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## **Split Share Structure Reform, corporate governance, and the foreign share discount puzzle in China**

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We examine the impact of the Split Share Structure Reform on the well-known foreign share discount puzzle in China. Existing literature confirms that foreign investors are more concerned about insider expropriation because of their information disadvantage relative to domestic investors. The split share structure of the ownership of Chinese listed firms created a conflict of interests between state and private shareholders. Since, before the reform, state shareholders held restricted shares that denied them any wealth effect from share price movements, they had a limited incentive to work with private shareholders to ensure that managers maximized the stock market value of the firm. By abolishing the trading restrictions for state shareholders, this reform has increased the incentive alignment between state and private shareholders, encouraging them to monitor managers. If foreign investors' concerns over the corporate governance implications of the split share structure at least partly contributed to their discounting of Chinese listed firms, then this discount should be reduced following the reform. Indeed, our evidence confirms this prediction, especially among Chinese listed firms with more state ownership or restricted shares. Our findings imply that this significant institutional reform of the Chinese stock market has benefitted minority investors.

**Keywords:** Split Share Structure Reform; corporate governance; foreign share discount; ownership structure; China

*JEL classification:* G32; G35

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## **1. Introduction**

We study the impact of the Split Share Structure Reform (e.g., Firth et al., 2010) on the well-known foreign share discount puzzle in China (e.g., Bailey et al., 1999). Previous studies have attributed this discount to a wide array of reasons, ranging from market illiquidity (Chen et al., 2001) to information asymmetry (e.g., Chan et al., 2008). We add to the literature on the Chinese foreign share discount by examining a unique research setting based on the effect of an exogenous regulatory change. The existing literature suggests that foreign investors are more concerned about the scope of expropriation by controlling insiders (e.g., Leuz et al., 2009), because foreigners have less local knowledge with which to detect such activities, than domestic investors. Prior to the Split Share Structure Reform, state shareholders held restricted shares that insulated them from the stock market performance of their firms, and therefore encouraged them to collude with managers and pursue self-serving activities at the expense of private investors. If the fear of insider expropriation under this split share structure at least partly contributed to the foreign share discount phenomenon in China, then we would expect the reforms to have alleviated this discount. Our study not only gains new insights into the underlying cause of the foreign share discount but also provides an empirical verification of the benefit of the Split Share Structure Reform, which is considered to be one of the most significant institutional changes in the Chinese stock market. Since China is an increasingly influential emerging country, the effect of its capital market reforms has policy implications for other transitional economies.

As a result of China's political ideology and transitional economy, the government maintains a high degree of ownership through state-affiliated shareholders in the majority of listed firms, to sustain its influence (e.g., Allen et al., 2005). The existing literature stipulates two counteracting effects of ownership concentration on corporate governance (e.g., La Porta et al., 1999; Claessens et al., 2002). First, large shareholders can lead to an entrenchment effect (e.g.,

Shleifer and Vishny, 1997; Johnson et al., 2000; Djankov et al., 2008), which could impede corporate governance since their dominance over the control of the firm enables them to collude with management to expropriate the wealth of minority outside investors. Second, large shareholders can also be associated with an incentive alignment effect (e.g., Shleifer and Vishny, 1986; Gomes, 2000), which could enhance corporate governance if their interests and wealth are associated with the value of the firm they control. In the case of state shareholders in China, however, control and ownership concentration was maintained primarily through restricted shares, prior to the Split Share Structure Reform. Since these shares could not be traded in the stock exchange, the state shareholders were more interested in acquiring political credits or cash dividends. However, these pursuits may not necessarily be beneficial to their firms' market value and long-term growth, upon which private investors' wealth hinges. In other words, the split share structure of ownership in Chinese listed firms generated a conflict of interest between state and private shareholders. This tilted state shareholders toward the aforementioned entrenchment effect instead of the incentive alignment effect. By abolishing the split share structure, the state shareholders will benefit from increases in firms' market value, just as the private investors do. Thus, the Split Share Structure Reform should create a greater desire among state shareholders to monitor executives and ensure they maximize their firms' market value. This should foster the incentive alignment effect and ultimately benefit private investors.

The preference of foreign investors for well-governed firms is well-established in the literature. In a survey of global investors, McKinsey and Company (2002) show that corporate governance considerations dominate investment decisions, and over 60% of respondents state that they will avoid poorly governed firms. Leuz et al. (2009) show that foreigners do indeed invest less in poorly governed firms in countries with weak legal institutions. They suggest that poorly governed firms require more monitoring, which makes them more costly for foreign

investors, who lack local knowledge to detect expropriation activities. They also argue that countries with weak legal institutions further increase the disadvantage for foreign investors, since insider relationships are more influential in controlling the firms. Due to the information disadvantage, foreign investors are also expected to benefit more from institutional reforms that reduce the scope of insiders' wealth expropriation from outsiders. For instance, Tan et al. (2011) show that there are greater increases in following and forecast accuracy among foreign analysts than local analysts after firms improve their corporate information environment. As a result of China's weak shareholder protection (e.g., Allen et al., 2005) and foreigners' lack of local knowledge, the entrenchment effect of state shareholders, encouraged by the split share structure, is expected to put off foreign investors more than domestic investors. An increase in the incentive alignment effect of state shareholders, promoted by the reform aimed at abolishing the split share structure, is expected to be more beneficial to foreign investors than domestic investors.

The foreign share discount phenomenon in China has been well-documented in the literature (e.g., Chakravarty et al., 1998; Bailey et al., 1999; Fernald and Rogers, 2002). Although China is not the only country with segmented stock markets, its foreign shares are widely traded at a discount (Bailey et al., 1999). This unique phenomenon is considered to be a puzzle generally, because foreign investors are assumed to be more able to diversify their risk and should therefore demand lower returns than domestic investors, which in turn should lead to a foreign share premium instead of a discount. Several explanations have been put forward in the literature to explain the unique Chinese foreign share discount. These include B-share market illiquidity (Chen et al., 2001), limited domestic investment opportunities (Fernald and Rogers, 2002), information asymmetry (Chan et al., 2008), domestic investor speculation (Mei et al., 2009), and firms' governance qualities (Tong and Yu, 2011).

However, to what extent the split share structure and its subsequent reform have influenced

the foreign share discount in China, beyond the existing explanations provided by the literature, has not been examined. Some factors, such as liquidity, information asymmetry, speculation and governance characteristics, that are suggested by previous studies, can all be endogenously related to the foreign share discount. In contrast, the Split Share Structure Reform provides a unique research setting for us to empirically observe whether an exogenously-induced reduction in the conflict of interests between dominant and minority shareholders could alleviate foreign investors' concerns over insider expropriation. In fact, some of the existing explanations provided by the literature on Chinese foreign share discounts, such as liquidity, information asymmetry and governance qualities, may in fact be manifestations of the deeper underlying conflict between shareholder groups that we can observe by studying the effects of this reform. Firms with insiders who are more likely to pursue self-serving activities under the split share structure are also more likely to have higher information asymmetry, since the insiders have greater incentives to withhold sensitive information. Such firms are also less likely to attract foreign investors, which in turn decreases their market liquidity. To cover up insider expropriation, such firms are also more likely to reduce levels of governance, for example by appointing a less independent board. Of course, we do not stipulate that the Split Share Structure Reform will completely eliminate the foreign share discount. This is because other institutional factors, such as the lack of alternative investment channels for domestic investors, which also contribute to the phenomenon (Fernald and Rogers, 2002), persist. Our specific prediction is that the split share structure contributed significantly to the foreign share discount on Chinese listed firms under state control or with more restricted shares.

To carry out our analyses, we sample all A- and B-share dual-listed Chinese firms in both the Shanghai and Shenzhen stock exchanges over the period from 2001 to 2008. For each firm, we identify the year in which the negotiations over compensation to holders of tradable shares were completed and the process of reform began. We classify firms that are controlled by state

shareholders, or have above the yearly cross-sectional median proportion of restricted shares, as our treatment group, since we assume that such firms are more sensitive to the influence of the Split Share Structure Reform. We classify firms that are controlled by private shareholders, or have below the yearly cross-sectional median proportion of restricted shares, as our control group, since we assume that such firms are less sensitive to the reform. To draw the inference that the foreign share discount has indeed been reduced by the reform, instead of some other unidentified background reasons, such as a time trend or macro-economic factors, we must observe a significantly more pronounced reduction in the treatment than in the control group, after the reform.

Our findings are as follows. Among firms under state control or with a higher proportion of restricted shares (i.e., our treatment group), we observe a significantly higher foreign share discount than among their counterparts, prior to the Split Share Structure Reform. This confirms our conjecture that foreign investors are concerned about the corporate governance of Chinese state-controlled listed firms and incorporate this into the discount rate they attach to Chinese listed firms. One can interpret this pre-reform finding as an inverse relationship between corporate governance and the foreign share discount, which is broadly in line with Tong and Yu (2011), although their analyses are based on an earlier sample period of 1998 to 2005 and they do not look at state control or restricted shares. Following the reform, we find original evidence of a significantly more pronounced reduction in the foreign share discount among firms in our treatment group, relative to those in our control group. Evidence of a greater effect among Chinese listed firms that are sensitive to the reform confirms our prediction that an exogenous reduction in the conflict of interests between the dominant state shareholder and the minority private shareholders after the reform reduces the foreign share discount. This is consistent with the reduction of the scope of insider expropriation benefiting foreign investors more as a result of their limited local knowledge relative to domestic investors. Our findings are

robust to several dimensions of controls, such as determinants of the Chinese foreign share discount that have been identified in the literature (i.e., market liquidity, information asymmetry, investor speculation and governance qualities), determinants of investors required returns (i.e., size, leverage, growth, profitability and risk), as well as firm, industry, year and regional fixed effects.

Our findings contribute to several strands of the academic literature. In relation to the growing literature on economic development in China, we show that the Split Share Structure Reform has had a beneficial impact on the capital market of this transitional economy. Evidence of a reduction in the required rate of return demanded by foreign investors since the reform suggests a decline in the risk perceived by outside investors. This in turn decreases the firms' cost of raising equity capital. In terms of the literature on corporate governance, we provide an example of how the conflict of interests between dominant and minority shareholders can be reduced exogenously through regulatory intervention. In a transitional economy where shareholder protection and legal enforcement are weak, the influence of outside investors may not be enough to motivate firms to improve corporate governance mechanisms. Therefore, public policy may be required to stimulate change. Finally, we add to the established literature on the Chinese foreign share discount puzzle an alternative explanatory factor, that is, the concern over the state control of listed firms under the split share structure. Our findings confirm that foreign investors are more concerned about this issue than domestic investors.

Our paper is organized as follows. Section 2 reviews the literature, explains the institutional background and develops our hypotheses. Section 3 describes our sample and methodologies. Section 4 presents our empirical findings. Section 5 concludes.

## **2. Literature and hypotheses**

### ***2.1 The Chinese stock market***

China established the Shanghai and Shenzhen stock exchanges in the early 1990s to promote



economic development by encouraging firms to obtain external funding. China's stock market has experienced significant growth in parallel with its economy. For instance, the market capitalization of China's stock market was already the largest among developing countries by 2001, and it is currently the second largest in the world, with only the United States' stock market larger.<sup>1</sup> The success and experience of Chinese economic growth has useful implications for other emerging countries. Thus, there is increasing interest in the academic literature in examining the development of the Chinese economy and capital market.

