations. $\mathbf{LQ_{it}}$ is a proxy for liquidity, which we define it as A-share turnover over foreign share turnover. It is expected to be positive because relative liquidity A-share would trade at premium relative to foreign share. $\mathbf{RD_{it}}$ is used as a proxy for differential risk level, and define the ratio of standard deviation of A-share return to foreign share return, σ_A^2/σ_H^2. The risk hypothesis proposed relative higher risk of A-share would induce larger A-share price premium by increasing A-share price.

6.2. Currency Effect

Although our dummy variable would give us a testing mechanism to see the significant difference before and after the exchange rate reform, the exact magnitude of the change in the premium is response to one unit change in exchange rate is not

clear. To this end, we have to substitute the dummy with exchange rate effect. We add important key variable, currency factor, into regression model.

In Benchmark Model 2, we use two sub-periods to test how the A-share price premium differs before and after reform. We separately test currency effect on A-share price premium in pre- reform period (16, Dec 1998 to 20, July 2005) and post-reform period (21, July 2005 to 28, July 2010). This approach would let us quantify the exchange rate effect on A-share price premium before and after the reform.

$$\mathbf{PREM}_{\mathbf{it}} = \boldsymbol{\alpha_0} + \boldsymbol{\alpha_1}\mathbf{CUR}_{\mathbf{it}} + \boldsymbol{\alpha_2}\mathbf{INF}_{\mathbf{it}} + \boldsymbol{\alpha_3}\mathbf{SUP}_{\mathbf{it}} + \boldsymbol{\alpha_4}\mathbf{MC}_{\mathbf{it}} + \boldsymbol{\alpha_5}\mathbf{LQ}_{\mathbf{it}} + \boldsymbol{\alpha_6}\mathbf{RD}_{\mathbf{it}} + \boldsymbol{\varepsilon}_{\mathbf{it}}$$

Benchmark Model 2

$\mathrm{CUR}_{\mathrm{it}}$ is change in exchange rate which is separately tested by two different measurements. We test both nominal and real exchange rate. $\mathrm{CUR1}_{\mathrm{it}}$ is change in bilateral nominal exchange rate$(\mathrm{e_t}/\mathrm{e_{t-1}}) - 1$; $\mathrm{CUR2}_{\mathrm{it}}$ is change in bilateral real exchange rate$(\mathrm{s_t}/\mathrm{s_{t-1}}) - 1$. We use RMB over HKD in A-share to H-share sample and RMB over USD in A-share to ADR sample. We expect the coefficient of $\mathrm{CUR}_{\mathrm{it}}$ is not significant before the reform. In the pre-reform period, China adopted a fixed exchange rate regime which is tightly regulated by central government and exchange rate is not determinate by market. So it means there is no currency effect. After the reform, the exchange rate regime is more flexible and exchange rate is market-determined. We expect the sign of $\mathrm{CUR}_{\mathrm{it}}$is expected positive which means appreciation of $\mathrm{CUR}_{\mathrm{it}}$ would make A-share price premium smaller. Because appreciation or expected appreciation of RMB would increase value of renminbi-denominated asset in foreign currency, hence foreign share price would increase and A-share price premium is smaller. The five control variables are the same as Benchmark Model 1.

7. Empirical Results

7.1. Exchange rate reform results

The results of the panel regression of Benchmark Model 1 are presented in Table 7-a. Columns (1) and (2) indicate the A-share and H-share sample while Columns (3) and (4) indicate the A-share and ADR sample. Coefficient estimates are reported with standard errors in parentheses. Our key dummy variable $\mathbf{Reform_t}$ is significantly negative at one percent level in both A-H share sample and A-ADR sample with or without company-specific fixed effects. The coefficient of $\mathbf{Reform_t}$ is -0.5214 in Column (1) and -0.3623 in Column (3). It confirms that exchange rate regime reform has negative effect on A-share price premium. After relaxation of exchange rate regime control, A-share price premium decrease 0.5214% in A-H case and 0.3623% in A-ADR case. Such relaxation paves a way for more market determination of A-share stock, making its price closer to H-share price, which is more market oriented.

Control variables also give us some results. Firstly, $\mathbf{INF_{it}}$ is negative and significant at one percent level in both samples. It is consistent with previous information asymmetry hypothesis which claims that higher the total market capitalization, larger firm, the more information discloser, thus the closer A-share price to foreign share price.

Secondly, the sign of $\mathbf{SUP_{it}}$ in A-and H-share sample is positive and it implies the more foreign share outstanding the larger premium. Since relative more shares outstanding of H share has down pressure on H-share price. H-share price would decrease and cause lager A-share price premium. However, the sign of $\mathbf{SUP_{it}}$ is negative for A-share and ADR case. We interpret this evidence as ADR is not support

differential demand hypothesis. ADR is certain amount of H-share rather than new-issuing share, and it cannot be explained by demand function here.

The coefficient of $\mathbf{MC_{it}}$ is significantly positive in both samples which is consistent with our prediction. When the whole A-share market condition is relative better than foreign share market, the individual A-share price compare to foreign share would increase. In other words, when the whole market is going up, A-share naturally follows.

$\mathbf{LQ_{it}}$ which is predicted to be positive by the liquidity hypothesis, is positive and also significant at one percent level in both samples. Relative illiquid foreign share would have relative lower price than A-share. It leads to larger A-share price premium.

Lastly, the sign of $\mathbf{RD_{it}}$ is negative in both sample. The negative coefficient indicates that lower risk of A-share relative to foreign share would lead to higher price of A-share. It is not consistent with our prediction. Note that we use total risk, volatility, as a proxy for risk, there may be a downward bias in the estimates. This is a common problem when a proxy is used. We would use other two measurements of risk in robustness test. Results of estimation with company-specific fixed effects are presented in Column (2) and Column (3). The results are very similar to the model without fixed effects.

In addition, we also try to examine that how α_6 change over the different regimes, so we add $(\text{Reform} * \text{RD})_{it}$ into Benchmark Model 1. The sign and the magnitude of the estimated α_7 could give us an answer. In Table 7-b, our key variable Reform_t is still significant at one percent level in both A-H and A-ADR sample. The coefficient α_7 is significantly positive at one percent level. It means that RD_{it} has more effect on A-share price premium after the reform.

Overall, results of Benchmark Model 1 confirm the critical finding of this study. The exchange rate regime reform has dramatic effect on A-share premium after controlling for all other factors. This exchange rate regime reform does decrease A-share price premium.

7.2. Currency effect results

7.2.1. A-share and H-share Sample

Table 8 presents results of currency effect on A-H share price premium before and after the exchange rate reform. The coefficient of $\mathbf{CUR1_{it}}$ is not significant before 25, July 2005 with or without company specific-effect. This estimation results shows there is no currency effect on A-share price premium before the reform. Under fixed exchange rate regime, price disparity is mainly induced from other hypotheses. The coefficient of $\mathbf{CUR1_{it}}$ is significantly positive after the exchange rate reform. The positive sign indicates that larger $\mathbf{CUR1_{it}}$ would make larger A-share price premium. With one percent increase in $\mathbf{CUR1_{it}}$, A-share price premium would increase 3.6307%. Because depreciation of RMB would decrease the value of renminbi-denominated asset in Hong Kong dollar, hence disparity of A-share and H-share would lager. Results of control variables are similar as we discussed before.

7.2.2. A-share and ADR Sample

The results of currency effect on A-ADR price premium based on Benchmark Model 2 are reported in Table 9. Nominal exchange rate effect is not significant before the reform. In post-reform period, $\mathbf{CUR1_{it}}$ is significant at one percent level without company-specific fixed effect, and significant at five percent level with fixed effect.

This result is consistent with A-H sample. With one percent increase in $\mathbf{CUR1_{it}}$, price disparity between A-share and ADR would increase 7.6772%.

7.2.3. Unique feature of ADR

As we discussed in Section 2, ADR represents a single share, or multiple shares of the foreign stock. In our sample, underlying share of ADR is H-share instead of A-share. Thus, HKD over USD exchange rate also should be considered. We use $\mathbf{CUR3_{it}}$ and $\mathbf{CUR4_{it}}$ in Benchmark Model 2. $\mathbf{CUR3_{it}}$ is percentage change in HKD/USD bilateral nominal exchange rate$(e_t/e_{t-1}) - 1$; $\mathbf{CUR4_{it}}$ is percentage change in HKD/USD bilateral real exchange rate$(s_t/s_{t-1}) - 1$. Since HKD/USD currency effect is irrelevant with China exchange rate regime reform, we use whole time period to investigate the currency effects.

The statistic results of HKD/USD currency effect on A-share price premium are reported in Table 10. Both $\mathbf{CUR3_{it}}$ and $\mathbf{CUR4_{it}}$ are not significant with or without firm fixed effect. It is not surprised because of Hong Kong linked exchange rate regime. The results demonstrate that there is no HKD over USD exchange rate effect on A-share price premium relative to ADR. Because the underlying asset is H-share instead of A-share, American investors still treat ADR as Chinese-related asset instead of Hong Kong asset. On the other hand, the results show there is no exchange rate effect under the linked exchange rate regime just like China exchange rate regime in the per-reform period as the exchange rate are not market determined.

7.3. Robust Check and model extensions

7.3.1. Split-share structure reform

As we discussed in Section 2, Split-share structure reform also would have certain effect on A-share price premium through changing A-share price. In Bench Model 2, we use $\mathbf{SUP_{it}}$ which is calculated as share outstanding of H-share over share outstanding of H-share and tradable A-share. It considers Split-share structure reform effect into regression. We use figures to reflect the Split-share structure reform. We take one of companies as an example (Guangzhou Shipyard International Co, Ltd, Code: 600685). In Figure 3, the vertical axis stands for the number of tradable A-share, the original number of tradable A-share is 150 million shares, after the adjustment, they jump to about 350 million shares. We also provide ratio of tradable A-shares over the total number of A-shares in Figure 4. In the adjustment date, Jun, 2009, the ratio jump to one. It means all of A-shares are tradable. Different companies have different adjustment dates. Some companies would make several adjustments to archive the fully tradable. In this part, we use $\mathbf{SUP\,1_{it}}$ which is defined as share outstanding of H-share over share outstanding of H-share and total A-share. We try to exclude Split-share structure reform effect from the regression and investigate the exchange rate regime reform effect and currency effect. We also use figure to show $\mathbf{SUP\,1}$ of same company. In Figure 5, the vertical axis stands for the ratio of number of H-share outstanding over the total A-share and H-share outstanding. During the testing time, this ratio is not change which means we exclude Split-share structure reform effect from the regression.

Table 11 shows results of Exchange rate reform effect on A-H sample and A-ADR sample. The coefficients of $\mathbf{Reform_t}$ are all significant at one percent level and

have negative sign in both samples. These results provide strong evidence that Exchange rate regime reform does have effect on A-share price premium whether or not we take into account the impact from the Split-share structure reform.

The results of Benchmark Model 2 in A-H sample by using $\mathbf{SUP\ 1_{it}}$ are reported in Table 12. $\mathbf{CUR1_{it}}$ is only significant in post-reform period and it is consistent with previous results.

Table 13 shows the results of Bench Model 2 in A-ADR sample by using $\mathbf{SUP\ 1_{it}}$. All results of currency effect are consistent with previous results except Column (4). Although this coefficient is not significant at ten percent level, $\mathbf{CUR1_{it}}$ has the coefficient at 10.8%, which means currency effect has certain effect on A-share price premium.

The results of this part provide very strong evidence that Exchange rate regime reform does effect on A-share price premium no matter considering Split-share structure reform or not.

