Dividend, liquidity and firm valuation: Evidence from China

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Abstract

This paper examines the relevance of cash dividend from the theoretical and empirical perspectives by taking market liquidity into account. We construct an economic model which demonstrates that the effect of cash dividend on firm valuation depends on the status of market liquidity. The hypotheses derived from our model are strongly supported using the data from A-and B-share markets in China. Our results from the dynamic panel regression indicates that the price premium of B-share relative to A-share is positively correlated to the level of cash dividend, and this relationship even becomes stronger when the relative liquidity of B-share is low. In addition, the price premium is positively affected by the relative liquidity and firm profitability. Using the event study approach, we observed a more positive (negative) response to the announcement of cash dividend initiation (omission) in the B-share market. In particular, this positive response on the initiation is negatively correlated with the relative liquidity. However, no significant differences in the reactions to the announcement of cash dividend between the two markets are reported.

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Key words: Dividend policy; liquidity; firm valuation; China market.

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1. Introduction

Does dividend policy affect the valuation of a firm? It is still one of the controversial issues in the finance literature. The seminal paper by Miller and Modigliani (1961) (MM) provided a general framework for the understanding and analyzing the dividend policy. But the irrelevance propositions proposed by MM were built on a set of restrict assumptions which may be unrealistic in the real world. Since 1960's, researchers have proposed a wide set of theories and hypotheses to tackle one or more violations of these assumptions[1] and their works also contribute substantially to the dividend literature.

In fact, the notion of perfect market liquidity is implied by the set of assumptions from the irrelevance theory (Miller and Modigliani, 1961), but it is largely ignored in the dividend literature. In an ideal world, stocks are liquid to the extent they can be traded at large quantities quickly and at low cost. However, illiquidity can arise from various sources in reality (Amihud, 2005, 2008): (1) exogenous transaction costs, such as brokerage commissions; (2) demand pressure and inventory risk; (3) information asymmetry among investors; (4) search and delay costs. Since the paper by Amihud and Mendelson (1986), the liquidity effect on asset prices has been studied extensively. The empirical evidences suggest that liquidity has both cross-sectional effects (Amihud and Mendelson, 1986; Eleswarapu, 1997) and time-series effects (Amihud, 2002; Bekaert,

[1] When tax is taken into account, stocks with high dividend payment should be held by investors of low tax brackets, but Lewellen, Stanley, Lease and Schlarbaum (1978) found very little evidence of this clientele effect; Signaling models (Bhattacharya, 1979; Miller and Rock, 1985;John & Williams,1985) argue that firms shave dividends to signal their future prospects in a market with information asymmetry. However, empirical studies (Watts,1973; Gonedes,1978; Penman,1983; Benartzi, Michaely, and Thaler,1997) found no significant evidence of a positive relation between dividend changes and future earnings changes; Free cash flow hypothesis (Grossman and Hart, 1982; Easterbrook, 1984; Jensen,1986) states that unnecessary cash can be taken from the hands of self-interested management in the form of dividend, otherwise they may be invested in negative NPV projects. Mixed empirical evidences were found for this agency model (Lang and Litzenberger, 1989; Denis et al., 1994; Yoon and Starks 1995). Baker and Wurgler (2004a) argue that the decision to pay dividends is driven by prevailing investor demand for dividend payers. Empirical results consistent with this view are provided by Baker and Wurgler (2004a, 2004b), Li and Lie (2006).. See Allen and Michaely ((2003), Brav et al. (2005) , Denis and Osobov (2008) for details.

Harvey and Lundblad, 2007) on asset pricing. The underlying reason for liquidity to affects prices is that liquidity cost adds incremental burden to an investor when he trades a security. A rational investor should take these costs into account and depress the price (Amihud 2008). However, companies can reduce the liquidity costs imposed on investors by distributing cash dividend. With the regular cash dividend payments, an investor can avoid plunging into the market to liquidate a proportion of his stocks. Therefore he requires less compensation for the illiquidity of stocks and expects a higher value for the dividend payers (Banerjee et al. 2007). We refer this hypothesis as *liquidity hypothesis of dividend*, which states that investors prefer cash dividend payers when markets liquidity is low. Until recently, only few papers have noticed the impact of liquidity on the relationship between dividend policy and asset prices. Gottesman and Jacoby (2006) extended Amihud and Mendelson (1986) model and found that the choice of payout policy affects the relationship between returns and illiquidity. Banerjee et al. (2007) studied the relationship between dividend policy and market liquidity based on the catering theory. The results show that owners of less (more) liquid stocks are more (less) likely to receive cash dividends in the US market.

In this paper, we extend the liquidity model by Domowitz et al (1997) to investigate how the status of liquidity affects the relationship between dividend and firm valuation. The empirical implications of the model are supported by data from China AB share markets. We contribute to the existing literature on the following aspects: In their empirical study, Banerjee et al. (2007) focus on whether managers pay cash dividend to cater the liquidity demand of investors, without considering the preference of the investors to the cash dividend payers in different status of liquidity. It can be argued that

management may not always behave in interest of shareholders (Jensen and Meckling, 1976). In this paper, we focus on whether investors are more concern about the cash dividend when market liquidity is low.

Second, we construct an economic model which provides further insights into the importance of cash dividend in different status of market liquidity. In a setting of two markets with differential liquidity, the model shows that dividend is in fact a pricing factor. Specifically, the price premium of B-share relative to A-share[2] is an increasing function of the dividend and relative liquidity. In addition, the cash dividend becomes more important when the relative liquidity is low. Some recent papers (for example, Tong and Yu, 2012) attribute the B-share discount to the irrationality or lower expertise of the domestic investors, in contrast, our model exhibits that dividend can be valued differently by the two markets without assuming any investors to be irrational or less professional.

Finally, we make use of a distinctive and promising setting (the Chinese AB-markets) to test the liquidity hypothesis of dividend. In the Chinese AB-markets, A-shares and B-shares are issued by the same firms and both of them carry identical voting rights and represent identical claims to cash flow rights. Although investors in B-share market receive the same cash dividend as those in A-share market, it's well known that B-share market are much less liquid than A-share market (for example, Chen et al, 2001; Tong and Yu,2012). Therefore, we conjecture that B-shares investors should prefer cash dividend to no dividend and this preference should be stronger when relative liquidity is low.

The reminder of this paper is organized as follows: Section 2 gives an overview of

[2] For simplicity, thereafter in this study, we refer the price premium as the price premium of B-share relative A-share, which is defined as $(P_B-P_A)/P_A$.

Chinese stock markets and related studies on the China B-share discount puzzle. The model and the hypotheses are developed in section 3. Section 4 describes data and methodologies. Section 5 provides the empirical results. Section 6 reports the robustness tests. Finally, section 7 concludes.

2. Chinese stock markets and China B- share discount puzzle.

2.1 A brief history of Chinese stock markets.

Since economic reforms were initiated in 1978, China has experienced remarkable growth in the economy. In 2010, China becomes the world's second largest economy behind the United States. During this period, the Chinese stock markets also expanded rapidly. Currently, China has two national stock exchanges, Shanghai Stock Exchange (founded in November 1990) and Shenzhen Stock Exchange (founded in April 1991). The shares issued by Chinese firms could roughly be classified as tradable shares and non-tradable shares. The non-tradable shares include state shares, legal person shares and employee shares. The tradable shares include public A-shares, B-shares, H-shares and other foreign shares. Both A-shares and B-shares are listed on either of the two national exchanges and H-shares are listed on the Stock Exchange of Hong Kong. The trading of A-shares has started since the initiation of the two stock exchanges and the shares were held exclusively by domestic investors. One the other hand, B-shares and H-shares were introduced to attract foreign capital in 1992 and 1993 respectively. B-shares were originally held and traded among foreign investors but it's opened to domestic investors on 19 February 2001. Today, Foreigners are still illegal to purchase A-shares. However, Qualified Foreign Institutional Investors (QFII) can participate in the A-share market under some strict regulations since May 2003. Table 1 shows the number of public firms

listed on the Chinese stock markets. By the end of 2010, there are 2063 public firms, with 894 listed on the Shanghai Stock Exchange and 1169 listed on the Shenzhen Stock Exchange. The number of firm listed on A-share markets (2041) is much larger than that listed on the B-shares markets (109). In 1992, there are 18 firms cross listed on the A- and B-share markets. The number peaked in 2001 and dropped to 86 in 2010.

