Listing Location Matters! A Tale of Two Betas

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Abstract

The Chinese equity exposure in international indices is dominated by B-shares and shares listed on Hong Kong and U.S. exchanges, rather than stocks listed on the main A-share market. The externally listed firms include many companies without an A-share listing (homeless shares). Using a comprehensive data set on Chinese firm listings, we document that shares listed outside Mainland China have large (small) global (domestic) exposures, while the opposite is true for A and B-shares. While homeless shares are more global than cross-listed shares, the differences relative to cross-listed shares are mostly not statistically significant. These different risk exposures imply differential diversification benefits and costs of capitals, depending on the listing location of Chinese firms. The Chinese gradual liberalization program has not had consistent effects on these risk exposures.

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1. Introduction

The Chinese stock market is the second largest stock market in the world, and Chinese shares dominate the major international emerging market indices such as those of MSCI and FTSE, accounting for over 30% of the total market capitalization. However, while these international indices now include domestic Chinese A-shares, the bulk of their Chinese exposure involves Chinese shares listed outside the main domestic China A-share market. These shares include B-shares in China itself, and Chinese firms listed in Hong Kong and the U.S. These stocks could represent cross-listed A-shares or be "homeless", i.e. Chinese stocks that do not have a domestic A-share listing. In this article, we document stark differences between the local and global risk exposures of domestic A shares and Chinese firms trading elsewhere.

Figure 1 documents our key finding. In Panel A, we show the local and global betas of the various types of Chinese shares, estimated from a time-series regression of monthly excess returns on the A-share and world market excess returns (further details are provided in Section 3). The first two bars regard MSCI's index of Chinese A-shares and the MSCI China index, which represents the Chinese shares in the major emerging market index. Not surprisingly, the former index has a domestic beta close to 1 and a global beta close to zero, whereas the "international" MSCI index has a domestic beta of 0.35 and a global beta of 0.86. Onshore B-shares exhibit A-share market betas exceeding 0.85, with global market betas close to zero. In contrast, Hong Kong- and U.S.-listed Chinese shares show significantly lower A-share market betas, ranging from 0.2 to 0.4, with global market betas close to 1. Thus, investing in Chinese stocks listed outside Mainland China primarily exposes investors to global—not China's—market risks.

Section 3 of this article provides more color on this result, and statistical tests of the differences in these exposures. To do so, we construct a comprehensive dataset on the listing status of Chinese firms by collecting data from multiple sources, which we cross-validate with public disclosures and manual checks. Our results for the Chinese stock market are unique for multiple reasons.

First, the vast literature on cross-listing (Foerster and Karolyi, 1999; Miller, 1999; Errunza

and Miller, 2000; Sarkissian and Schill, 2004; Karolyi, 2006) has shown before that cross-listing is associated with increases in beta with the international market (mostly the U.S. market). However, the magnitude of the difference in beta between domestically and internationally traded stocks in China is much larger than previous studies have shown for other markets. Panel B of Figure 1 documents this fact in a stark fashion by investigating the local and global betas of portfolios of A-shares matched to the cross-listed shares in Panel A (these are the shares of the corresponding firms for the cross-listed firms, and shares of firms matched on industry and total sales for the homeless firms, see Section 2). For all categories of firms, the domestic beta varies between 0.85 and 1.10; the global betas are close to zero or even slightly negative. We verify that such stark differences in exposure are not observed in other emerging markets, such as India, Brazil, and Mexico, whose American Depository Receipts (ADRs) still show large local betas.

Second, Lewis (2017) shows that the (mild) increase in beta observed upon cross-listing on U.S. exchanges mostly just reflects general market integration trends of the underlying domestic markets, becoming more integrated and correlated with global capital markets over time. This is clearly not the case for China, where cross-listed firms are priced differently in the A-share market than they are in the other locations. Mei, Scheinkman and Xiong (2009) study the A-B premiums and Carpenter, Whitelaw and Zou (2020) the A-H premiums but they do not investigate how differential pricing implies very different comovements with domestic and global markets.