7.3.2. Differential risk level hypothesis

In this part, we want to testify the different measurements of risk. Beside of total risk, there are two other types of risk, systematic risk and idiosyncratic risk. Because market beta is not available for our high frequency data, we use ARCH-method to calculate systematic risk. We firstly regression estimate weekly natural logarithm of market price on its lagged price and then use ARCH-method to predict variance of residual. Shanghai composite index is used in calculating A-share systematic risk, Hang Seng index for H-share and S&P 500 index for ADR. The ratio of A-share

systematic risk over foreign share systematic risk is defined as a proxy for differential risk level.

In addition, we also use idiosyncratic risk to stand for risk hypothesis. Similar to systematic risk, we use ARCH-method to calculate idiosyncratic risk of each stock. We regression estimate weekly return of each share on their local market index weekly return and then use ARCH method to predict variance of residual as a proxy for idiosyncratic risk of shares.

We use $\mathbf{RD2_{it}}$and $\mathbf{RD3_{it}}$ to stand for idiosyncratic risk and systematic risk and separately substitute them into Benchmark Model and robustness test the exchange rate regime reform and exchange rate effect.

The Statistic results of the reform effect under two different risk level controls are reported in Table 14. Column (1) to (4) shows the results in A-share and H-share sample. The coefficients of $\mathbf{Reform_t}$ are still significant negative at one percent level. Column (5) to (6) presents the results in A-share and ADR sample. $\mathbf{Reform_t}$ is significantly negative which is consistent with results of Benchmark Model 1.

We also robustness test the Benchmark Model 2 by separately using $\mathbf{RD2_{it}}$ and $\mathbf{RD3_{it}}$. Table 15 and Table 16 summarized the estimated currency effect in A-share and H-share sample under different measurements of risk. $\mathbf{CUR1_{it}}$ is only significant in the post-reform period. In Table 15, the coefficients of $\mathbf{CUR1_{it}}$are only significant at five percent level under $\mathbf{RD2_{it}}$ in the post-reform period. There is no currency effect before the reform. Table 16 provides similar results. It confirms our findings that there is no currency effect before the reform. In the post-reform period,

the finding of $\mathbf{CUR\ 1_{it}}$ is still consistent. Increase in $\mathbf{CUR\ 1_{it}}$ would make larger A-share price premium because that depreciation of RMB would decrease value of renminbi-denominated asset in Hong Kong dollar.

Table 17 and Table 18 report statistic results of currency effect on A-ADR price premium under different risk proxies. The coefficient of $\mathbf{CUR1_{it}}$ is significantly positive after the reform. There is no nominal currency effect before the reform and it is consistent with previous results.

7.3.3. Daily data result

We also provide robustness in our results by looking at the daily data. The Table 19 provides currency factor $\mathbf{CUR1_{it}}$ effect on A-share price premium. In panel A, A-H sample, there is no currency effect before the reform with or without fixed effect. In the post-reform period, with one percent increase in $\mathbf{CUR1_{it}}$, A-share price premium increase 1.6346 percentages. Similarly, in panel B, A-ADR sample, nominal currency factor only significant in the post-reform period. In Column (7), currency factor is significantly positive at one percent level. It also provides strong evidence that currency effect has effect on A-share price premium. These daily results are consistent with previous results.

7.3.4. Monthly real exchange rate data

In this part, we apply monthly data to investigate exchange rate regime effect and real exchange rate effect on A-share price premium. Because CPI is monthly observation, we use the monthly data to check the robustness. Since both CPI and nominal exchange rate have monthly observations. We don't have the calculation problem. We extract month-end observations available for each variable.

As Table 20 indicates that dummy variable $\mathbf{Reform}_{\mathbf{t}}$ is still significant at one percent level in both A-H sample and A-ADR sample. It is consistent with results of weekly data. Exchange rate regime reform decrease A-share price premium and cause convergence of A-share price and foreign price.

Panel A of Table 21 shows that the coefficient of $\mathbf{CUR2}_{\mathbf{it}}$, real exchange rate, is not significant with or without fixed effect before the reform. It confirms our prediction that there is no real exchange rate effect before the reform. In the post-reform period, $\mathbf{CUR2}_{\mathbf{it}}$ is significantly positive at one percent level. It is consistent with previous results of weekly data. In the post-reform, exchange rate does affect A-share price premium. Panel of B of Table 21 also provide evidence that real exchange rate only has effect on A-ADR price premium after the reform. It is consistent with A-H sample. With one percent increase in monthly real exchange rate return, A-share price premium would increase 3.0365%.

8. Conclusion

When the People's Bank of China announced its adoption of a managed floating exchange rate regime, it has great influence on China economy and even world economy. We look at this effect upon the A-share price premium. Although A-share price premium has been examined for quite some time in the literature, previous investigations depend on an important and yet implicit assumption: the exchange rate regime is "normal". The evidence on how exchange rate regime reform affects A-share price premium is surprisingly scanty. In this study, we look at 28 companies which concurrently issue A-shares, H-shares, and foreign-shares to investigate how this exchange rate regime reform affects this well-known price disparity.

We found that exchange rate reform starting from July 21 2005 has significant effect on price disparity between A-H share and between A-ADR, which shows that relaxation of the exchange rate control brings about a clear convergence of A-share price with foreign share price.

We also found that currency factor has significant effect on price premium between A-shares and foreign shares. Appreciation in RMB would lead to a decrease in price premium. Since those companies are located in Mainland China and dividends are paid in RMB, any appreciation of RMB relative to foreign currencies will increase the present value of expected future cash flows on foreign shares in foreign currency. So foreign share price would increase and A-share premium would decrease.

To conduct the robustness check, we first examine the potential effect of another important event in China financial community: the Split Share Structure Reform. The

result shows that our exchange rate reform still exerts its effect whether or not we take into account the impact from the Split Share Structure Reform. We then applied several different measurements of idiosyncratic, systematic, and the combined risks in the same regression model. Our exchange rate reform result is again robust. We thus conclude that China has indeed made a step forward in her exchange rate reform.

As more and more Chinese companies are cross-listed in more and more financial centers around the globe, they are sure to go beyond Hong Kong and New York. Our research endeavor will be to collect more data from London, Frankfurt, Tokyo, and even in some emerging financial markets to look at this issue more broadly in the future.