[Insert table 1 here]

2.2 China B- share discount puzzle.

Although A- and B-shares of the same company carry identical voting rights and cash flow rights other than traded separately in their corresponding markets, Bailey (1994) documented that B-shares always traded at a large discount relative to A-shares. This phenomenon is puzzling because the unrestricted B-shares generally traded at a premium relative to the restricted A-shares in other countries with similar settings (Domowitz et al., 1997). Various explanations have been proposed to explain this strange phenomenon in the literature, for example: the illiquidity of B-share market (Chen et al., 2001); differential demand elasticity (Sun and Tong, 2000); and information asymmetry (Chan et al., 2008); speculative trading of domestic investors (Mei et al., 2009); political risk arising from state ownership (Karolyi et al., 2009); and differential attitudes to the corporate governance (Tong and Yu, 2012). However, these explanations for B-share discount puzzle are still open to debates. For example, the information asymmetry should be largely eliminated after the liberalization of B-share market to domestic investors. But the persistence of B-share discount indicates that the argument based on information asymmetry is inadequate.

3. Economic model and the hypotheses

3.1 A simple model

In this section, we will develop a simple model to rationalize the importance of cash dividend under different status of market liquidity. The model is based on a setting similar to Domowitz et al (1997) but we extend their model by incorporating the dividend policy and the profitability of a firm into our model setting.

Assume there is a representative all-equity firm in an economy without tax and the firm issues two classes of shares, A-share and B-share. Both shares have identical cash flow right and voting right. However, each type of shares is traded in its corresponding market separately. The two classes of shares are prohibited from converting to each other. The percentage bid-ask spread of A-shares and B-shares are $2S_A$ and $2S_B$ respectively. The intrinsic value of the representative firm is v at the beginning of the period. It is estimated that the return on equity is r and dividend payout ratio is d. A buyer pays the ask price of $P*(1+S)$ at the beginning of the period and receives capital gain income of $v*(1+r*(1-d))*(1-S) - P*(1+S)$ plus dividend income of $v*r*d$ at the end of the period. For a marginal investor to be indifferent between the two markets, the returns net of costs to buy B-shares or A-shares should be identical. This implies that

$$\frac{v\left(1+r*(1-d)\right)*(1-S_B)+ v*r*d}{P_B(1+S_B)}-1=\frac{v\left(1+r*(1-d)\right)*(1-S_A)+ v*r*d}{P_A(1+S_A)}-1 \qquad (1)$$

where P_A and P_B denote the prices of A- and B-shares respectively. Define the relative liquidity of B-shares to A-shares as $\rho_S=S_A/S_B$. Rearrange equation (1),

$$\frac{P_B}{P_A}=\frac{\left(1+r*(1-d)\right)*(1-S_B)+ r*d}{\left(1+r*(1-d)\right)*\left(1-\rho_S\ S_B\right)+ r*d}*\frac{(1+\rho_S\ S_B)}{(1+S_B)} \qquad (2)$$

Take logarithm on both sides of equation (2) and define the price premium as

Prem=ln(P_B/P_A) , we obtain

$$Prem = \ln\frac{\left(1+r^*(1-d)\right)^*(1-S_B)+r^*d}{\left(1+r^*(1-d)\right)^*\left(1-\rho_S\ S_B\right)+r^*d} + \ln\frac{(1+\rho_S\ S_B)}{(1+S_B)} \qquad (3)$$

Equation (3) indicates that the price premium depends on a number of factors in our model. These factors include the relative liquidity, dividend payout ratio and the profitability. Hence, the following propositions can be deduced from the above model.

Proposition I: *If B-share market is less liquid than A-share market, then B-share sell at a discount to its counterpart in the A share market.*

Proof:

If ρ_S<1 then

$$\left(1+r^*(1-d)\right)^*(1-S_B)+r^*d > \left(1+r^*(1-d)\right)^*\left(1-\rho_S\ S_B\right)+r^*d$$

Therefore

$$\ln\frac{\left(1+r^*(1-d)\right)^*(1-S_B)+r^*d}{\left(1+r^*(1-d)\right)^*\left(1-\rho_S\ S_B\right)+r^*d} < 0.$$

Similarly

$$\ln\frac{(1+\rho_S\ S_B)}{(1+S_B)} < 0$$

Therefore,

$$Prem = \ln\frac{\left(1+r^*(1-d)\right)^*(1-S_B)+r^*d}{\left(1+r^*(1-d)\right)^*\left(1-\rho_S\ S_B\right)+r^*d} + \ln\frac{(1+\rho_S\ S_B)}{(1+S_B)} < 0$$

Proposition II: *The price premium is an increasing function of the relative liquidity.*

Proof:

$$\frac{\partial Prem}{\partial \rho_S} = \frac{(1+r^*(1-d))^*S_B}{r^*d+(1+r^*(1-d))^*(1-\rho_S S_B)} + \frac{S_B}{(1+\rho_S S_B)} > 0$$

Proposition III: *The price premium is an increasing function of dividend payout ratio if B-shares are less liquid than A-shares.*

Proof:

Consider $\rho_S < 1$, then

$$\frac{\partial Prem}{\partial d} = \frac{r^*S_B}{(1+r^*(1-d))^*(1-S_B)+r^*d} - \frac{r^*\rho_S{}^*S_B}{(1+r^*(1-d))^*(1-\rho_S S_B)+r^*d}$$

$$= \frac{r^*S_B(1+r)(1-\rho_S)}{\{(1+r^*(1-d))^*(1-S_B)+r^*d\}^*\{(1+r^*(1-d))^*(1-\rho_S S_B)+r^*d\}}$$

$$> 0$$

Proposition IV: *Ceteris paribus, the marginal effect of dividend payout ratio on the price premium decreases with the improvement in relative liquidity.*

Proof:

$$\frac{\partial\left(\frac{\partial Prem}{\partial d}\right)}{\partial \rho_S} = \frac{-r^*S_B(1+r)\{[1+r^*(1-d)](1-S_B)+r^*d\}}{\{[1+r^*(1-d)]^*(1-S_B)+r^*d\}^*\{[1+r^*(1-d)]^*(1-\rho_S S_B)+r^*d\}^2} < 0$$

***Proposition V*:** *Ceteris paribus, the price premium is an increasing function of the profitability if B-shares are less liquid than A-shares.*

Proof:

$$\frac{\partial Prem}{\partial r} = \frac{S_B{}^*d^*(1-\rho_S)}{\{[1+r^*(1-d)]^*(1-S_B)+r^*d\}^*\{[1+r^*(1-d)]^*(1-\rho_S S_B)+r^*d\}} > 0$$

This model highlights the effects of the change in liquidity and dividend policy on the valuation of a firm. More importantly, the model emphasizes that the significance of dividend policy on firm valuation depends on the status of market liquidity.

3.2 Research hypotheses

In China, it is well known that the B-share market is much less liquid than the A-share market. According to the Proposition I, investors in the B-share market should require a compensation for the liquidity cost and trade B-shares at a discount relative to their A-share counterpart. Therefore, we proposed the first hypothesis:

H1: *Ceteris paribus, as the B-share market is less liquid than the A-share market, ~~the~~ B-share should trade at a discount relative to its counterpart in the A share market.*

According to the Proposition II, the price premium is an increasing function of the relative liquidity. In the Chinese A- and B-share markets, the relative liquidity varies across stocks and through time, though B-shares are generally less liquid than A-shares. Therefore, we proposed the second hypothesis:

H2: *Ceteris paribus, the higher the relative liquidity of B-shares, the higher the price premium traded on A-share counterpart.*

According to the Proposition III, The price premium is an increasing function of dividend payout ratio if B-shares are less liquid than A-shares. In other words, when an investor receives cash dividend, he avoids the costly trading in an illiquid market and consequently gives a higher valuation for the dividend payers. Therefore, we proposed the third hypothesis:

H3a: *Ceteris paribus, the price premium is higher for the companies who distribute the*

cash dividend than for those without any dividend payment;

H3b: *Ceteris paribus, B-share market reacts more positively (negatively) to announcements of the dividend initiations (omissions) than A-share market.*

According to Proposition IV, the marginal effect of dividend payout ratio on the price premium decreases with the improvement of the relative liquidity. Intuitively, in a market with perfect liquidity, capital gain income is a perfect substitute for cash dividend but the substitution effect weakens as the market liquidity deteriorates. Therefore, we propose the fourth hypothesis:

