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Risk under "One Country and Two Systems": Evidence from Class A, B and H Shares of Chinese Listed Companies

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Chinese listed companies issue Class A, B and H shares to Chinese, foreign and Hong Kong investors, respectively. Entitled to exactly the same rights and obligations, the three classes of shares are, however, traded at significantly different prices. The valuation differential is attributable to the different responses to the country-specific risk related to the emerging Chinese stock market by the three categories of investors. The country risk of China can be decomposed into political risk, exchange rate risk, interest rate risk and market risk. Empirical tests provide strong evidence to support the decomposition model. Compared with Chinese investors of A-shares, foreign investors would require a higher rate of return for B-shares to adjust for the political risk of China, reflecting a differential in the risk premium required on the world capital market. In comparison, the Hong Kong investors, who have greater tolerance of the political risk involved in H-shares as a result of the increasing integration between the Hong Kong and Chinese markets under "one country and two systems", are willing to pay a higher price for H-shares relative to B-shares.

Keywords: China; Country risk; Hong Kong; Market segmentation.

1. Introduction

Within a decade from the establishment of the Shanghai Stock Exchange in 1991 and Shenzhen Stock Exchanges in 1992, the Chinese stock market has become the largest emerging market in the world, ranking only after the developed markets in U.S., U.K. and Japan in terms of market capitalization. As China changes from a command economy to a socialist

market economy, the development of the Chinese stock market aims to revive the ailing state-owned enterprises by listing them on stock exchanges to attract capital infusion and stimulate performance improvement through shareholder monitoring with a new governance structure. This process is termed "partial privatization" or "corporatization". However, the government has also made clear its intention to continue to control a majority stake in the country's largest enterprises, especially those in major industries. In the context of a gradual and partial economic reform policy, China's effort to stimulate the effect of privatization while retaining public ownership in listed companies is an interesting experiment, leading to the evolution of certain unique features in ownership structure and market segmentation. While all the listed companies in China issue Class A shares to domestic investors; a limited number of them also issue B shares to foreign investors, or H shares to Hong Kong investors. Class A and B shares are traded on the two domestic stock exchanges, but H shares are traded on the Hong Kong Stock Exchange, subject to the Hong Kong listing rules. The annual reports for Class A shareholders follow the Chinese GAAP; in addition, companies issuing B or H shares are also required to prepare another set of reports based on International Accounting Standards (IASs) for Class B and H shareholders. Although the three classes of shares are entitled to exactly the same voting and dividend rights and obligations, they have been traded at significantly different prices, with a substantial price discount for Class B and H shares. Table 1 shows the sizes of the three market segments.

Table 1. Statistics on A-share, B-share and H-share Markets

	A-share			B-share			H-share		
Year	Firms	Market Capital	Total Turnover	Firms	Market Capital	Total Turnover	Firms	Market Capital	Total Turnover
1992	53*	50**		18*	44**				
1993	183	683	3562[2]	34	179	105[2]	6[1]	15[2]	39[2]
1994	227	814	8003	54	155	125	15	22	33
1995	242	791	4319	58	147	78	17	15	17
1996	431	2514	21052	69	353	280	23	25	24
1997	627	4856	30295	76	384	427	39	58	296
1998	727	5550	23418	80	196	127	41	40	74
1999	822	7937	31050	82	276	270	44	51	103
2000	1058	15753	60279	113	563	548	47	97	171

* Number includes firms listed on both the Shanghai and Shenzhen Stock Exchanges.
** Amount in RMB100 million yuan.

According to efficient market theory, the required rate of return for any investment is positively related to the risk taken by the investors. The emerging Chinese stock market has, undoubtedly, a much higher risk than seasoned markets in developed countries, and foreign investors are likely to require a higher rate of return than domestic investors to adjust for the additional risk. Consequently, the valuation differential between Class A and B shares can be regarded as an indicator of the country-specific risk related to the Chinese market as perceived by international investors. Country risk will affect the business environment that investors will lose money or have reduced profit margin. Specifically, the country risk of China is one of partially reformed institutions, lack of clearly defined property rights, and inadequate legal protection of investor interests under a transition economy. The focus of the paper is on how H-shareholders' response to the country risk of China differs from that of either A-shareholders or B-shareholders because of Hong Kong's peculiar position.

Hong Kong had been a crown colony under British rule for one and a half centuries before its sovereignty was reverted to China in 1997, when it became a special administrative region of China. However, the Basic Law governing the handover allows Hong Kong to retain its capitalist system for 50 more years, thus creating a situation of "one country and two systems". Hong Kong investors are, therefore, not subjected to the same regulations as investors in China. Furthermore, Hong Kong also has a well-established and more transparent stock market compared to China. On the one hand, the price of H-shares should be more closely correlated with that of A-shares than B-shares because Hong Kong and China have become one political entity. On the other, a different degree of valuation differential would still exist between Class A and H shares to reflect the fact that the Chinese and Hong Kong markets are operated under different economic and legal systems.

This paper develops an estimation model to decompose the country risk of China into political risk, exchange rate risk, interest risk and market risk, and examines the impact of the risk factors on H-shareholders versus B-shareholders. Empirical evidence shows that Hong Kong and international investors respond differently to the political risk of China, thus reflecting the unique position of Hong Kong under "one country and two systems". The rest of the paper is organized as follows. Section 2 reviews the literature. Section 3 develops an estimation model of the country risk of China. Section 4 reports test results, and Sec. 5 concludes the paper.