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Appendix

Figure 1: RMB over USD Bilateral Nominal Exchange rate

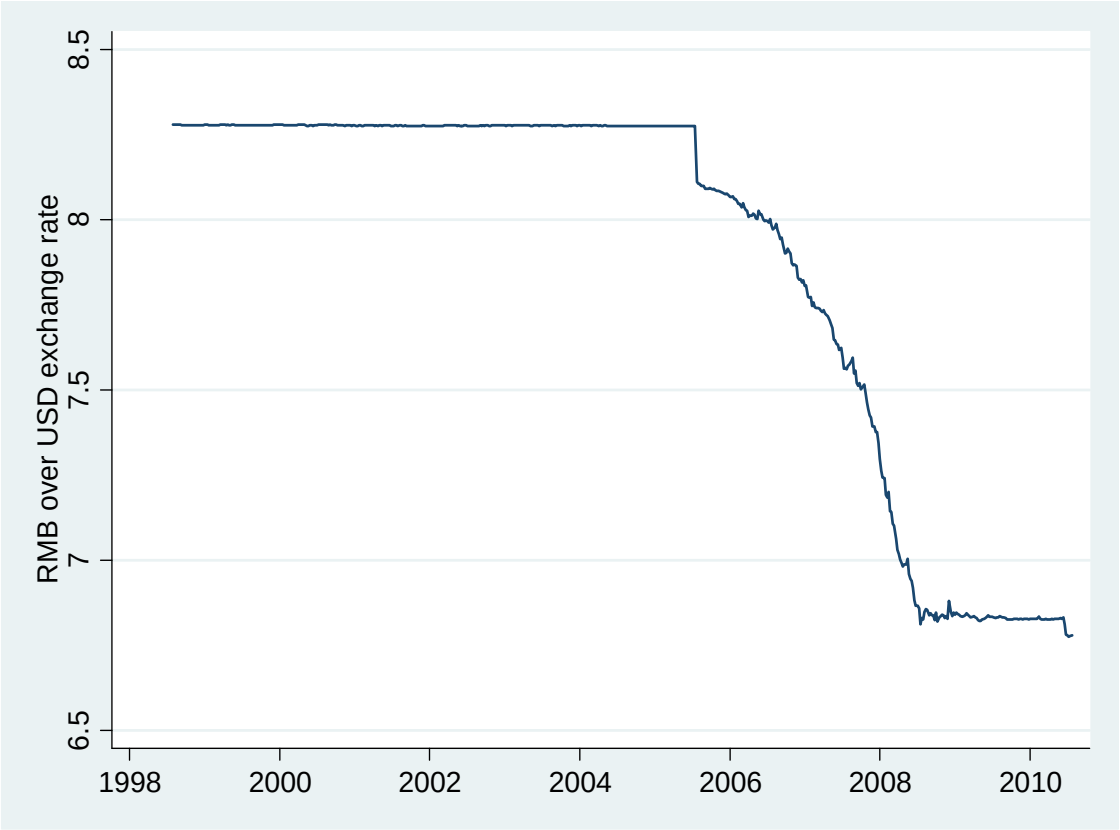


Figure 2: Share stuctures of Sinopec Shanghai Petrochem

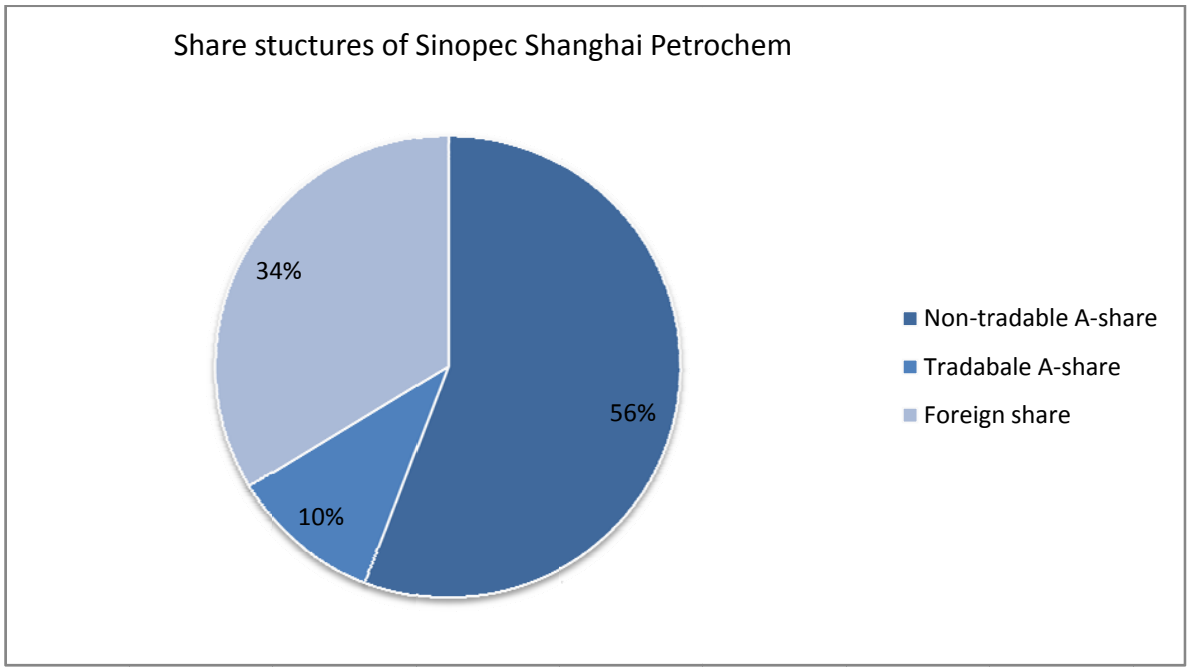
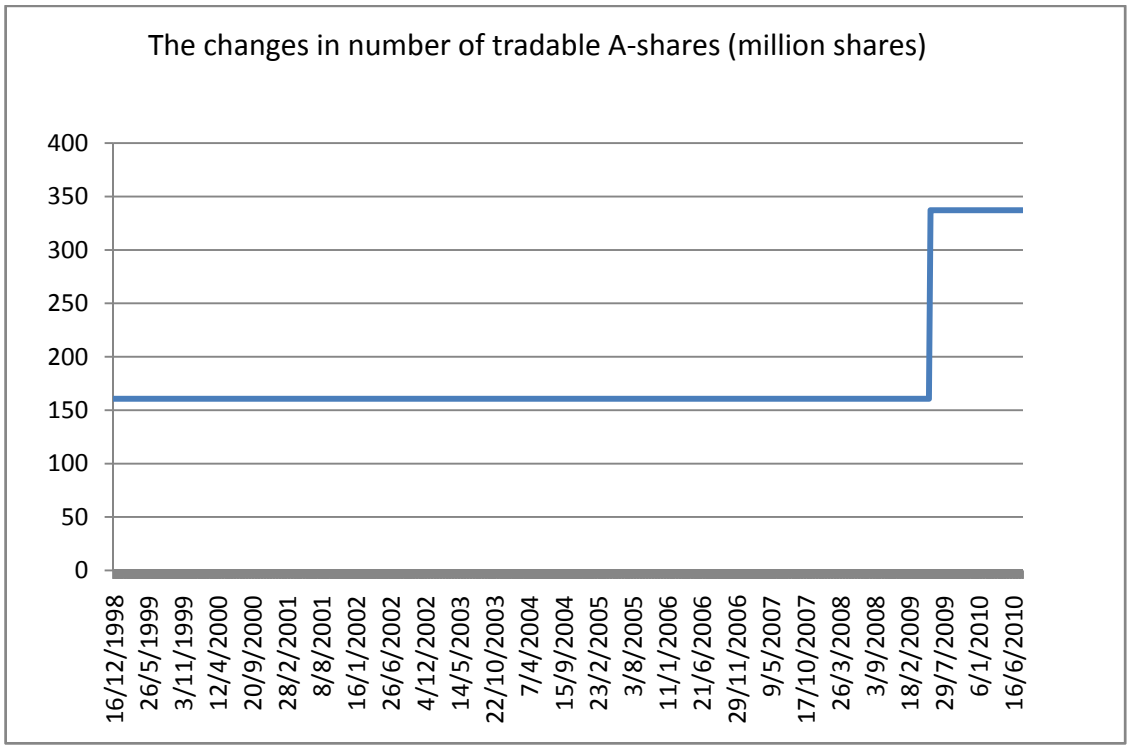


Figure 3: Split-share structure reform

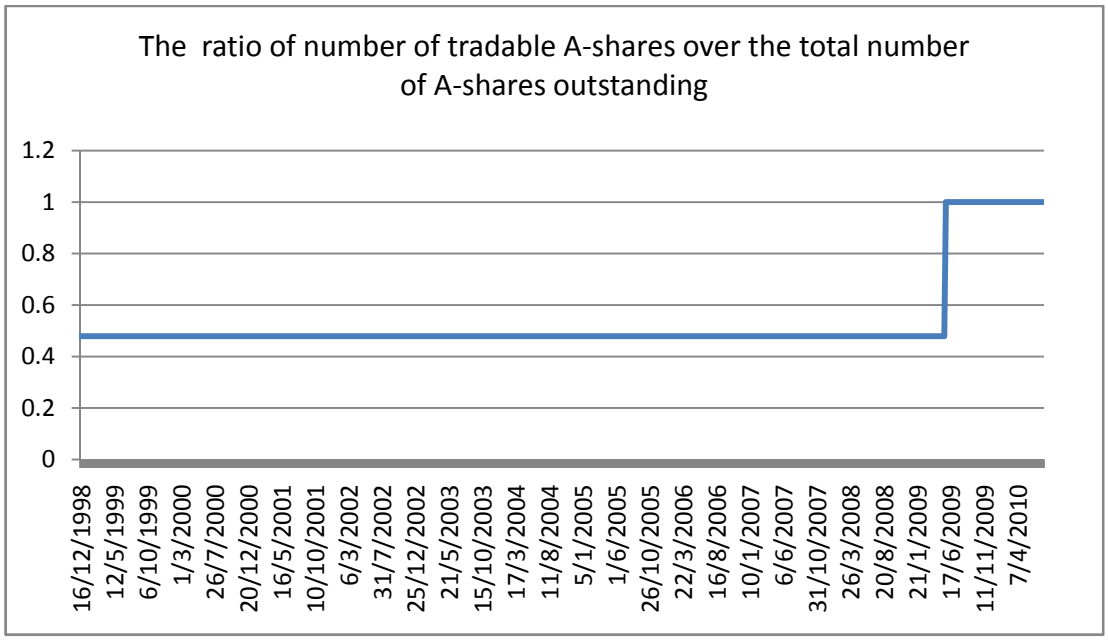
Selected company: Guangzhou Shipyard International Co. ltd (600685)



Data sources: DataStream

Figure 4: Split-share structure reform

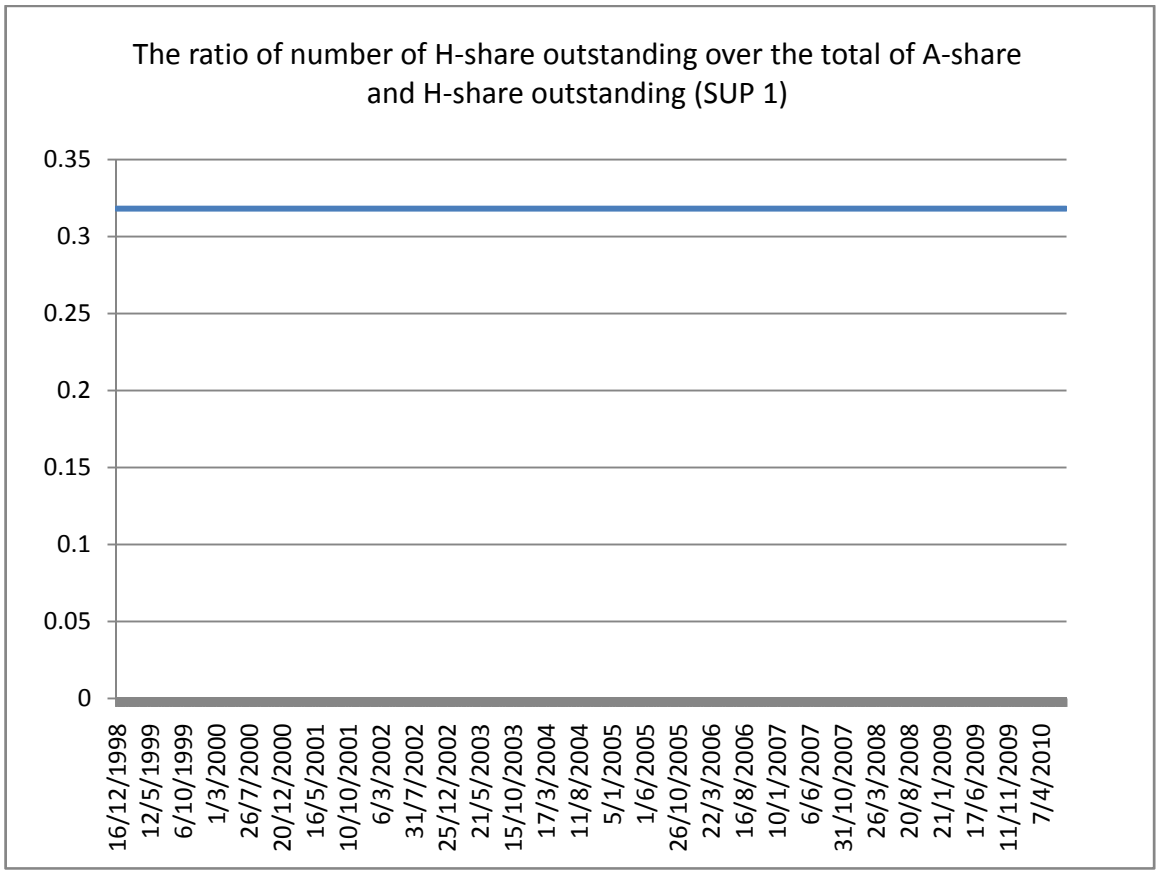
Selected company: Guangzhou Shipyard International Co. ltd (600685)



Data sources: DataStream

Figure 5: SUP 1 in testing period

Selected company: Guangzhou Shipyard International Co. ltd (600685)



Data sources: DataStream

Table 1: Market capitalization of China-related share in Main Board [4](in Hong Kong dollar million)

	H shares		Red chips		All	
Year-end	Market capitalization	% of market	Market capitalization	% of market	Market capitalization	% of market
1996	31,530.63	0.91%	263,330.90	7.58%	294,861.53	8.48%
1997	48,622.01	1.52%	472,970.42	14.77%	521,592.43	16.29%
1998	33,532.66	1.26%	334,966.21	12.58%	368,498.87	13.84%
1999	41,888.78	0.89%	956,942.33	20.24%	998,831.11	21.13%
2000	85,139.58	1.78%	1,203,551.95	25.10%	1,288,691.53	26.87%
2001	99,813.09	2.57%	908,854.82	23.39%	1,008,667.91	25.96%
2002	129,248.37	3.63%	806,407.41	22.66%	935,655.78	26.29%
2003	403,116.50	7.36%	1,197,770.75	21.87%	1,600,887.25	29.23%
2004	455,151.75	6.87%	1,409,357.12	21.26%	1,864,508.88	28.13%
2005	1,280,495.01	15.78%	1,709,960.75	21.08%	2,990,455.76	36.86%
2006	3,363,788.46	25.39%	2,951,581.05	22.28%	6,315,369.51	47.67%
2007	5,056,820.09	24.62%	5,514,059.49	26.85%	10,570,879.58	51.47%
2008	2,720,188.76	26.53%	2,874,906.69	28.04%	5,595,095.45	54.57%
2009	4,686,418.75	26.37%	3,862,143.29	21.73%	8,548,562.04	48.11%
2010	5,210,324.73	24.88%	4,380,687.29	20.92%	9,591,012.02	45.80%

