

Does Opening B-Share Markets to Domestic Investors Lead to More or Less Price Synchronicity?

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Abstract

In February 2001 China B-share markets were opened to Chinese domestic investors. Whilst some researchers consider this an act of market liberalization, we argue the contrary. Opening B-share markets may result in improved transactional efficiency, yet this is not equivalent to improved informational efficiency. We find that after market opening, B-share price movements become more synchronous and firm-specific return variations are reduced. Opening B-share markets to domestic investors does not improve information capitalization of B share prices, as reflected by increased price synchronicity and reduced idiosyncratic risk. The market opening policy is a reversal act of market liberalization.

Keywords: *stock market liberalization, information capitalization, market segmentation, idiosyncratic risk, Chinese B shares*

1. Introduction

Closed for nearly half a century, China stock markets were re-opened in early 1990s. Initially only A shares were allowed to trade on exchanges. In February 1992, a new class of shares, the B shares, was created for foreign investors. The A and B share markets were completely segmented till February 19, 2001. Since then, China Securities Regulatory Commission allowed domestic investors to purchase B shares with certain conditions. A domestic investor has to open a bank account designated for trading B shares. This capital account liberalization policy is perceived as trying to revitalize the ailing B-share market. A number of scholars consider opening the B share market to domestic investors as a measure of stock market liberalization. We argue against such claim, as the policy does not create new avenue to foreign investors.

The function of a stock market is to process information, and guide capitals towards its best economic use. The former is related to informational efficiency, whilst the latter is described by Tobin (1982) as functional efficiency. Stock price changes reflect new information, be it at market-level or firm-level. Morck, Yeung and Yu (2000) state that the extent of stock comovement depends on the relative amounts of firm-level and market-level information capitalized into stock prices. A high degree of price synchronicity is an indication of low idiosyncratic risk and low market efficiency. Researches had verified that such a market is usually associated with poor institutions, less market openness, less developed economy, less efficient allocation of capital.

This paper studies whether B-share market opening leads to higher or lower price synchronicity. B-share market opening is a capital account liberalization policy, but not necessarily stock market liberalization. A number of researches assume the latter is true. We argue that as more Chinese investors participate in B-share market upon its opening, share price synchronicity will increase. Such a phenomenon means China B-share market is further segmented from global market. Our research interest is to examine change in share price synchronicity before and after this market opening announcement. We divide the study period into two sections: the before-event period and after-event period. We exclude the period shortly after the announcement to screen out market turbulence. We compare our findings with other studies on stock market liberalization. We try to observe the similarities and differences among the two China B-share markets, and between China stock market and

other emerging markets on reactions towards market liberalization. We employ a variation of runs test for share price comovement, asset valuation model for regression, and panel regression for further investigation of changes before and after the event.

We find that market comovements become more obvious after B-share market opening. Price synchronicity as represented by fraction of stocks that move in the same direction in same period increases from 0.798 to 0.879 upon B-share market opening. R^2 on average increases from 0.614 to 0.783 upon B-share market opening, which are statistically different at 1% significance level, using F-statistics.

This paper is organized as follows. Section 2 provides the institutional background on China stock market. Section 3 reviews relevant literature for our research. Section 4 describes the data used and develops the research methodology. Section 5 presents the empirical findings. Section 6 summarizes and concludes the paper.

2. China Stock Markets and Liberalization

Closed for nearly half a century, China stock markets were re-opened in early 1990s. In the late 1980s, China transformed many state-owned-enterprises into stock companies. The first stock market in the history of the People's Republic of China, Shanghai Stock Exchange, opened on November 26, 1990. Shenzhen Stock Exchange opened on April 11, 1991. Initially only the public A shares were allowed to trade on exchanges. In 1992, the B shares were created for foreign investors. The first B-shares began trading on February 21, 1992. In 1993, other new classes of shares (H, N, L or S shares) for overseas listing were created. The first batch of such shares was listed as H shares in Hong Kong on July 15, 1993.

The A shares are domestic ordinary shares denominated and traded in Renminbi by Chinese citizens only. The majority of A shares are issued by state-owned-enterprises, and can be further divided into three classes – the state shares which are held by the government through a designated government agency, the legal shares (also called restricted institutional shares) which are held by “legal persons” which are enterprises or other economic entities besides individuals, and public shares which are owned by ordinary Chinese citizens. Only public shares are tradable at the exchanges. The B shares are ordinary shares denominated in renminbi but traded in foreign currencies (US dollars for Shanghai B shares, Hong Kong

dollars for Shenzhen B shares). Holders of B shares have the same rights and obligations as holders of A shares. The main differences are that B shares are restricted to foreign investors (before February 19, 2001), and that price quotes and dividend payments are in foreign currency. Individual investors are allowed to hold up to 25 percent of a firm's B shares, but the total foreign ownership of a firm cannot exceed 49 percent. Besides A and B shares, overseas listed shares are known as H shares for those listed in Hong Kong, N shares for New York listing, L shares for London listing and S shares for Singapore listing. In addition, some mainland companies set up overseas holding companies to list through backdoor.