Third, the variety of locations where Chinese firms list is unique, relative to the standard cross-listing literature. The domestic A-share market is dominated by Chinese investors and has only very gradually opened up to foreign investment (See Bekaert, Ke, Wang and Zhang, 2025 for more details). The domestic B-share market initially allowed foreign investors access to a subset of Chinese domiciled firms, but since 2001, Chinese investors can invest in this market as well. Hong Kong and U.S. cross-listed shares are the cross-listings typically studied in the literature, comprising stocks that must satisfy the listing requirements of both exchanges in which they list. The homeless firms are special in that their failure to list in the Chinese market may well reflect their failure to satisfy the listing requirements of the Chinese exchanges. Importantly, the stocks

listed outside China are priced by global investors. Thus, the investor bases and listing requirements differ across the different locations. Formal tests reveal that the investor base is the dominant driver of the beta differences. We find no significant differences in exposures between cross-listed and homeless shares, but we do find significant differences between A/B-shares and shares listed outside Mainland China. However, the B-share and A-share risk exposures are not statistically significantly different. Hu, Wang and Zhong (2025) instead study the performance, volatility and risk exposures of Chinese stocks listed in the U.S. and Hong Kong, relative to similar firms in the U.S. and Hong Kong. They find that these firms do load on a "China factor," not present in similar firms in the listing countries. We show that these China exposures are much smaller than the corresponding exposures of similar firms in China.

Of course, the listing decision is not random and differences in firm characteristics may contribute to the differences in risk exposures. There is a small literature examining the economic reasons for the cross-listing of Chinese firms, but no strong consistent conclusions have emerged (see e.g. Hung, Wang, and Zhang, 2012; Busaba, Guo, Sun, and Yu, 2015). We therefore also document in detail how cross-listed firms differ from typical A shares. We find that the Chinese firms listed externally have generally higher book to market ratios, lower returns on equity (ROEs), and a higher percentage of foreign sales. We also use ROE to measure domestic and global cash flow exposure and find the externally listed firms to have more global and less domestic cash flow exposure. While differences in firm fundamental characteristics maybe associated with the listing decision or venue (e.g. Doidge, Karolyi, and Stulz, 2004, 2009; Pagano, Röell. and Zechner, 2002), such firm differences cannot explain the differential beta exposures for the cross-listed firms. Using a panel model with time-varying betas as dependent variables, we confirm that industry composition, firm characteristics and cash flow betas have a minimal economic effect on the global and domestic risk exposures, despite being sometimes statistically significant.

Section 4 examines the profound implications of these beta results for portfolio management and capital budgeting. For global investors investing in China, the most well-known index, the MSCI Emerging market index, has now more than 30% China exposure, but up until a

few years ago, none of that China exposure was comprised of A-shares. Because betas constitute an important component of correlations, the diversification benefits of such "international" Chinese indices are much worse than those of A-shares. We show that a representative global investor would triple its China exposure when A-share correlations would apply or would require a much lower expected return to invest in domestic A-shares than in externally listed shares. Of course, for most of the sample period, the China A-share market is best characterized as segmented from global capital markets, and as the Chinese government continues its gradual liberalization program, betas and expected returns are likely to change. The different risk exposures we observe for the cross-listed shares are evidence of this.

This section also examines another important implication of the different risk exposures: Chinese firms face potentially very different costs of equity capital at home as opposed to internationally. Using the two-factor model we employed in Figure 1, the risk premium for any firm is the product of the local and global risk exposures with the corresponding market risk premiums. Using the risk premium model of Ferreira and Santa Clara (2011), we find the domestic cost of capital to substantially exceed the international cost of capital.

In Section 5, we analyze the time series dynamics of the global and domestic betas of our various Chinese portfolios, differentiated across listing locations. We investigate general time trends and create several indices quantifying the gradual opening of China's capital markets to foreign investors since the early 21st century. These policy changes include, inter alia, the official start of Qualified Foreign Institutional Investor (QFII) scheme, the official start of Shanghai-Hong Kong Connect, the official inclusion of A-share into MSCI indices and other significant policy changes. We also differentiate between regulations affecting capital inflows and outflows. While one might expect that these liberalization policies gradually reduce A-share and increase global market risk exposures, the empirical results are decidedly mixed and weak.

Our study fits first and foremost in the literature on cross-listing (See Karolyi, 1998 for a survey of the early literature), with a special focus on China. Prior research has largely focused on valuation differentials across listing location. Other studies compare return performance across

listing locations, often finding that externally listed shares outperform domestic A-shares (e.g., Allen, Qian, Shan, and Zhu, 2024). Our research instead focuses on systematic risk exposures, while leveraging a more comprehensive dataset than previous studies.