2. Literature Review

The segmentation between Class A, B and H shares is in essence a form of ownership restriction, designed to prevent foreign and Hong Kong investors from owning a controlling interest in Chinese listed companies. Ownership restriction has been reported in markets other than China. For example, Finland, France, India, Indonesia, South Korea, Mexico, Spain, Sweden and Switzerland have also limited the number of shares of firms foreign investors were allowed to purchase, and in Australia, Canada, Japan, Malaysia and Norway, limited foreign ownership was imposed on selected industries (Eun and Janakiramanan, 1986). Booth *et al.* (1994) studied the Finnish ownership restricted stock market from 1984–1989 and found an equilibrium relationship between the two markets. Hietala (1989) reported that the unrestricted shares had a positive price differential relative to the restricted shares in the Finnish market.[1] However, by 1996, China had become the only country that restricts foreigners to special classes of shares (IFC 1997).

Previous studies on stock market segmentation mainly focused on developed countries such as Finland and Switzerland, but the nature of their ownership restrictions differed from those in China. For instance, in the Finnish market during 1984–1989, both foreign and domestic investors were able to purchase the unrestricted shares but only domestic investors were allowed to invest in the restricted market. In Switzerland, a firm can issue bearer and registered shares, the former are accessible to both domestic and foreign investors, but the latter only to domestic investors. These "mildly segmented" markets have resulted in a price premium for foreign investors. In contrast, all the three classes of shares are restricted in China, and the strict segmentation has resulted in a price discount for foreign investors. The valuation differential between Class A, B and H shares reflects the segment differential in demand and supply and the country-specific risk related to the Chinese market, which differs from that related to the Finnish and Switzerland markets.

Country risk is reflected in an overall differential in the risk premium required on the world capital market. The market for A-shares is segmented from the world market as the Chinese domestic investors are denied international arbitrage opportunities, and vice versa, nor do foreign investors have access to the restricted A-share market. Under such segmented conditions, the equilibrium risk premium required of A-shares is determined by

[1]For an overview of investment restriction, see Claessens and Rhee (1994).

the supply and demand of the limited number of such stocks in the Chinese market as well as the risk tolerance of domestic investors. Foreign investors in B-shares, however, face different investment opportunities because they have free access to the world capital market with an almost unlimited supply of stocks, with B-shares only comprising a tiny portion of this world portfolio. As a result, the equilibrium risk premium required of B-shares by international investors would be determined by the supply and demand in the international market and their risk preferences. In addition, B-shareholders are also exposed to an exchange rate risk because all dividend payments are denominated in Chinese currency, and B-shareholders need to convert them into foreign currency. Therefore, fluctuating exchange rate would increase the risk of B-shares. Consequently, domestic and foreign investors would use different discount rates to discount the same firm cash flow and result in generally lower B-share prices than A-share prices.

The Hong Kong investors are positioned between the two categories of investors. Like the international investors, the Hong Kong investors' choice is not limited to H-shares alone because they also enjoy the freedom to create their own worldwide portfolios. However, the increasing economic integration between Hong Kong and China on account of Hong Kong being the No. 1 investor in China, and the Chinese mainland being Hong Kong's biggest trading partner is likely to exert a strong impact on the price movements between Class A and H shares. Besides, Hong Kong investors will also have an exchange rate risk based on HKD/RMB rate instead of USD/RMB rate. Taken together, Hong Kong investors would require a rate of return on H-shares different from that on either A-shares as required by Chinese investors or B-shares as required by international investors because their investment opportunities are different from the former and their risk tolerance different from the latter.

There are diverse ways to estimate systematic country risk in relation to expected returns in finance. A simple approach is to use the beta of the capital asset pricing model (CAPM) as a proxy for country risk, which appears to have some ability to discriminate between expected returns in developed markets when measured against either a single factor or world portfolio (Erb *et al.*, 1996). Reilly and Akhtar (1995) demonstrated the impact of alternative benchmarks on the beta for a sample of stocks from developed markets, emphasizing the implications of country risk to different investors. However, a study of emerging markets (Harvey, 1995) found no relation between expected returns and betas measured with respect to the

world market portfolio, and it documented instead that country variance did a better job of explaining the cross-sectional variances in expected returns. Bakaert and Harvey (1995) pursued a model where expected returns were influenced by both world and local factors, and proposed a conditional regime-switching methodology to distinguish between developing segmented countries and developing countries integrated in world capital markets. The valuation differential between Class A, B and H shares provides a unique opportunity to examine the country risk of China with reference to "one country and two systems" by comparing its impact on the investment decisions of A-shareholders, B-shareholders and H-shareholders, respectively.

3. Country Risk of China: An Estimation Model

The price of A-shares (P^A) is determined by the expected dividend flow (D) to A-share investors:

$$P_t^{\mathrm{A}} = \sum_s \frac{E_t(D_{t+s})}{(1+r^{\mathrm{A}})^s} \tag{1}$$

where r^{A} is the required rate of return by domestic investors in A-shares.

The price of B-share (P^{B}) is determined by the expected dividend flow (D) to the B-share investors who, however, will also take into account both the effect of political and exchange rate risk factors on expected dividend flow:

$$P_t^{\mathrm{B}} = \sum_s \frac{E_t(D_{t+s})E_t(\pi_{t+s})}{(1+r^{\mathrm{B}})^s}\theta_t^* \tag{2}$$

where r^{B} is the required rate of return by foreign investors in B-share, π is the exchange rate, and θ^* is the discount factor for the political risk as perceived by B-share investors.