Similar to other developing countries, China restricts foreign ownership of domestic equities in order to maintain corporate control. The A and B share markets were completely segmented before February 19, 2001. The Shanghai and Shenzhen B share markets were small in size compared to their A share counterparts. B share trading had never been active. B share prices were traded at deep discounts to their corresponding A share prices. Such discounts stood at an average of 86% in early February 2001. On February 19, 2001, China Securities Regulatory Commission and the State Administration of Foreign Exchange Bureau jointly announced that Chinese nationals with existing foreign currency deposit accounts with a domestic commercial bank are allowed to trade B shares starting February 28, 2001. Chinese nationals who open such foreign currency deposit accounts after February 19 are allowed to trade B shares from June 1, 2001 onwards. The B share markets were closed for a week after the announcement, and resumed trading on February 28, 2001. All B share prices surged to their daily limits of 10% for several weeks with heavy turnovers.

Stock market liberalization is a political decision by the government to allow foreigners to invest in domestic stock markets. Stock market liberalization in China started with listing of B shares in 1992, followed by listing of H (and N, L and S) shares in 1993. On November 5, 2002, China regulatory authorities announced the Qualified Foreign Institutional Investors (QFII) scheme. The scheme opens the door for foreign investors to participate in China's major stock markets, the A share markets. This is the most important stock market liberalization policy enforced by China. A number of scholars consider opening the B share market to domestic investors as a measure of stock market liberalization. We argue against such claim, as the policy does not create new avenue to foreign investors. Results of this study reflect that opening B share market leads to more price synchronicity and does not improve market informativeness.

3. Literature Review

The efficient market hypothesis suggests that as a stock market is liberalized, stock prices should reflect the increased availability of information and be more efficiently priced. Empirical researches on market efficiency upon liberalization, however, show a divergence of results. Groenewold and Ariff (1998) test weak-form efficiency, and find regression of actual returns on past returns and autocorrelation tests display some predictability in the post-liberalization sub-sample. Kawakatsu and Morey (1999) employ several econometric tests to test data from 16 countries and find that liberalization does not improve the efficiency of these emerging markets, which were already efficient before liberalization. Kim and Singal (2000) find liberalizing markets become more efficient based on Lo and MacKinlay's variance ratio test for random walk, and there is no concomitant increase in volatility. Jain-Chandra (2002) studies a panel data on 16 liberalizing countries and find emerging markets become more efficient and more liquid in the years following liberalization.

Findings from firm-level studies provide further insights on information capitalization and market efficiency. Kelly (2005) gives detailed description on relationship among price synchronicity, idiosyncratic volatility, market efficiency and information environment. Morck, Yeung and Yu (2000) document emerging markets have high price synchronicity. Durnev, Morck, Yeung and Zarowin (2003) consider such price synchronicity an indication of less stock price informativeness. Researches also find that greater idiosyncratic variation is associated with better stock price informativeness. Roll (1988) argues that idiosyncratic variation reflects trading by investors with private firm-specific information. Beny (2000) finds greater idiosyncratic variation is evident in countries with stronger insider trading prohibition. Bushman et al. (2000) also show greater idiosyncratic variation in countries with more developed financial analysis industries. Bris et al. (2002) finds same results in countries with fewer short selling restrictions. Durnev, Morck and Yeung (2004) also document that higher idiosyncratic risk is indicative of more efficient corporate investment.

The efficient market hypothesis suggests that as a stock market is liberalized, share prices should reflect the increased availability of information and shares more efficiently priced. Empirical findings confirm such premises. Kim and Singal (2000) find liberalizing markets become more efficient without increase in volatility. Jain-Chandra (2002) shows 16 liberalizing emerging markets become more efficient and more liquid in the years following

liberalization. Douthett Jr., Jung and Song (2003) show that after Korea liberalized its market in 1991, stock return comovements decrease, stock price differentiation increases, and the explanatory power of accounting numbers increases. Li, Morck, Yang and Yeung (2004) find that liberalization increases idiosyncratic risk, an indication of improved market efficiency, and this firm-specific risk is associated with greater market openness. Bae, Bailey and Mao (2005) examine the impact of liberalization on the information environment in emerging markets, and find firm-specific information, analyst coverage and value-added by analysts increase with extent of liberalization whereas earnings management tends to decline. All these findings agree with the premise of improved market efficiency upon liberalization. However, a few researches such as Groenewold and Ariff (1998), and Kawakatsu and Morey (1999) find that emerging markets were already efficient before liberalization, and that liberalization does not improve the information efficiency.