Chinese listed firms issue A-shares, B-shares and H-shares to different constituencies. The vast majority of Chinese listed firms only issue A-shares, which are traded in Shanghai or Shenzhen exchanges in the Chinese currency RMB. A-shares could initially only be purchased by domestic investors. Since 2003, some qualified foreign institutional investors (QFII) have also been granted access. However, the A-share market is currently still largely dominated by Chinese domestic investors. B-shares are traded in either U.S. dollars in the Shanghai exchanges or Hong Kong dollars in the Shenzhen exchanges. Initially, B-shares could only be traded by foreign investors. Since 2001, domestic investors have also been allowed to purchase B-shares, but only if they have access to foreign currency, which are subject to exchange control in China. Therefore, the B-share market is still largely dominated by foreign investors. H-shares are not traded in mainland China's stock exchanges but in Hong Kong, which has a different institutional environment. Chinese listed firms that issue A-shares mainly to domestic investors can also issue B-shares and/or H-shares that mainly target foreign investors.

By the end of 2009, 1,632 Chinese listed firms had issued pure A-shares that were traded on the mainland Chinese stock exchanges. Among them, 86 had also issued B-shares. These A- and B-share dual-listed firms are required to report under different accounting standards to cater for investors' needs. Firms that issue A-shares are required to comply with Chinese domestic accounting standards, which converged to the International Financial Reporting

Standards (IFRS) in 2007. However, even before 2007, firms that had issued both A- and B-shares were required to report under both the Chinese domestic accounting standards and the IFRS. Therefore, these A- and B-share dual-listed firms should not have been affected by the impact of the IFRS transition in the same way as the purely A-share-issuing firms. Although the A- and B-share dual-listed firms only account for a subset of all listed firms in China, they provide a useful setting to evaluate the differential impact of firm characteristics and institutional reforms on foreign investors.

## ***2.2 The Chinese foreign share discount puzzle***

Bailey et al. (1999) document that foreign shares are priced at a discount only in China and at a premium in all other segmented markets, namely, Indonesia, South Korea, Malaysia, Mexico, Norway, the Philippines, Singapore, Switzerland, Taiwan, and Thailand. It should be noted that China was not the only emerging economy in their study, which makes the phenomenon interesting, and as a result it has become known in the literature as a puzzle. There are competing explanations for the general behavior of foreign investors. Some studies (e.g., Froot and Ramadorai, 2007) suggest that foreign investors have an advantage over domestic investors due to their experience and expertise. Foreign investors are also assumed to be better able to diversify their risk than domestic investors. These arguments imply that foreign investors will require lower returns, which seems to apply to all countries except for China in the study by Bailey et al. (1999). Other studies (e.g., Brennan and Cao, 1997; Grinblatt and Keloharju, 2001) argue that foreign investors have informational, linguistic, and cultural disadvantages. These qualities imply that foreign investors will require higher returns, which seems to apply to China but not to other countries.

More direct explanations relating to the Chinese setting have been put forward to address the foreign share discount puzzle. Fernald and Rogers (2002) suggest that Chinese investors have lower expected returns due to the lack of alternative investment channels. Apart from shares,

their primary investment outlet is bank deposits, which pay less than the international level of interest rates. Although this argument explains why A-shares would be traded at a premium relative to B-shares, it does not address cross-sectional variations in this premium across firms. Chakravarty et al. (1998) and Chan et al. (2008) document that information asymmetry between domestic and foreign investors explains a portion of the cross-sectional variation in the Chinese foreign share discount. This is consistent with the suggestion of Merton (1987) that investors are more reluctant to hold stocks associated with poorer information environments. Chen et al. (2001) suggest the trading activity explanation, which stipulates that the discount is due to lower liquidity in the B-share market. This is in line with the argument of Amihud and Mendelson (1986) that investors require higher returns to compensate for the higher trading costs associated with illiquid stocks, and therefore attach a higher discount rate to them. Mei et al. (2009) argue that domestic investors' speculation contributes to the cross-sectional variation in the A-share premium. This is based on the theoretical model of Scheinkman and Xiong (2003), which suggests there is a speculative component in asset pricing. Tong and Yu (2011) argue that the B-share discount is higher among firms with weaker governance qualities, such as a less independent board. This is broadly consistent with the analyses of Bai et al. (2004), which show that corporate governance measures impact the Tobin's Q of Chinese firms.

The discounting of Chinese listed firms by foreign investors also provides a useful platform on which to evaluate the economic consequences of this unprecedented institutional reform in China. It provides an empirically observable measure of the discount rate to overcome the widely recognized inaccuracy of estimates based on asset pricing (e.g., Fama and French, 1997; Elton, 1999) and valuation (e.g., Easton and Monahan, 2005) models.

### ***2.3 The ownership structure in China***

Ownership structure literature stipulates that it is possible for large shareholders to play a positive role in corporate governance, since through their power and expertise they can reduce

the agency problem more effectively than minority shareholders (e.g., Jensen and Meckling, 1976; Shleifer and Vishny, 1986; Admati et al., 1994; Maug, 1998; La Porta et al., 1999; Noe, 2002). An incentive alignment effect occurs when large shareholders incur a greater cost from a decline in their firm's value than they could gain from diverting their firm's cash flow into their own pockets. Kaplan and Minton (1994) and Kang and Shivdasani (1995) show there is increased management turnover in the presence of large shareholders. Bertrand and Mullainathan (2001) and Hartzell and Starks (2003) find tighter executive compensation controls under large shareholders. Gomes (2000) suggests that a high degree of ownership concentration also serves as a signal for reputation-building by controlling owners. To the extent that large shareholders can improve corporate governance and decrease agency costs, they are also expected to influence firm valuation by reducing the firm's cost of capital. Lombardo and Pagano (2002) suggest that investors require higher returns to compensate for the monitoring costs of poorly governed firms. Corporate governance also decreases the cost of capital by discouraging insider trading (e.g., Bhattacharya and Daouk, 2003). Better governance can also reduce the non-diversifiable risk of expropriation by corporate insiders during market downturns (e.g., Durnev and Kim, 2005).

Chinese listed firms have a high degree of state ownership concentration. This originates from the early 1990s, when many state-owned Chinese firms became partially privatized and were listed on the stock exchanges. Unlike in western, developed economies, the large shareholders of listed firms in China represent the interests of the state instead of private investor interests. Both central and local governments in China usually retain a substantial amount of ownership so as to maintain effective control of these listed firms. In contrast, other transitional economies such as Russia largely relinquish state ownership once firms are privatized. The majority of the firms currently listed on the Chinese stock exchanges are still dominated by state ownership. However, instead of delivering the aforementioned corporate

governance benefits of large shareholders, the high degree of state ownership in Chinese listed firms is more likely to exacerbate the agency problem from the perspective of minority private shareholders. In Chinese state-controlled listed firms, both the managers and the dominant shareholders are affiliated with the government, and share the same interest in pursuing political credits and other common agenda. This creates the incentive and the opportunities for dominant shareholders to collude with managers so as to divert firm resources to serve their own objectives at the expense of minority shareholders.

Shleifer and Vishny (1997) suggest that an entrenchment effect occurs when large shareholders with effective control of a firm's management have the incentive to pursue their own interests against those of the other investors. Johnson et al. (2000) provide evidence of "tunneling", where controlling shareholders transfer assets and profits out of the firm for their own benefit, in civil-law countries such as Belgium, France and Italy. Claessens et al. (2002) show that firm value drops when the control rights of large shareholders exceed their cash-flow rights, in eight East Asian countries. In the case of China, existing studies provide evidence that controlling shareholders use inter-corporate loans (Jiang et al., 2010) and cash dividends (Lv et al., 2011) to engage in tunneling and the expropriation of minority shareholders. Wei and Xiao (2009) document that state shareholders prefer cash dividends to share dividends and argue that this has negative implications for their firms' long-term growth and value. Yuan et al. (2007) and Gul et al. (2010) both document reduced corporate transparency among Chinese listed firms with greater state ownership, which is consistent with entrenched dominant shareholders withholding value-relevant information to conceal self-serving behavior. Firth et al. (2006) show that executive remuneration is only sensitive to share return performance in privately-controlled Chinese listed firms.

The entrenchment effect of state shareholder in China is exacerbated by the institutional environment, such as the use of restricted shares to maintain such ownership. Therefore, the

Split Share Structure Reform provides a useful opportunity to evaluate how state ownership affects the valuation of Chinese listed firms.

#### ***2.4 The Split Share Structure Reform in China***

Under the split share structure, the shares of Chinese listed firms were classified into restricted and freely-traded shares. There were two kinds of restricted shares: state and legal-person shares. The former were held by central and local governments through their bureaucratic agencies or affiliated state-owned enterprises (SOEs). The latter could be held by any of the above, or by private entities. Restricted shares could not be freely traded in the stock exchanges and could only be transferred in two ways. First, they could be transferred with the authorities' approval, in which case the transfer price was often set near the book value. Second, they could be auctioned, also with a substantial illiquidity discount on their value. The documented illiquidity discounts, due to the lack of tradability, are nearly 80% in Chen and Xiong (2001), Chen et al. (2008), Huang and Xu (2009), and Hou and Howell, (2011). Even after the transfer or auction, these shares would remain restricted and could not be traded in the stock exchanges. The split share structure essentially catered for the socio-political ideology of China. On the one hand, the government wished to maintain its influence in listed firms, in order to achieve political and social objectives. On the other hand, it also wanted their controlled firms to reduce their dependence on state subsidies and increase their ability to raise capital through the equity market. Nevertheless, this split share structure reduced the quality of firms' corporate governance and the efficiency of their performance (Sun and Tong, 2003; Wei et al., 2005; Fan et al., 2007; Chen et al., 2008). To accommodate further economic development, China recognized the need to modernize its capital market by abolishing this split share structure across listed firms.

After a previously unsuccessful attempt in 2001 (e.g., Kim et al., 2003) to reform the split share structure, the China Securities Regulatory Commission (CSRC) announced on 29<sup>th</sup> April

2005 its decision to mandate the elimination of the trading constraints imposed on all restricted shares. Two groups of firms were chosen for an initial piloting of the scheme, on 9<sup>th</sup> May and 19<sup>th</sup> June 2005, respectively, and on 4<sup>th</sup> September 2005 official guidelines were issued, providing formal operational procedures. To avoid the sharp price drop in the stock market that had occurred with previous such attempts, the government required the release of trading constraints to be gradual, and a compensation deal to be agreed by and paid out to existing tradable shareholders. Firth et al. (2010) provide evidence that state-controlled listed firms offered more compensation to existing tradable shareholders than other firms, probably due to government pressure aimed at ensuring the success of the reform. The stock exchange regulatory authority selected listed firms in batches to carry out the process. Once the negotiation process was complete and the compensation deal had been agreed, the portion of restricted shares offered as compensation to the minority private investors would become tradable at once. After a 12-month period following the ratification of the compensation deal, all restricted shares held by those shareholders holding less than 5% of the firm's ownership could also be traded in the stock market. Within a further 12 (24) months, large shareholders holding more than 5% of the firm's ownership would also be allowed to trade up to 5% (10%) of their restricted shares. Finally, all restricted shares would become fully tradable in the stock market, 36 months after the ratification of the compensation plan. Majority of the Chinese listed firms had their compensation payout plan ratified by the end of 2008. Thus, most of listed firms in China would not have any restricted shares remaining by the end of 2011.

So, has the Split Share Structure Reform benefitted the Chinese listed firms and their minority shareholders? This is a crucial research question that deserves to be addressed given the significance of this reform to the development of the Chinese capital market. Our study seeks to answer this question by providing original empirical evidence of the economic consequences of this reform.