H4: *Ceteris paribus, the lower (higher) the relative liquidity of a company, the more (less) preferred to the cash dividend for the investor.*

According to Proposition IV, the price premium is an increasing function of profitability if B-shares are less liquid than A-shares. In the context of China A- and B-shares markets, B-shares are much less liquid than A-shares, therefore, we proposed the fifth hypothesis:

H 5: *Ceteris paribus, the more profitable the firm, the higher the price premium.*

4. Data and variables measurement

4.1 Data

Our raw data are retrieved from the China Stock Market & Accounting Research database (CSMAR), World Bank and China National Bureau of Statistics. The raw sample includes all the firms which are cross-listed in A- and B-share markets from 1992 to 2012 and perform the following elimination:

(1) In order to control the impact of IPO, the firms are required to list on the A- and B-share markets for at least 12 months;

(2) Stock price are in between 0.50-500.00 RMB. Returns on low-price stocks are greatly affected by the minimum tick of 0.01 RMB, which adds noise to the estimations. We remove the stocks with extreme prices to avoid the noise from the outliers;

(3) The annual number of trading days should be at least 100 days. This makes the estimated parameters more reliable;

(4) Remove the firms with negative book value of shareholders' equity[3].

The final sample consists of 1297 firm year observations and the distribution of the firms included in our final sample is tabulated in table 2

[Insert table 2 here]

4.2 Methodology

4.2.1 Dynamic panel data model

We use a dynamic panel data model to examine our proposed hypotheses in section 3. Arellano and Bond (1991) provide a detail discussion of the dynamic panel data model.

$$Prem_{i,t}=\alpha_i+\beta_1*Prem_{i,t-1}+\beta_2*Rliq_{i,t}+\beta_2*PayoutPatio_{i,t}+\beta_4*Rliq_{i,t}*PayoutRatio_{i,t}$$

$$+\beta_5*EBIT_{i,t}+\beta_{11}*DivStkD_{i,t}+\beta_6*NoB/NoA_{i,t}+\beta_6*Size_{i,t}+\beta_7*StdB/StdA_{i,t}$$

$$+\beta_8*Tradable_{i,t}+\beta_9*Inflation_{i,t}+\beta_{10}*LnReserves_{i,t}+\beta_{14}*Dyear+\varepsilon_{i,t}$$

The above equation is the full model need to be estimated. Price premium is regressed on

[3] Negative book value of shareholders' equity warns the risk of financial distress as well as the risk of being delisted from the stock exchanges.

its own lag and other independent variables and interaction terms. The relative liquidity ($Rliq_{i,t}$), the cash dividend payout ratio ($PayoutPatio_{i,t}$), the profitability measure ($EBIT_{i,t}$) and the interaction term between relative liquidity and cash dividend payout ratio ($Rliq_{i,t} * PayoutRatio_{i,t}$) are key variables in this study. The definitions of the variables in our model are as follows:

Price premium: The percentage daily price premium is defined as $Prem=(P_B-P_A)/P_A$, where P_A and P_B are daily close prices of A-share and B-share respectively. The daily price premium is then averaged over the year for each firm. *A negative sign of Prem indicates that there is a price discount of B-share relative to A-share*.

Liquidity: we borrow the illiquidity measure (*ILLIQ*) from Amihud (2002). In this study, *ILLIQ* is defined as the annual average of daily ratio of absolute stock return to its dollar volume. It can be interpreted as the average daily price response associated with one dollar of trading volume. The less the price responds to the trading volume, the more liquid is a stock. In the context of cross listing, we are more interested in the relative liquidity of B-shares to A-shares, that is, $Rliq=ILLIQ_A/ILLIQ_B$. The higher the *Rliq*, the more liquid the B-share is relative to its corresponding A-share, which results in less liquidity cost imposed on B-share investors. Therefore, the price premium should be positively correlated with *Rliq*.

Cash dividend: We use dividend payout ratio (*PayoutRatio*) to proxy for the level of dividend payments. *PayoutRatio* is calculated as the total cash dividend divided by the net incomes. If the net incomes are negative (190 observations) or dividend payout

ratio is more than 1.5 (3 observations)[4], then *PayoutRatio* is set as missing values. We expect the B-shares price premium to be positively affected by the *PayoutRatio*.

***Profitability**:* we use earnings before interest and taxes (*EBIT*) to measure the profitability of a firm. To calculate earnings before interest and taxes, we add back the net interest expenses to the operating incomes and then standardized by total assets. As we demonstrated in our economic model in section 3.1, the more profitable the firm, the more values are distributed through cash dividend if the firm has a constant dividend payout ratio. In a market with low liquidity, it means less liquidity costs will be incurred by an investor.

Control variables: in order to control other factors (Sun and Tong, 2000) which may affect the B-share price premium, we also employ a number of control variables. The ratio of the return volatility of A and B shares (*StdB/StdA*) is used as a measure for differential risk as well as for differential levels of speculation between the two markets. The ratio of the floatation of A and B shares (*NoB/NoA*) captures the relative share supply between the two markets. We use the logarithm of sales (*Size*) to proxy for the information factor. The inflation rate (*Inflation*) and total reserves (*Reserves*) [5]are used to control for the currency risk. The ratio of tradable shares (*Tradable*) is used to capture the political risk and/or corporate governance concern[6]. Stock dividend per share (*DivStk*) captures the effect of stock dividend. As B-share market is opened to domestic investors

[4] The payout ratio of more than 1.5 means more than one and a half of the earnings are distributed to shareholders, which cannot be sustainable in the long run. We exclude these extreme cases to make the parameters estimates more reliable.

[5] Total reserves comprise holdings of monetary gold, special drawing rights, reserves of IMF members held by the IMF, and holdings of foreign exchange under the control of monetary authorities. The gold component of these reserves is valued at year-end (December 31) London prices. Data are obtained from World Bank web site and are converted to RMB denomination.

[6] The non-tradable shares are hold directly or indirectly by the government agencies. Karolyi et al. (2009) use the state ownership as a proxy for political risk. The splits-share structure also affects corporate governance (Beltratti et. al 2011).

starting from 2001, we capture this effect by a dummy variable (*Dyear*), which takes the value 0 if it is before 2001 and 1 otherwise[7].

4.2.2 A event study approach

We may omit some variables that may compound our results in the dynamic panel analysis. Hence, we further conduct an event study to investigate whether A- and B-share markets react differently to the announcements of dividend policy and whether the differential reaction is due to the relative liquidity. Based on the event study approach, we may reasonably assume other factors held constant in a short time period. The detailed results of our event study are reported in section 5.5.

5. Empirical Results

5.1 Summary statistics

Table 3 presents the summary statistics of the main variables in this study. First, consistent with our first hypothesis, there is a significant price discount of B-shares to A-shares, range from the average of 55.1% to the maximum of 92.7% in terms of the discount rate. Second, the liquidity of the B shares is less than 1/3 of the liquidity of A shares (the median is less than 1/6) in terms of the Amihud (2002) liquidity indicators. Third, there are 45.3% of the firms in our sample issued cash dividends with 0.08RMB per share on average, which accounted for 21% of the profits. Finally, we noted that the number of B-share outstanding is 2.4 times larger than that of the corresponding A-share outstanding, indicating that the supply of shares from the same firm is larger in B-share

[7] The B-share market is opened to domestic investors on 19 Dec 2001.

market than in A-share market.

[Insert table 3 here]

The correlation matrix among variables is reported in Table 4. The price premium is positively correlated with the level of dividend payments, relative liquidity, profitability, firm size and the ratio of tradable shares. We also note that the premium is positively correlated with some macro factors, such as inflation rate and total reserves. On the other hand, the price premium is negatively correlated with relative supply as well as the volatility ratio of the B- and A-share markets. In addition, the VIF of the explanatory variables are substantially lower than 10, multicollinearity should not constitute a problem in our estimation (Chaterjee and Price, 1977)

[Insert table 4 here]

5.2 Sub-sample analysis

We divided our sample into two groups: firms which issue and not issue cash dividend. Figure 1 demonstrates that B-share sells at a discount in both groups and the price discount for cash dividend issued firms are significantly lower than the corresponding non-issued counterpart. Around the year of 2001, there was a significant change in the discount price of B shares on the A-share.