Our study is also related to the literature on international diversification, going back to Levy and Sarnat (1970) for developed and Errunza (1977) for emerging markets. The subsequent literature document the diversification benefits of emerging markets for developed investors (see e.g. Bekaert and Urias, 1996, and De Roon, Nijman and Werker, 2001), but their sample does not include China. More recently, Shan, Tang, Wang, and Zhang (2022) demonstrate that A-shares provide considerable diversification benefits for international investors, which are not offered by H shares. We use a more comprehensive and granular firm-level dataset to examine how the diversification benefits of Chinese equities vary by listing location.

Our study also contributes to the literature documenting the effects of stock market liberalizations on financial globalization on asset return comovements and betas, see Bekaert and Harvey (2000), Baele (2005) and Bekaert, Harvey, Kiguel and Wang (2016). Such studies are mostly country panel studies. The Chinese situation is very special, not only because of the size of the stock market relative to other emerging markets, but also because the Chinese government has introduced financial market openness to foreigners cautiously and gradually, a process that is still ongoing, with several studies focusing on the resulting valuation effects, see Bekaert, Ke, Wang, and Zhang (2025), and Liu, Wang, and Wei (2021). In contrast, we investigate how the opening of China's capital markets through a large set of internationalization policies affects the local and global risk exposures of domestically listed firms and firms listed externally.

Finally, an earlier strand of literature suggests that the trading location may induce country specific sentiment in the trading location to dominate prices (See e.g. Froot and Dabora, 1999). Particularly relevant is Chan, Hameed and Lau (2003) who show that the Jardine Group companies, with core businesses in Hong Kong and Mainland China, started to correlate more strongly with the Singapore market, after de-listing from Hong Kong and moving the trading location to Singapore, essentially becoming "homeless" firms.

2. Domestic and External Listings of Chinese Firms

In Section 2.1, we discuss the data sources. In Section 2.2, we thoroughly examine how stocks in the alternative listing locations differ from A-share stocks, in terms of industry composition, size, book to market, return on equity and cash flow betas.

2.1. Data on Chinese Publicly Listed Firms

The dataset comprises stocks issued by Chinese firms listed on stock exchanges in Mainland China, Hong Kong, and the U.S. from January 2000 to December 2022. We do not consider the limited number of cross-listings on other exchanges, such as Singapore. Following regulatory requirements on overseas listings across the exchanges, we classify a firm as a Chinese firm if it satisfies at least one of the following conditions: 1) it is incorporated in Mainland China; 2) it primarily operates within Mainland China (e.g. more than 50% of total revenues, assets or profits are generated in Mainland China, or being headquartered in China); 3) more than 50% of its outstanding voting shares are held by Chinese entities or individuals; or 4) the majority of its key executives are Chinese nationals.

We create a comprehensive list of Chinese stocks, using integrated and cross-validated information from multiple databases. For Chinese stocks listed on the A and B-share markets, we directly obtain data from WIND and CSMAR. For Chinese stocks listed outside Mainland China, we begin with the lists of China overseas listed companies sourced from CSMAR and WIND. To identify Chinese stocks listed on the Hong Kong Stock Exchange, we also employ Datastream. We further supplement U.S.-listed Chinese stocks with the ADR directory provided by J.P. Morgan.[1] After compiling the initial list, we conduct a thorough verification process to ensure accuracy and completeness. This involves cross-referencing firm information with public disclosures, including official company websites, stock exchange disclosures, and regulatory filings such as IPO prospectuses and annual reports. We also manually check for consistency in firm identity and classification across data sources.

[1] The directory is available at https://adr.com/

We focus on Chinese stocks listed in four distinct locations. A-shares represent stocks listed on the Shanghai and Shenzhen stock exchanges, encompassing the main board, STAR market, and GEM (ChiNext) board. These shares trade in RMB and were historically only available to Chinese investors. However, since the mid-2000s China embarked on a gradual liberalization process making (a sub-set of) A-shares available to foreign investors (See Bekaert, Ke, Wang and Zhang, 2025 for a detailed description). B-shares are defined as those B-shares stocks listed on the Shanghai and Shenzhen exchanges. They are traded in U.S. dollars in Shanghai and in Hong Kong dollars in Shenzhen, and were only accessible to foreign investors until February 2001. Hong Kong-listed shares pertain to stocks issued by Chinese firms on the Hong Kong Stock Exchange, while U.S.-listed shares encompass those issued by Chinese firms on major U.S. exchanges, including NYSE, AMEX, and NASDAQ. Additionally, for each listing location, we categorize stocks as "cross-listed" if the issuing firm is also listed in the A-share market; otherwise, they are classified as "homeless". In total, we have seven categories: A, B Crosslist, B Homeless, HK Crosslist, HK Homeless, U.S. Crosslist, and U.S. Homeless. Firms with multiple listings may fall into more than one category, and the classification of their stocks may change over time as listing status evolves. Importantly, for much of our sample period, the China exposure in the major emerging market indices was restricted to externally listed Chinese firms.[2]