## ***2.5 Hypothesis development***

We synthesize the aforementioned literature on the Chinese foreign share discount, ownership structure, and the Share Structure Reform, to generate our research hypotheses. The existing literature shows findings that are consistent with the foreign share discount being higher among firms with less liquidity, more information asymmetry, and greater monitoring costs. However, this evidence may only be associating the foreign share discount with the symptoms of some deeper underlying problems, one of which could be the split share structure of ownership in Chinese listed firms. Under the split share structure, the dominant shareholders of state-controlled Chinese listed firms mainly held restricted shares that could not be traded in the stock market as the shares held by private minority shareholders could. Therefore, despite their dominant position, state shareholders in such firms would have had little interest in the share return performance of the firms they controlled. This, in turn, would have led them to exercise less power and influence over managers to urge them to maximize the market value of their firms. In other words, under the split share structure, the accountability of state-controlled listed firms' managers to the capital market would have been limited to private shareholders in minority positions. This conflict of interests between the dominant and minority shareholders under the split share structure would have reduced the effectiveness of corporate governance and exacerbated the agency problem. The joint existence of widespread state ownership and the split share structure created an institutional feature specific to China that would have facilitated insider expropriation. It is expected that this problem would have been greater among firms under state control and/or associated with more restricted shares. Foreign investors are known to be more concerned about insider expropriation, because they lack local knowledge and incur higher monitoring costs, than domestic investors (e.g., Leuz et al., 2009). Thus, they are likely to have demanded a higher return than domestic investors on firms with a greater scope for insider expropriation under the split share structure. Given these arguments, we hypothesize



that:

*H<sub>1</sub>: Prior to the Split Share Structure Reform, Chinese listed firms under state control or having a higher ratio of restricted to total shares would have been associated with a higher foreign share discount.*

As a result of the disadvantage for foreigners, institutional reform that could reduce the scope for insider expropriation should make more of a difference to foreign investors than domestic investors. For instance, Tan et al. (2011) show that the following and forecast accuracy of foreign analysts improves more than that of domestic analysts when corporate transparency improves. Since the monitoring costs of foreign investors are higher than those of their domestic counterparts, we also expect the Split Share Structure Reform to have had a greater impact on the valuation of Chinese listed firms by foreign investors than by domestic investors. To the extent that the incentive alignment effect invoked by this reform discourages insider expropriation, there will be a greater reduction in monitoring costs among the foreign investors than the domestic investors. This should in turn lead to a greater reduction in the required return among the former group of investors than the latter. Given this, we hypothesize that:

*H<sub>2</sub>: Following the Split Share Structure Reform, Chinese listed firms under state control or with a higher ratio of restricted to total shares will be associated with a greater decline in the foreign share discount.*

It is important to clarify that we are definitely not stipulating that the foreign share discount phenomenon was only and entirely driven by the split share structure of ownership among Chinese listed firms. The objective of our study is to determine whether the split share structure contributed significantly to foreign investors' discounting of Chinese listed firms. There could be other unidentified factors in the Chinese institutional environment that continue to cause this discount even after the Split Share Structure Reform. For instance, the lack of alternative

investment channels for Chinese domestic investors, which reduces their required returns relative to those of foreign investors (Fernald and Rogers, 2002), may continue to cause the foreign share discount phenomenon among A- and B-share dual-listed firms. Thus, we do not expect that the reform will have completely eliminated the entire Chinese foreign share discount puzzle. The specific prediction of our hypothesis  $H_2$  is that there should be a significantly greater reduction in the foreign share discount among state-controlled listed firms than among privately-controlled listed firms, and among listed firms with more restricted shares in comparison to those with fewer restricted shares.

Firms under state control or which have a higher proportion of restricted to total shares serve as the treatment group in our test of the impact of the reform, while those under private control or which have a lower proportion of restricted shares serve as our control group. If we observe a drop in the foreign share discount that is, however, not more significant among firms in the treatment group than among those in the control group, then we will not be able to infer that it is the Split Share Structure Reform that has brought about the decline. In turn, this would also weaken the inference that it is the poor corporate governance, caused by the possession of restricted shares by the dominant shareholders of state-controlled listed firms, that contributes to the foreign share discount in China. On the other hand, if we observe a significantly greater decline in the foreign share discount in the treatment than in the control group, then this would reduce the possibility that the drop is due to other unidentified background reasons, such as a time trend or business cycles.

Around the period when the Split Share Structure Reform was implemented, there are two alternative effects that could influence our evidence. First, the financial crisis that began in late 2007 could add noise to our analyses. However, this would be likely to affect the share prices of firms in both our treatment and our control group, simultaneously. In the case of flight to quality, foreign investors are more likely to ditch firms they deem less desirable, such as those in our

treatment group, with a higher perceived agency problem. Thus, if anything, the financial crisis should work against us finding results in favor of our predictions. Second, the Chinese convergence to the IFRS also overlaps with our post-reform period. If IFRS indeed strengthens Chinese listed firms' accounting quality, then this may also reduce the firm-specific discount rate. However, Chinese listed firms that issue B-shares have long been reporting under both the original domestic accounting standard and IFRS. As a result, the IFRS convergence is not expected to influence the A- and B-share dual-listing Chinese firms in our sample.

There are also two possible counterarguments against our hypothesis  $H_2$ . The first critique is that, even after trading restrictions have been abolished, the state shareholders may still be unlikely to sell their shares due to government pressure. Thus, there may be no incentive alignment effect achieved through the reform at all. However, this critique neglects the established Chinese government policy known as "*Zhua Da Fang Xiao*", which seeks to sustain ownership only in strategic enterprises (e.g., energy, transportation, aerospace, defense, etc.) and encourages the relaxation of control among less essential businesses.<sup>2</sup> Anecdotal evidence from the media also shows that some previously restricted shares held by state shareholders have been traded in the stock market following this reform.<sup>3</sup> Even if state shareholders do not race to trade their shares immediately once they are allowed to, this does not mean that they have no incentive to want to see an increase in their firms' market performance. This is because they could be holding on to the shares in anticipation of the long-term growth of their firms' market value. The second critique is that there is no incentive alignment effect until all of the restricted shares of a firm become fully tradable, in other words, 36 months after the ratification of the compensation plan in the reform process of each firm. According to this critique, it will only be possible to examine the impact of the reform across all firms in the Chinese stock market using a post-2011 sample. Thus, our study will not capture any incentive alignment effect associated with the reform. However, this critique is hinged on the narrow assumption

that all restricted shareholders are too myopic to prepare and plan ahead. The CSRC's announcement in 2005 already made clear the government's intention to proliferate the reform across all Chinese listed firms. Keen restricted shareholders would have stepped up their influence so as to increase their firms' market value before their shares became eligible for trading, in order to maximize their profit when trading did become permitted. It takes time to identify profitable investment projects and boost the market value of a firm, so it is unlikely that the restricted shareholders would have waited until the day their shares became tradable to begin such efforts. Section 2.4 mentioned that restricted shareholders were able to sell all or a portion of their holdings within the 36-month horizon, depending on the proportion of the firm they owned. Thus, this critique also completely ignores the wealth implications of a rising share price for the restricted shareholders over this period.

### 3. Sample and methodology

#### 3.1 Test of hypotheses

To test our predictions in hypotheses  $H_1$  and  $H_2$ , we use regression analyses based on the equation below:

$$\begin{aligned}
FSD_{i,t} = & \alpha_0 + \alpha_1 TREAT_{i,t} + \alpha_2 POST_{i,t} + \alpha_3 TREAT_{i,t} \times POST_{i,t} \\
& + \alpha_4 RMV_{i,t-1} + \alpha_5 RTO_{i,t-1} + \alpha_6 RRET_{i,t-1} \\
& + \alpha_7 LEV_{i,t} + \alpha_8 \Delta SALE_{i,t} + \alpha_9 IROA_{i,t} + \alpha_{10} TQ_{i,t} + \alpha_{11} BETA_{i,t} + \alpha_{12} \Delta PI_{i,t} \\
& + \alpha_{13} OWNC_{i,t} + \alpha_{14} CHOLD_{i,t} + \alpha_{15} CDUAL_{i,t} \\
& + \alpha_{16} BINDP_{i,t} + \alpha_{17} BMEET_{i,t} + \alpha_{18} BSIZE_{i,t} \\
& + Industry + Year + Area + \varepsilon_{i,t}
\end{aligned} \tag{1}$$

The dependent variable  $FSD_{i,t}$  is the foreign share discount of firm  $i$  at the end of month  $t$ , calculated as the A-share price minus the B-share price, divided by the A-share price. Based on this construction, a higher  $FSD_{i,t}$  value indicates a greater foreign share discount. We use two key variables to test our hypotheses.  $TREAT_{i,t}$  is assigned the value 1 for firms in our treatment group and 0 otherwise.  $POST_{i,t}$  equals to 1 from the year in which the compensation payout plan of the reform was ratified for the firm in question and for all years afterwards, and to 0 for the

years before this. Firms are allocated to the treatment (control) group if they are state- (privately-) controlled or have above (below) the yearly cross-sectional median level of the ratio of restricted to total shares. These two different ways of identifying the firms in our treatment group serve as a mutual robustness check to increase the rigor of our findings. We define the post-reform period for each firm as starting from the year when the restricted shareholders completed their compensation negotiations with the freely tradable shareholders and commenced the process of eliminating the restricted shares. Although not all restricted shares were immediately rendered tradable, the price should be forward-looking and we expect that the foreign investors' perceived risk toward these firms should have already started to change once the abolishment of all restricted shares became imminent. The interaction term  $TREAT_{i,t} \times POST_{i,t}$  enables us to test the incremental effect of the reform on the foreign share discount among the firms in our treatment group. If the coefficient  $\alpha_1 > 0$ , this will indicate a greater foreign share discount in the treatment group than in the control group before the reform, which will confirm our hypothesis  $H_1$ . If the coefficient  $\alpha_3 < 0$ , this will indicate a greater reduction of the foreign share discount in the treatment group than in the control group after the reform, which will confirm our hypothesis  $H_2$ .

We include four sets of control variables. The first set addresses the information asymmetry (e.g., Chan et al., 2008), market liquidity (Chen et al., 2001), and investor speculation (Mei et al., 2009) explanations put forward in the literature to address the Chinese foreign share discount.  $RMV_{i,t-1}$  is the ratio of the market capitalization of A-shares to B-shares at the end of the previous month. Information asymmetry is expected to be greater among firms with a lower A-share market capitalization, since such firms are smaller.  $RTO_{i,t-1}$  is the ratio of the turnover of A- to B-shares at the end of the previous month. Liquidity is assumed to be higher among firms with higher turnover.  $RRET_{i,t-1}$  is the ratio of the stock returns of A- to B-shares in the last month. Speculation is likely to be greater in stocks with higher past returns. This variable also

controls for the relative price movement between A- and B-shares of the same firm. These three control variables are based on data available from the stock market and so we can update them on a monthly basis as we can for the dependent variable.

The second set of control variables includes determinants of the cost of equity capital.  $LEV_{i,t-1}$  is the debt-to-equity ratio of the last fiscal year, which captures financial risk.  $\Delta SALE_{i,t-1}$  is the percentage change in sales growth in the last fiscal year, which serves as a proxy for demand-side growth.  $IROA_{i,t-1}$  is the industry median-adjusted return on assets in the last fiscal year, calculated as operating income divided by total assets; this measure captures the profitability of the firm.  $TQ_{i,t-1}$  is the Tobin's Q in the last fiscal year, calculated as the sum of market value and debt, divided by total equity, which captures firm performance.  $BETA_{i,t-1}$  captures systematic risk exposure and is measured as CAPM beta up to the end of the last year, estimated from time-series regressions of firm-specific daily excess returns on daily market excess returns over the past one-year period.  $\Delta PI_{i,t-1}$  is the percentage change in share price informativeness over the last year and serves as a proxy for changes in the firm-specific information environment. The share price informativeness measure is calculated as the log of  $[(1-R^2)/R^2]$  where  $R^2$  is the goodness-of-fit measure based on a time-series regression of firm-specific weekly excess returns on both Chinese domestic and U.S. weekly market excess returns, following Fernandes and Ferreira (2008).<sup>4</sup> The construction of these control variables either requires data available from the financial statements (e.g., leverage, sales, profitability, and Tobin's Q) or estimation through past historical return data (e.g., beta and price informativeness). Thus, we update them on an annual frequency, based on the previous fiscal year-end values.