[Insert figure 1 here]

Our sample is further divided into three sub-samples of 1993-2000, 2001 and 2002 -2010. We conducted a two sample t test for the firms which issue and not issue cash dividend in these three time periods. The results are presented in table 5. Panel A denotes the period prior to the opening of B-share market to the domestic investors (1993-2000).

There are 166 firms issue the cash dividend out of 413 firms, which account for 40.2% of the sub-sample. The price discount for the firms which issued cash dividend is 67.8% which is significantly lower than the 76.8% of the non-issued counterpart. Panel C denotes the period after the opening of B-share market to the domestic investors (2002 -2010). There are 387 companies which issued the cash dividend out of 811 firms, which account for 47.7% of the sub-sample and significantly increases compared to the Panel A. Similarly, the price discount for the dividend-issued group was significantly lower than the non-issued counterpart. Panel B denote the transition period (2001). The results are similar to those we obtained in Panel A and C. In addition, the price discount of B-shares to A-shares decreased significantly in both groups (to less than 51%) after B-share market opened to domestic investors. The price discount for those firms which issue the cash dividend decreased from 67.8% in panel A to 40.8% in panel B; while the non-issued group also decreased from 76.8% to 50.9%. These results are consistent with the observations in figure 1.

5.3 Dynamic panel data analysis

The sub-sample analysis in section 5.2 demonstrates that the price discounts for cash dividend issued by companies are significantly lower than the corresponding non-issued counterpart. In this part, we report and discuss the results from dynamic panel data model analysis.

Table 6 shows the results of the dynamic panel regression. Model 1 examines the effect of relative liquidity on the A- and B-share price disparity. As predicted, the relative liquidity (*Rliq*) is significantly positive (t=10.81), suggesting a positive relationship between the relative liquidity and the price premium. The result is also consistent with the

previous literature (Chen et al., 2001; Sun and Tong, 2000).

Model 2 are constructed to test hypothesis 5. The *EBIT* enters significantly positive in the model (t=5.75), indicating a strong positive relationship between the profitability of the firm and the price premium Therefore hypothesis 5 is confirmed. One possible explanation for the above results is that B-share market investors are more rational than those in the A-share market. However, our economic model in section 3 indicates this is not necessarily the case. The fact that B-share investors pay more attention to the profitability of the firm may arise from the illiquidity of B-share markets.

Previous studies documented that markets react positively to the announcements of stock dividend (Grinblatt et. al, 1984; Foster and Vickrey, 1978), but it is not clear whether A- and B-share react differentially to the announcements. In this study we just use stock dividend per share to control any effect associated with this firm transaction. Model 3 show that stock dividend positively affects the B-share price premium. The result is consistent with the signaling argument of stock dividend as B-share market investors are more difficult to obtain information. However, a lot of A-share investors rushed in after the liberalization of B-share markets, the information asymmetry may not so severe. Another possible explanation is that stock dividends, as well as stock splits, can improve the market liquidity (Baker and Gallagher, 1980; Baker and Powell, 1993; Muscarella and Vetsuypens, 1996). The improvement of liquidity is more important for the less liquid B-share market.

As discussed in the previous sections, the cash dividend provides liquidity to investors in the status of low market liquidity. The effect should be stronger in the relative illiquid B-share market. Model 4 examines the effect of cash dividend on the

price premium. We use the dividend payout ratio (*PayoutRatio*) as a proxy of cash dividends. The coefficient of *PayoutRatio* is significantly positive, indicates that the higher the cash dividend payout ratio, the higher is the price premium. Hence, hypothesis 3a is supported.

To further address whether investors' preferences on payout policy is affected by the liquidity, we added interaction terms to the regression model. According to hypothesis 4, we expect that coefficient the interaction term should be significantly negative. The regression results in model 5 support our hypothesis. The interaction term of liquidity and cash dividends (*Rliq*PayoutRatio*) are significantly negative. It is because the higher the liquidity, the less prefer on the cash dividend for the investors in the B-share market. In other words, the cost of selling stock is lower, therefore, it is less attractive for companies to pay cash dividend. In addition, Model 5 shows that the signs and the significances of the key variables in this study are not sensitive to the inclusion or exclusion of other variables.

In addition, our empirical results also demonstrate that the price premium moves in the same direction with both the size of the company and the strength of the Chinese currency; On the other hand, the price premium is negatively related to the number of B-shares relative to A-shares. Finally, a significantly increase in the price premium after the opening of the B-share market to domestic investors can be observed.

[Insert table 6 here]

5.5 Announcement effect of the dividend policy

In section 5.4, the dynamic analysis shows that ~~all~~ the five hypotheses are supported

by the data from China AB share markets. The results confirm our liquidity hypothesis of dividend. In this subsection, we describe our event study and report the empirical results as follows.

5.5.1 Data

In China, most firms pay annual dividend and only few firms paid interim dividend (In our sample, the ratio between the number of the interim dividend and the total number of dividend is 10/707=1.4%). Therefore we ignore the interim dividend announcements in this study. We first collect annual dividend announcements data for those firms which cross listed on the A- and B-share markets (1513). According to the content of the announcement, the dividend announcements are classified into two categories: issuing and not issuing cash dividend. We further sub-divide each category based on the timing of issuing cash dividend. There are four different types of announcements under the consideration. Specific grouping methods are shown in Figure 2. We filter the sample data through the following procedure: In order to control the IPO effect, we exclude the dividend announcements within 12 months of the IPO (68); we select the announcement days as the event points and require daily data for at least 20 trading days before and after the event days (99 events dropped); we drop those dividend announcements if the 41 trading days span more than 70 calendar days (165). The final data consist of 1181 announcements events: *Initiation* (94); *Omission* (109); *Dividend* (436) and *No issue* (542).

5.5.2 Announcement effects on the different types of dividend policies

Cash dividend is often regarded as good news and the market reacts positively to the announcements of dividend increase and dividend initiation, but negatively to the

announcements of dividend decrease and dividend omission (Pettit, 1972; Michaely et. al, 1995; Grullon et.al, 2002). According to our liquidity hypothesis, the dividend initiation (omission) should be a relatively good (bad) news to the illiquid B-share market rather than to in the A-share market. Therefore, we expect that the B-share markets should react more positively (negatively) to announcements of the dividend initiation (omission). We examine this hypothesis (H3b) in this section.

Figure 3 plots the cumulative changes of B-share price premium for each group of dividend announcements with an event window of [-20, 20]. We note that the premium begins to increases 20 days before the announcements of cash dividend initiation and continues thereafter. For the event window of [-20, 20], the average premium increase accumulates to 3% within two months, which is economically significant. For the announcements of cash dividend (exclude initiation), *Dividend*, the price premium increases slightly after the announcement date. As expected, the B-share market reacts more negatively to the announcement of dividend omissions and this negative reaction also began prior to the announcement days.

[Insert figure 3 here]

To rigorously test the significance of the differential reactions between the two markets for each type of announcements, we run the following regression:

$$\Delta Prem_{i,t,[\tau_1,\tau_2]} = \alpha_i + \beta_1 * Initiation_i + \beta_2 * Dividend_i + \beta_3 * Omission_i + \beta_4 * Stock_i + \varepsilon_{i,t}$$

$\Delta Prem_{i,\,t,\,[\,\tau_1,\,\tau_2]}$ is the cumulative change of B-share price premium, t indicate the fiscal year and $[\,\tau_1, \tau_2]$ denotes the event window. Each type of announcement (*Initiation, Dividend, Omission* and *Stock*) takes the value 1 if it falls into the corresponding group

as shown in figure 2. For example, the value of *Initiation* equals 1 on the announcement day of cash dividend initiation and 0 otherwise. *Stock* is used to control the effect associated with stock dividend, and takes 1 if stock dividend is also announced in the event. We choose some representative windows to estimate the regression model: namely, [-1, 1], [-5, 5], [-20, 1] and [1, 20].

Panel A in table 7 presents the results of the multiple regressions. The results show that announcements of the cash dividend initiation (*Initiation*) have positive and significant impact on the price premium. The positive changes in the price premium due to cash dividend initation occur largely in the event window of [-20, 1]. Although the price premium changes are still positive, they are no longer statistically significant in the event window of [1, 20]. The differential reactions to the announcements of the cash dividend[8] (*Dividend*) are generally positive but not significant in all our event windows, indicate the announcement of cash dividend (*Dividend*) are expected by the investors. As expected, the coefficient for Omission is significantly negative for the event window of [-5, 5]. However, this result is not consistently significant for the other event windows. Finally, we note that the announcements of stock dividend *(Stock)* are responded more positively by the B-share markets.