Return and accounting data for A and B shares are sourced from the China Securities Market and Accounting Research (CSMAR) database. For U.S.-listed shares, return data are obtained from the Center for Research in Security Prices (CRSP), while accounting data are sourced from Compustat. For shares listed in Hong Kong, return data are obtained from Datastream, and accounting data are taken from Worldscope. Because our main perspective is that of U.S and

[2] The MSCI index started to include A shares only in 2018, and FTSE in 2019. The MSCI China Index includes large and mid-cap stocks across A shares, H shares, B shares, Red chips, P chips, and foreign listings (e.g., ADRs). B shares are incorporated in China, and trade on the Shanghai and Shenzhen exchanges; they are quoted in USD and HKD and are open to foreign investors. H shares are incorporated in China and trade on the Hong Kong exchange. Red chips and P chips are Chinese companies incorporated outside of China and trade on the Hong Kong exchange. Red chips are usually state-owned and P chips are non state-owned. As of the end of 2024, A shares are only included in the MSCI index with an inclusion factor of 20%, i.e. they are represented at 20% of their free float adjusted market capitalization.

global investors accessing Chinese stock markets, all data are denominated in U.S. dollars (USD). During our sample period, the RMB was either pegged relative to the dollar or floated in a narrow band relative to a basket of world currencies, limiting the effect of currency movements. We impose the following data filters: 1) for A and B shares: observations within six months post-initial public offering (IPO) are excluded; 2) firm-month market values below RMB 10 million are removed; 3) firm-month returns exceeding 500% are removed.

Another special feature of Chinese firms cross-listing is that quite a few very large firms list in over-the-counter markets (OTC) in the U.S., with the listings often unsponsored. Most studies on ADRs exclude such OTC cross-listings (see e.g. Karolyi, 2006) and there are good reasons for doing so. Index providers, for example, only include Chinese firms listed on major exchanges (the U.S. and Hong Kong) and B-shares, excluding these OTC stocks. Yet, for China, these OTC stocks represent very large and well-known companies such as Tencent and China Construction Bank. In fact, they are on average larger than Chinese stocks listed on major exchanges. We therefore also collect return data on Chinese stocks listed OTC in the U.S. from Datastream and verify whether our empirical results continue to hold when incorporating them.

2.2. A-Share Firms versus B-shares and Externally Listed Firms

The listing decision is not random and there is a large literature on why firms cross-list (see Blass and Yafeh, 2001; Karolyi, 1998; Pagano, Roell and Zechner, 2002). The reasons mentioned include raising capital in deeper financial markets, broadening the shareholder base, a commitment to better disclosure and corporate governance standards, improving trading liquidity, capitalizing on product market reputation, delivering a quality signal etc. Many of these reasons serve to lower the cost of capital for cross-listing firms, a benefit which can offset the actual costs of cross-listing. Of course, the bulk of the literature focusses on stocks, mostly from developed countries, listing on U.S. or European stock exchanges and the China situation may be quite unique. The extant literature has not delivered strong, consistent results. The majority of the papers confirm standard listing motivations, such as access to better corporate governance, a larger shareholder base, external capital, etc. (see e.g. Zhang and King, 2010). Hung, Wang and Zhang (2012) focus on

external visibility for managers of state-owned enterprises, and Busaba, Guo, Sun and Yun (2015) on enhanced visibility for the firm preceding a domestic listing. In any case, it is plausible that cross-listing firms may be quite different from "typical" A-share firms.

Firm Characteristics

Table 1, Panel A summarizes some average firm characteristics, across the listing locations, while reporting the average number of firms in the first column. In addition, we report two size variables (market cap and total sales), the percentage of sales that is foreign and the book to market ratio (BM) and return on Equity (ROE). For each firm in each quarter, we calculate the return on equity (ROE) as the trailing 4-quarter net income divided by common equity at the beginning of the period. We remove firm-quarter ROEs with non-positive book value of common equity or ROEs below -100%. The return on equity has similar units to actual financial returns.