The third set of control variables includes corporate governance qualities, which not only affect the cost of equity capital (e.g., Lombardo and Pagano, 2002) but has also been used to explain the Chinese foreign share discount (Tong and Yu, 2011).  $OWNC_{i,t-1}$  is the ownership

concentration of the last fiscal year, measured by the Herfindahl index based on the ownership held by the ten largest shareholders of the firm.  $CHOLD_{i,t-1}$  is equal to 1 for firms with CEO shareholdings above top 75<sup>th</sup> or below bottom 25<sup>th</sup> percentile of yearly cross-section, and 0 otherwise. Low CEO ownership reduces the incentive alignment with the shareholders while high CEO ownership induces entrenchment. Thus, both effects increase the agency problem.  $CDUAL_{i,t-1}$  is 1 for firms whose CEO also served as board chairman in the last fiscal year, and 0 otherwise. CEOs that also serve as the chairman of the board have the power to reduce the effectiveness of the board's monitoring of them.  $BINDP_{i,t-1}$  is 1 for firms whose proportion of independent directors in the last fiscal year was above the cross-sectional median, and 0 otherwise. Independent shareholders are assumed to have a greater incentive and greater expertise to monitor managers.  $BMEET_{i,t-1}$  is 1 for firms with number of board meetings in the last fiscal year above the cross-sectional median, and 0 otherwise. More frequent board meetings indicate more active monitoring by the board.  $BFSIZE_{i,t-1}$  is 1 for firms with board size in the last fiscal year above the cross-sectional median, and 0 otherwise. The corporate governance control variables are also updated annually, and based on the previous fiscal year-end values.

Finally, we also include three sets of dummy variables that control for industry (*Industry*), year (*Year*), and regional (*Area*) fixed effects, respectively. This is because state ownership, corporate governance, and foreign investor preferences may vary over time across different industries, and because of disparities in regional development. We define industry according to the first two digits of the GICS (Global Industry Classification Standard) code. We define region based on Firth et al. (2006), who group firms into four different regions based on economic development level. We define industry according to the first two digits of the GICS (Global Industry Classification Standard) code. We define region based on Firth et al. (2006), who group firms into four different regions based on economic development level. To further

ensure the robustness of our results, we also replicate our analyses by controlling for firm fixed effects and by bootstrapped median regression.

### **3.2 Sample description, summary statistics, and correlation matrix**

Our sample period covers 2001 to 2008. We choose to begin our analyses after the opening of the B-share market to Chinese domestic investors in 2001, to ensure consistency between the pre- and post-reform periods. From the Chinese Security Market and Accounting Research (CSMAR) and China Center of Economic Research (CCER) databases, we obtain the data used to compute variables such as the foreign share discount, state control status, the proportion of restricted shares, the firm-specific year of reform, market capitalization, turnover, stock returns, debt-to-equity ratio, the return on assets ratio, Tobin's Q, share price informativeness, ownership concentration, CEO ownership, CEO duality, the number of outside directors, the number of board meetings, board size, and industrial and regional classifications. We obtain Chinese domestic market returns from Datastream and the U.S. stock market returns from the Center for Research in Security Prices (CRSP). To deal with outliers, we winsorize the top and bottom 1% of all our regression variables, except those that are constructed as dummy variables. We include all listed firms that issue both A- and B-shares in both the Shanghai and Shenzhen stock exchanges. We exclude firms that were listed on the stock exchanges after the reform was launched at the end of 2005, as they did not adopt a split share structure. Finally, our sample requires all of the aforementioned variables to have valid values and includes a total of 5,870 firm-month observations.

Table 1 presents the summary statistics of the variables used in our analyses. Over our sample period of 2001 to 2008, the median monthly B-share discount is 45.04%. The median ratios of the monthly turnover (*RTO*) and share returns (*RRET*) of the A- to B-shares of the same firms are 1.2947 and 0.7427 respectively. Since  $RTO > 1$ , this confirms that the B-shares are less actively traded than their A-share counterparts. Since  $RRET < 1$ , this indicates that the



B-shares are associated with higher past returns than the A-shares, which suggests that foreign investors require higher returns than Chinese domestic investors. The A- and B-share dual-listing firms in our sample have an average sales growth ( $\Delta SALE$ ) of 30.57% and above industry median profitability ( $IROA$ ). Turning to the correlation matrix in Table 2, notice that this discount is negatively correlated with  $RMV$ , which indicates a lower foreign share discount among higher A-share market capitalization firms, since information asymmetry tends to be lower in larger firms. The discount is positively correlated with  $RTO$ , which indicates a higher foreign share discount among B-share stocks with lower turnover, which are supposed to have less liquidity. Foreign investors also attach a lower discount to Chinese listed firms that are more profitable ( $IROA$ ). They also demand higher returns from firms with higher growth in sales ( $\Delta SALE$ ), greater systematic risk exposure ( $BETA$ ) and greater concentration of ownership ( $OWNC$ ). Firms with larger boards ( $BSIZE$ ) have lower discounts, possibly because such firms have boards that are more active or have more expertise with which to supervise their firms.

[insert Tables 1 and 2 here]

## **4. Empirical findings**

### **4.1 Treatment group based on state-controlled firms**

Table 3 presents our tests of hypotheses  $H_1$  and  $H_2$  using state-controlled listed firms as the treatment group and privately-controlled listed firms as the control group. Notice that the four regressions consistently yield significantly positive coefficients for  $TREAT$ . This indicates that, prior to the Split Share Structure Reform, the state-controlled listed firms did indeed have higher foreign share discounts than the privately-controlled firms. This confirms the prediction in our hypothesis  $H_1$  and implies that foreign investors do indeed attach a higher discount rate to state-controlled Chinese listed firms, possibly due to corporate governance concerns. To this extent, our findings are also broadly consistent with Tong and Yu (2011), who document a higher B-share discount among Chinese listed firms with weaker governance, despite using an

earlier sample period of 1998 to 2005 and not testing the difference between state- and privately-controlled firms as we do. Our findings confirm that the combination of being state-controlled and having a split share structure contributed to the Chinese B-share discount.

Turning to hypothesis  $H_2$ , notice throughout Table 3 that the coefficients pertaining to the interaction term  $TREAT \times POST$  are all significantly negative. This indicates that the state-controlled firms in our treatment group experienced a significantly greater reduction in their foreign share discount after the reform, than the privately-controlled firms in our control group. Although the negative coefficients of  $POST$  indicate that the control group also experienced a reduction, it was significantly less than for the treatment group. Privately-controlled firms may have experienced a reduction for two reasons. First, it could be the result of a background time trend, unrelated to the reform. Second, such firms may also have received corporate governance benefits from the reform, since they may also have had state shareholders and restricted shares. However, the effect is thought to be less since the conflict of interests between dominant and minority shareholders caused by the split share structure would have been less severe. The coefficients of  $TREAT \times POST$  confirm the predictions of our hypothesis  $H_2$ . They also suggest that the benefit of the reform has economic significance.

This finding has two key implications. First, the Split Share Structure Reform has indeed reduced the foreign share discount, since we observe a greater impact on Chinese state-controlled listed firms that would have been more sensitive to its effects. We provide original evidence that this major change in the institutional settings of the Chinese stock market has yielded favorable economic consequences. To be specific, we show that this reform could have reduced the costs of Chinese state-controlled firms' acquisition of foreign equity capital. Second, the split share structure did indeed contribute to the foreign share discount among Chinese state-controlled listed firms, because we see a significant decline after the reform. To be specific, foreign investors' discount of Chinese state-controlled listed firms was significantly

driven by the higher perceived risk associated with the scope for insider expropriation under the split share structure.

Our findings are robust to the controls of the determinants of the Chinese foreign share discount established in the literature, as well as factors that are likely to influence equity investors' required returns. Control variables that are consistently significant across all four regressions in Table 3 have robust relationships with the foreign share discount. The coefficients of *RTO* are significantly positive, which indicates that foreign investors set higher discounts for stocks that are less liquid in the B-share market, which is consistent with Chen et al. (2001). The required returns of foreign investors are higher for firms with higher growth (*ΔSALE*), and lower for firms with above industry median profitability (*IROA*). These findings are all pro-intuitive. Our findings are also robust to controls of industry, year, regional, and firm fixed effects, as well as to bootstrapped median regression.

[insert Table 3 here]

#### ***4.2 Treatment group based on above median level of restricted to total shares ratio***

Table 4 presents our tests of hypotheses  $H_1$  and  $H_2$  using firms with above (below) median level of restricted to total shares ratio as our treatment (control) group. Across all four regressions, the coefficients of *TREAT* are significantly positive. This indicates that firms with a higher proportion of restricted shares, which make up our treatment group, were associated with a higher foreign share discount before the Split Share Structure Reform was enacted. This finding is in line with the prediction in our hypothesis  $H_1$  and suggests that foreign investors indeed required a higher rate of returns from Chinese listed firms with more ownership maintained through restricted shares, which was likely to exacerbate the conflict of interests between shareholders and impede the effectiveness of the corporate governance role of ownership. This finding serves as a mutual robustness check of our evidence in Table 3, which uses state-controlled firms as the treatment group. In fact, using the ratio of restricted to total

shares gives us an even more direct measure with which to capture the impact of the split share structure on the foreign share discount. Thus, we provide direct evidence that the split share structure contributes to the foreign share discount in China.

In terms of hypothesis  $H_2$ , the coefficients pertaining to the interaction term  $TREAT \times POST$  are significantly negative throughout Table 4. This indicates that the firms with more restricted shares, in our treatment group, are associated with a significantly greater decline in the B-share discount after the Split Share Structure Reform, than the firms with fewer restricted shares, in our control group. Although the control group also experienced a reduction, as indicated by the negative coefficients of  $POST$ , the effect was significantly less than among the treatment group. As mentioned earlier, the control group may have experienced a foreign share discount reduction but this could be due to confounding effects unrelated to the reform. Alternatively, it may have been caused by the corporate governance benefits of the reform, since such firms did also have state shareholders and restricted shares. However, the effect would be expected to be weaker, since the impact of abolishing the restricted shares for such firms would have been less than for those in the treatment group. Our prediction in hypothesis  $H_2$  is thus confirmed in Table 4 by the coefficients of  $TREAT \times POST$ . This further strengthens the two key inferences we draw from Table 3, since our results are not affected by alternative definitions of the treatment group.

[insert Table 4 here]

### **4.3 Robustness checks**

Tables 5 and 6 present further robustness tests.<sup>5</sup> In Table 5 we substitute the treatment group dummy variable in Equation 1 directly by state ownership ratio ( $SOR$ ) in Panel A or restricted share ratio ( $RSR$ ) in Panel B.<sup>6</sup> Notice that the coefficients of  $SOR$  and  $RSR$  are significantly positive. This indicates that firms with higher state ownership ratio or higher restricted shares ratio are also associated with higher foreign share discount prior to the reform. The coefficients of  $SOR \times POST$  and  $RSR \times POST$  are significantly negative. This indicates that the foreign share

discounts associated with such firms are incrementally lower after the reform. These results suggest that our main findings in Tables 3 and 4 are not specific only to the use of treatment group dummy variables in the regression analyses. In Table 6 we substitute foreign share discount (*FSD*) with A-share price minus B-share price following Chan et al. (2008). The treatment group is defined as state controlled firms in Panel A (as in Table 3) and above median level restricted share ratio firms in Panel B (as in Table 4). The coefficients of *TREAT* are consistently and significantly positive and the coefficients of *TREAT*×*POST* are also consistently and significantly negative. These findings suggest that our main results in Tables 3 and 4 are not sensitive to alternative definition of foreign share discount.