[4] Sources: Hong Kong Exchanges and Clearing Limited

Table 2: The selected companies included in the sample

Company name	Equity Code			Listed Date		
	A-share	H-share	ADR	A-share	H-share	ADR
Angang New Steel Co. Ltd.	898	347		25-Dec-9	24-Jul-97	
Anhui Conch Cement Co. Ltd.	600585	914		7-Feb-02	21-Oct-9	
Anhui Expressway Co. Ltd.	600012	995		6-Jan-03	13-Nov-9	
Beiren Printing Machinery Holdings Ltd.	600860	187		6-May-94	6-Aug-93	
China Eastern Airlines Corporation Ltd.	600115	670	CEA	5-Nov-97	5-Feb-97	
China Petroleum & Chemical Corporation	600028	386	SNP	7-Aug-01	18-Oct-0	
China Southern Airlines Co. Ltd.	600029	1055	ZNH	24-Jul-03	31-Jul-97	
CHINA UNICOME	600050	762	CHU	8-Oct-02	21-Jun-0	
Dongfang Electrical Machinery Co. Ltd.	600875	1072		10-Oct-9	6-Jun-94	
Guangzhou Pharmaceutical Co. Ltd.	600332	874		5-Feb-01	30-Oct-9	
Guangzhou Shipyard International Co.	600685	317		28-Oct-9	6-Aug-93	
HISENSE KELON	000921	921		13-Jul-99	23-Jul-96	
Huaneng Power International, Inc.	600011	902	HNP	5-Dec-01	22-Jan-98	
Jiangsu Expressway Co. Ltd.	600377	177		15-Jan-01	27-Jun-9	
Jiangxi Copper Co. Ltd.	600362	358		11-Jan-02	12-Jun-9	
Jiaoda Kunji High-Tech Co. Ltd.	600806	300		3-Jan-94	7-Dec-93	
Jingwei Textile Machinery Co. Ltd.	000666	350		10-Dec-9	2-Feb-96	
Luoyang Glass Co. Ltd.	600876	1108		31-Oct-9	8-Jul-94	12-Apr-9
Maanshan Iron & Steel Co. Ltd.	600808	323		6-Jan-94	3-Nov-93	26-Jul-93
Nanjing Panda Electronic Co. Ltd.	600775	553		18-Nov-9	2-May-96	4-Feb-97
Northeast Electric Development Co. Ltd.	000585	42		13-Dec-9	6-Jul-95	
Shandong Xinhua Pharmaceutical Co. Ltd.	000756	719		6-Aug-97	31-Dec-9	30-Mar-9
Shenzhen Expressway Co. Ltd.	600548	548		25-Dec-0	11-Mar-9	
Sinopec Shanghai Petrochemical Co. Ltd.	600688	338	SHI	8-Nov-93	26-Jul-93	17-Oct-0
Sinopec Yizheng Chemical Fibre Co., Ltd	600871	1033		11-Apr-9	29-Mar-9	6-Oct-94
Tsingtao Brewery Co. Ltd.	600600	168	TSGT	30-Aug-9	15-Jul-93	
Yanzhou Coal Mining Co. Ltd.	600188	1171	YZC	7-Jun-98	1-Apr-98	20-Jun-0
ZTE CORP	000063	763		18-Nov-9	8-Dec-04	29-Jul-97

Table 3: Description of the Data and Expected effect for Bench Model

Variable	Factor	Description
PREM	A-share premium	Natural logarithm of A-share price minus natural logarithm H-share (ADR) of the same stock
CUR	Currency factor	Percentage change in exchange rate
INF	Asymmetric information hypothesis	Natural logarithm of total market capitalization based on all shares.
SUP	Differential Demand hypothesis	Natural logarithm of number of outstanding H-share (ADR) over number of tradable A-share and H-share (ADR)
MC	Market condition	Natural logarithm of Shanghai Stock Index over Hang Seng Index (S&P 500 index)
LQ	Differential liquidity hypothesis	Natural logarithm of weekly A-share turnover over H-share (ADR) turnover
RD	Differential risk level hypothesis	10-week rolling standard deviation of A-share return over 10-week rolling standard deviation of H-share (ADR)

Table 4: Summary statistics of A-H sample and A-ADR sample

	Observation	Mean	Std. Dev.	Minimum	Maximum
Panel A: A-share and H share sample					
PREM	14942	1.0352	0.8089	-1.1995	5.8567
INF	15254	9.3245	1.4243	6.3204	14.5223
SUP	15821	6.2730	1.5153	4.2767	11.4621
MC	16940	-2.0067	0.2555	-2.6098	-1.4308
LQ	14405	-0.6434	1.7349	-7.4315	7.3685
RD	14668	0.9635	0.6579	0.0019	9.1285
CUR 1	16940	-0.0003	0.0016	-0.0202	0.0096
CUR 2	16940	-0.0004	0.0043	-0.0251	0.0330
Panel A: A-share and ADR sample					
PREM	3698	0.6455	0.6645	-1.2154	2.1321
INF	3698	10.8409	1.1283	9.0226	14.5223
SUP	3613	4.0861	1.3881	2.7543	7.8024
MC	3949	0.5742	0.4058	-0.1546	1.4138
LQ	3446	1.0898	2.0107	-4.5399	8.7615
RD	3638	0.9438	0.5410	0.1399	5.1886
CUR 1	3949	-0.0004	0.0016	-0.0198	0.0075
CUR 2	3949	0.0000	0.0040	-0.0198	0.0301
CUR 3	4912	0.0000	0.0006	-0.0055	0.0025
CUR 4	4912	0.0005	0.0037	-0.0353	0.0247

Table 5: Panel Unit Root Test

Im, Pesaran and Shin W-stat				
	A-share and H-share		A-share and ADR	
	level	1st diff	level	1st diff
	P-value	P-value	Statistics	P-value
PREM	0.0001	0.0000	0.0257	0.0000
INF	0.1079	0.0000	0.4707	0.0000
SUP	1.0000	0.0000	0.9998	0.0000
MC	0.0000	0.0000	0.6922	0.0000
LQ	0.0000	0.0000	0.0000	0.0000
RD	0.0000	0.0000	0.0000	0.0000
CUR 1	0.0000	0.0000	0.0000	0.0000
CUR 2	0.0000	0.0000	0.0000	0.0000

Individual intercept is included.

Table 6: Cointegration Test

Panel A: A-share and H-share sample

Alternative hypothesis: common AR coefs. (within-dimension)				
			Weighted	
	Statistic	Prob.	Statistic	Prob.
Panel v-Statistic	-2.3803	0.9914	-2.3995	0.9918
Panel rho-Statistic	-5.0344	0.0000	-8.4825	0.0000
Panel PP-Statistic	-5.3229	0.0000	-7.8585	0.0000
Panel ADF-Statistic	-0.7185	0.2362	-1.6888	0.0456

Alternative hypothesis: individual AR coefs. (between-dimension)		
	Statistic	Prob.
Group rho-Statistic	-7.0366	0.0000
Group PP-Statistic	-6.3154	0.0000
Group ADF-Statistic	-1.2680	0.1024

Automatic lag length selection based on SIC with lags from 1 to 4.
Individual intercept and individual trend are allowed.

Panel B: A-share and ADR sample

Alternative hypothesis: common AR coefs. (within-dimension)				
			Weighted	
	Statistic	Prob.	Statistic	Prob.
Panel v-Statistic	2.3418	0.0096	2.3699	0.0089
Panel rho-Statistic	-142.7949	0.0000	-147.4211	0.0000
Panel PP-Statistic	-56.8920	0.0000	-57.6752	0.0000
Panel ADF-Statistic	-31.9589	0.0000	-32.3182	0.0000

Alternative hypothesis: individual AR coefs. (between-dimension)		
	Statistic	Prob.
Group rho-Statistic	-156.1661	0.0000
Group PP-Statistic	-67.7740	0.0000
Group ADF-Statistic	-38.0389	0.0000

Automatic lag length selection based on SIC with lags from 1 to 4.
Individual intercept and individual trend are allowed.

Table 7-a: Estimates of the Benchmark Model 1

This table reports the estimates and test results of the following model:

$$\mathbf{PREM}_{\mathbf{it}} = \alpha_0 + \alpha_1 \mathbf{Reform}_{\mathbf{t}} + \alpha_2 \mathbf{INF}_{\mathbf{it}} + \alpha_3 \mathbf{SUP}_{\mathbf{it}} + \alpha_4 \mathbf{MC}_{\mathbf{it}} + \alpha_5 \mathbf{LQ}_{\mathbf{it}} + \alpha_6 \mathbf{RD}_{\mathbf{it}} + \boldsymbol{\varepsilon}_{\mathbf{it}}$$

The dependent variable $\mathbf{PREM}_{\mathbf{it}}$ for each firm is Natural logarithm of A-share price minus natural logarithm of foreign-share price. $\mathbf{Reform}_{\mathbf{t}}$ is the dummy variable, it equals to one after 21 July 2005, and zero otherwise. $\mathbf{INF}_{\mathbf{it}}$ is total market capitalization in foreign currency (in natural logarithm). $\mathbf{SUP}_{\mathbf{it}}$ is the ratio of number of foreign outstanding over total A-share tradable share and foreign outstanding. $\mathbf{MC}_{\mathbf{it}}$, is computed as the Shanghai composite index price over Hang Seng index price (or S&P 500 index). $\mathbf{LQ}_{\mathbf{it}}$ is defined as A-share turnover over foreign share turnover. Turnover is calculated as A-share weekly trading volume over A-share equity outstanding. $\mathbf{RD}_{\mathbf{it}}$ is ratio of standard deviation of A-share return to foreign share return, σ_A^2/σ_H^2 and we calculate simple 10-week rolling standard deviation for each share. Numbers inside the parentheses are standard errors. (*** Significance at 1%, ** Significance at 5%,*Significance at 10%)

	A-share and H-share		A-share and ADR	
	(1)	(2)	(3)	(4)
Reform	**-0.5214*** **	**-0.5233*** **	**-0.3623*** **	**-0.3524*** **
	(0.0091)	**(0.0092)**	**(0.0143)**	**(0.0116)**
INF	-0.2747***	-0.2743***	-0.3811***	-0.3419***
	(0.0073)	(0.0075)	(0.0057)	(0.0145)
SUP	0.0450***	0.0522***	-0.3811***	-0.0946***
	(0.0108)	(0.0113)	(0.057)	(0.0126)
MC	1.0239***	1.0219***	0.6564***	0.9672***
	(0.0160)	(0.0161)	(0.0180)	(0.0175)
LQ	0.0364***	0.0371***	0.0160***	0.0209***
	(0.0030)	(0.0030)	(0.0041)	(0.0035)
RD	-0.0449***	-0.0452***	-0.0807***	-0.0462***
	(0.0059)	(0.0059)	(0.0112)	(0.0088)
Constant	5.6255***	5.5944***	0.9628***	4.3782***
	(0.1218)	(0.1159)	(0.0747)	(0.1501)
R-squared		0.4375		0.5703
Fixed-effect	NO	YES	NO	YES

Table 7-b: Estimates of the Benchmark Model 1

This table reports the estimates and test results of the following model:

$$\mathbf{PREM}_{it} = \alpha_0 + \alpha_1 \mathbf{Reform}_t + \alpha_2 \mathbf{INF}_{it} + \alpha_3 \mathbf{SUP}_{it} + \alpha_4 \mathbf{MC}_{it} + \alpha_5 \mathbf{LQ}_{it} + \alpha_6 \mathbf{RD}_{it} + \alpha_7 (\mathbf{Reform} * \mathbf{RD})_{it} + \varepsilon_{it}$$

The dependent variable $\mathbf{PREM}_{it}$ for each firm is Natural logarithm of A-share price minus natural logarithm of foreign-share price. $\mathbf{Reform}_t$ is the dummy variable, it equals to one after 21 July 2005, and zero otherwise. $\mathbf{INF}_{it}$ is total market capitalization in foreign currency (in natural logarithm). $\mathbf{SUP}_{it}$ is the ratio of number of foreign outstanding over total A-share tradable share and foreign outstanding. $\mathbf{MC}_{it}$, is computed as the Shanghai composite index price over Hang Seng index price (or S&P 500 index). $\mathbf{LQ}_{it}$ is defined as A-share turnover over foreign share turnover. Turnover is calculated as A-share weekly trading volume over A-share equity outstanding. $\mathbf{RD}_{it}$ is ratio of standard deviation of A-share return to foreign share return, σ_A^2/σ_H^2 and we calculate simple 10-week rolling standard deviation for each share. $(\mathbf{Reform} * \mathbf{RD})_{it}$ is dummy variable multiplies differential risk level variable. Numbers inside the parentheses are standard errors. (*** Significance at 1%, ** Significance at 5%,*Significance at 10%)