To make the model tractable, we first note that the pricing principle can be rewritten as

$$P_t^{\mathrm{A}} = \sum_s \frac{E_t(D_{t+s})}{(1+r^{\mathrm{A}})^s} = \frac{E_t(D_{t+1})}{1+r^{\mathrm{A}}} + \frac{E_t(P_{t+1}^{\mathrm{A}})}{1+r^{\mathrm{A}}}\,. \tag{3}$$

Let g_t be the expected capital-gains yield, i.e.,

$$g_t = \frac{E_t(P_{t+1}) - P_t}{P_t}$$

then (*) is equivalent to

$$P_t^{\mathrm{A}} = \frac{E_t(D_{t+1})}{1+r^{\mathrm{A}}} + \frac{P_t(1+g_t)}{1+r^{\mathrm{A}}}$$

which simplifies to

$$P_t^{\mathrm{A}} = \frac{E_t(D_{t+1})}{r^{\mathrm{A}} - g_t} \tag{4}$$

for A-share investors. For B-share investors, we assume that the expected future exchange rates have no long-term trend, namely,

$$E_t(\pi_{t+s}) = E_t(\pi_{t+1})\,, \quad \forall\, s\,. \tag{5}$$

We further assume that the expectation for the exchange rate during the next period is formed by an adaptive expectation:

$$E_t(\pi_{t+1}) = E_{t-1}(\pi_t) + \alpha_0[\pi_t - E_{t-1}(\pi_t)]\,. \tag{6}$$

Applying the same formula recursively and simplifying gives

$$\begin{aligned} E_t(\pi_{t+1}) &= \alpha_0\pi_t + \alpha_1\pi_{t-1} + \alpha_2\pi_{t-2} + \cdots \\ &= \pi_t[\alpha_0 + \alpha_1\frac{\pi_{t-1}}{\pi_t} + \alpha_2\frac{\pi_{t-2}}{\pi_t} + \cdots] \end{aligned} \tag{7}$$

where

$$\alpha_i = \alpha_0(1-\alpha_0)^i\,, \quad \forall\, i\,.$$

Defining

$$\begin{aligned} \frac{\pi_{t-1}}{\pi_t} &= \frac{\pi_t - (\pi_t - \pi_{t-1})}{\pi_t} = 1 - \frac{\Delta\pi_1}{\pi_t}\,, \\ \frac{\pi_{t-2}}{\pi_t} &= \frac{\pi_t - (\pi_t - \pi_{t-2})}{\pi_t} = 1 - \frac{\Delta\pi_2}{\pi_t}\,, \quad \ldots\,. \end{aligned}$$

Equation (7) may be rewritten as

$$\begin{aligned} E_t(\pi_{t+1}) &= \pi_t\left[\alpha_0 + \alpha_1\left(1 - \frac{\Delta\pi_1}{\pi_t}\right) + \alpha_2\left(1 - \frac{\Delta\pi_2}{\pi_t}\right) + \cdots\right] \\ &= \pi_t\left[\sum \alpha_j - \sum \alpha_j\frac{\Delta\pi_j}{\pi_t}\right] \\ &= \pi_t\left[1 - \sum \alpha_j\frac{\Delta\pi_j}{\pi_t}\right]. \end{aligned} \tag{8}$$

Substituting (8) into (2) gives

$$P_t^{\mathrm{B}} = \sum_s \frac{E_t(D_{t+s})E_t(\pi_{t+s})}{(1+r^{\mathrm{B}})^s}\theta_t^* = \theta_t^*\pi_t\left[1 - \sum \alpha_j\frac{\Delta\pi_j}{\pi_t}\right]\frac{E_t(D_{t+1})}{r^{\mathrm{B}} - g_t}\,. \tag{9}$$

To see the effect of political and expected exchange rate risks, we convert the price of A-share into foreign currency and then take the ratio of the price of B-share to that of A-share:

$$\frac{P_t^{\mathrm{B}}}{P_t^{\mathrm{A}}\pi_t} = \theta_t^* \left[1 - \sum \frac{\alpha_j \Delta\pi_j}{\pi_t}\right] \frac{r^{\mathrm{A}} - g_t}{r^{\mathrm{B}} - g_t}\,. \tag{10}$$

Taking logarithmic transformation gives

$$\ln P_t^{\mathrm{B}} - \ln(P_t^{\mathrm{A}}\pi_t) = \ln\theta_t^* + \ln\left[1 - \sum \frac{\alpha_j \Delta\pi_j}{\pi_t}\right] + \ln\frac{r^{\mathrm{A}} - g_t}{r^{\mathrm{B}} - g_t}\,. \tag{11}$$

This equation decomposes the valuation differential between A-share and B-share into component parts respectively attributable to the effects of political risk, exchange rate risk and required-rate-of-return differential, respectively.

In general, $\alpha_j \Delta\pi_j/\pi_t$ is small relative to unity, therefore,

$$\ln\left[1 - \sum \frac{\alpha_j \Delta\pi_j}{\pi_t}\right] \approx \alpha_1 \frac{\Delta\pi_1}{\pi_t} + \alpha_2 \frac{\Delta\pi_2}{\pi_t} + \alpha_3 \frac{\Delta\pi_3}{\pi_t} + \alpha_4 \frac{\Delta\pi_4}{\pi_t} + \varepsilon_{1t}\,. \tag{12}$$

The analytical model can be operationalized as follows. The required rate of return for A-share investors can be modeled by CAPM:

$$r^{\mathrm{A}} = r_F^{\mathrm{A}} + \beta(r_M^{\mathrm{A}} - r_F^{\mathrm{A}}) \tag{13}$$

where $r_M^{\mathrm{A}} - r_F^{\mathrm{A}}$ is the expected market risk-premium in the A-share market, which depends on the risk tolerance and investment opportunity set available to A-share investors.