[insert Tables 5 and 6 here]

## 5. Conclusion

China is a fast-growing and increasingly influential emerging economy. Studies of Chinese capital market issues are attracting increasing attention from academics, practitioners, and regulators. We intersect two important topics in this literature, namely, the reform of the split share structure (e.g. Firth et al., 2010; Cummings and Hou, 2012), and the foreign share discount puzzle (e.g. Chan et al., 2008). We provide original evidence addressing both topics, by confirming that the split share structure of ownership significantly contributed to the foreign share discount among Chinese listed firms under state control, and those with more restricted shares. Our analysis controls for alternative explanations put forward in the literature to explain the foreign share discount, such as liquidity, information asymmetry and governance qualities. Future studies could seek to identify other possible factors in the Chinese institutional environment that also contribute to the discounting of listed firms by foreign investors. For instance, if the lack of alternative investment channels for Chinese domestic investors also contributes (Fernald and Rogers, 2002), then researchers could attempt to validate this explanation following the enactment of relevant institutional reforms in the future. Another

possible extension of our study would be to evaluate the impact of the Split Share Structure Reform on firms that issue both A-shares traded in mainland China's stock exchanges and H-shares traded in Hong Kong's stock exchange. To avoid the influence of institutional differences between mainland China and Hong Kong, our study focuses only on firms that issue A- and B-shares, both of which are traded in mainland China's stock exchanges.

In terms of policy implications, we suggest that, through the maintenance of state control by holding restricted shares, the dominant shareholders were deprived of wealth gains from share price rises and therefore had fewer incentives to monitor managers and ensure they maximized their firms' market value. In other words, the split share structure encouraged the entrenchment effect of state shareholders, and increased their incentive to collude with executives in the expropriation of the wealth of private investors. Since foreign investors lack local knowledge, they are more concerned about the scope for insider expropriation than domestic investors are. As a result of greater monitoring costs, foreign investors will also charge a higher required return than domestic investors for compensation. The elimination of trading constraints has made the wealth of dominant shareholders sensitive to share price movements in the market. This has improved the incentive alignment between state and private shareholders, which will in turn discourage insider expropriation. Due to the informational disadvantage for foreign investors, the reforms are expected to lower the monitoring costs and therefore the required returns of foreign investors, more than those of domestic investors. Thus, we provide empirical evidence that the Split Share Structure Reform, which is one of the most important changes to have been made to the institutional settings of the Chinese stock market, has been beneficial to minority investors and firms alike. The minority investors have benefited from better protection of their wealth, while firms have benefited from a reduction in the cost of equity capital from foreign investors. Both are likely to strengthen the efficiency of the Chinese stock market in allocating capital, which is crucial to the further sustained growth of the country's economy.

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Table 1. Summary statistics

|              | Mean    | Standard deviation | 25 <sup>th</sup> percentile | 50 <sup>th</sup> percentile | 75 <sup>th</sup> percentile | Obs. |
|--------------|---------|--------------------|-----------------------------|-----------------------------|-----------------------------|------|
| <i>FSD</i>   | 0.4378  | 0.1490             | 0.3438                      | 0.4504                      | 0.5486                      | 5870 |
| <i>SOR</i>   | 0.3044  | 0.2123             | 0.1196                      | 0.3140                      | 0.4728                      | 5870 |
| <i>RSR</i>   | 0.4561  | 0.1542             | 0.3602                      | 0.4612                      | 0.5777                      | 5870 |
| <i>POST</i>  | 0.3247  | 0.4683             | 0                           | 0                           | 1                           | 5870 |
| <i>RMV</i>   | 1.1052  | 0.0885             | 1.0365                      | 1.1041                      | 1.1701                      | 5870 |
| <i>RTO</i>   | 1.3237  | 0.3057             | 1.1410                      | 1.2947                      | 1.4709                      | 5870 |
| <i>RRET</i>  | 0.7356  | 6.4205             | 0.0581                      | 0.7427                      | 1.5021                      | 5870 |
| <i>LEV</i>   | 0.4804  | 0.1701             | 0.3604                      | 0.4916                      | 0.6072                      | 5870 |
| <i>ΔSALE</i> | 0.3057  | 1.2281             | -0.0079                     | 0.1475                      | 0.3334                      | 5870 |
| <i>IROA</i>  | 0.0021  | 0.0147             | -0.0043                     | 0.0014                      | 0.0090                      | 5870 |
| <i>TQ</i>    | 0.6845  | 0.1696             | 0.6278                      | 0.7111                      | 0.7752                      | 5870 |
| <i>BETA</i>  | 1.0928  | 0.3198             | 0.8904                      | 1.0927                      | 1.2939                      | 5870 |
| <i>ΔPI</i>   | -0.6182 | 2.7197             | -0.7800                     | -0.0114                     | 0.4508                      | 5870 |
| <i>OWNC</i>  | 0.1819  | 0.1233             | 0.0892                      | 0.1423                      | 0.2680                      | 5870 |
| <i>CHOLD</i> | 0.2874  | 0.4526             | 0.0000                      | 0.0000                      | 1.0000                      | 5870 |
| <i>CDUAL</i> | 0.0240  | 0.1531             | 0.0000                      | 0.0000                      | 0.0000                      | 5870 |
| <i>BINDP</i> | 0.1138  | 0.3176             | 0.0000                      | 0.0000                      | 0.0000                      | 5870 |
| <i>BMEET</i> | 0.5588  | 0.4966             | 0.0000                      | 1.0000                      | 1.0000                      | 5870 |
| <i>BSIZE</i> | 0.3543  | 0.4784             | 0.0000                      | 0.0000                      | 1.0000                      | 5870 |

Note: This table presents the summary statistics of the variables used in our analyses. The sample period covers 2001-2008 and includes A- and B-share dual-listing stocks appearing in both the Shanghai and Shenzhen stock exchanges.  $FSD_{i,t}$  is the monthly foreign share discount, calculated as the A-share price minus the B-share price, divided by the A-share price. *SOR* is state ownership ratio measured as yearly number of state shares divided by total number of shares. *RSR* is restricted shares ratio measured as yearly number of restricted shares divided by total number of shares. *POST* equals to 1 from the year in which the compensation payout plan of the reform was ratified for the firm in question and for all years afterwards, and to 0 for the years before this. *RMV* is the ratio of the market capitalization of A- to B-shares at the end of the previous month. *RTO* is the ratio of the turnover of A- to B-shares at the end of the previous month. *RRET* is the ratio of the stock returns of A- to B-shares at the end of the previous month. *LEV* is the debt-to-equity ratio of the last fiscal year. *ΔSALE* is the percentage change in sales growth over the last fiscal year. *IROA* is the industry median adjusted return on assets in the last fiscal year, calculated as operating income divided by total assets. *TQ* is the Tobin's Q for the last fiscal year, calculated as the sum of market value and debt, divided by total equity. *BETA* is the CAPM beta up to the end of the last year, estimated from time-series regressions of firm-specific daily excess returns on daily market excess returns over the past one-year period. *ΔPI* is the percentage change in share price informativeness over the last year, calculated as the log of  $[(1-R^2)/R^2]$  where  $R^2$  is based on a time-series regression of firm-specific weekly excess returns on both Chinese domestic and U.S. weekly market excess returns. *OWNC* is ownership concentration in the last fiscal year, measured by the Herfindahl index, based on the ownership held by the ten largest shareholders in the firm. *CHOLD* is equal to 1 for firms with CEO shareholdings above top 75<sup>th</sup> or below bottom 25<sup>th</sup> percentile of yearly cross-section, and 0 otherwise. *CDUAL* is 1 for firms whose CEO also served as the board chairman in the last fiscal year, and 0 otherwise. *BINDP* is 1 for firms whose proportion of independent directors in the last fiscal year was above the cross-sectional median, and 0 otherwise. *BMEET* is 1 for firms that held more board meetings in the last fiscal year than the cross-sectional median, and 0 otherwise. *BSIZE* is 1 for firms whose board in the last fiscal year was larger than the cross-sectional median, and 0 otherwise.

Table 2. Correlation matrix

|                      | <i>FSD</i> | <i>SOR</i> | <i>RSR</i> | <i>REFORM</i> | <i>RMV</i> | <i>RTO</i> | <i>RRET</i> | <i>LEV</i> | $\Delta$ <i>SALE</i> | <i>IROA</i> | <i>TQ</i> | <i>BETA</i> | $\Delta$ <i>PI</i> | <i>OWNC</i> | <i>CHOLD</i> | <i>CDUAL</i> | <i>BINDP</i> | <i>BMEET</i> | <i>BSIZE</i> |  |
|----------------------|------------|------------|------------|---------------|------------|------------|-------------|------------|----------------------|-------------|-----------|-------------|--------------------|-------------|--------------|--------------|--------------|--------------|--------------|--|
| <i>FSD</i>           | 1          |            |            |               |            |            |             |            |                      |             |           |             |                    |             |              |              |              |              |              |  |
| <i>SOR</i>           | 0.2209*    | 1          |            |               |            |            |             |            |                      |             |           |             |                    |             |              |              |              |              |              |  |
| <i>RSR</i>           | 0.2484*    | 0.5685*    | 1          |               |            |            |             |            |                      |             |           |             |                    |             |              |              |              |              |              |  |
| <i>POST</i>          | -0.1517*   | -0.0814*   | -0.3237*   | 1             |            |            |             |            |                      |             |           |             |                    |             |              |              |              |              |              |  |
| <i>RMV</i>           | -0.0885*   | 0.0038     | -0.0235    | 0.0259        | 1          |            |             |            |                      |             |           |             |                    |             |              |              |              |              |              |  |
| <i>RTO</i>           | 0.1127*    | 0.0126     | 0.0031     | 0.0848*       | -0.019     | 1          |             |            |                      |             |           |             |                    |             |              |              |              |              |              |  |
| <i>RRET</i>          | -0.0102    | -0.0175    | -0.0032    | 0.0450*       | -0.0168    | 0.0348*    | 1           |            |                      |             |           |             |                    |             |              |              |              |              |              |  |
| <i>LEV</i>           | 0.0375*    | 0.0034     | -0.1129*   | 0.1551*       | 0.1586*    | 0.0990*    | 0.0157      | 1          |                      |             |           |             |                    |             |              |              |              |              |              |  |
| $\Delta$ <i>SALE</i> | 0.0534*    | 0.0298     | 0.0309     | 0.0148        | 0.0013     | -0.0469*   | -0.0025     | 0.0911*    | 1                    |             |           |             |                    |             |              |              |              |              |              |  |
| <i>IROA</i>          | -0.2370*   | -0.0996*   | -0.0537*   | 0.0872*       | -0.2134*   | -0.0664*   | 0.0129      | -0.3255*   | 0.1098*              | 1           |           |             |                    |             |              |              |              |              |              |  |
| <i>TQ</i>            | 0.0767*    | 0.1731*    | 0.2774*    | -0.1817*      | 0.0300     | 0.0498*    | 0.0114      | 0.3867*    | -0.0207              | -0.1744*    | 1         |             |                    |             |              |              |              |              |              |  |
| <i>BETA</i>          | 0.1106*    | 0.0643*    | -0.0171    | 0.0602*       | -0.0052    | 0.1813*    | 0.0141      | 0.2410*    | -0.1192*             | -0.3196*    | 0.0498*   | 1           |                    |             |              |              |              |              |              |  |
| $\Delta$ <i>PI</i>   | -0.0131    | 0.0348*    | 0.0987*    | -0.1024*      | 0.0533*    | -0.0423*   | -0.0179     | 0.0490*    | 0.0119               | -0.0181     | 0.0696*   | -0.0800*    | 1                  |             |              |              |              |              |              |  |
| <i>OWNC</i>          | 0.2391*    | 0.7054*    | 0.7470*    | -0.0641*      | -0.1004*   | 0.0201     | -0.0006     | -0.0780*   | -0.017               | -0.0116     | 0.1942*   | 0.0184      | 0.0649*            | 1           |              |              |              |              |              |  |
| <i>CHOLD</i>         | -0.1484*   | -0.3720*   | -0.4795*   | 0.1489*       | -0.0916*   | -0.0189    | 0.0129      | 0.0106     | -0.0545*             | 0.1741*     | -0.1927*  | -0.0779*    | -0.0964*           | -0.4309*    | 1            |              |              |              |              |  |
| <i>CDUAL</i>         | 0.0233     | -0.012     | -0.0945*   | 0.0213        | -0.0983*   | -0.0063    | 0.0061      | 0.1103*    | 0.005                | -0.0683*    | 0.0340*   | 0.0549*     | 0.0078             | -0.0802*    | 0.0767*      | 1            |              |              |              |  |
| <i>BINDP</i>         | 0.0269     | 0.0640*    | 0.0933*    | -0.1526*      | -0.0613*   | 0.0211     | 0.0088      | 0.0247     | -0.0166              | 0.0249      | 0.0693*   | -0.0037     | 0.0398*            | 0.0356*     | -0.0315*     | 0.0171       | 1            |              |              |  |
| <i>BMEET</i>         | 0.0439*    | 0.0164     | 0.0499*    | 0.0126        | 0.0912*    | 0.0645*    | -0.0139     | 0.1096*    | 0.0356*              | -0.0245     | -0.0354*  | 0.1185*     | -0.0116            | -0.0574*    | -0.0803*     | 0.0410*      | -0.0164      | 1            |              |  |
| <i>BSIZE</i>         | -0.1368*   | -0.0205    | -0.0609*   | -0.0934*      | 0.0003     | -0.1017*   | 0.0109      | 0.0323*    | -0.0117              | 0.0830*     | 0.0585*   | -0.1053*    | -0.0258            | -0.1509*    | 0.0360*      | 0.0233       | 0.2581*      | -0.0164      | 1            |  |