Focusing first on Column 1, among the various listing locations, the A-share market hosts the largest number of Chinese firms, averaging 2,042 observations. Among externally listed stocks, the largest group is Hong Kong homeless stocks, averaging 583 firms, while U.S. cross-listed stocks form the smallest group, with an average of 6 firms. The averages hide important temporal changes. The number of firms on the A-share market has steadily risen over time, from less than 1,000 stocks in 2000 to exceeding 4,500 stocks in 2022. There are about 80 cross-listed B-shares, with the number varying little over time, whereas the number of homeless B shares has slowly decreased from over 25 to less than 15 in 2022. The number of Hong Kong cross-listed firms has steadily increased from around 20 in 2000 to 145 in 2022. The growth in the number of Hong Kong homeless firms was even more dramatic from 113 firms in 2000 to close to 1200 firms in 2022. There are very few U.S. cross-listed firms, but the number of U.S. homeless firms has increased from 12 in 2000 to 228 in 2022.

The remaining firm characteristics we report in Table 1 may also depend on listing requirements, which vary across stock exchanges in China and abroad. The A-share market maintains relatively stringent standards, historically requiring firms to meet multiple criteria simultaneously, including positive cumulative earnings and operating cash flow (or revenue) over

the past three years, along with a minimum pre-IPO capital threshold. In contrast, exchanges in Hong Kong and the U.S. allow firms to qualify by meeting one of several alternative standards based on profitability, revenue, market capitalization, or cash flow. This flexibility lowers entry barriers for high-growth or asset-light firms, particularly those not yet consistently profitable.

We report two size variables, market value and sales. Because the market values are affected by the differential pricing of stocks in the different locations, sales may be a better indicator of the actual size of the various companies. Average sales are smallest for the B-Share companies, but the externally listed firms, both in the U.S. and Hong Kong, are on average larger than the A-share companies overall. In terms of book to market ratios, the firms listed outside the A-share market all have larger BM ratios than the average A-share firm. This is somewhat surprising as it is typically thought that externally listed firms often tend to be "growth firms." Of course, the well-documented price premiums earned by A-shares relative to outside shares (see Mei, Scheinkman and Xiong, 2009; Carpenter, Whitelaw, and Zou, 2020) downwardly bias the A-share book-to-market ratios. Online Appendices Table OA1, Panel A and Panel B show that the discrepancies persist when taking size weighted averages, except for U.S. homeless shares which now have the lowest BM ratios. The ROEs of homeless firms tend to be, on average, lower than that of A-share firms, but Hong Kong cross-listed firms have the highest ROEs of all groups. These ROE differences may be linked to the listing requirements imposed for the A-share market, as they involve restrictions on profitability.

Finally, we report the percentage of sales that is foreign. Pagano, Röell, and Zechner (2002) suggest firms with a greater global presence are more inclined to pursue overseas listings and these firms may be more sensitive to global economic conditions. Overall, the firms listed outside Mainland China do appear to have a higher percentage of foreign sales, exceeding 11% for every group except for B cross-listed and U.S. homeless firms, which haver foreign sales percentages in the 9.5%-10% range, in line with A share firms on average.

Externally listed firms may also differ in terms of industry composition. Figure 2 lists the two top industries in terms of relative market capitalization for each group, with the relative market

capitalization averaged over the sample period. For the overall A-share market, the two top industries are the "Banks" and "Oil, Gas and Coal" industries, representing 10% to 11% of total market capitalization (but the share of banks has increased considerably over the last decade). These two industries are very dominant for the Hong Kong cross-listed firms, comprising more than 75% of total market capitalization. The "Oil, Gas and Coal" industry is also an important industry among B-share and Hong Kong homeless shares. The numbers for U.S. cross-listed firms are hard to interpret as there are so few firms, but the pharmaceutical and electricity firms dominate. Among U.S. homeless firms, software firms dominate in numbers but not in terms of relative market capitalization, with the dominant industry being "Telecom Service Providers."[3] We also reject statistically that the relative industry composition of the A-share market equals that of the firms listed outside the A-share market. To do so, for each quarter, we find the top 5 industries in terms of relative market capitalization in the A-share market and take the average absolute deviation of their market share relative to their corresponding relative market shares for the various alternative listings. The average differences vary between 6% for Hong Kong homeless firms and 11% for U.S. homeless firms, with all these differences highly statistically significantly different from zero. These results are reported in the Online Appendix. Clearly, if we want to find firms in the A share market similar to firms with alternative listings, we must control for industry structure.