By its strictest sense, stock market liberalization in China started in early 1990s. Yet the extent of liberalization was very limited. Empirical researches on China stock market liberalization are few as market data in early 1990s are incomplete. Studies focus on A-B and A-H share price discounts/premiums, liquidity, return volatility, lead-lag relationship and market segmentation. These studies include Bailey (1994), Bailey, Chung and Kang (1999), Chakravarty, Sarkar and Wu (1998), Chen, Lee and Rui (2001), Chui and Kwok (1998), Fung, Lee and Leung (2000), Sjoo and Zhang (2000), Su and Fleisher (1999), Lui (2002), He, Wu and Chen (2003), Tian and Wan (2004).

Researchers such as McGuinness (2002) consider opening B-share markets to domestic investors a current account liberalization measure. Whether this is stock market liberalization is arguable, as the policy does not create new avenue to foreign investors. Sun, Tong and Yan (2005) found that opening B share markets to domestic investors improves the quality of the B share markets but not at the expense of A share markets, with higher volume, lower levels of volatility, lower bid-ask spreads and more liquidity. Yet Ahlgren, Sjoo and Zhang (2003) argue that A and B share markets remain segmented after the opening. Karolyi and Li (2003) and Chan, Menkveld and Yang (2003) also analyze effects of opening B shares on the price difference between A and B shares. Karolyi and Li find that strong reactions are concentrated in small capitalization stocks and those with substantial past-return momentum, and such reactions are unrelated to firm risk and liquidity attributes. Chan, Menkveld and

Yang find that the change in price is partially caused by the reduction in the information asymmetry between foreign and domestic investors.

4. Data and Methodology

Classical event-study methodology is employed to examine and compare changes in information contents as reflected by price synchronicity of the Shanghai and Shenzhen B share markets before and after the opening announcement made on February 19, 2001. The before-event period is defined from December 30, 1999 to December 29, 2000. The after-event period runs from June 29, 2001 to June 28, 2002. The period from December 30, 2000 to June 28, 2001 is not included to exclude effects of information leakage ahead of the announcement and kneejerk reactions thereafter, as our research interest is on the steady state information environment.

During the study period of December 30, 1999 through June 28, 2002, there were 50 companies with B shares listed on Shanghai Stock Exchange and 52 B-share companies on Shenzhen Stock Exchange. Two Shanghai B-share companies that were listed during the study period were not considered. One of the 52 Shenzhen B-share companies was suspended from trading during the study period, and was excluded from the study. The sample thus comprises 101 B-share companies, 50 from Shanghai and 51 from Shenzhen.

Weekly closing share prices, market indices and exchange rates are taken from Bloomberg financial information provider. Shanghai B-share index and Shenzhen B-share index are taken to represent the B-share market in both exchanges, and the MSCI World index is taken as surrogate for global market. We also construct an all-market index with returns obtained from equally weighted returns of all B-shares. All prices are converted to US dollar before computation. It is noted that studies based on daily data give the same results as weekly data provide, and that renminbi is virtually pegged at 8.277 with US dollar, and Hong Kong dollar fixed at 7.800 with US dollar during this study period. Differences in currency risk considerations by foreign and Chinese investors are insignificant.

We adopt two measures of price synchronicity. The first measure is a time-series variable of stock co-movement in a trading period, and is defined as the fraction of stocks that move in the same direction in same period (Morck et al., 2000; Li et al., 2004):

$$f_{jt} = \frac{\max [n_{jt}^{up}, n_{jt}^{down}]}{n_{jt}^{up} + n_{jt}^{down}} \quad (1)$$

where f_{jt} is the fraction of B-shares in market j (Shanghai or Shenzhen) whose prices move in the same direction in week t , n_{jt}^{up} is the number of B-shares in market j whose prices rise in week t and n_{jt}^{down} is the number of stocks whose prices fall. We calculate f_{jt} for before-event period and after-event period, and compare whether these two sets of data are statistically significantly different. Understandably all values of f_{jt} , f_{jB} and f_{jA} are between 0.5 and 1.0. A high f_{jt} would mean a high degree of price synchronicity. If B-share markets exhibit more price synchronicity after opening to local Chinese investors, then average of f_{jt} for the after-event period will be statistically significantly higher than corresponding average for the before-event period.