	A-share and H-share		A-share and ADR	
	(1)	(2)	(3)	(4)
Reform	**-0.6197*** **	**-0.6216*** **	**-0.4581*** **	**-0.4746*** **
	(0.0149)	**(0.0150)**	**(0.0254)**	**(0.0204)**
Reform*RD	**0.0970*** **	**0.0970*** **	**0.1008*** **	**0.1246*** **
	(0.0117)	**(0.0117)**	**(0.0221)**	**(0.0171)**
INF	-0.2727***	-0.2723***	0.0975***	-0.3374***
	(0.0073)	(0.0075)	(0.0082)	(0.0144)
SUP	0.0457***	0.0528***	-0.3798***	-0.0831***
	(0.0108)	(0.0113)	(0.0057)	(0.0126)
MC	1.0233***	1.0213***	0.6607***	0.9657***
	(0.0159)	(0.0160)	(0.0180)	(0.0174)
LQ	0.0372***	0.0378***	0.0158***	0.0209***
	(0.0029)	(0.0029)	(0.0040)	(0.0035)
RD	-0.0824***	-0.0827***	-0.1419***	-0.1232***
	(0.0074)	(0.0074)	(0.0175)	(0.0137)
Constant	5.6352***	5.6038***	1.0209***	4.3493***
	(0.1221)	(0.1156)	(0.0755)	(0.1489)
R-squared		0.4402		0.5772
Fixed-effect	NO	YES	NO	YES

Table 8: Estimates of the Benchmark Model 2 in A-H sample

This table reports the estimates and test results of the following model:

$$\mathbf{PREM}_{\mathbf{it}} = \alpha_0 + \alpha_1 \mathbf{CUR}_{\mathbf{it}} + \alpha_2 \mathbf{INF}_{\mathbf{it}} + \alpha_3 \mathbf{SUP}_{\mathbf{it}} + \alpha_4 \mathbf{MC}_{\mathbf{it}} + \alpha_5 \mathbf{LQ}_{\mathbf{it}} + \alpha_6 \mathbf{RD}_{\mathbf{it}} + \varepsilon_{\mathbf{it}}$$

The dependent variable $\mathbf{PREM}_{\mathbf{it}}$ for each firm is Natural logarithm of A-share price minus natural logarithm of foreign-share price. $\mathbf{CUR1}_{\mathbf{it}}$ is change in RMB over HKD bilateral nominal exchange rate($e_t/e_{t-1}) - 1$. $\mathbf{INF}_{\mathbf{it}}$ is total market capitalization in foreign currency (in natural logarithm). $\mathbf{SUP}_{\mathbf{it}}$ is the ratio of number of foreign outstanding over total A-share tradable share and foreign outstanding. $\mathbf{MC}_{\mathbf{it}}$, is computed as the Shanghai composite index price over Hang Seng index price (or S&P 500 index). $\mathbf{LQ}_{\mathbf{it}}$ is defined as A-share turnover over foreign share turnover. Turnover is calculated as A-share weekly trading volume over A-share equity outstanding. $\mathbf{RD}_{\mathbf{it}}$ is ratio of standard deviation of A-share return to foreign share return, σ_A^2/σ_H^2 and we calculate simple 10-week rolling standard deviation for each share. Numbers inside the parentheses are standard errors. (*** Significance at 1%, ** Significance at 5%,*Significance at 10%)

	Pre-Reform		Post-Reform	
	(1)	(2)	(3)	(4)
CUR 1	**-8.9926**	**-8.8209**	**3.6307*** **	**3.6055*** **
	(7.8440)	**(7.8261)**	**(1.3628)**	**(1.3617)**
INF	-0.2842***	-0.2841***	-0.1273***	-0.1234***
	(0.0182)	(0.0196)	(0.0081)	(0.0082)
SUP	-0.0391	-0.0391	0.0404***	0.0438***
	(0.0383)	(0.0383)	(0.0069)	(0.0070)
MC	1.3461***	1.3431***	0.6353***	0.6293***
	(0.0277)	(0.0279)	(0.0146)	(0.0147)
LQ	0.0722***	0.0738***	0.0053*	0.0054*
	(0.0044)	(0.0044)	(0.0029)	(0.0029)
RD	-0.1093***	-0.1100***	-0.0110**	-0.0111**
	(0.0088)	(0.0088)	(0.0054)	(0.0054)
Constant	6.9471***	6.7806***	2.8985***	2.8145***
	(0.2876)	(0.2016)	(0.1298)	(0.1125)
R-squared		0.2910		0.2846
Fixed-effect	NO	YES	NO	YES

Table 9: Estimates of the Benchmark Model 2 in A-ADR sample

This table reports the estimates and test results of the following model:

$$\mathbf{PREM}_{\mathbf{it}} = \alpha_0 + \alpha_1 \mathbf{CUR}_{\mathbf{it}} + \alpha_2 \mathbf{INF}_{\mathbf{it}} + \alpha_3 \mathbf{SUP}_{\mathbf{it}} + \alpha_4 \mathbf{MC}_{\mathbf{it}} + \alpha_5 \mathbf{LQ}_{\mathbf{it}} + \alpha_6 \mathbf{RD}_{\mathbf{it}} + \varepsilon_{\mathbf{it}}$$

The dependent variable $\mathbf{PREM}_{\mathbf{it}}$ for each firm is Natural logarithm of A-share price minus natural logarithm of foreign-share price. $\mathbf{CUR1}_{\mathbf{it}}$ is change in RMB over USD bilateral nominal exchange rate($e_t/e_{t-1}) - 1$.$\mathbf{INF}_{\mathbf{it}}$ is total market capitalization in foreign currency (in natural logarithm). $\mathbf{SUP}_{\mathbf{it}}$ is the ratio of number of foreign outstanding over total A-share tradable share and foreign outstanding. $\mathbf{MC}_{\mathbf{it}}$, is computed as the Shanghai composite index price over Hang Seng index price (or S&P 500 index). $\mathbf{LQ}_{\mathbf{it}}$ is defined as A-share turnover over foreign share turnover. Turnover is calculated as A-share weekly trading volume over A-share equity outstanding. $\mathbf{RD}_{\mathbf{it}}$ is ratio of standard deviation of A-share return to foreign share return, $\sigma_A^2/\sigma_{ADR}^2$ and we calculate simple 10-week rolling standard deviation for each share. Numbers inside the parentheses are standard errors. (*** Significance at 1%, ** Significance at 5%,*Significance at 10%)

	Pre-Reform		Post-Reform	
	(1)	(2)	(3)	(4)
CUR 1	**-52.7957**	**-78.9862**	**7.6772*** **	**2.3575** **
	(223.3671)	**(158.9941)**	**(2.3573)**	**(2.1398)**
INF	0.1723***	-0.5425***	-0.1355***	-0.1756***
	(0.0164)	(0.0353)	(0.0139)	(0.0155)
SUP	-0.4328***	-0.0041	-0.0961***	0.0638***
	(0.0110)	(0.0584)	(0.0113)	(0.0133)
MC	1.3532***	1.2230***	0.6918***	0.6971***
	(0.0544)	(0.0423)	(0.0173)	(0.0183)
LQ	0.0458***	0.0423***	-0.0358***	-0.0292***
	(0.0065)	(0.0051)	(0.0043)	(0.0040)
RD	-0.0631***	-0.0944***	-0.0083	-0.0032
	(0.0200)	(0.0149)	(0.0095)	(0.0085)
Constant	0.0734	6.1289***	1.9177***	1.6465***
	(0.1473)	(0.3928)	(0.1387)	(0.1635)
R-squared		0.5847		0.6426
Fixed-effect	NO	YES	NO	YES

Table 10: USD over HKD in A-ADR sample

This table reports the estimates and test results of the following model:

$$\mathbf{PREM}_{\mathbf{it}} = \alpha_0 + \alpha_1 \mathbf{CUR}_{\mathbf{it}} + \alpha_2 \mathbf{INF}_{\mathbf{it}} + \alpha_3 \mathbf{SUP}_{\mathbf{it}} + \alpha_4 \mathbf{MC}_{\mathbf{it}} + \alpha_5 \mathbf{LQ}_{\mathbf{it}} + \alpha_6 \mathbf{RD}_{\mathbf{it}} + \varepsilon_{\mathbf{it}}$$

The dependent variable $\mathbf{PREM}_{\mathbf{it}}$ for each firm is Natural logarithm of A-share price minus natural logarithm of foreign-share price. $\mathbf{CUR3}_{\mathbf{it}}$ is change in HKD over USD bilateral nominal exchange rate$(e_t/e_{t-1}) - 1$. $\mathbf{CUR4}_{\mathbf{it}}$ is change in HKD over USD bilateral real exchange rate$(s_t/s_{t-1}) - 1$. $\mathbf{SUP}_{\mathbf{it}}$ is the ratio of number of foreign outstanding over total A-share tradable share and foreign outstanding. $\mathbf{MC}_{\mathbf{it}}$ is computed as the Shanghai composite index price over Hang Seng index price (or S&P 500 index). $\mathbf{LQ}_{\mathbf{it}}$ is defined as A-share turnover over foreign share turnover. Turnover is calculated as A-share weekly trading volume over A-share equity outstanding. $\mathbf{RD}_{\mathbf{it}}$ is ratio of standard deviation of A-share return to foreign share return, $\sigma_A^2/\sigma_{ADR}^2$ and we calculate simple 10-week rolling standard deviation for each share. Numbers inside the parentheses are standard errors. (*** Significance at 1%, ** Significance at 5%,*Significance at 10%)

Sample: A-share and ADR				
	(1)	(2)	(3)	(4)
CUR 3	**-15.7644**	**-11.6319**		
	(9.9424)	**(7.9032)**		
CUR 4			**1.8282**	**1.4363**
			(1.6870)	**(1.3419)**
INF	0.1120***	-0.3920***	0.1110***	-0.3927***
	(0.0090)	(0.0164)	(0.0090)	(0.0164)
SUP	-0.4048***	-0.2036***	-0.4042***	-0.2028***
	(0.0061)	(0.0138)	(0.0061)	(0.0138)
MC	0.4248***	0.8306***	0.4255***	0.8310***
	(0.0170)	(0.0192)	(0.0170)	(0.0192)
LQ	0.0211***	0.0248***	0.0204***	0.0242***
	(0.0044)	(0.0040)	(0.0044)	(0.0040)
RD	-0.1737***	-0.1183***	-0.1734***	-0.1180***
	(0.0116)	(0.0096)	(0.0116)	(0.0096)
Constant	0.9378***	5.3269***	0.9447***	5.3305***
	(0.0818)	(0.1664)	(0.0818)	(0.1664)
R-squared		0.4477		0.4475
Fixed-effect	NO	YES	NO	YES

Table 11 Split-share structure reform in Model 1

This table reports the estimates and test results of the following model:

$$\mathbf{PREM}_{\mathbf{it}} = \alpha_0 + \alpha_1 \mathbf{Reform}_{\mathbf{t}} + \alpha_2 \mathbf{INF}_{\mathbf{it}} + \alpha_3 \mathbf{SUP\ 1}_{\mathbf{it}} + \alpha_4 \mathbf{MC}_{\mathbf{it}} + \alpha_5 \mathbf{LQ}_{\mathbf{it}} + \alpha_6 \mathbf{RD}_{\mathbf{it}} + \varepsilon_{\mathbf{it}}$$