Note: This table presents the correlation matrix for the variables used in our analyses. The sample period covers 2001-2008 and includes A- and B-share dual-listing stocks appearing on both the Shanghai and Shenzhen stock exchanges.  $FSD_{i,t}$  is the monthly foreign share discount, calculated as the A-share price minus the B-share price, divided by the A-share price. *SOR* is state ownership ratio measured as yearly number of state shares divided by total number of shares. *RSR* is restricted shares ratio measured as yearly number of restricted shares divided by total number of shares. *POST* equals to 1 from the year in which the compensation payout plan of the reform was ratified for the firm in question and for all years afterwards, and to 0 for the years before this. *RMV* is the ratio of the market capitalization of A- to B-shares at the end of the previous month. *RTO* is the ratio of the turnover of A- to B-shares at the end of the previous month. *RRET* is the ratio of the stock returns on A- to B-shares at the end of the previous month. *LEV* is the debt-to-equity ratio in the last fiscal year.  $\Delta$ *SALE* is the percentage change in the sales growth over the last fiscal year. *IROA* is the industry median adjusted return on assets in the last fiscal year, calculated as operating income divided by total assets. *TQ* is Tobin's Q of the last fiscal year, calculated as the sum of market value and debt, divided by total equity. *BETA* is the CAPM beta up to the end of the last year, estimated from time-series regressions of firm-specific daily excess returns on daily market excess returns over the past one-year period.  $\Delta$ *PI* is the percentage change in share price informativeness over the last year, calculated as the log of  $[(1-R^2)/R^2]$  where  $R^2$  is based on a time-series regression of firm-specific weekly excess returns on both Chinese domestic and U.S. weekly market excess returns. *OWNC* is ownership concentration in the last fiscal year, measured by the Herfindahl index, based on the ownership held by the ten largest shareholders in the firm. *CHOLD* is equal to 1 for firms with CEO shareholdings above top 75<sup>th</sup> or below bottom 25<sup>th</sup> percentile of yearly cross-section, and 0 otherwise. *CDUAL* is 1 for firms whose CEO also served as board chairman in the last fiscal year, and 0 otherwise. *BINDP* is 1 for firms whose proportion of independent directors in the last fiscal year was above the cross-sectional median, and 0 otherwise. *BMEET* is 1 for firms which held more board meetings in the last fiscal year than the cross-sectional median, and 0 otherwise. *BSIZE* is 1 for firms whose boards in the last fiscal year were larger than the cross-sectional median, and 0 otherwise. \* denotes 1% level significance.

Table 3. Regression analyses using state-controlled firms as treatment group

|                            | Regression 1        | Regression 2        | Regression 3      | Regression 4       |
|----------------------------|---------------------|---------------------|-------------------|--------------------|
| Intercept                  | 0.4732 (16.91)***   | 0.6660 (22.31)***   | -0.250 (-1.17)    | 0.8122 (15.65)***  |
| <i>TREAT</i>               | 0.0658 (8.53)***    | 0.0484 (6.49)***    | 0.0458 (2.46)**   | 0.0364 (3.95)***   |
| <i>POST</i>                | 0.0319 (2.90)***    | -0.0572 (-4.15)***  | -0.075 (-3.06)*** | -0.0852 (-5.94)*** |
| <i>TREAT</i> × <i>POST</i> | -0.0956 (-8.28)***  | -0.0781 (-7.45)***  | -0.054 (-2.35)**  | -0.0892 (-9.63)*** |
| <i>RMV</i>                 | -0.1748 (-8.05)***  | -0.3171 (-14.79)*** | 0.4602 (2.59)**   | -0.3280 (-9.43)*** |
| <i>RTO</i>                 | 0.0552 (6.69)***    | 0.0490 (5.45)***    | 0.0996 (10.02)*** | 0.0764 (8.49)***   |
| <i>RRET</i>                | -0.0001 (-0.43)     | -0.0001 (-0.58)     | 0.0003 (1.44)     | -0.0001 (-0.35)    |
| <i>LEV</i>                 | 0.0084 (0.62)       | -0.0251 (-2.04)**   | -0.010 (-0.20)    | -0.0441 (-2.88)*** |
| $\Delta$ <i>SALE</i>       | 0.0111 (8.10)***    | 0.0113 (9.16)***    | 0.0051 (1.97)*    | 0.0116 (6.83)***   |
| <i>IROA</i>                | -2.2846 (-14.29)*** | -2.0571 (-13.83)*** | -1.155 (-4.12)*** | -2.2733 (-10.5)*** |
| <i>TQ</i>                  | -0.0322 (-2.50)**   | 0.0298 (2.73)***    | 0.0000 (0.00)     | 0.0220 (1.55)      |
| <i>BETA</i>                | 0.0150 (2.39)**     | 0.0329 (5.28)***    | 0.0195 (1.30)     | 0.0397 (4.53)***   |
| $\Delta$ <i>PI</i>         | -0.0024 (-3.55)***  | -0.0006 (-1.04)     | -0.001 (-1.68)*   | -0.0008 (-1.20)    |
| <i>OWNC</i>                | 0.2387 (14.68)***   | 0.2104 (13.28)***   | 0.0784 (0.84)     | 0.2317 (15.37)***  |
| <i>CHOLD</i>               | -0.0023 (-0.49)     | 0.0036 (0.87)       | -0.010 (-1.04)    | 0.0031 (0.51)      |
| <i>CDUAL</i>               | 0.0406 (3.29)***    | 0.0303 (2.62)***    | 0.0144 (0.53)     | 0.0266 (1.94)*     |
| <i>BINDP</i>               | 0.0048 (0.82)       | 0.0237 (4.17)***    | 0.0068 (0.67)     | 0.0149 (3.14)***   |
| <i>BMEET</i>               | 0.0162 (4.49)***    | 0.0215 (6.47)***    | 0.0009 (0.11)     | 0.0194 (6.14)***   |
| <i>BSIZE</i>               | -0.0226 (-5.56)***  | -0.0087 (-2.30)**   | 0.0000 (0.00)     | -0.0072 (-1.42)    |
| Industry effect            | No                  | Yes                 | Yes               | Yes                |
| Year effect                | No                  | Yes                 | Yes               | Yes                |
| Region effect              | No                  | Yes                 | Yes               | Yes                |
| Firm fixed effect          | No                  | No                  | Yes               | No                 |
| BSQREG                     | No                  | No                  | No                | Yes                |
| Adjusted R <sup>2</sup>    | 0.1881              | 0.3487              | 0.0772            |                    |
| Pseudo R <sup>2</sup>      |                     |                     |                   | 0.2367             |
| Observation                | 5870                | 5870                | 5870              | 5870               |

Note: This table presents our main regression analyses. The sample period covers 2001-2008 and includes A- and B-share dual-listing stocks appearing in both the Shanghai and Shenzhen stock exchanges. The dependent variable *FSD* is the monthly foreign share discount, calculated as the A-share price minus the B-share price, divided by the A-share price. *TREAT* is set to 1 for state-controlled firms, and 0 otherwise. *POST* equals to 1 from the year in which the compensation payout plan of the reform was ratified for the firm in question and for all years afterwards, and to 0 for the years before this. *RMV* is the ratio of the market capitalization of A- to B-shares at the end of the previous month. *RTO* is the ratio of the turnover of A- to B-shares at the end of the previous month. *RRET* is the ratio of the stock returns on A- to B-shares at the end of the previous month. *LEV* is the debt-to-equity ratio in the last fiscal year.  $\Delta$ *SALE* is the percentage change in the sales growth over the last fiscal year. *IROA* is the industry median adjusted return on assets in the last fiscal year, calculated as operating income divided by total assets. *TQ* is Tobin's Q of the last fiscal year, calculated as the sum of market value and debt, divided by total equity. *BETA* is the CAPM beta up to the end of the last year, estimated from time-series regressions of firm-specific daily excess returns on daily market excess returns over the past one-year period.  $\Delta$ *PI* is the percentage change in share price informativeness over the last year, calculated as the log of  $[(1-R^2)/R^2]$  where  $R^2$  is based on a time-series regression of firm-specific weekly excess returns on both Chinese domestic and U.S. weekly market excess returns. *OWNC* is ownership concentration in the last fiscal year, measured by the Herfindahl index, based on the ownership held by the ten largest shareholders in the firm. *CHOLD* is equal to 1 for firms with CEO shareholdings above top 75<sup>th</sup> or below bottom 25<sup>th</sup> percentile of yearly cross-section, and 0 otherwise. *CDUAL* is 1 for firms whose CEO also served as board chairman in the last fiscal year, and 0 otherwise. *BINDP* is 1 for firms whose proportion of independent directors in the last fiscal year was above the cross-sectional median, and 0 otherwise. *BMEET* is 1 for firms which held more board meetings in the last fiscal year than the cross-sectional median, and 0 otherwise. *BSIZE* is 1 for firms whose boards in the last fiscal year were larger than the cross-sectional median, and 0 otherwise. All *t*-statistics are reported in parentheses. Regression 1 (2) excludes (includes) the controls for industry, year, and regional fixed-effects. Regression 3 (4) applies firm fixed-effect control (bootstrapped median regression). Regressions 1 to 3 report the adjusted R<sup>2</sup> and *t*-statistics, adjusted for heteroskedasticity. Regression 4 reports the pseudo R<sup>2</sup>. \*, \*\*, and \*\*\* denote 10%, 5%, and 1% levels of significance.