The second measure of price synchronicity is the firm-specific stock return variation (French and Roll, 1986; Roll, 1988; Morck et al., 2000; Li et al., 2004) obtained from the regression:

$$r_{ijt} = a_i + b_{I,i} r_{m,t} + e_{it} \quad (3)$$

where r_{ijt} is the return of stock i listed on market j (which is either Shanghai or Shenzhen) in week t , $r_{j,t}$ is return of market j in week t , and $r_{m,t}$ the market index return in week t . A high R^2 in this regression indicates a high degree of stock price synchronicity. We run regressions for each B-share for before-event period and after-event period. If B-share markets exhibit more price synchronicity after opening to local Chinese investors, then in general R^2 's for after-event period will be significantly higher than corresponding R^2 's for before-event period for a typical B share.

5. Findings

Table 1 summarizes calculations on the fraction of stocks that move in the same direction in the same week being studied. Before B-share market opening, an average of 79.8% stocks move in synchrony in the same week. This figure increases to 87.9% after B-share market opening. Distribution of this comovement index, as indicated by the standard deviation, reduces from 0.401 to 0.326 upon B-share market opening. Effect of comovement after B-share market opening is significant, as distribution of index f_{jt} in the after-event period is stochastically dominant on that in the before-event period. Table 1 also shows that

Shanghai listed B shares exhibit higher degree of price synchronicity than Shenzhen listed B shares, both before and after B-share market opening.

Regression results confirm increased price synchronicity after B-share market opening. Chart 2 provides the visual understanding how R^2 of each security changes upon B-share market opening. R^2 for after-event period are obviously higher than corresponding R^2 for before-event period. Among the 101 regressions on B-shares, 91 result in higher R^2 in the after-event period. R^2 for before-event period range from 0.107 to 0.839, with an average of 0.614 and standard deviation of 0.156. R^2 for after-event period range from 0.418 to 0.953, with an average of 0.783 and standard deviation of 0.089. The two average R^2 are statistically different at 1% significance level, using F-statistics. It is worth noting that again Shanghai B-shares exhibit higher degree of price synchronicity than Shenzhen B-shares, as represented by their relatively higher R^2 both before and after market opening.

Some may argue that total risk comprises market risk and idiosyncratic risk. In a security return regression, SSR represents market risk, whereas SSE represents idiosyncratic risk. Some may argue that a high R^2 can be due to a high SSR or low SSE. In our regressions on each of the 101 B-shares, all SSE's in the after-event period are lower than corresponding SSE's in the before-event period. On average, the SSE reduces by 0.140 in the after-event period, with standard deviation of 0.063. The difference is significant at 5% level. The SSR's before and after B-share market opening do not change much. 33 of the 101 regressions give higher SSR in the after-event period, but the increases are statistically not different from zero at 5% level. On average, SSR reduces by 0.037 in the after-event period, with standard deviation 0.094.

6. Summary and Conclusion

This paper is an event study that contributes to the existing literature on the causal link between capital account or stock market liberalization and market performance. We focus on China, a major emerging market seldom covered in previous studies on stock market liberalization. We use a natural experiment, the announcement of B-share market opening. Our focus is on price synchronicity, which is related to market efficiency, capital allocation and asset valuation. We investigate share price comovement in the period leading to the B-share market opening announcement and thereafter. We exclude the turbulent period shortly

after the announcement to screen out market noises. Theories depict that if a stock market is liberalized, it is more integrated with global markets, its cost of capital will fall, and market efficiency will enhance. These claims means share price synchronicity will reduce and idiosyncratic risk will increase.

This paper examines whether the B-share market opening is a market liberalization policy which results in enhanced market efficiency. We employ event study. We study two measures of price synchronicity, namely fraction of stocks that move in the same direction in same period, and stock return variation R^2 obtained from regression stock returns on market indices. We also perform panel regressions to investigate effects of B-share market opening on relative behavior of B-shares in both Shenzhen and Shanghai exchanges, and before and after the event.

We find that market comovements become more obvious after B-share market opening. Price synchronicity as represented by fraction of stocks that move in the same direction in same period increases from 0.798 to 0.879 upon B-share market opening. R^2 on average increases from 0.614 to 0.783 upon B-share market opening, which are statistically different at 1% significance level, using F-statistics.