The dependent variable $\mathbf{PREM}_{\mathbf{it}}$ for each firm is Natural logarithm of A-share price minus natural logarithm of foreign-share price. $\mathbf{Reform}_{\mathbf{t}}$ is the dummy variable, it equals to one after 21 July 2005, and zero otherwise. $\mathbf{INF}_{\mathbf{it}}$ is total market capitalization in foreign currency (in natural logarithm). $\mathbf{SUP1}_{\mathbf{it}}$ as the ratio of number of H-share outstanding over total A-share share and H-share outstanding. $\mathbf{MC}_{\mathbf{it}}$, is computed as the Shanghai composite index price over Hang Seng index price (or S&P 500 index). $\mathbf{LQ}_{\mathbf{it}}$ is defined as A-share turnover over foreign share turnover. Turnover is calculated as A-share weekly trading volume over A-share equity outstanding. RD_{it} is ratio of standard deviation of A-share return to foreign share return, σ_A^2/σ_H^2 and we calculate simple 10-week rolling standard deviation for each share. Numbers inside the parentheses are standard errors. (*** Significance at 1%, ** Significance at 5%,*Significance at 10%)

	A-share and H-share		A-share and ADR	
	(1)	(2)	(3)	(4)
Reform	**-0.5147*** **	**-0.5150*** **	**-0.3848*** **	**-0.3673*** **
	(0.0089)	**(0.0089)**	**(0.0131)**	**(0.0113)**
INF	-0.2472***	-0.2468***	-0.2800***	-0.3486***
	(0.0077)	(0.0078)	(0.0055)	(0.0145)
SUP 1	0.3868***	0.3985***	-0.4435***	-0.1063***
	(0.0336)	(0.0340)	(0.0058)	(0.0164)
MC	1.0166***	1.0163***	0.9655***	0.9713***
	(0.0159)	(0.0159)	(0.0162)	(0.0176)
LQ	0.0362***	0.0369***	-0.0065*	0.0200***
	(0.0029)	(0.0029)	(0.0036)	(0.0035)
RD	-0.0450***	-0.0453***	-0.0568***	-0.0462***
	(0.0059)	(0.0059)	(0.0103)	(0.0088)
Constant	6.0891***	6.1158***	1.2368***	3.5592***
	(0.1012)	(0.0890)	(0.0663)	(0.1794)
R-squared		0.4421		0.5684
Fixed-effect	NO	YES	NO	YES

Table 12: Split-share structure reform in A-H sample

This table reports the estimates and test results of the following model:

$$\mathbf{PREM}_{\mathbf{it}} = \alpha_0 + \alpha_1 \mathbf{CUR}_{\mathbf{it}} + \alpha_2 \mathbf{INF}_{\mathbf{it}} + \alpha_3 \mathbf{SUP\ 1}_{\mathbf{it}} + \alpha_4 \mathbf{MC}_{\mathbf{it}} + \alpha_5 \mathbf{LQ}_{\mathbf{it}} + \alpha_6 \mathbf{RD}_{\mathbf{it}} + \varepsilon_{\mathbf{it}}$$

The dependent variable $\mathbf{PREM}_{\mathbf{it}}$ for each firm is Natural logarithm of A-share price minus natural logarithm of foreign-share price. $\mathbf{CUR1}_{\mathbf{it}}$ is change in RMB over HKD bilateral nominal exchange rate($e_t/e_{t-1}) - 1$. $\mathbf{INF}_{\mathbf{it}}$ is total market capitalization in foreign currency (in natural logarithm). $\mathbf{SUP1}_{\mathbf{it}}$ is the ratio of number of H-share outstanding over total A-share share and H-share outstanding. $\mathbf{MC}_{\mathbf{it}}$ is computed as the Shanghai composite index price over Hang Seng index price (or S&P 500 index). $\mathbf{LQ}_{\mathbf{it}}$ is defined as A-share turnover over foreign share turnover. Turnover is calculated as A-share weekly trading volume over A-share equity outstanding. $\mathbf{RD}_{\mathbf{it}}$ is ratio of standard deviation of A-share return to foreign share return, σ_A^2/σ_H^2 and we calculate simple 10-week rolling standard deviation for each share. Numbers inside the parentheses are standard errors. (*** Significance at 1%, ** Significance at 5%,*Significance at 10%)

	Pre-Reform		Post-Reform	
	(1)	(2)	(3)	(4)
CUR 1	**-9.1510**	**-9.3789**	**4.7022*** **	**4.7477*** **
	(7.7941)	**(7.7419)**	**(1.3570)**	**(1.3562)**
INF	-0.2966***	-0.3263***	-0.1153***	-0.1116***
	(0.0178)	(0.0197)	(0.0084)	(0.0086)
SUP 1	1.2690***	1.9059***	0.1278***	0.1294***
	(0.1296)	(0.1539)	(0.0306)	(0.0308)
MC	1.3841***	1.4132***	0.6353***	0.6306***
	(0.0277)	(0.0281)	(0.0147)	(0.0148)
LQ	0.0719***	0.0740***	0.0060**	0.0062**
	(0.0043)	(0.0043)	(0.0029)	(0.0029)
RD	-0.1096***	-0.1122***	-0.0122**	-0.0124**
	(0.0087)	(0.0087)	(0.0054)	(0.0054)
Constant	8.3906***	9.4926***	3.1956***	3.1414***
	(0.2573)	(0.2962)	(0.1214)	(0.1030)
R-squared		0.291		0.2825
Fixed-effect	NO	YES	NO	YES

Table 13: Split-share structure reform in A-ADR sample

This table reports the estimates and test results of the following model:

$$\mathbf{PREM_{it}} = \alpha_0 + \alpha_1 \mathbf{CUR_{it}} + \alpha_2 \mathbf{INF_{it}} + \alpha_3 \mathbf{SUP1_{it}} + \alpha_4 \mathbf{MC_{it}} + \alpha_5 \mathbf{LQ_{it}} + \alpha_6 \mathbf{RD_{it}} + \varepsilon_{it}$$

The dependent variable $\mathbf{PREM_{it}}$ for each firm is Natural logarithm of A-share price minus natural logarithm of foreign-share price. $\mathbf{CUR1_{it}}$ is change in RMB over USD bilateral nominal exchange rate($e_t/e_{t-1}) - 1$. $\mathbf{INF_{it}}$ is total market capitalization in foreign currency (in natural logarithm). $\mathbf{SUP1_{it}}$ is the ratio of number of ADR outstanding over total A-share share and H-share outstanding. $\mathbf{MC_{it}}$ is computed as the Shanghai composite index price over Hang Seng index price (or S&P 500 index). $\mathbf{LQ_{it}}$ is defined as A-share turnover over foreign share turnover. Turnover is calculated as A-share weekly trading volume over A-share equity outstanding. $\mathbf{RD_{it}}$ is ratio of standard deviation of A-share return to foreign share return, $\sigma_A^2/\sigma_{ADR}^2$ and we calculate simple 10-week rolling standard deviation for each share. Numbers inside the parentheses are standard errors. (*** Significance at 1%, ** Significance at 5%,*Significance at 10%)

	Pre-Reform		Post-Reform	
	(1)	(2)	(3)	(4)
CUR 1	**-107.1579**	**-73.9273**	**3.4560****	**3.2172**
	(185.2942)	**(151.0540)**	**(1.6287)**	**(1.7043)**
INF	-0.3182***	-0.3943***	-0.1666**	-0.1666*
	(0.0089)	(0.0348)	(0.0814)	(0.0827)
SUP 1	-0.5484***	-1.7882***	0.0395	0.0506
	(0.0102)	(0.1456)	(0.0341)	(0.0420)
MC	1.4232***	1.1709***	0.6966***	0.6950***
	(0.0446)	(0.0382)	(0.1077)	(0.1083)
LQ	0.0196***	0.0383***	-0.0287***	-0.0282**
	(0.0051)	(0.0049)	(0.0105)	(0.0104)
RD	-0.0946***	-0.0691***	-0.0054	-0.0055
	(0.0167)	(0.0142)	(0.0220)	(0.0221)
Constant	0.9598***	-4.3058***	2.0146**	2.0658**
	(0.1093)	(0.9177)	(0.8468)	(0.7674)
R-squared		0.6251		0.6403
Fixed-effect	NO	YES	NO	YES

Table 14: Differential risk level hypothesis in Model 1

This table reports the estimates and test results of the following model:

$$\mathbf{PERM}_{it} = \alpha_0 + \alpha_1 \mathbf{Reform}_t + \alpha_2 \mathbf{INF}_{it} + \alpha_3 \mathbf{SUP}_{it} + \alpha_4 \mathbf{MC}_{it} + \alpha_5 \mathbf{LQ}_{it} + \alpha_6 \mathbf{RD}_{it} + \varepsilon_{it}$$

The dependent variable $\mathbf{PERM}_{it}$ for each firm is Natural logarithm of A-share price minus natural logarithm of foreign-share price. $\mathbf{Reform}_t$ is the dummy variable, it equals to one after 21 July 2005, and zero otherwise. $\mathbf{INF}_{it}$ is total market capitalization in foreign currency (in natural logarithm). $\mathbf{SUP}_{it}$ as the ratio of number of foreign outstanding over total A-share tradable share and foreign outstanding. $\mathbf{MC}_{it}$ is computed as the Shanghai composite index price over Hang Seng index price (or S&P 500 index). $\mathbf{LQ}_{it}$ is defined as A-share turnover over foreign share turnover. Turnover is calculated as A-share weekly trading volume over A-share equity outstanding. $\mathbf{RD2}_{it}$ is idiosyncratic risk which is calculated as ARCH-method. $\mathbf{RD3}_{it}$ is systematic risk, which is calculated as ARCH-method. Numbers inside the parentheses are standard errors. (*** Significance at 1%, ** Significance at 5%,*Significance at 10%)

	A-H sample				A-ADR sample			
	(1)	(2)	(3)	(4)	(5)	(7)	(6)	(8)
Reform	**-0.5310*** **	**-0.5335*** **	**-0.5243*** **	**-0.5266*** **	**-0.3924*** **	**-0.3646*** **	**-0.3983*** **	**-0.3668*** **
	(0.0089)	**(0.0090)**	**(0.0090)**	**(0.0090)**	**(0.0137)**	**(0.0113)**	**(0.0139)**	**(0.0114)**
INF	-0.2676***	-0.2669***	-0.2647***	-0.2640***	0.0990***	-0.3528***	0.0981***	-0.3529***
	(0.0072)	(0.0073)	(0.0072)	(0.0073)	(0.0083)	(0.0145)	(0.0082)	(0.0145)
SUP	0.0429***	0.0516***	0.0409***	0.0490***	-0.3809***	-0.0997***	-0.3804***	-0.0998***
	(0.0107)	(0.0114)	(0.0107)	(0.0113)	(0.0057)	(0.0128)	(0.0057)	(0.0128)
MC	1.0411***	1.0385***	1.0376***	1.0351***	0.6914***	0.9932***	0.6908***	0.9927***
	(0.0156)	(0.0157)	(0.0156)	(0.0157)	(0.0176)	(0.0170)	(0.0176)	(0.0170)
LQ	0.0348***	0.0356***	0.0362***	0.0370***	0.0155***	0.0193***	0.0151***	0.0194***
	(0.0029)	(0.0029)	(0.0029)	(0.0029)	(0.0040)	(0.0034)	(0.0040)	(0.0034)
RD 2	0.0006**	0.0006**			-0.0137**	-0.0013		
	(0.0003)	(0.0003)			(0.0069)	(0.0054)		
RD 3			-0.0623***	-0.0623***			0.0063	0.0042
			(0.0076)	(0.0076)			(0.0058)	(0.0044)
Constant	5.5657***	5.5251***	5.6135***	5.5768***	0.8868***	4.4671***	0.8761***	4.4597***
	(0.1174)	(0.1134)	(0.1181)	(0.1133)	(0.0755)	(0.1507)	(0.0765)	(0.1509)
R-squared		0.4339		0.4364		0.5634		0.5635
Fixed-effect	NO	YES	NO	YES	NO	YES	NO	YES