Similarly, for the B-share investors, the required rate of return is

$$r^{\mathrm{B}} = r_F^{\mathrm{B}} + \beta(r_M^{\mathrm{B}} - r_F^{\mathrm{B}})\,. \tag{14}$$

The risk tolerance profiles and total investment opportunity sets available to the A-share and B-share investors are clearly different because the A-share market is open to Chinese domestic investors only while the B-share market may be considered as an integrated part of the global market accessible by all international investors. Similarly, the risk-free rate faced by A-share investors and B-share investors are also different. Taking the difference in the required rates of return by the two groups of investors, we have

$$\begin{aligned} r^{\mathrm{A}} - r^{\mathrm{B}} &= r_F^{\mathrm{A}} - r_F^{\mathrm{B}} + \beta^{\mathrm{A}}(r_M^{\mathrm{A}} - r_F^{\mathrm{A}}) - \beta^{\mathrm{B}}(r_M^{\mathrm{B}} - r_F^{\mathrm{B}}) \\ &= r_F^{\mathrm{A}} - r_F^{\mathrm{B}} + \mathrm{E}(\mathrm{MRP}^{\mathrm{A}}) - \mathrm{E}(\mathrm{MRP}^{\mathrm{B}}) \end{aligned} \tag{15}$$

where E(MRP) denotes the expected market risk premium.

Now, the last term in (11) can be written as

$$\ln\frac{r^{\mathrm{A}} - g_t}{r^{\mathrm{B}} - g_t} = \ln\left[1 + \frac{r^{\mathrm{A}} - r^{\mathrm{B}}}{r^{\mathrm{B}} - g}\right] \approx \gamma(r^{\mathrm{A}} - r^{\mathrm{B}}) + \varepsilon_{2t}\,.$$

Using (15), we have

$$\ln \frac{r^{\mathrm{A}} - g_t}{r^{\mathrm{B}} - g_t} \approx \gamma[(r_F^{\mathrm{A}} - r_F^{\mathrm{B}}) + \mathrm{E}(\mathrm{MRP}^{\mathrm{A}}) - \mathrm{E}(\mathrm{MRP}^{\mathrm{B}})] + \varepsilon_{2t}$$
$$= \gamma(r_F^{\mathrm{A}} - r_F^{\mathrm{B}}) + \delta + \varepsilon_{2t}\,. \tag{16}$$

Substituting (12) and (16) into (11) arrives at

$$\ln P_t^{\mathrm{B}} - \ln(P_t^{\mathrm{A}}\pi_t) \approx \theta_t + \alpha_1 \frac{\Delta\pi_1}{\pi_t} + \alpha_2 \frac{\Delta\pi_2}{\pi_t} + \alpha_3 \frac{\Delta\pi_3}{\pi_t}$$
$$+ \alpha_4 \frac{\Delta\pi_4}{\pi_t} + \gamma(r_F^{\mathrm{A}} - r_F^{\mathrm{B}}) + \delta + \varepsilon_t\,. \tag{17}$$

Equation (17) breaks down the country risk of China into political risk, exchange rate risk, interest rate differential, and market-risk-premium differential. The same method can likewise be applied to account for the valuation differential between A-shares and H-shares.

4. Empirical Test

We now empirically test the estimation model. Test data are based on firms listed on the Shanghai Stock Exchange that either issue A-shares and B-shares (A-B sample) or A-shares and H-shares (A-H sample).[2] There are forty-three firms in the A-B sample, and six in the A-H sample. Table 2 lists the company names and their A-share, B-share, and H-share IPO dates. The test period covers 1992–2000. The data is derived from *China Statistics Yearbook*, Bloomberg, Euromoney and various Chinese, Hong Kong and U.S. websites. All the data are on quarterly basis except for country risk weighting. The definitions of the variables in the estimation model for A-B shares are as follows. The dependent variable, the valuation differential between Class A and B shares, is defined as the difference between the natural logs of B-share and A-share quarterly closing prices (both expressed in U.S. dollars). We use the Euromoney country risk weighting for China as proxy of its political risk. The Euromoney country risk weighting is one of several better-known indexes that incorporate economic, social and political factors into an overall measure of business climates.[3] It is published twice a year in March and September, respectively. We use the March weighting for

[2]Companies are allowed to issue either B-shares or H-shares, but not both.

[3]Some other examples are J.P. Morgan Country Risk Index (bank-focused) and Business Environment Risk Index (BERI, non-bank-focused).

Table 2. List of Sample Companies

Panel A: Companies issuing both Class A and B shares

No.	Company Name	A Share IPO	B Share IPO	No.	Company Name	A Share IPO	B Share IPO
1	Auto Instrument	19940324	19940429	23	Lianhua Fibre	19921013	19930928
2	China Textile Mach	19920805	19920728	24	Lujiazui	19930628	19941122
3	Chloride Alkali Center	19921112	19920820	25	Material Trading	19940204	19940330
4	Daheng Technology	20001129	19971021	26	Narcissus Electric	19930106	19941110
5	Dajiang (Group)	19931122	19931216	27	Phoenix	19931008	19931119
6	Dazhong Transportation	19920807	19920722	28	Posts & Telecoms	19931018	19941020
7	Diesel Engine	19940311	19931229	29	Refrige Compressor	19921113	19930118
8	Eastern Communication	19961126	19960809	30	Rubber Belt	19920828	19920728
9	Erfangji	19920410	19920701	31	Sanmao Textile	19931108	19931231
10	First Pencil	19920814	19920728	32	Shanggong	19940311	19940114
11	Forever	19940114	19931115	33	Shanghai New Asia	19920608	19941215
12	Friendship	19940204	19940105	34	Shanghai Worldbost	19970703	19960726
13	Hainan Airlines	19991125	19970626	35	Shangling Electric	19940224	19940114
14	Haixin	19940404	19931209	36	Steel Tube	19940311	19940316
15	Heilongjiang Electric	19960701	19960422	37	Tianjin Marine Ship	19960909	19960430
16	Hero	19940311	19931229	38	Tyre & Rubber	19921204	19920828
17	Huangshan Tourism	19970506	19961122	39	Vacuum Electron	19910102	19920221
18	Huaxincem	19940103	19941209	40	Wai Gaoqiao	19930504	19930726
19	Jin Jiang Tower	19930607	19931018	41	Wing Sung	19920820	19920722
20	Jinan Motorcycle	19931206	19970617	42	Yaohua Pilkington	19940114	19931213
21	Jinqiao	19930326	19930531	43	Zhenhua Port Machinery	20001221	19970805
22	Jinzhou Port	19990609	19980519				