Table 4. Regression analyses using firms with above median level of restricted to total shares ratio as treatment group

|                            | Regression 1 |             | Regression 2 |             | Regression 3 |            | Regression 4 |             |
|----------------------------|--------------|-------------|--------------|-------------|--------------|------------|--------------|-------------|
| Intercept                  | 0.5699       | (19.2)***   | 0.7282       | (23.51)***  | -0.1952      | (-0.86)    | 0.8415       | (17.91)***  |
| <i>TREAT</i>               | 0.0717       | (12.54)***  | 0.0635       | (11.67)***  | 0.0720       | (4.16)***  | 0.0554       | (8.24)***   |
| <i>POST</i>                | -0.0343      | (-6.64)***  | -0.0963      | (-9.09)***  | -0.0999      | (-6.19)*** | -0.1224      | (-13.49)*** |
| <i>TREAT</i> × <i>POST</i> | -0.0741      | (-8.76)***  | -0.0907      | (-12.10)*** | -0.0771      | (-4.57)*** | -0.0846      | (-12.94)*** |
| <i>RMV</i>                 | -0.1933      | (-8.70)***  | -0.3292      | (-15.13)*** | 0.4702       | (2.51)**   | -0.3351      | (-11.52)*** |
| <i>RTO</i>                 | 0.0478       | (5.40)***   | 0.0451       | (4.76)***   | 0.0979       | (9.04)***  | 0.0689       | (10.21)***  |
| <i>RRET</i>                | 0.0000       | (-0.17)     | -0.0001      | (-0.35)     | 0.0004       | (1.90)     | -0.0001      | (-0.46)     |
| <i>LEV</i>                 | 0.0085       | (0.62)      | -0.0214      | (-1.76)*    | -0.0079      | (-0.14)    | -0.0300      | (-2.51)**   |
| $\Delta$ <i>SALE</i>       | 0.0116       | (9.50)***   | 0.0111       | (10.10)***  | 0.0060       | (3.03)***  | 0.0114       | (12.54)***  |
| <i>IROA</i>                | -2.3154      | (-14.55)*** | -2.0019      | (-13.61)*** | -1.1906      | (-4.29)*** | -2.1502      | (-9.98)***  |
| <i>TQ</i>                  | -0.0511      | (-3.96)***  | 0.0133       | (1.31)      | -0.0086      | (-0.36)    | 0.0183       | (1.33)      |
| <i>BETA</i>                | 0.0170       | (2.72)***   | 0.0308       | (5.02)***   | 0.0229       | (1.65)     | 0.0365       | (4.92)***   |
| $\Delta$ <i>PI</i>         | -0.0028      | (-4.13)***  | -0.0007      | (-1.27)     | -0.0018      | (-1.59)    | -0.0010      | (-1.63)**   |
| <i>OWNC</i>                | 0.1716       | (8.97)***   | 0.1595       | (8.83)***   | 0.0342       | (0.42)     | 0.1513       | (8.31)***   |
| <i>CHOLD</i>               | -0.0044      | (-0.94)     | -0.0001      | (-0.03)     | -0.0166      | (-1.58)    | -0.0001      | (-0.04)     |
| <i>CDUAL</i>               | 0.0379       | (2.92)***   | 0.0260       | (2.14)**    | 0.0117       | (0.42)     | 0.0187       | (1.02)      |
| <i>BINDP</i>               | 0.0067       | (1.18)      | 0.0268       | (4.88)***   | 0.0079       | (0.81)     | 0.0216       | (4.01)***   |
| <i>BMEET</i>               | 0.0136       | (3.72)***   | 0.0190       | (5.71)***   | 0.0033       | (0.42)     | 0.0143       | (3.54)***   |
| <i>BSIZE</i>               | -0.0219      | (-5.43)***  | -0.0099      | (-2.65)**   | 0.0011       | (0.09)     | -0.0127      | (-2.80)**   |
| Industry effect            | No           |             | Yes          |             | Yes          |            | Yes          |             |
| Year effect                | No           |             | Yes          |             | Yes          |            | Yes          |             |
| Region effect              | No           |             | Yes          |             | Yes          |            | Yes          |             |
| Firm fixed effect          | No           |             | No           |             | Yes          |            | No           |             |
| BSQREG                     | No           |             | No           |             | No           |            | Yes          |             |
| Adjusted R <sup>2</sup>    | 0.1909       |             | 0.3584       |             | 0.1034       |            |              |             |
| Pseudo R <sup>2</sup>      |              |             |              |             |              |            | 0.2432       |             |
| Observation                | 5870         |             | 5870         |             | 5870         |            | 5870         |             |

Note: This table presents our main regression analyses. The sample period covers 2001-2008 and includes A- and B-share dual-listing stocks appearing in both the Shanghai and Shenzhen stock exchanges. The dependent variable *FSD* is the monthly foreign share discount, calculated as the A-share price minus the B-share price, divided by the A-share price. *TREAT* is set to 1 for firms whose ratio of restricted to total shares is above the yearly cross-sectional median, and 0 otherwise. *POST* equals to 1 from the year in which the compensation payout plan of the reform was ratified for the firm in question and for all years afterwards, and to 0 for the years before this. *RMV* is the ratio of the market capitalization of A- to B-shares at the end of the previous month. *RTO* is the ratio of the turnover of A- to B-shares at the end of the previous month. *RRET* is the ratio of the stock returns on A- to B-shares at the end of the previous month. *LEV* is the debt-to-equity ratio in the last fiscal year.  $\Delta$ *SALE* is the percentage change in the sales growth over the last fiscal year. *IROA* is the industry median adjusted return on assets in the last fiscal year, calculated as operating income divided by total assets. *TQ* is Tobin's Q of the last fiscal year, calculated as the sum of market value and debt, divided by total equity. *BETA* is the CAPM beta up to the end of the last year, estimated from time-series regressions of firm-specific daily excess returns on daily market excess returns over the past one-year period.  $\Delta$ *PI* is the percentage change in share price informativeness over the last year, calculated as the log of  $[(1-R^2)/R^2]$  where  $R^2$  is based on a time-series regression of firm-specific weekly excess returns on both Chinese domestic and U.S. weekly market excess returns. *OWNC* is ownership concentration in the last fiscal year, measured by the Herfindahl index, based on the ownership held by the ten largest shareholders in the firm. *CHOLD* is equal to 1 for firms with CEO shareholdings above top 75<sup>th</sup> or below bottom 25<sup>th</sup> percentile of yearly cross-section, and 0 otherwise. *CDUAL* is 1 for firms whose CEO also served as board chairman in the last fiscal year, and 0 otherwise. *BINDP* is 1 for firms whose proportion of independent directors in the last fiscal year was above the cross-sectional median, and 0 otherwise. *BMEET* is 1 for firms which held more board meetings in the last fiscal year than the cross-sectional median, and 0 otherwise. *BSIZE* is 1 for firms whose boards in the last fiscal year were larger than the cross-sectional median, and 0 otherwise. All *t*-statistics are reported in parentheses. Regression 1 (2) excludes (includes) the controls for industry, year, and regional fixed effects. Regression 3 (4) applies firm fixed-effect control (bootstrapped median regression). Regressions 1 to 3 report adjusted R<sup>2</sup> and *t*-statistics, adjusted for heteroskedasticity. Regression 4 reports pseudo R<sup>2</sup>. \*, \*\*, and \*\*\* denote 10%, 5%, and 1% levels of significance.

Table 5. Robustness tests substituting treatment group dummy by state ownership ratio or restricted share ratio

|                          | Panel A: State Ownership Ratio |                     | Panel B: Restricted Share Ratio |                     |
|--------------------------|--------------------------------|---------------------|---------------------------------|---------------------|
|                          | Regression 1                   | Regression 2        | Regression 1                    | Regression 2        |
| Intercept                | 0.7297 (23.36)***              | 0.8418 (20.17)***   | 0.6387 (20.87)***               | 0.8418 (26.58)***   |
| <i>SOR</i>               | 0.1197 (10.21)***              | 0.1062 (9.65)***    |                                 |                     |
| <i>POST</i>              | -0.0841 (-7.17)***             | -0.1032 (-8.84)***  |                                 |                     |
| <i>SOR</i> × <i>POST</i> | -0.1301 (-7.78)***             | -0.1647 (-8.55)***  |                                 |                     |
| <i>RSR</i>               |                                |                     | 0.3427 (14.73)***               | 0.1062 (7.22)***    |
| <i>POST</i>              |                                |                     | 0.0271 (1.83)*                  | -0.1032 (-6.25)***  |
| <i>RSR</i> × <i>POST</i> |                                |                     | -0.3214(-13.53)***              | -0.1647 (-9.09)***  |
| <i>RMV</i>               | -0.3496 (-15.86)***            | -0.3478 (-14.12)*** | -0.3317(-15.60)***              | -0.3478 (-15.75)*** |
| <i>RTO</i>               | 0.0438 (4.54)***               | 0.0689 (8.43)***    | 0.0392 (4.03)***                | 0.0689 (6.65)***    |
| <i>RRET</i>              | -0.0001 (-0.37)                | -0.0003 (-1.10)     | -0.0001 (-0.46)                 | -0.0003 (-0.90)     |
| <i>LEV</i>               | -0.0405 (-3.30)***             | -0.0579 (-3.78)***  | -0.0087 (-0.73)                 | -0.0579 (-4.09)***  |
| $\Delta$ <i>SALE</i>     | 0.0109 (9.17)***               | 0.0111 (6.12)***    | 0.0096 (7.99)***                | 0.0111 (6.38)***    |
| <i>IROA</i>              | -2.0746 (-13.76)***            | -2.1558 (-12.18)*** | -1.9875 (-13.66)***             | -2.1558 (-12.34)*** |
| <i>TQ</i>                | 0.0339 (3.20)***               | 0.0330 (2.92)***    | -0.0009 (-0.09)                 | 0.0330 (2.26)**     |
| <i>BETA</i>              | 0.0344 (5.52)***               | 0.0452 (4.43)***    | 0.0327 (5.26)***                | 0.0452 (4.37)***    |
| $\Delta$ <i>PI</i>       | -0.0004 (-0.69)                | -0.0008 (-0.90)     | -0.0011 (-1.80)*                | -0.0008 (-0.83)     |
| <i>OWNC</i>              | 0.1179 (5.72)***               | 0.1473 (7.10)***    | 0.0433 (2.02)**                 | 0.1473 (7.23)***    |
| <i>CHOLD</i>             | 0.0043 (1.06)                  | 0.0023 (0.40)       | 0.0068 (1.65)                   | 0.0023 (0.45)       |
| <i>CDUAL</i>             | 0.0165 (1.38)                  | 0.0045 (0.21)       | 0.0278 (2.22)**                 | 0.0045 (0.36)       |
| <i>BINDP</i>             | 0.0282 (5.07)***               | 0.0244 (3.76)***    | 0.0232 (4.28)***                | 0.0244 (3.63)***    |
| <i>BMEET</i>             | 0.0207 (6.15)***               | 0.0172 (4.78)***    | 0.0202 (6.10)***                | 0.0172 (4.14)***    |
| <i>BSIZE</i>             | -0.0129 (-3.43)***             | -0.0117 (-2.71)***  | -0.0109 (-2.95)***              | -0.0117 (-2.11)**   |
| Industry effect          | Yes                            | Yes                 | Yes                             | Yes                 |
| Year effect              | Yes                            | Yes                 | Yes                             | Yes                 |
| Region effect            | Yes                            | Yes                 | Yes                             | Yes                 |
| BSQREG                   | No                             | Yes                 | No                              | Yes                 |
| Adjusted R <sup>2</sup>  | 0.3521                         |                     | 0.3705                          |                     |
| Pseudo R <sup>2</sup>    |                                | 0.2407              |                                 | 0.2407              |
| Observation              | 5870                           | 5870                | 5870                            | 5870                |