Table 15: Idiosyncratic risk in A-H sample

This table reports the estimates and test results of the following model:

$$\mathbf{PREM}_{\mathbf{it}} = \alpha_0 + \alpha_1 \mathbf{CUR}_{\mathbf{it}} + \alpha_2 \mathbf{INF}_{\mathbf{it}} + \alpha_3 \mathbf{SUP}_{\mathbf{it}} + \alpha_4 \mathbf{MC}_{\mathbf{it}} + \alpha_5 \mathbf{LQ}_{\mathbf{it}} + \alpha_6 \mathbf{RD2}_{\mathbf{it}} + \varepsilon_{\mathbf{it}}$$

The dependent variable $\mathbf{PREM}_{\mathbf{it}}$ for each firm is Natural logarithm of A-share price minus natural logarithm of foreign-share price. $\mathbf{CUR1}_{\mathbf{it}}$ is change in RMB over HKD bilateral nominal exchange rate$(e_t/e_{t-1}) - 1$. $\mathbf{INF}_{\mathbf{it}}$ is total market capitalization in foreign currency (in natural logarithm). $\mathbf{SUP}_{\mathbf{it}}$ is the ratio of number of foreign outstanding over total A-share tradable share and foreign outstanding. $\mathbf{MC}_{\mathbf{it}}$, is computed as the Shanghai composite index price over Hang Seng index price (or S&P 500 index). $\mathbf{LQ}_{\mathbf{it}}$ is defined as A-share turnover over foreign share turnover. Turnover is calculated as A-share weekly trading volume over A-share equity outstanding.$\mathbf{RD2}_{\mathbf{it}}$ is idiosyncratic risk which is calculated as ARCH-method. Numbers inside the parentheses are standard errors. (*** Significance at 1%, ** Significance at 5%,*Significance at 10%)

	Pre-Reform		Post-Reform	
	(1)	(2)	(3)	(4)
CUR 1	**-9.4651**	**-9.2578**	**3.2447****	**3.2143****
	(7.8583)	**(7.8385)**	**(1.3872)**	**(1.3846)**
INF	-0.2629***	-0.2587***	-0.1324***	-0.1270***
	(0.0181)	(0.0195)	(0.0081)	(0.0082)
SUP	-0.0409	-0.0402	0.0349***	0.0399***
	(0.0371)	(0.0372)	(0.0071)	(0.0072)
MC	1.3901***	1.3856***	0.6665***	0.6582***
	(0.0274)	(0.0276)	(0.0144)	(0.0146)
LQ	0.0642***	0.0659***	0.0060**	0.0062**
	(0.0043)	(0.0043)	(0.0029)	(0.0029)
RD 2	0.0002	0.0002	0.0041***	0.0040***
	(0.0004)	(0.0004)	(0.0007)	(0.0007)
Constant	6.7445***	6.5282***	3.0329***	2.9328***
	(0.2803)	(0.2007)	(0.1236)	(0.1125)
R-squared		0.2788		0.2940
Fixed-effect	NO	YES	NO	YES

Table 16: Systematic risk in A-H model

This table reports the estimates and test results of the following model:

$$\mathbf{PREM}_{\mathbf{it}} = \alpha_0 + \alpha_1 \mathbf{CUR}_{\mathbf{it}} + \alpha_2 \mathbf{INF}_{\mathbf{it}} + \alpha_3 \mathbf{SUP}_{\mathbf{it}} + \alpha_4 \mathbf{MC}_{\mathbf{it}} + \alpha_5 \mathbf{LQ}_{\mathbf{it}} + \alpha_6 \mathbf{RD3}_{\mathbf{it}} + \varepsilon_{\mathbf{it}}$$

The dependent variable $\mathbf{PREM}_{\mathbf{it}}$ for each firm is Natural logarithm of A-share price minus natural logarithm of foreign-share price. $\mathbf{CUR1}_{\mathbf{it}}$ is change in RMB over HKD bilateral nominal exchange rate($e_t/e_{t-1}) - 1$. $\mathbf{INF}_{\mathbf{it}}$ is total market capitalization in foreign currency (in natural logarithm). $\mathbf{SUP}_{\mathbf{it}}$ is the ratio of number of foreign outstanding over total A-share tradable share and foreign outstanding. $\mathbf{MC}_{\mathbf{it}}$, is computed as the Shanghai composite index price over Hang Seng index price (or S&P 500 index). $\mathbf{LQ}_{\mathbf{it}}$ is defined as A-share turnover over foreign share turnover. Turnover is calculated as A-share weekly trading volume over A-share equity outstanding. $\mathbf{RD3}_{\mathrm{it}}$ is systematic risk, which is calculated as ARCH-method..Numbers inside the parentheses are standard errors. (*** Significance at 1%, ** Significance at 5%,*Significance at 10%)

	Pre-Reform		Post-Reform	
	(1)	(2)	(3)	(4)
CUR 1	**-11.9008**	**-11.7174**	**2.7880****	**2.7614****
	(7.8059)	**(7.7852)**	**(1.3982)**	**(1.3968)**
INF	-0.2713***	-0.2690***	-0.1303***	-0.1262***
	(0.0179)	(0.0194)	(0.0082)	(0.0083)
SUP	-0.0384	-0.0384	0.0351***	0.0390***
	(0.0366)	(0.0366)	(0.0072)	(0.0072)
MC	1.3523***	1.3486***	0.6659***	0.6594***
	(0.0275)	(0.0276)	(0.0145)	(0.0146)
LQ	0.0658***	0.0676***	0.0068**	0.0070**
	(0.0042)	(0.0042)	(0.0029)	(0.0029)
RD 3	-0.1734***	-0.1735***	-0.0097*	-0.0098*
	(0.0172)	(0.0171)	(0.0051)	(0.0051)
Constant	6.9217***	6.7368***	3.0264***	2.9485***
	(0.2772)	(0.2004)	(0.1283)	(0.1127)
R-squared		0.2891		0.2911
Fixed-effect	NO	YES	NO	YES

Table 17: Idiosyncratic risk in A-ADR sample

This table reports the estimates and test results of the following model:

$$\mathbf{PREM}_{\mathbf{it}} = \alpha_0 + \alpha_1 \mathbf{CUR}_{\mathbf{it}} + \alpha_2 \mathbf{INF}_{\mathbf{it}} + \alpha_3 \mathbf{SUP}_{\mathbf{it}} + \alpha_4 \mathbf{MC}_{\mathbf{it}} + \alpha_5 \mathbf{LQ}_{\mathbf{it}} + \alpha_6 \mathbf{RD2}_{\mathbf{it}} + \varepsilon_{\mathbf{it}}$$

The dependent variable $\mathbf{PREM}_{\mathbf{it}}$ for each firm is Natural logarithm of A-share price minus natural logarithm of foreign-share price. $\mathbf{CUR1}_{\mathbf{it}}$ is change in RMB over USD bilateral nominal exchange rate(e_t/e_{t-1}) − 1. $\mathbf{INF}_{\mathbf{it}}$ is total market capitalization in foreign currency (in natural logarithm). $\mathbf{SUP}_{\mathbf{it}}$ is the ratio of number of foreign outstanding over total A-share tradable share and foreign outstanding. $\mathbf{MC}_{\mathbf{it}}$, is computed as the Shanghai composite index price over Hang Seng index price (or S&P 500 index). $\mathbf{LQ}_{\mathbf{it}}$ is defined as A-share turnover over foreign share turnover. Turnover is calculated as A-share weekly trading volume over A-share equity outstanding.$\mathbf{RD2}_{\mathrm{it}}$ is idiosyncratic risk which is calculated as ARCH-method. Numbers inside the parentheses are standard errors. (*** Significance at 1%, ** Significance at 5%,*Significance at 10%)

	Pre-Reform		Post-Reform	
	(1)	(2)	(3)	(4)
CUR 1	**-49.4723**	**-75.7564**	**5.0188****	**2.1307***
	(225.0155)	**(162.2266)**	**(2.2970)**	**(1.0139)**
INF	0.1881***	-0.5234***	-0.1783***	-0.1970***
	(0.0162)	(0.0359)	(0.0148)	(0.0155)
SUP	-0.4384***	-0.0974*	-0.0275**	0.0609***
	(0.0107)	(0.0587)	(0.0125)	(0.0136)
MC	1.3940***	1.2769***	0.7302***	0.7288***
	(0.0522)	(0.0413)	(0.0174)	(0.0179)
LQ	0.0412***	0.0358***	-0.0231***	-0.0194***
	(0.0064)	(0.0050)	(0.0041)	(0.0039)
RD 2	-0.0472*	0.0102	0.0084*	0.0094**
	(0.0255)	(0.0192)	(0.0046)	(0.0043)
Constant	-0.1147	6.1793***	2.0421***	1.8594***
	(0.1455)	(0.3994)	(0.1549)	(0.1650)
R-squared		0.5640		0.6365
Fixed-effect	NO	YES	NO	YES

Table 18: Systematic risk in A-ADR sample

This table reports the estimates and test results of the following model:

$$\mathbf{PREM}_{\mathbf{it}} = \alpha_0 + \alpha_1 \mathbf{CUR}_{\mathbf{it}} + \alpha_2 \mathbf{INF}_{\mathbf{it}} + \alpha_3 \mathbf{SUP}_{\mathbf{it}} + \alpha_4 \mathbf{MC}_{\mathbf{it}} + \alpha_5 \mathbf{LQ}_{\mathbf{it}} + \alpha_6 \mathbf{RD3}_{\mathbf{it}} + \varepsilon_{\mathbf{it}}$$

The dependent variable $\mathbf{PREM}_{\mathbf{it}}$ for each firm is Natural logarithm of A-share price minus natural logarithm of foreign-share price. $\mathbf{CUR1}_{\mathbf{it}}$ is change in RMB over USD bilateral nominal exchange rate(e_t/e_{t-1}) $-$ 1. $\mathbf{INF}_{\mathbf{it}}$ is total market capitalization in foreign currency (in natural logarithm). $\mathbf{SUP}_{\mathbf{it}}$ is the ratio of number of foreign outstanding over total A-share tradable share and foreign outstanding. $\mathbf{MC}_{\mathbf{it}}$, is computed as the Shanghai composite index price over Hang Seng index price (or S&P 500 index). $\mathbf{LQ}_{\mathbf{it}}$ is defined as A-share turnover over foreign share turnover. Turnover is calculated as A-share weekly trading volume over A-share equity outstanding. $\mathbf{RD3}_{\mathrm{it}}$ is systematic risk, which is calculated as ARCH-method..Numbers inside the parentheses are standard errors. (*** Significance at 1%, ** Significance at 5%,*Significance at 10%)

	Pre-Reform		Post-Reform	
	(1)	(2)	(3)	(4)
CUR 1	**-52.3059**	**-75.1773**	**4.8638****	**2.1857***
	(225.2228)	**(162.2305)**	**(2.2939)**	**(1.1139)**
INF	0.1850***	-0.5234***	-0.1752***	-0.1934***
	(0.0161)	(0.0359)	(0.0148)	(0.0155)
SUP	-0.4386***	-0.0965	-0.0293**	0.0592***
	(0.0107)	(0.0587)	(0.0125)	(0.0135)
MC	1.4179***	1.2720***	0.7260***	0.7243***
	(0.0517)	(0.0410)	(0.0175)	(0.0179)
LQ	0.0405***	0.0361***	-0.0223***	-0.0186***
	(0.0064)	(0.0050)	(0.0041)	(0.0039)
RD 3	0.0109	-0.0033	0.0116***	0.0116***
	(0.0131)	(0.0094)	(0.0041)	(0.0039)
Constant	-0.1341	6.1891***	1.9954***	1.8082***
	(0.1478)	(0.3993)	(0.1554)	(0.1656)
R-squared		0.5640		0.6373
Fixed-effect	NO	YES	NO	YES