B-share market opening allows local Chinese to participate in the B-share market so as to improve market liquidity. The idea is that improved liquidity will attract more foreigners who are mostly institutional investors. The consensus is that foreign institutional investors will bring better market practice and provide better governance to listed companies. Our finding that price synchronicity increases upon B-share market opening suggests that B-share market opening attracts more local Chinese than foreign investors. Market efficiency does not improve after B-share market opening; on the contrary, information efficiency is reduced.

The findings in this paper may have some practical implications for China policy makers. In August 2007, China government announced that Chinese citizens can buy Hong Kong stocks through special accounts with no capital restriction. This capital account liberalization policy is the most aggressive one in modern China history. If we want to assess its implications and impact on both Hong Kong and China markets, this paper serves as a reference.

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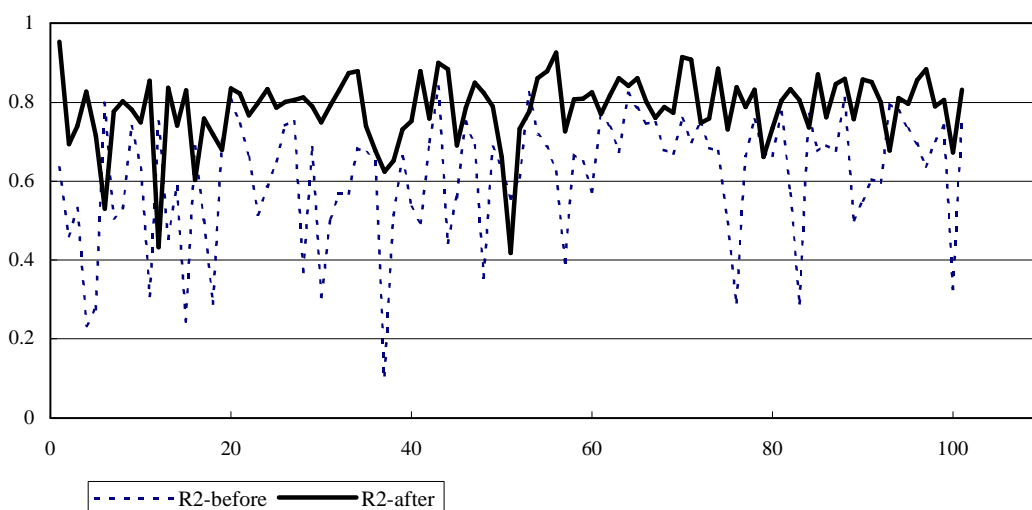
Table I: Summary Findings of Stock Co-movement Index - Average fraction of stocks moving in the same direction (f_{jt})

The period under study is from December 30, 1999 to June 28, 2002. The event day is February 19, 2001, the date opening of B-share markets to Chinese citizens was announced. Two event windows are defined: before-event period runs from December 30, 1999 to December 29, 2000, and after-event period runs from June 29, 2001 to June 28, 2002. The period from December 30, 2000 to June 28, 2001 is not included to exclude effects of information leakage ahead of the announcement and kneejerk reactions thereafter. The before-event period serves as the estimation period that provides the basis for analysis on market behavior in the other event window.

	Max	Min	Mean	Standard Deviation
<u>Both B-Share Markets</u>				
Before-event	1.00	0.50	0.798	0.401
After-event	1.00	0.55	0.879	0.326
<u>Shanghai B-Share Market</u>				
Before-event	1.00	0.53	0.865	0.342
After-event	1.00	0.57	0.913	0.282
<u>Shenzhen B-Share Market</u>				
Before-event	1.00	0.50	0.788	0.409
After-event	1.00	0.55	0.864	0.342

Table and Chart 2: Change of Stock Co-movement Index – R^2 of market model for each security

The regressions are performed using weekly market data. The market index return is equally-weighted average return of all B shares. The period under study is from December 30, 1999 to June 28, 2002. The event day is February 19, 2001, the date opening of B-share markets to Chinese citizens was announced. Two event windows are defined: before-event period runs from December 30, 1999 to December 29, 2000, and after-event period runs from June 29, 2001 to June 28, 2002. The period from December 30, 2000 to June 28, 2001 is not included to exclude effects of information leakage ahead of the announcement and kneejerk reactions thereafter.



	Max	Min	Mean	Standard Deviation
<u>Both B-Share Markets</u>				
Before-event	0.839	0.107	0.614	0.156
After-event	0.953	0.418	0.783	0.089
<u>Shanghai B-Share Market</u>				
Before-event	0.825	0.290	0.662	0.127
After-event	0.926	0.418	0.799	0.081
<u>Shenzhen B-Share Market</u>				
Before-event	0.839	0.108	0.566	0.170
After-event	0.953	0.433	0.768	0.094