Panel B: Companies issuing both Class A and H shares

No.	Company Name	A Share IPO	H Share IPO	No.	Company Name	A Share IPO	H Share IPO
1	China Eastern Airline	19970511	19970205	4	Shanghai Petrochem	19931108	19930726
2	Jiangsu Expressway	20010116	19970627	5	Yanzhou Coal Mining	19980701	19980401
3	Maanshan Iron & Steel	19940106	19931103	6	Yizheng Chem. Fiber	19950411	19940329

the second and third quarters, and the September weighting for the fourth quarter and the first quarter of the following year. Change in exchange rate is defined as the first difference in USD/RMB exchange rates for four quarters back, i.e., (Exchange Rate$_t$ − Exchange Rate$_{t-1}$), (Exchange Rate$_t$ − Exchange Rate$_{t-2}$), (Exchange Rate$_t$ − Exchange Rate$_{t-3}$), and (Exchange Rate$_t$ − Exchange Rate$_{t-4}$). The yields of 5-year Chinese and U.S. government bonds are used as risk free rates for Chinese and foreign investors, respectively. The market risk differential is defined as the difference in the expected risk premium between an A-share and a B-share of the same company. We use U.S. risk free rate and market risk premium as proxies for international risk free rate and market risk premium because of the preponderance of U.S. shares in an international portfolio. In the estimation model for A-H shares, the dependent variable is the difference between the natural logs of H-share and A-share quarterly closing prices (both expressed in HK dollars). Likewise, we replace the USD/RMB exchange rate with HKD/RMB exchange rate, the yield of 5-year U.S. Treasury Bond with the yield of 5-year HK Exchange Fund Bond. Chow *et al.* (1999) has used a present-value model to explain the prices of 47 A-shares traded on the Shanghai Stock Exchange, and found the estimated parameters similar to those reported for stocks traded on New York and Hong Kong Stock Exchanges, thus providing evidence on the compatibility between the three markets.

Table 3 reports the descriptive statistics for A-B shares (Panel A) and A-H shares (Panel B). Both the raw prices of A-share, B-share, and H-shares and the logs of their prices are reported. The logs of the A-share and B-share prices are negative because the prices are fractions when expressed in U.S. dollars. The difference between the logs of A-share and B-share prices is of larger magnitude than that between the logs of A-shares and H-shares. We use the Euromoney country risk weighting for China as a proxy of its political risk. Euromoney ranks countries in order of their risks, with a higher weighting for lower risk. The maximum weighting is 100 (e.g., the weighting for U.S. is 98.08 in 1992 and 94.92 in 2000). China has ranked between number 38 and 45 among approximately 200 countries with a weighting between 56.51 and 72.81 over the test period. Its weightings show a greater variability than most developed countries, thus representing higher political uncertainty. The official USD/RMB exchange rate decreased from 0.1879 in 1991 to 0.1160 in 1994, and then increased to 0.1208 in 2000. The HK dollars are pegged to the U.S. dollars, but floating with RMB. The exchange rate

Table 3. Descriptive Statistics

Panel A: A-share and B-share Sample

Variable	Mean	Std. Dev.	Q1	Median	Q3
(A-share Price)	1.1569	1.2289	0.7096	0.9750	1.3673
Log of A-share Price	−0.0241	0.5335	−0.3431	−0.0253	0.3128
(B-share Price)	0.3371	0.2798	0.1500	0.2400	0.4100
Log of B-share Price	−1.3550	0.7087	−1.8971	−1.4271	−0.8916
(B Price – A Price)	−0.8694	0.9039	−0.4954	−0.7621	−1.0895
Log B – Log A	−3.5097	0.6130	−3.9523	−3.5001	−3.0895
Political Risk	62.0192	7.3754	56.5100	60.7200	70.5000
USD/RMB Rate	0.1392	0.0288	0.1202	0.1208	0.1749
Chinese 5-Yr Bond Yield	9.0483	3.9041	6.6600	9.0000	13.8600
US 5-Yr Bond Yield	6.1244	0.8528	5.5200	6.0700	6.6000
A-share Index Return	10.3307	43.3814	−8.0402	1.0708	10.5459
S&P 500 Index Return	3.7197	6.3832	−0.2944	3.2878	7.1495

Panel B: A-share and H-share Sample

Variable	Mean	Std. Dev.	Q1	Median	Q3
(A-share Price)	4.0095	1.7690	2.7147	3.7952	4.7837
Log of A-share Price	1.2978	0.4308	0.9987	1.3337	1.5652
(H-share Price)	1.5583	0.7649	0.9400	1.4800	2.1300
Log of H-share Price	0.3040	0.5664	−0.0619	0.3920	0.7561
(H Price – A Price)	−2.5314	1.7698	−1.6833	−2.4969	−3.5337
Log H – Log A	−1.0554	0.6732	−1.5069	−1.1431	−0.6657
Political Risk	62.0192	7.3754	56.5100	60.7200	70.5000
HKD/RMB Rate	1.0790	0.2242	0.9296	0.9361	1.3518
Chinese 5-Yr Bond Yield	9.0483	3.9041	6.6600	9.0000	13.8600
HK 5-Yr Bond Yield	7.2865	0.9847	6.7100	6.9600	7.5800
A-share Index Return	10.3307	43.3814	−8.0402	1.0708	10.5459
Hang Seng Index Return	5.2771	15.7892	−3.3368	6.0244	12.0670