Table 19: Daily data in Benchmark Model 2

This table reports the estimates and test results of the following model:

$$\mathbf{PERM}_{\mathbf{it}} = \alpha_0 + \alpha_1 \mathbf{CUR}_{\mathbf{it}} + \alpha_2 \mathbf{INF}_{\mathbf{it}} + \alpha_3 \mathbf{SUP}_{\mathbf{it}} + \alpha_4 \mathbf{MC}_{\mathbf{it}} + \alpha_5 \mathbf{LQ}_{\mathbf{it}} + \alpha_6 \mathbf{RD}_{\mathbf{it}} + \varepsilon_{\mathbf{it}}$$

The dependent variable $\mathbf{PERM}_{\mathbf{it}}$ for each firm is Natural logarithm of A-share price minus natural logarithm of foreign-share price. $\mathbf{CUR\ 1}_{\mathbf{it}}$ is change in RMB over HKD daily bilateral nominal exchange rate$(e_t/e) - 1$ $\mathbf{INF}_{\mathbf{it}}$ is total market capitalization in foreign currency (in natural logarithm). $\mathbf{SUP}_{\mathbf{it}}$ as the ratio of number of foreign outstanding over total A-share tradable share and foreign outstanding. $\mathbf{MC}_{\mathbf{it}}$, is computed as the Shanghai composite index price over Hang Seng index price (or S&P 500 index). $\mathbf{LQ}_{\mathbf{it}}$ is defined as A-share turnover over foreign share turnover. Turnover is calculated as A-share daily trading volume over A-share equity outstanding. $\mathbf{RD}_{\mathbf{it}}$ is ratio of standard deviation of A-share return to foreign share return, σ_A^2/σ_H^2. Numbers inside the parentheses are standard errors. (*** Significance at 1%, ** Significance at 5%,*Significance at 10%)

	Panel A: A-share and H-share				Panel B: A-share and ADR			
	Pre-reform		Post-Reform		Pre-reform		Post-Reform	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CUR 1	**-3.3515**	**-3.1411**	**1.6346****	**1.6357****	**-97.3785**	**-81.4727**	**14.0948*****	**14.0960*****
	(7.2904)	**(7.2641)**	**(0.0234)**	**(0.0253)**	**(242.5659)**	**(140.6826)**	**(2.4635)**	**(2.4628)**
INF	-0.2573***	-0.2189***	-0.0661***	-0.0647***	-0.2668***	-0.6953***	0.0439***	0.0446***
	(0.0100)	(0.0104)	(0.0039)	(0.0039)	(0.0074)	(0.0166)	(0.0080)	(0.0080)
SUP	-0.3228***	-2.3252***	-0.0305***	-0.0322***	-0.5887***	-0.2269***	-0.0129**	-0.0127**
	(0.0543)	(0.1458)	(0.0072)	(0.0072)	(0.0143)	(0.0316)	(0.0051)	(0.0051)
MC	0.8624***	0.8128***	0.5852***	0.5831***	1.2097***	0.7610***	0.6143***	0.6133***
	(0.0146)	(0.0149)	(0.0074)	(0.0075)	(0.0308)	(0.0192)	(0.0146)	(0.0146)
LQ	0.0948***	0.0938***	0.0014	0.0014	-0.0519***	0.0362***	-0.0716***	-0.0715***
	(0.0021)	(0.0021)	(0.0014)	(0.0014)	(0.0038)	(0.0026)	(0.0023)	(0.0023)
RD	-0.3000***	-0.2904***	-0.0364***	-0.0364***	-0.0421***	-0.1313***	-0.0781***	-0.0781***
	(0.0067)	(0.0067)	(0.0028)	(0.0028)	(0.0128)	(0.0079)	(0.0054)	(0.0054)
Constant	5.4386***	3.4249***	2.4539***	2.4324***	3.8335***	7.6277***	1.3898***	1.3821***
	(0.1348)	(0.1833)	(0.0789)	(0.0505)	(0.1174)	(0.2047)	(0.1912)	(0.1001)
R-squared		0.2194		0.2562		0.5312		0.5500
Fixed-effect	NO	YES	NO	YES	NO	YES	NO	YES

Table 20: Monthly data in Model 1

This table reports the estimates and test results of the following model:

$$\mathbf{PERM}_{\mathbf{it}} = \alpha_0 + \alpha_1 \mathbf{Reform}_{\mathbf{t}} + \alpha_2 \mathbf{INF}_{\mathbf{it}} + \alpha_3 \mathbf{SUP}_{\mathbf{it}} + \alpha_4 \mathbf{MC}_{\mathbf{it}} + \alpha_5 \mathbf{LQ}_{\mathbf{it}} + \alpha_6 \mathbf{RD}_{\mathbf{it}} + \varepsilon_{\mathbf{it}}$$

The dependent variable $\mathbf{PERM}_{\mathbf{it}}$ for each firm is Natural logarithm of A-share price minus natural logarithm of foreign-share price. $\mathbf{Reform}_{\mathbf{t}}$ is the dummy variable, it equals to one after 21 July 2005, and zero otherwise. $\mathbf{INF}_{\mathbf{it}}$ is total market capitalization in foreign currency (in natural logarithm). $\mathbf{SUP}_{\mathbf{it}}$ as the ratio of number of foreign outstanding over total A-share tradable share and foreign outstanding. $\mathbf{MC}_{\mathbf{it}}$, is computed as the Shanghai composite index price over Hang Seng index price (or S&P 500 index). $\mathbf{LQ}_{\mathbf{it}}$ is defined as A-share turnover over foreign share turnover. Turnover is calculated as A-share monthly trading volume over A-share equity outstanding. $\mathbf{RD}_{\mathbf{it}}$ is ratio of standard deviation of A-share return to foreign share return, σ_A^2/σ_H^2 and we use last week standard deviation for each share in certain month. Numbers inside the parentheses are standard errors. (*** Significance at 1%, ** Significance at 5%,*Significance at 10%)

	A-share and H-share		A-share and ADR	
	(1)	(2)	(3)	(4)
Reform	**-0.5769*** **	**-0.5781*** **	**-0.3614*** **	**-0.3401*** **
	(0.0181)	**(0.0184)**	**(0.0292)**	**(0.0241)**
INF	-0.3078***	-0.3139***	-0.0871***	-0.3212***
	(0.0147)	(0.0157)	(0.0169)	(0.0288)
SUP	0.0196	0.0314	-0.3781***	-0.1160***
	(0.0191)	(0.0230)	(0.0117)	(0.0262)
MC	8.2759***	8.2993***	5.2140***	7.2878***
	(0.2469)	(0.2532)	(0.2837)	(0.2693)
LQ	0.0287***	0.0317***	0.0067	0.0166**
	(0.0061)	(0.0061)	(0.0085)	(0.0075)
RD	-0.0534***	-0.0548***	-0.0830***	-0.0461**
	(0.0120)	(0.0120)	(0.0235)	(0.0186)
Constant	6.0114***	6.0212***	1.0582***	4.2265***
	(0.2082)	(0.2384)	(0.1521)	(0.2984)
R-squared		0.4421		0.5749
Fixed-effect	NO	YES	NO	YES

Table 21: Monthly data in Model 2

This table reports the estimates and test results of the following model:

$$\mathbf{PERM}_{\mathbf{it}} = \alpha_0 + \alpha_1 \mathbf{CUR}_{\mathbf{it}} + \alpha_2 \mathbf{INF}_{\mathbf{it}} + \alpha_3 \mathbf{SUP}_{\mathbf{it}} + \alpha_4 \mathbf{MC}_{\mathbf{it}} + \alpha_5 \mathbf{LQ}_{\mathbf{it}} + \alpha_6 \mathbf{RD}_{\mathbf{it}} + \varepsilon_{\mathbf{it}}$$

The dependent variable $\mathbf{PERM}_{\mathbf{it}}$ for each firm is Natural logarithm of A-share price minus natural logarithm of foreign-share price. $\mathbf{CUR2}_{\mathbf{it}}$ is change in RMB over HKD monthly bilateral real exchange rate$(s_t/s_{t-1}) - 1$ $\mathbf{INF}_{\mathbf{it}}$ is total market capitalization in foreign currency (in natural logarithm). $\mathbf{SUP}_{\mathbf{it}}$ as the ratio of number of foreign outstanding over total A-share tradable share and foreign outstanding. $\mathbf{MC}_{\mathbf{it}}$, is computed as the Shanghai composite index price over Hang Seng index price (or S&P 500 index). $\mathbf{LQ}_{\mathbf{it}}$ is defined as A-share turnover over foreign share turnover. Turnover is calculated as A-share monthly trading volume over A-share equity outstanding. $\mathbf{RD}_{\mathbf{it}}$ is ratio of standard deviation of A-share return to foreign share return, σ_A^2/σ_H^2 and we use last week standard deviation for each share in certain month. Numbers inside the parentheses are standard errors. (*** Significance at 1%, ** Significance at 5%,*Significance at 10%)

	Panel A: A-share and H-share				Panel B: A-share and ADR			
	Pre-reform		Post-Reform		Pre-reform		Post-Reform	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CUR 2	**-0.2845**	**-0.1672**	**4.3131*** **	**4.3908*** **	**-0.4247**	**0.1892**	**3.0365*** **	**2.9285*** **
	(1.5116)	**(1.4979)**	**(0.6131)**	**(0.6121)**	**(2.0839)**	**(1.7047)**	**(0.9581)**	**(0.9421)**
INF	-0.3196***	-0.3518***	-0.1454***	-0.1297***	-0.3204***	-0.3284***	-0.1410***	-0.1355***
	(0.0306)	(0.0397)	(0.0171)	(0.0181)	(0.0185)	(0.0748)	(0.0289)	(0.0299)
SUP	-0.0230	-0.0230*	0.0265*	0.0388***	0.5330***	2.2168***	0.0173	-0.0236
	(0.0380)	(0.0132)	(0.0138)	(0.0144)	(0.0213)	(0.3305)	(0.0282)	(0.0291)
MC	12.3784***	12.4168***	4.7974***	4.6213***	10.0877***	8.3809***	5.2634***	5.1684***
	(0.4427)	(0.4534)	(0.2234)	(0.2317)	(0.6621)	(0.5656)	(0.2737)	(0.2772)
LQ	0.0575***	0.0642***	0.0009	0.0016	0.0136	0.0325***	-0.0313***	-0.0295***
	(0.0086)	(0.0086)	(0.0062)	(0.0062)	(0.0113)	(0.0107)	(0.0084)	(0.0083)
RD	-0.0874***	-0.0923***	-0.0117	-0.0119	-0.0950***	-0.0584*	0.0071	0.0062
	(0.0173)	(0.0172)	(0.0114)	(0.0113)	(0.0346)	(0.0300)	(0.0183)	(0.0179)
Constant	7.4149***	7.6440***	2.9937***	2.7103***	1.0816***	-7.0956***	1.4470***	1.5829***
	(0.3575)	(0.4113)	(0.2289)	(0.2378)	(0.2312)	(2.0854)	(0.3416)	(0.3412)
R-squared		0.3652		0.2823		0.6362		0.6537
Fixed-effect	NO	YES	NO	YES	NO	YES	NO	YES