[Insert table 7 here]

5.5.3 The role of relative liquidity in the announcement effects.

The evidences in the previous section suggest that the A-and B-share markets react differently to the announcements of dividend policies, especially to the initiation of cash dividend. In this section, we further test whether the differential reaction is due to the

[8] We exclude the cash dividend initiation from this group as shown in figure 2.

relative liquidity. We restrict our sample data only due to the initiation of cash dividend and test the effects of relative liquidity with the following model:

$$\Delta Prem_{i,t,(\tau_1,\tau_2)}=\alpha_i+\gamma_1{}^*Rliq_{i,t}+\gamma_2{}^*Stock_{i,t}+\gamma_3{}^*Size_{i,t}+\gamma_4{}^*EBIT_i+\varepsilon_{i,t}$$

The variables are defined as those in the previous sections. We add a firm size variable (*Size*) to control for size effect (Amihud and Li, 2006). The profitability of the firm (*EBIT*) is also controlled because the dividend policy is usually announced with the annual report.

The empirical results are reported in Panel B of table 7. The relative liquidity (*Rliq*) enters the model with a negative sign, suggesting that the less liquid of the B-share market relative to the A-share market, the more positive the reaction of B-share market to the announcements of cash dividend initiations. This result is marginally significant in two of our three event windows. One possible explanation for the low significance of the estimated coefficients may be due to the small sample size of announcement in initiation of the cash dividend.

In sum, we conduct an event study to test our liquidity hypothesis of dividend in this section. The results indicate that the illiquid B-share market reacts more positively (negatively) to the announcements of cash dividend initiation (omission). In the sub-sample of dividend initiation, the differential reaction is negatively related to the relative liquidity. These results are generally consistent with those results obtained in the dynamic panel analysis.

6 Robustness test for the dynamic panel analysis

The evidences provided in the previous section strongly support the liquidity

hypothesis of dividend. In this section we further examine the robustness of our results in the dynamic panel analysis. For instance, we use the alternative for the proxies of the liquidity and cash dividend measures. For the liquidity measure, we use the modified Amihud (2002) illiquidity measure (*IlliqM*), which is defined as the daily ratio of absolute stock return to its turnover and then takes averaged over the year (Bortolotti et al. ,2007). The relative liquidity is constructed based on this illiquidity measure. For the cash dividend measure, we substitute cash dividend per share for the dividend payout ratio. We re-estimate the full model (model 5 in table 6) based on the alternative measurements. Table 8 reports the estimation results for the robustness tests as well as the original result. The second column in table 8 presents the result for the original model (model 5 in table 6). The measures for the key variables are replaced once a time and the estimation results are presented in the next three columns. All the reported estimated coefficients have the same signs and comparable magnitudes, which means that the results in robustness tests are strongly consistent with those obtained in the dynamic panel analysis in section 5.3.

[Insert table 8 here]

7 Conclusion

In this study, we relax the assumption of perfect market liquidity on MM dividend irrelevance theory and investigate how the firm value and the level of cash dividend are affected by the market liquidity. We first extend the liquidity model of Domowitz et al (1997) by incorporating the dividend policy and the profitability of a firm into our setting. In this simple economic model, we illustrate that the significance of cash dividend on firm valuation depends on the status of market liquidity. Specifically, under imperfect

market liquidity, investors demand more cash payments and expect a higher value for those firms who distribute cash dividends because it is costly for investors to trade in an illiquid market. The model also demonstrates that the firm value is positively correlated to market liquidity and the profitability of the firm.

Empirically, we examine a set of hypotheses derived from our model via dynamic panel analysis and event study approach using the data of China A-and B-share markets. In the dynamic panel regression, the results show that there is a positive relationship between the price premium and the level of cash dividend payments. This effect becomes even stronger for the firms with the lower relatively liquidity. We also notice that the price premium is positively correlated to both the relative liquidity and the profitability of a company. Using the event study approach, we find that the illiquid B-share market react positively (negatively) to the dividend initiation (omission). In particular, the positive reaction to the initiation is negatively associated with the relative liquidity. For the announcement of cash dividend, there is also a more positive response from the B–share market, although the result is not significant.

References

Allen, F., Michaely, R., 2003. Payout policy. In: Constantinides, G., Harris, M., Stulz, R. (Eds.), Handbook of Economics. North-Holland, Amsterdam, pp. 337–430.

Amihud, Y., 2002, Illiquidity and stock returns: cross-section and time series effects, Journal of Financial Markets 5, 31-56.

Amihud, Y. and Kefei Li, 2006, "The declining information content of dividend announcements and the effects of institutional holdings". Journal of Financial and Quantitative analysis 41, 637-660.

Amihud, Y., Mendelson, H., 1986, "Asset pricing and the bid-ask spread," Journal of Financial Economics 17, 223–249.

Amihud, Y., Mendelson, H., 2008, "Liquidity, the Value of the Firm, and Corporate Finance", Journal of Applied Corporate Finance,20(2),32-45

Amihud ,Y., Haim Mendelson, and Lasse Heje Pedersen, 2005, "Liquidity and Asset Prices" Foundations and Trends in Finance, 1(4), 269-364.

Bailey, Warren. 1988, Canada's dual class shares: Further evidence on the market value of cash dividends, Journal of Finance 43. 1143-1160.

Baker, H.K. and P.L. Gallagher, 1980, "Management's View of Stock Splits," Financial Management 9, 73-77.

Baker, H.K. and G.E. Powell, 1993, "Further Evidence on Managerial Motives for Stock Splits," Quarterly Journal of Business and Economics 32, 20–31.

Baker, M., Wurgler, J., 2004a, "A catering theory of dividends," Journal of Finance 59, 1125-1165.

Baker, M., Wurgler, J., 2004b, "Appearing and disappearing dividends: the link to catering incentives", Journal of Financial Economics 73, 271-288.

Banerjee, S., Gatchev, V.A., Spindt, P.A., 2007. Stock market liquidity and firm dividend policy. Journal of Financial and Quantitative Analysis 42, 369–398.

Bekaert, Geert, Campbell R. Harvey and Christian Lundblad, 2007, "Liquidity and expected returns: Lessons from emerging markets," Review of Financial Studies, Volume 20, Issue 6 Pp. 1783-1831.

Benartzi, Shlomo, Roni Michaely and Richard Thaler, 1997, "Do changes in dividends signal the future or the past?," Journal of Finance 52 (3), 1007-1043.

Beltratti, A., Bortolotti, B. and Caccavaio, M. (2011). "The stock market reaction to the 2005 non-tradable share reform in china". European Central Bank Working Paper Series No. 1339.

Bhattacharya, Sudipto, 1979, "Imperfect Information, Dividend Policy, and 'The Bird In The Hand. Fallacy," *Bell Journal of Economics, 10* (1), 259-270.

Black, Fischer, 1976, "The Dividend Puzzle," Journal of Portfolio Management, 2, 5-8.

Brav, A., J. Graham, C. Harvey and R. Michaely. 2005. Payout Policy in the 21st Century. The Journal of Finance 77: 483–527.

Chen, G.M., Lee, B.-S., Rui, O., 2001. Foreign ownership restrictions and market segmentation in China's stock markets. Journal of Financial Research 24, 133–155.

Denis, D.J., Denis, D.K., Sarin, A., 1994. "The information content of dividend changes: cash flow signaling, overinvestment, and dividend clienteles," Journal of Financial

and Quantitative Analysis 29, 567-587.

Denis, D. and I. Osobov. 2008. Why Do Firms Pay Dividends? International Evidence on the Determinants of Dividend Policy. Journal of Financial Economics 89: 62–82.

Domowitz, I., Glen, J., Madhavan, A., 1997. Market segmentation and stock prices: evidence from an emerging market. Journal of Finance 52, 1059–1085.

Easterbrook, Frank H., 1984, "Two Agency-Cost Explanations of Dividends," *American Economic Review, 74* (4), 650-659.

Eleswarapu, Venkat R., 1997, Cost of transacting and expected returns in the Nasdaq market, Journal of Finance 52, 2113-2127.