reported here is based on quarterly market rates, which display a higher degree of variability than the official rate. Lee *et al.* (1999) found that the yield of 1-month T-bill is a better proxy for risk-free rate than T-bonds of longer maturity period. However, the shortest maturity period of Chinese government bond is five years, therefore, we have to use the yields of 5-year Chinese and U.S. government bonds as risk-free rates. Overall, the yield of Chinese bond is higher than that of U.S. bond. In comparison, the Hong Kong risk-free rate (yield of 5-year Exchange Fund Bond) is higher than the yield of U.S. 5-year T-bond. Accordingly, the differences in risk-free rates

between China and Hong Kong is smaller than that between China and U.S.[4] Similarly, the mean returns on the market indices of the Shanghai Stock Exchange (Shanghai 100 Index) and Hong Kong Stock Exchange (Hang Seng Index) are both higher than the S&P500 index returns, suggesting that the difference in the market risk premium between A-shares and H-shares is smaller than that between A-shares and B-shares, consistent with the fact that the valuation differential between A-shares and H-shares is smaller than that between A-shares and B-shares.

Note that Equation (17) is an ex ante model, in which different firms have different β's, giving different expected market risk premia, therefore the coefficients γ and δ are in fact firm specific. Accordingly, we add firm dummies to both the interest rate risk differential and market risk differential in the empirical model. The model is thus being applied on an ex ante basis.

The firm-specific regression results for A-B shares are presented in Panel A of Table 4. The coefficient estimate for political risk is 0.0388, significant at the 0.0001 level. Recall that political risk is proxied by the Euromoney country risk weighting that takes into account country-specific factors such as economic performance, politic risk, debt indicators, access to bank lending, access to short-term finance, access to capital markets, discount on forfeiting, credit ratings, and debt to default or rescheduled ratio. Since a lower weighting indicates greater political risk, a significant positive correlation between the valuation differential and political risk implies that higher political risk as perceived by international investors would lead to greater underpricing of B-shares relative to A-shares. The difference between the emerging Chinese market and seasoned markets in developed countries as reflected in political risk is an important determinant of the valuation differential between Class A and B shares.

Table 4 also shows that for the exchange rate risk, none of the four coefficients in the adaptive expectation models are significant. This may be due to the fact that RMB has been largely managed on a fixed rate regime vis-à-vis the U.S. dollar over the test period, therefore the exchange rate has limited influence on the B-share prices.

For firm-specific interest rate differential [γ in Equation (17)], we expect an inverse association between the valuation differential and interest rate differential because either higher Chinese, and/or lower U.S., interest rate would induce foreign investors to pay a higher price for B-shares, thus

[4]The 5-year Hong Kong Exchange Fund Bond did not come into existence until 1994. The risk free rate for previous years are corresponding synthetic rates used by Datastream.

Table 4. Regression Results of Ex Ante Model

Panel A: Dependent Variable = (Log of B-share Price) − (Log of A-share Price)
$N = 1051$ F Value $= 30.55$ Prob. $> F = 0.0001$ Adj. $R^2 = 0.7000$

Variable	Coefficient	Std. Err.	t-statistic	Prob.>t
Intercept	−4.1221	0.1264	−32.62	0.0000***
Political Risk	0.0388	0.0018	22.02	0.0000***
$\text{USD/RMB}_{t-(t-1)}$	0.0214	0.0138	1.55	0.1203
$\text{USD/RMB}_{t-(t-2)}$	0.0079	0.0138	0.58	0.5650
$\text{USD/RMB}_{t-(t-3)}$	−0.0186	0.0138	−1.35	0.1774
$\text{USD/RMB}_{t-(t-4)}$	−0.0095	0.0097	−0.98	0.3275
Firm_2*IRD	0.0306	0.0135	2.28	0.0230**
Firm_3*IRD	0.0424	0.0135	3.15	0.0017***
Firm_4*IRD	0.0386	0.0135	2.87	0.0043***
Firm_5*IRD	0.0758	0.0142	5.33	0.0000***
Firm_6*IRD	0.0697	0.0137	5.07	0.0000***
Firm_7*IRD	0.0738	0.0148	4.98	0.0000***
Firm_8*IRD	−0.0327	0.0323	−1.01	0.3119
Firm_9*IRD	0.0400	0.0137	2.91	0.0037***
Firm_{10}*IRD	0.0297	0.0148	2.01	0.0449**
Firm_{11}*IRD	0.0387	0.0148	2.62	0.0090***
Firm_{12}*IRD	−0.0175	0.0148	−1.18	0.2383
Firm_{13}*IRD	0.1155	0.3079	0.38	0.7077
Firm_{14}*IRD	−0.0043	0.0153	−0.28	0.7772
Firm_{15}*IRD	0.0409	0.0312	1.31	0.1895
Firm_{16}*IRD	0.0177	0.0148	1.20	0.2323
Firm_{17}*IRD	0.0276	0.0162	1.70	0.0898*
Firm_{18}*IRD	0.0313	0.0367	0.85	0.3937
Firm_{19}*IRD	−0.0191	0.0367	−0.52	0.6026
Firm_{20}*IRD	0.0187	0.0142	1.31	0.1900
Firm_{21}*IRD	0.0316	0.0135	2.35	0.0191**
Firm_{22}*IRD	0.1462	0.2990	0.49	0.6249
Firm_{23}*IRD	0.0218	0.0137	1.60	0.1106
Firm_{24}*IRD	−0.0091	0.0162	−0.56	0.5751
Firm_{25}*IRD	0.0234	0.0323	0.72	0.4691
Firm_{26}*IRD	0.0649	0.0142	4.57	0.0000***
Firm_{27}*IRD	0.0231	0.0162	1.42	0.1560
Firm_{28}*IRD	0.0254	0.0135	1.89	0.0592*
Firm_{29}*IRD	−0.0014	0.0135	−0.10	0.9169
Firm_{30}*IRD	0.0302	0.0148	2.04	0.0416**
Firm_{31}*IRD	−0.0024	0.0148	−0.16	0.8725
Firm_{32}*IRD	0.0552	0.0148	3.73	0.0002***
Firm_{33}*IRD	0.0100	0.0148	0.68	0.4975
Firm_{34}*IRD	0.0066	0.0312	0.21	0.8321
Firm_{35}*IRD	0.0624	0.0135	4.64	0.0000***
Firm_{36}*IRD	0.0100	0.0137	0.73	0.4674
Firm_{37}*IRD	0.0070	0.0137	0.51	0.6089
Firm_{38}*IRD	0.0089	0.0137	0.65	0.5152
Firm_{39}*IRD	0.0960	0.0403	2.38	0.0174**
Firm_{40}*IRD	0.1117	0.0148	7.55	0.0000***
Firm_2	0.0652	0.0907	0.72	0.4727
Firm_3	−0.0867	0.0907	−0.96	0.3395
Firm_4	−0.1989	0.0911	−2.18	0.0292**
Firm_5	−0.0287	0.0921	−0.31	0.7554
Firm_6	0.7101	0.0907	7.83	0.0000***
Firm_7	0.1587	0.0921	1.72	0.0852**