Note: This table presents robustness tests. The sample period covers 2001-2008 and includes A- and B-share dual-listing stocks appearing in both the Shanghai and Shenzhen stock exchanges. The dependent variable *FSD* is the monthly foreign share discount, calculated as the A-share price minus the B-share price, divided by the A-share price. *SOR* is state ownership ratio measured as yearly number of state shares divided by total number of shares. *RSR* is restricted shares ratio measured as yearly number of restricted shares divided by total number of shares. *POST* equals to 1 from the year in which the compensation payout plan of the reform was ratified for the firm in question and for all years afterwards, and to 0 for the years before this. *RMV* is the ratio of the market capitalization of A- to B-shares at the end of the previous month. *RTO* is the ratio of the turnover of A- to B-shares at the end of the previous month. *RRET* is the ratio of the stock returns on A- to B-shares at the end of the previous month. *LEV* is the debt-to-equity ratio in the last fiscal year.  $\Delta$ *SALE* is the percentage change in the sales growth over the last fiscal year. *IROA* is the industry median adjusted return on assets in the last fiscal year, calculated as operating income divided by total assets. *TQ* is Tobin's Q of the last fiscal year, calculated as the sum of market value and debt, divided by total equity. *BETA* is the CAPM beta up to the end of the last year, estimated from time-series regressions of firm-specific daily excess returns on daily market excess returns over the past one-year period.  $\Delta$ *PI* is the percentage change in share price informativeness over the last year, calculated as the log of  $[(1-R^2)/R^2]$  where  $R^2$  is based on a time-series regression of firm-specific weekly excess returns on both Chinese domestic and U.S. weekly market excess returns. *OWNC* is ownership concentration in the last fiscal year, measured by the Herfindahl index, based on the ownership held by the ten largest shareholders in the firm. *CHOLD* is equal to 1 for firms with CEO shareholdings above top 75<sup>th</sup> or below bottom 25<sup>th</sup> percentile of yearly cross-section, and 0 otherwise. *CDUAL* is 1 for firms whose CEO also served as board chairman in the last fiscal year, and 0 otherwise. *BINDP* is 1 for firms whose proportion of independent directors in the last fiscal year was above the cross-sectional median, and 0 otherwise. *BMEET* is 1 for firms which held more board meetings in the last fiscal year than the cross-sectional median, and 0 otherwise. *BSIZE* is 1 for firms whose boards in the last fiscal year were larger than the cross-sectional median, and 0 otherwise. All *t*-statistics are reported in parentheses. Regression 2 is based on bootstrapped median regression and reports pseudo  $R^2$ . \*, \*\*, and \*\*\* denote 10%, 5%, and 1% levels of significance.



Table 6. Robustness tests using alternative definition of foreign share discount

|                            | Panel A: <i>TREAT</i> = state controlled firms |            | Panel B: <i>TREAT</i> = above median level restricted share ratio firms |             |              |            |              |             |
|----------------------------|--|------------|---|-------------|--------------|------------|--------------|-------------|
|                            | Regression 1                                   |            | Regression 2  |             | Regression 3 |            | Regression 4 |             |
| Intercept                  | 10.2984  | (18.02)*** | 8.1471  | (13.22)***  | 11.2017      | (19.62)*** | 8.5468       | (13.11)***  |
| <i>TREAT</i>               | 0.4549   | (4.67)***  | 0.2068  | (2.91)***   | 1.0632       | (8.93)***  | 0.7724       | (6.61)***   |
| <i>POST</i>                | 0.2461   | (1.08)     | -0.4731   | (-2.70)***  | -0.6362      | (-3.99)*** | -0.7588      | (-6.79)***  |
| <i>RATIO</i> × <i>POST</i> | -1.4668  | (-7.06)*** | -0.5827   | (-5.17)***  | -1.1270      | (-5.61)*** | -0.9692      | (-4.82)***  |
| <i>RMV</i>                 | -3.5319  | (-8.95)*** | -4.0941   | (-13.68)*** | -3.6806      | (-9.50)*** | -4.1938      | (-11.37)*** |
| <i>RTO</i>                 | 0.5064   | (3.85)***  | 0.6474  | (3.97)***   | 0.4724       | (3.61)***  | 0.6308       | (5.02)***   |
| <i>RRET</i>                | -0.0024  | (-0.53)    | -0.0047   | (-1.01)     | -0.0010      | (-0.23)    | -0.0044      | (-0.96)     |
| <i>LEV</i>                 | -0.0148  | (-0.06)    | 0.0551  | (0.19)      | 0.0502       | (0.20)     | 0.2667       | (0.93)      |
| $\Delta$ <i>SALE</i>       | 0.1702   | (4.04)***  | 0.1999  | (3.33)***   | 0.1627       | (4.06)***  | 0.1857       | (2.97)***   |
| <i>IROA</i>                | 28.1039  | (9.88)***  | 15.8847   | (8.73)***   | 29.5816      | (9.95)***  | 15.6022      | (5.63)***   |
| <i>TQ</i>                  | 0.5165   | (1.75)*    | 0.8265  | (2.75)***   | 0.2760       | (0.94)     | 0.3100       | (0.65)      |
| <i>BETA</i>                | -1.1913  | (-8.50)*** | -0.7941   | (-6.15)***  | -1.2086      | (-8.60)*** | -0.7518      | (-6.61)***  |
| $\Delta$ <i>PI</i>         | 0.0112   | (0.94)     | 0.0020  | (0.13)      | 0.0080       | (0.69)     | -0.0016      | (-0.10)     |
| <i>OWNC</i>                | 3.9105   | (10.97)*** | 3.9458  | (13.67)***  | 2.5411       | (6.69)***  | 2.9233       | (6.97)***   |
| <i>CHOLD</i>               | 0.5063   | (6.14)***  | 0.5658  | (9.27)***   | 0.4823       | (5.87)***  | 0.5329       | (5.06)***   |
| <i>CDUAL</i>               | -0.1239  | (-0.77)    | -0.3345   | (-1.62)     | -0.1883      | (-1.12)    | -0.3935      | (-2.39)**   |
| <i>BINDP</i>               | 0.9051   | (6.84)***  | 0.4386  | (3.19)***   | 0.9297       | (6.77)***  | 0.4807       | (5.50)***   |
| <i>BMEET</i>               | 0.2310   | (3.31)***  | 0.0665  | (1.43)      | 0.1724       | (2.51)**   | 0.1202       | (1.26)      |
| <i>BSIZE</i>               | 0.1281   | (1.55)     | -0.1807   | (-2.07)**   | 0.0839       | (1.04)     | -0.1800      | (-2.72)**   |
| Industry effect            | Yes  |            | Yes   |             | Yes          |            | Yes          |             |
| Year effect                | Yes  |            | Yes   |             | Yes          |            | Yes          |             |
| Region effect              | Yes  |            | Yes   |             | Yes          |            | Yes          |             |
| BSQREG                     | No   |            | Yes   |             | No           |            | Yes          |             |
| Adjusted R <sup>2</sup>    | 0.4016   |            |   |             | 0.4040       |            |              |             |
| Pseudo R <sup>2</sup>      |  |            | 0.2629  |             |              |            | 0.2671       |             |
| Observation                | 5870   |            | 5870  |             | 5870         |            | 5870         |             |

Note: This table presents robustness tests. The sample period covers 2001-2008 and includes A- and B-share dual-listing stocks appearing in both the Shanghai and Shenzhen stock exchanges. The dependent variable is foreign share discount calculated as A-share price minus B-share price following Chan et al. (2008). In Panel A, *TREAT* is 1 for state controlled firms, and 0 otherwise. In Panel B, *TREAT* is 1 for firms with above yearly cross-sectional median restricted to total share ratio, and 0 otherwise. *POST* equals to 1 from the year in which the compensation payout plan of the reform was ratified for the firm in question and for all years afterwards, and to 0 for the years before this. *RMV* is the ratio of the market capitalization of A- to B-shares at the end of the previous month. *RTO* is the ratio of the turnover of A- to B-shares at the end of the previous month. *RRET* is the ratio of the stock returns on A- to B-shares at the end of the previous month. *LEV* is the debt-to-equity ratio in the last fiscal year.  $\Delta$ *SALE* is the percentage change in the sales growth over the last fiscal year. *IROA* is the industry median adjusted return on assets in the last fiscal year, calculated as operating income divided by total assets. *TQ* is Tobin's Q of the last fiscal year, calculated as the sum of market value and debt, divided by total equity. *BETA* is the CAPM beta up to the end of the last year, estimated from time-series regressions of firm-specific daily excess returns on daily market excess returns over the past one-year period.  $\Delta$ *PI* is the percentage change in share price informativeness over the last year, calculated as the log of  $[(1-R^2)/R^2]$  where  $R^2$  is based on a time-series regression of firm-specific weekly excess returns on both Chinese domestic and U.S. weekly market excess returns. *OWNC* is ownership concentration in the last fiscal year, measured by the Herfindahl index, based on the ownership held by the ten largest shareholders in the firm. *CHOLD* is equal to 1 for firms with CEO shareholdings above top 75<sup>th</sup> or below bottom 25<sup>th</sup> percentile of yearly cross-section, and 0 otherwise. *CDUAL* is 1 for firms whose CEO also served as board chairman in the last fiscal year, and 0 otherwise. *BINDP* is 1 for firms whose proportion of independent directors in the last fiscal year was above the cross-sectional median, and 0 otherwise. *BMEET* is 1 for firms which held more board meetings in the last fiscal year than the cross-sectional median, and 0 otherwise. *BSIZE* is 1 for firms whose boards in the last fiscal year were larger than the cross-sectional median, and 0 otherwise. All *t*-statistics are reported in parentheses. Regression 2 is based on bootstrapped median regression and reports pseudo  $R^2$ . \*, \*\*, and \*\*\* denote 10%, 5%, and 1% levels of significance.

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<sup>1</sup> See details at [http://www.bloomberg.com/apps/news?pid=newsarchive&sid=a\\_84o9PPPGqk](http://www.bloomberg.com/apps/news?pid=newsarchive&sid=a_84o9PPPGqk).

<sup>2</sup> For instance, this policy was mentioned in the *Ninth Five-Year Plan for National Economic and Social Development* and the *Outline for the Long-Range Objective Through the Year 2010*.

<sup>3</sup> We list a few recent financial news articles here, translating their Chinese language headlines into English, and provide their web URLs for reference:

- “29 firms this year experienced local government stock ownership reduction”  
<http://finance.ifeng.com/stock/zqyw/20110827/4474686.shtml>
- “Selling shares – July wave of government stock ownership reduction”  
<http://stock.hexun.com/2011-07-29/131890710.html>
- “July’s local government stock ownership reduction in 25 listed firms to cash in 3.3 billion RMB”  
<http://www.beelink.com/20110808/2808514.html>

<sup>4</sup> Chinese domestic market returns are based on the Shanghai Composite Index. Chinese risk-free rates are based on the 7-day interbank rate. U.S. stock market returns are based on a NYSE, AMEX, and NASDAQ value-weighted portfolio. U.S. risk-free rates are based on the one-month Treasury bill.

<sup>5</sup> We thank the referees for suggesting these robustness tests.

<sup>6</sup> Following referee’s suggestion, we also replicated our analyses by redefining *TREAT* as 1 for firms with a ratio of restricted to total shares above the 80<sup>th</sup> percentile and 0 otherwise. We obtained similar findings in support of the predictions of both hypotheses.