Fama, E. F., and K. R. French. "Disappearing Dividends: Changing Firm Characteristics or Lower Propensity to Pay?" Journal of Financial Economics, 60 (2001), 3–43.

Foster, T. and D. Vickrey, 1978, The information content of stock dividend announcements, The Accounting Review 53, 360-370.

M. Grinblatt, R. Masulis, and S. Titman. "The Valuation Effects of Stock Splits and Stock Dividends." Journal of Financial Economics 13 (December 1984), 461-90.

Gonedes, Nicholas J., 1978, "Corporate Signaling, External Accounting, and Capital Market Equilibrium: Evidence on Dividends, Income, and Extraordinary Items," *Journal of Accounting Research, 16* (1), 26-79.

Gottesman, Aron and Gady Jacoby, 2006, Payout policy, taxes, and the relation between returns and the bid–ask spread, Journal of Banking and Finance 30, 37-58

Grossman, Sanford J. and Oliver D. Hart, 1980, "Takeover bids, the free-rider problem, and the theory of the corporation," *Bell Journal of Economics* 11, 42-54.

Grullon, G., Michaely, R., Swaminathan, B., 2002. Are dividend changes a sign of firm maturity. Journal of Business 75, 387–424.

Jensen, Michael C., 1986, "Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers," *American Economic Review, 76* (2), 323-329.

John, Kose and Joseph Williams, 1985, "Dividends, Dilution, and Taxes: A Signaling Equilibrium," *Journal of Finance, 40* (4), 1053-1070.

Chaterjee, S. and Price, B., Regression Analysis by Example (New York: John Wiley, 1977).

Lang, Larry H. P. and Robert H. Litzenberger, 1989, "Dividend Announcements: Cash Flow Signaling vs. Free Cash Flow Hypothesis," *Journal of Financial Economics, 24* (1), 181-192.

Li, Wei and Erik Lie,2006," Dividend changes and catering incentives," *Journal of Financial Economics, 80 (2006) 293–308.*

Lewellen, Wilbur G., Kenneth L. Stanley, Ronald C. Lease and Gary G. Schlarbaum, 1978, "Some Direct Evidence on the Dividend Clientele Phenomenon," *Journal of Finance, 33* (5), 1385-1399.

Michaely, Roni, Richard H. Thaler and Kent Womack, 1995, "Price Reactions to Dividend Initiations and Omissions: Overreaction or Drift?," Journal of Finance 50 (2), 573-608.

Miller, Merton and Franco Modigliani, 1961, "Dividend Policy, Growth and the Valuation of Shares," *Journal of Business, 34,* 411-433.

Miller, Merton and Kevin Rock, 1985, "Dividend Policy Under Asymmetric Information," *Journal of Finance, 40* (4), 1031-1051.

Muscarella, C. and M. Vetsuypens, 1996, "Stock Splits: Signaling or Liquidity? The Case of ADR 'Solo-Splits'," Journal of Financial Economics 42, 3-26.

Penman, Stephen H., 1983, "The Predictive Content of Earnings Forecasts and Dividends," *Journal of Finance, 38* (4), 1181-1199.

Pettit, R. Richardson, 1972, "Dividend Announcements, Security Performance, and Capital Market Efficiency," *Journal of Finance, 27* (5), 993-1007.

Tong, W. and Yu, W., 2007, A Corporate Governance Explanation of the A-B Share Discount in China, Journal of International Money and Finance 31,125–147.

Watts, Ross, 1973, "The Information Content of Dividends," *Journal of Business, 46 (*2), 191-211.

Sun, Q., Tong, W., Yan, Y., 2009. Market liberalization within a country. Journal of Empirical Finance 16, 18–41.

Yoon, Pyung S. and Laura Starks, 1995, "Signaling, Investment Opportunities, and Dividend Announcements," Review of Financial Studies 8 (4), 995-1018.

Table 1

The number of public firms listed on Chinese stock markets

This table provides information on the number of public firms listed on the Chinese stock markets. The data is retrieved from the website of China National Bureau of Statistics (http://www.stats.gov.cn). "***SHSE***" denotes the Shanghai Security Exchange. "***SZSE***" denotes the Shenzhen Stock Exchange.

Year	Total	SHSE	SZSE	A-share only	A-and H-share only	A-and B-share only	B-share only	A-、B- and H-share only
1990	10	8	2	10				
1991	14	8	6	14				
1992	53	29	24	35		18		
1993	183	106	77	140	3	34	6	
1994	291	171	120	227	6	54	4	
1995	323	188	135	242	11	58	12	
1996	530	293	237	431	14	69	16	
1997	745	383	362	627	17	76	25	
1998	851	438	413	727	18	80	26	
1999	949	484	465	822	19	82	26	
2000	1088	572	516	955	19	86	28	
2001	1160	646	514	1025	23	88	24	
2002	1224	715	509	1085	28	87	24	
2003	1287	780	507	1146	30	87	24	
2004	1377	837	540	1236	31	86	24	
2005	1381	834	547	1240	32	86	23	
2006	1434	842	592	1287	38	86	23	
2007	1550	860	690	1389	52	86	23	
2008	1625	864	761	1459	57	85	23	1
2009	1718	870	848	1549	61	85	22	1
2010	2063	894	1169	1889	65	86	22	1

Table 2

The distribution of firms in the final sample

This table reports the distribution of firms in the final sample. "***SHSE***" denotes the Shanghai Security Exchange. "***SZSE***" denotes the Shenzhen Stock Exchange. The sample period is 1993-2011.

Year	SHSE	SZSE	Total
1993	5	4	9
1994	12	6	18
1995	26	13	39
1996	31	25	56
1997	33	29	62
1998	39	36	75
1999	38	39	77
2000	38	39	77
2001	38	35	73
2002	43	39	82
2003	43	39	82
2004	43	39	82
2005	43	39	82
2006	41	39	80
2007	42	40	82
2008	41	40	81
2009	41	40	81
2010	41	39	80
2011	41	38	79

Table 3

Summary statistics

This table presents the summary statistics of variables in our final sample. The B-share price premium measure, ***Prem***, is the annual average of the daily B-share price premium relative to its corresponding A-share price, which is defined as $(P_B-P_A)/P_A$. ***DivD*** is a dummy which takes 1 if the firm pays cash dividend and 0 otherwise. ***DivCash*** is the cash dividend per share adjusted for inflation. ***PayoutRatio*** is the dividend payout ratio. ***DivStk*** is stock dividend per share. ***EBIT*** is earnings before interest and taxes standardized by total assets. ***Rliq (RliqM)*** is the relative liquidity of B-shares relative to A-shares, constructed based on (modified) Amihud (2002) illiquidity measure. ***No.B/No.A*** is the ratio of shares outstanding in B- and A-share markets. **Size** is firm size measure calculated as the logarithm of sales. ***StdB/StdA*** is the ratio of standard deviation of returns in B- and A-share markets. ***Inflation*** is the percentage change of China CPI. ***LnReserves*** is the logarithm of China total reserves (include gold). ***Dyear*** is a dummy which takes 0 if it is before 2001 and 1 otherwise.

Variable	Obs	Mean	Std. Dev.	Min	Max
Prem	1297	-0.551	0.186	-0.927	0.237
DivD	1297	0.453	0.498	0.000	1.000
DivCash	1297	0.080	0.139	0.000	1.249
PayoutRatio	1103	0.210	0.258	0.000	1.180
DivStk	1297	0.052	0.159	0.000	1.000
EBIT	1297	0.041	0.082	-0.653	0.597
Rliq	1297	0.291	0.430	0.005	4.747
RliqM	1297	0.272	0.232	0.014	1.711
No.B/No.A	1297	2.371	2.522	0.055	15.410
Size(LnSales)	1297	20.912	1.479	15.630	24.916
StdB/StdA	1297	1.085	1.082	0.152	37.444
Tradable	1297	0.360	0.275	0.034	1.000
Inflation	1297	2.995	4.506	-1.408	24.237
LnReserves	1297	29.050	1.052	26.642	30.478
Dyear	1297	0.682	0.466	0.000	1.000

Table 4

Pearson correlation coefficients between variables and VIF coefficients

This table reports the Pearson correlation coefficients between variables and VIF coefficients. The B-share price premium measure, ***Prem***, is the annual average of the daily B-share price premium on its corresponding A-share price, which is defined as $(P_B-P_A)/P_A$. ***DivCash*** is the cash dividend per share adjusted for inflation. ***PayoutRatio*** is the dividend payout ratio. ***DivStk*** is stock dividend per share. ***EBIT*** is earnings before interest and taxes standardized by total assets. ***Rliq (RliqM)*** is the relative liquidity of B-shares relative to A-shares, constructed based on (modified) Amihud (2002) illiquidity measure. ***No.B/No.A*** is the ratio of shares outstanding in B- and A-share markets. ***Size*** is firm size measure calculated as the logarithm of sales. ***StdB/StdA*** is the ratio of standard deviation of returns in B- and A-share markets. ***Inflation*** is the percentage change of China CPI. ***LnReserves*** is the logarithm of China total reserves (include gold). ***Dyear*** is a dummy which takes 0 if it is before 2001 and 1 otherwise.