Table 4. Regression Results of Ex Ante Model (continued)

Panel A: Dependent Variable = (Log of B-share Price) − (Log of A-share Price)
$N = 1051$ F Value = 30.55 Prob. > $F = 0.0001$ Adj. $R^2 = 0.7000$

Variable	Coefficient	Std. Err.	t-statistic	Prob.>t
$Firm_8$	0.6271	0.0990	6.33	0.0000***
$Firm_9$	−0.0448	0.0907	−0.49	0.6218
$Firm_{10}$	−0.2898	0.0921	−3.15	0.0017***
$Firm_{11}$	0.3249	0.0921	3.53	0.0004***
$Firm_{12}$	−0.2597	0.0921	−2.82	0.0049***
$Firm_{13}$	1.3917	0.9784	1.42	0.1552
$Firm_{14}$	0.4344	0.0921	4.72	0.0000***
$Firm_{15}$	0.6632	0.0967	6.86	0.0000***
$Firm_{16}$	0.1458	0.0921	1.58	0.1137
$Firm_{17}$	0.2333	0.0924	2.53	0.0117**
$Firm_{18}$	0.7628	0.1069	7.14	0.0000***
$Firm_{19}$	0.5848	0.1069	5.47	0.0000***
$Firm_{20}$	0.0798	0.0921	0.87	0.3864
$Firm_{21}$	0.2928	0.0920	3.18	0.0015***
$Firm_{22}$	0.8605	0.9296	0.93	0.3549
$Firm_{23}$	−0.1638	0.0921	−1.78	0.0756*
$Firm_{24}$	0.3490	0.0924	3.78	0.0000***
$Firm_{25}$	0.3215	0.0990	3.25	0.0012***
$Firm_{26}$	−0.1592	0.0921	−1.73	0.0841*
$Firm_{27}$	0.1499	0.0924	1.62	0.1051
$Firm_{28}$	0.0637	0.0916	0.70	0.4870
$Firm_{29}$	−0.2949	0.0907	−3.25	0.0012***
$Firm_{30}$	0.2206	0.0921	2.39	0.0168**
$Firm_{31}$	−0.1732	0.0921	−1.88	0.0604*
$Firm_{32}$	0.5298	0.0921	5.75	0.0000***
$Firm_{33}$	−0.2773	0.0921	−3.01	0.0027***
$Firm_{34}$	0.2483	0.0967	2.57	0.0103**
$Firm_{35}$	−0.0191	0.0911	−0.21	0.8343
$Firm_{36}$	0.5289	0.0896	5.90	0.000***
$Firm_{37}$	0.0676	0.0921	0.73	0.4643
$Firm_{38}$	−0.1991	0.0907	−2.19	0.0285**
$Firm_{39}$	0.3277	0.1138	2.88	0.0041***
$Firm_{40}$	0.2384	0.0921	2.59	0.0098***

* Significant at the 0.1 level.

** Significant at the 0.05 level.

*** Significant at the 0.01 level.

Political Risk: Euromoney country risk weighting for China.

USD/RMB: US dollar/RMB yuan exchange rate.

$Firm_i$*IRD: Firm-specific interest rate differential (γ).

$Firm_i$: Firm-specific market risk differential (δ).

reducing the price difference between Class A and B shares. In other words, we expect γ to be positive in general. From the results in Table 4, we found that the mean of the firm-specific coefficient estimates for interest rate differentials is 0.0343, and thirty-two of the firm-specific coefficient estimates are positive (eighteen of them are significant at the conventional level) and only seven are negative (none of them are significant at the conventional

Table 4. Regression Results of Ex Ante Model (continued)

Panel B: Dependent Variable = (Log of H-share Price) − (Log of A-share Price)
$N = 97$ F Value = 28.04 Prob. > $F = 0.0000$ Adj. $R^2 = 0.7698$

Variable	Coefficient	Std. Err.	t-statistic	Prob.>t
Intercept	−2.2695	0.4095	−5.54	0.0000***
Political Risk	0.0110	0.0074	1.49	0.1402
$\text{HKD/RMB}_{t-(t-1)}$	0.0472	0.6038	0.37	0.7124
$\text{HKD/RMB}_{t-(t-2)}$	−0.0233	0.1397	−0.17	0.8682
$\text{HKD/RMB}_{t-(t-3)}$	−0.3180	0.8384	−0.38	0.7054
$\text{HKD/RMB}_{t-(t-4)}$	0.4830	0.8334	0.58	0.5637
Firm_2*IRD	0.1495	0.0183	8.18	0.0000***
Firm_3*IRD	0.1054	0.0183	5.77	0.0000***
Firm_4*IRD	0.0020	0.1242	0.02	0.9871
Firm_5*IRD	0.0549	0.0191	2.87	0.0051***
Firm_2	0.3100	0.1463	2.12	0.0370**
Firm_3	0.6698	0.1463	4.58	0.0000***
Firm_4	0.2441	0.4521	0.54	0.5906
Firm_5	0.5804	0.1463	3.97	0.0002***

** Significant at the 0.05 level.

*** Significant at the 0.01 level.

Political Risk: Euromoney country risk weighting for China.

HKD/RMB: Hong Kong dollar/RMB yuan exchange rate.

Firm_i^*IRD: Firm-specific interest rate differential (γ).

Firm_i: Firm-specific market risk differential (δ).

level). These results clearly support the inverse association between valuation differential and interest rate differential.

Panel A finally reports the firm-specific market risk differentials [δ in Equation (17)]. Likewise, we expect an inverse association between valuation differential and market risk differential for the reason that higher Chinese, and/or lower U.S., market risk premium would drive down A-shares price and/or drive up B-share price, thereby reducing the price difference between Class A and B shares. As the dependent variable, the valuation differential is defined as the log of B-share price minus log of A-share price and we expect δ to be generally positive. The results show that the δ of twenty-six firms have positive signs (eighteen of them are significant at the conventional level) and the other thirteen have negative signs (nine of them are significant at the conventional level). The mean of the firm-specific δ estimate is 0.2132. Again, the positive sign of the mean and the majority of the firm-specific coefficient estimates support the inverse association between the valuation differential and market risk differential. The negative sign of some of the estimates may be accountable by firm-specific factors not controlled for in the model. For example, Fernald and Rogers (2000) found that foreigners pay a lower relative price for companies with a higher proportion owned by the state. Overall, the results suggest that political risk

and market segmentation, which is reflected in the interest rate differential and the market risk premium differential, play a critical role in determining the valuation differential between Class A and B shares.

Panel B of Table 4 reports the firm-specific regression results for the A-H share sample. The major difference from the results for the A-B share sample is that political risk loses its significance in explaining the valuation differential between A-shares and H-shares. Change in HKD/RMB exchange rate is not significant, consistent with the result of change in USD/RMB exchange rate for A-B shares because HKD is pegged to be U.S. dollar. The firm-specific coefficient estimates for interest rate differential and market risk differential are all positive as expected. Both estimates are significant at the conventional level for three out of the four firms. A comparison of the results for the A-H share sample with that for the A-B share sample seems to suggest that in general Hong Kong investors are less susceptible to the political risk of China than international investors in making their investment decisions. Rather, they are more concerned with the firm-specific characteristics of Chinese listed companies. These results are explainable by the listing of H-shares on the Hong Kong Stock Exchange, which provides a convenient venue for Hong Kong investors to take arbitraging opportunities between H-shares and local shares, an advantage not available to investors in B-shares. The compliance with Hong Kong listing rules by Chinese companies issuing H-shares may further increase Hong Kong investors' confidence in trading H-shares. In summany, all these factors contribute to the significant difference in the risk tolerance between H-shareholders and B-shareholders. Hong Kong investors require a lower rate of return for the country risk related to the Chinese stock market because of the increasing integration underlying the Chinese and Hong Kong markets under "one country and two systems".[5]

5. Conclusion

China's effort to stimulate the effect of privatization while retaining public ownership in listed companies is an interesting experiment. The government imposes strict segmentation on the stock market to prevent foreign and Hong Kong investors from acquiring controlling interest in Chinese listed companies, resulting in a significant valuation differential between Class A, B and H shares. This paper develops an estimation model to decompose the

[5]We also use quarterly average prices to run the regressions, and the results are the same in terms of the signs and significance levels of the coefficient estimates and explanatory power of the model.

valuation differential into components attributable to the effects of political risk, exchange rate risk, interest rate risk and market risk. Empirical tests show a significant difference between the Hong Kong and international investors' attitudes toward the political risk of China. While the higher rate of return on B-shares required by international investors reflects their concern with the country — specific risk in the Chinese stock market, the valuation differential between A-shares and H-shares is more related to firm-specific risk and market risk premium differentials.

The Chinese government has recently taken two steps to boost the B-share and H-share market. The first measure is to improve the corporate governance of listed companies in order to increase investors' confidence.[6] The success of emerging markets such as China, to a great degree, depends on the effectiveness with which their corporate governance systems can protect investors' interests. The second measure is to open up the B-share market to Chinese domestic investors who possess foreign currencies for trading, as effective from February 2001.[7] These measures are likely to reduce, but still not totally eliminate, the valuation differential between Class A and B shares. The valuation differential between Class A, B and H shares will continue to exist so long as different categories of investors have different required rates of returns, based on their investment opportunities and risk tolerance. In particular, the different country risk factors impacting the valuation differential between Class A and H shares as compared to that between Class A and B shares reflect the unique position of Hong Kong investors under "one country two systems".

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[6]The Chinese Securities Regulatory Commission has appointed a former deputy chairman of Hong Kong Securities and Futures Commission to be its deputy chairman to head its market regulation enforcement.

[7]The Chinese Security Regulation Commission has announced that it will not converge A-shares with B-shares in the next five year. Its long-run policy on the two classes of shares will depend on the development of the market.

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