	Variablles	Prem	1	2	3	4	5	6	7	8	9	10	11	12	VIF
1	DivCash	0.29													2.64
2	PayoutRatio	0.18	0.66												1.84
3	DivStk	0.07	0.12	0.03											1.05
4	EBIT	0.19	0.59	0.33	0.15										1.78
5	Rliq	0.03	0.05	0.09	0.00	0.12									2.22
6	RliqM	0.33	0.05	0.08	0.00	0.02	0.34								2.15
7	No.B/No.A	-0.39	-0.13	-0.05	-0.05	-0.03	0.55	-0.18							2.24
8	Size(LnSales)	0.42	0.26	0.15	0.10	0.14	0.06	0.20	-0.09						1.24
9	StdB/StdA	-0.07	0.02	0.02	0.02	0.00	-0.01	-0.07	0.02	-0.07					1.07
10	Tradable	0.33	0.08	-0.01	0.02	-0.03	-0.33	0.31	-0.59	0.25	-0.12				2.66
11	Inflation	0.13	0.05	0.00	0.05	0.29	0.06	-0.15	0.06	-0.02	0.08	-0.01			1.20
12	LnReserves	0.48	0.04	-0.05	-0.06	-0.09	-0.18	0.36	-0.38	0.31	-0.23	0.65	-0.13		5.34
13	Dyear	0.66	0.04	-0.01	-0.05	-0.06	0.07	0.57	-0.26	0.30	-0.19	0.41	-0.18	0.81	4.67

Table 5

Two sample t-tests on the dividend and non-dividend issued cross-listed firms

This table reports the results of two sample t-tests on B-share price premium for dividend and non-dividend issued cross-listed firms. Panel A presents the results for the period of 1993-2000; Panel A presents the results for 2001; Panel C presents the results for the period of 2002-2011.

Panel A :1993-2000					
GROUP	N	Mean	Std Err	Minimum	Maximum
No dividend	247	-0.768	0.008	-0.927	-0.215
Dividend	166	-0.678	0.012	-0.912	0.020
Diff (1-2)		-0.090	0.014		
Panel B :2001					
GROUP	N	Mean	Std Err	Minimum	Maximum
No dividend	38	-0.497	0.100	0.016	-0.713
Dividend	35	-0.447	0.088	0.015	-0.619
Diff (1-2)		-0.051	0.094	0.022	
Panel C :2002-2011					
GROUP	N	Mean	Std Err	Minimum	Maximum
No dividend	424	-0.514	0.122	0.006	-0.793
Dividend	387	-0.413	0.138	0.007	-0.731
Diff (1-2)		-0.101	0.130	0.009	

Table 6 Dynamic panel Regression

This table reports the results of dynamic panel regression. The B-share price premium measure, ***Prem***, is the annual average of the daily B-share price premium on its corresponding A-share price, which is defined as $(P_B-P_A)/P_A$. ***Prem(-1)*** is the premium lag term to filter out the first-order serial correlation. ***PayoutRatio*** is the dividend payout ratio. ***DivStk*** is stock dividend per share. ***EBIT*** is earnings before interest and taxes standardized by total assets. ***Rliq*** is the relative liquidity of B-shares relative to A-shares, constructed based on (modified) Amihud (2002) illiquidity measure. ***No.B/No.A*** is the ratio of shares outstanding in B- and A-share markets. ***Size*** is firm size measure calculated as the logarithm of sales. ***StdB/StdA*** is the ratio of standard deviation of returns in B- and A-share markets. ***Inflation*** is the percentage change of China CPI. ***LnReserves*** is the logarithm of China total reserves (include gold). ***Dyear*** is a dummy which takes 0 if it is before 2001 and 1 otherwise.

	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	-0.03***(-27.48)	-0.028***(-22.85)	-0.026***(-15.52)	-0.022***(-9.93)	-0.029***(-10.66)
Prem(-1)	0.093***(14.39)	0.118***(14.62)	0.119***(12.42)	0.05*** (3.45)	0.015 (0.84)
Rliq	0.067***(10.81)	0.067***(11.86)	0.063***(7.60)	0.08*** (12.88)	0.084***(6.73)
PayoutRatio				0.035***(3.68)	0.132***(11.66)
PayoutRatio*Rliq					-0.259***(-10.27)
EBIT		0.241***(5.75)	0.232***(7.50)	0.115**(2.35)	0.102* (1.81)
DivStkD			0.054***(5.38)	0.014 (1.08)	-0.012 (-0.93)
NoB/NoA	-0.024***(-16.81)	-0.024***(-13.62)	-0.022***(-9.7)	-0.012***(-3.38)	-0.01** (-2.31)
Size(LnSales)	0.019*** (4.99)	0.019***(4.03)	0.018***(4.22)	0.058***(9.14)	0.068***(9.58)
StdB/StdA	-0.006* (-1.70)	0.004 (0.95)	0.004 (1.14)	-0.004 (-0.71)	0.008 (1.26)
Tradable	-0.105***(-18.22)	-0.114***(-8.99)	-0.111***(-10.84)	-0.134***(-10.19)	-0.117***(-6.52)
LnReserves	0.102***(24.24)	0.098***(20.64)	0.091***(15.18)	0.108***(11.75)	0.114***(13.12)
Inflation	0.008***(59.63)	0.007***(42.04)	0.007***(33.29)	0.005***(27.9)	0.006***(26.3)
Dyear	0.286***(52.76)	0.285***(52.01)	0.289***(38.19)	0.246***(36.52)	0.287***(25.89)
Root MSE	4.26	4.14	3.91	5.45	5.96
Sargan test	85.93(143)	86.13(142)	85.50(141)	79.50(140)	76.85(139)
N	127	1297	1297	1103	1103

Table 7

Test on the differential announcement effects between A- and B-share markets

This table reports the results of multiple regression models. The dependent variable is the cumulative premium change during the event window of [τ_1, τ_2]. Panel A is the results for regression of the cumulative premium change on different types of announcements. Panel B the results for regression of the cumulative premium change on relative liquidity for the initiation sub-sample. ***Initiation*** takes 1 if the event is announcement of cash dividend initiation and 0 otherwise. ***Dividend*** takes 1 if the event is announcement of cash dividend but not initiation and 0 otherwise. ***Omission*** takes 1 if the event is announcement of cash dividend omission and 0 otherwise. ***Stock*** takes 1 if the event is announcement of stock dividend and 0 otherwise. **Size** is firm size measure calculated as the logarithm of sales. ***EBIT*** is earnings before interest and taxes standardized by total assets.

Panel A

Variable	**[-1,1]**	**[-5,5]**	**[-20,1]**	**[1,20]**
Intercept	-0.001 (-1.03)	-0.001 (-0.58)	-0.002 (-0.75)	0.005** (2.18)
Initiation	0.004* (1.93)	0.009* (1.95)	0.018*** (2.72)	0.006 (0.92)
Dividend	0.002 (1.27)	0.004 (1.37)	0.002 (0.61)	-0.001 (-0.18)
Omission	-0.001 (-0.68)	-0.009** (-2.03)	-0.004 (-0.67)	-0.002 (-0.41)
Stock	0.009*** (5.37)	0.015***(4.49)	0.003 (0.55)	0.005 (1.12)
N	1181	1181	1181	1181
Adj R-Sq	0.027	0.024	0.004	-0.001

Panel B

Variable	**[-1,1]**	**[-5,5]**	**[-20,1]**
Intercept	0.018 (0.58)	0.037 (0.61)	0.176*(1.79)
Rliq	-0.002 (-0.71)	-0.01* (-1.65)	-0.018* (-1.82)
Stock	0.013***(2.65)	0.019* (1.90)	0.013 (0.82)
Size	-0.001 (-0.59)	-0.002 (-0.58)	-0.008 (1.64)
EBIT	0.047 (0.95)	0.160 (1.63)	0.114 (0.71)
N	90	90	90
Adj R-Sq	0.050	0.047	0.032

Table 8

Robustness test for the full model (Model 5) for the Dynamic panel regression

This table reports the results of the robustness test for the full model (Model 5) in the dynamic panel analysis. The B-share price premium measure, ***Prem***, is the annual average of the daily B-share price premium on its corresponding A-share price, which is defined as $(P_B-P_A)/P_A$. ***Prem(-1)*** is the premium lag term to filter out the first-order serial correlation. ***DivCash*** is the cash dividend per share adjusted for inflation. ***PayoutRatio*** is the dividend payout ratio. ***DivStk*** is stock dividend per share. ***EBIT*** is earnings before interest and taxes standardized by total assets. ***Rliq (RliqM)*** is the relative liquidity of B-shares relative to A-shares, constructed based on (modified) Amihud (2002) illiquidity measure. ***No.B/No.A*** is the ratio of shares outstanding in B- and A-share markets. ***Size*** is firm size measure calculated as the logarithm of sales. ***StdB/StdA*** is the ratio of standard deviation of returns in B- and A-share markets. ***Inflation*** is the percentage change of China CPI. ***LnReserves*** is the logarithm of China total reserves (include gold). ***Dyear*** is a dummy which takes 0 if it is before 2001 and 1 otherwise.

Variable	**1** Rliq, PayoutRatio	**2** RliqM, PayoutRatio	**3** Rliq, DivCash	**4** RliqM, DivCash
Intercept	-0.029***(-10.66)	-0.03***(-14.94)	-0.03***(-18.33)	-0.033***(-37.75)
Prem(-1)	0.015 (0.84)	0.012 (0.51)	0.088***(8.72)	0.094***(7.4)
Rliq	0.084***(6.73)		0.085***(10.86)	
RliqM		0.064***(4.98)		0.071***(5.82)
PayoutRatio	0.132***(11.66)	0.139***(6.98)		
DivCash			0.354***(8.62)	0.504***(8.63)
PayoutRatio*Rliq	-0.259***(-10.27)			
PayoutRatio*RliqM		-0.309***(-7.45)		
DivCash**Rliq			-0.328***(-6.06)	
DivCash**RliqM				-0.87***(-7.77)
EBIT	0.102* (1.81)	0.117**(2.16)	0.149***(4.9)	0.172***(5.67)
DivStkD	-0.012 (-0.93)	0.014 (0.99)	0.039***(3.44)	0.042***(2.94)
NoB/NoA	-0.01** (-2.31)	-0.011** (-2.46)	-0.024***(-10.95)	-0.017***(-7.39)
Size	0.068***(9.58)	0.064***(8.66)	0.022***(5.04)	0.023***(4.37)
StdB/StdA	0.008 (1.26)	0.012** (1.98)	-0.005 (-0.74)	0.002 (0.47)
Tradable	-0.117***(-6.52)	-0.107***(-5.95)	-0.112***(-10.63)	-0.09***(-8.14)
LnReserves	0.114***(13.12)	0.113***(12.97)	0.103***(18.79)	0.102***(26.69)
Inflation	0.006***(26.3)	0.006***(17.05)	0.007***(25.33)	0.006***(32.88)
Dyear	0.287***(25.89)	0.313***(33.64)	0.291***(45.95)	0.329***(43.11)
Root MSE	5.96	5.85	4.42	4.42
Sargan test	76.85(139)	73.85(139)	79.76(139)	82.84(139)
N	1103	1103	1297	1297

Figure 1
The annual B-share price premium for dividend and non-dividend issued groups

This figure plots the average price premium for dividend and dividend and non-dividend issued groups from 1993-2011. **Dividend** denotes the group which distribute annual cash dividend. **No Dividend** denotes the group which does not distribute annual cash dividend.

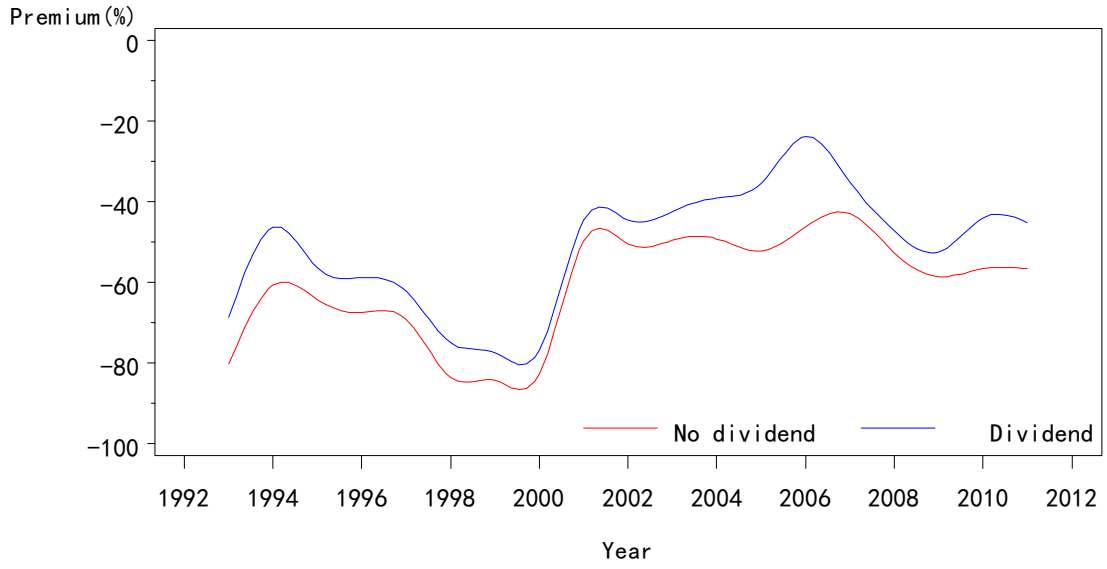

Figure 2
Classification of different types of dividend announcements

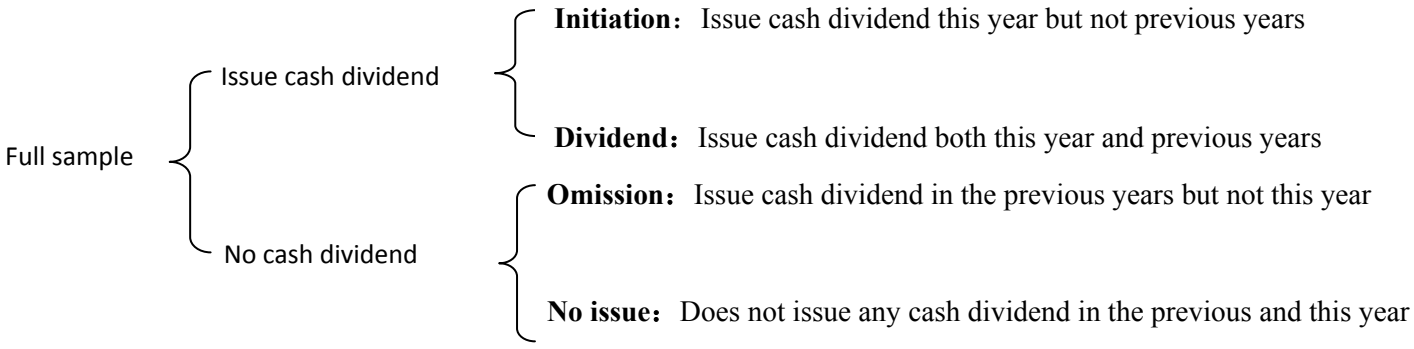

Figure 3

The cumulative price premium change during [-20, 20]

This figure plots the cumulative price premium change for three groups during an event window of [-20, 20]. **Initiation** takes 1 if the event is announcement of cash dividend initiation and 0 otherwise. **Dividend** takes 1 if the event is announcement of cash dividend but not initiation and 0 otherwise. **Omission** takes 1 if the event is announcement of cash dividend omission and 0 otherwise.