Given these observations, we can now more formally test whether the firms listed outside the A-share market are different from typical A-share firms. Note that for the externally listed firms, including cross-listed firms, the goal here is to compare them with firms listed in the A-share market that chose not to list. For each externally listed firm in each year, we match it with an A-share firm in the same industry (Datastream level 4) and closest in total sales, excluding all A-share firms with cross listings from the matching pool. For the size variables (market capitalization and sales), we instead only adjust for the industry composition, computing the size of an industry basket equal to that of the stocks in the alternative listing set.

[3] Major Chinese telecom service providers—China Mobile, China Telecom, and China Unicom—were previously listed on the NYSE as homeless firms. However, in 2021, they delisted from the NYSE following an earlier executive order barring U.S. investment in companies deemed affiliated with China's military.

The results are reported in Panel B of Table 1. Focusing first on the size of firms listed in alternative locations, we find that B-shares are significantly smaller than comparable A-shares, with the exception B-cross listed shares in terms of sales, which on average have about $246 million higher sales, with the difference significant. We observe the exact same phenomenon for the shares listed in Hong Kong. As already indicated, the few stocks cross-listing in the U.S. are very large and significantly larger than comparable A-shares, both in terms of market capitalization and sales. This is also true for U.S. homeless firms, but for sales the difference is insignificant. With proper matching, the alternative listing firms feature higher foreign sales percentages than the corresponding A-shares, with the differences statistically significant except for cross-listed B-shares and U.S. homeless shares. Similar, the book to market ratios of the alternative listings are invariably larger than those of similar A-share firms and these differences are always statistically significant. In contrast, the ROEs of firms listed in alternative locations are always smaller than those of the matched A-share firms, except for Hong Kong homeless firms where they are very similar. The differences are otherwise mostly significant, with the exception of U.S. homeless firms.

In sum, we are finding that the industry mix of cross-listed firms is quite different than the A-share market, but the mix differs across listing locations. Moreover, cross-listed firms have higher foreign sales, a value slant and lower ROEs than similar A-share firms. In terms of size, there is no uniform size bias, as it depends very much on listing location.

Cash Flow Exposures

The last property we compare is the cash flow exposure of the various firms, depending on listing location. While we already verified foreign sales, a firm's cash flows may depend on foreign links in a much more complicated fashion. We therefore directly measure the cash flow betas of the externally listed stocks and compare them with those of (comparable) A-shares.

Specifically, for each listing location, we regress its overall market ROE on the A-share market and world market ROEs and obtain the betas (using the full sample period):

$$ROE_{l,t} = \alpha_l^{ROE} + \beta_l^{G,ROE} ROE_t^G + \beta_l^{A,ROE} ROE_t^A + \varepsilon_{l,t}^{ROE} \quad (1)$$

where $ROE_{l,t}$ is the aggregate trailing 4-quarter net income, calculated by summing the firm-level

net incomes, and then dividing by the sum of the book values in listing location l and quarter t. Negative net incomes are treated as zero before aggregation. ROE_t^G is the world market ROE for the Datastream World Market Index (TOTMKWD), and ROE_t^A is the ROE for the A-share market. The standard errors for the betas are heteroskedasticity-consistent with 6 Newey -West (1987) lags. We perform the same exercise for portfolios of A-shares matched on industry and sales. Importantly, for the cross-listed shares, as before, we also find a matching A-share firm, which has not cross-listed. We aim to document the cash flow exposures of firms listing in alternative locations versus firms in the A-share market.

We report the results in Table 2. Panel A focusses on the cross-listed sample, Panel B on the homeless shares sample. We first focus on the alternative location samples in Columns I through III. The global cash flow beta for the B cross-listed shares low at 0.28 and it is 0.39 for the B-listed homeless shares. Clearly, stocks listed on the B-market do not show large global cash flow exposure. The B-share firms do feature substantial domestic cash flow betas, registering a 0.48 (respectively 1.31) cash flow beta with respect to the A-share market for cross-listed (respectively homeless) firms. The global betas for shares listed outside Mainland China are typically somewhat larger, varying between 0.30 for Hong Kong cross-listed shares and 0.59 for Hong Kong homeless shares. Analogously, their A-share ROE betas are typically lower, being only 0.12 for US homeless shares and 0.30 for U.S. cross-listed shares. The exception are Hong Kong cross-listed shares which feature a 1.01 ROE beta with respect to the domestic ROE. For the B-share market and Hong Kong cross-listed shares the A share ROE betas are significantly larger than the global ROE betas, but the global ROE beta dominance is not statistically significant for the other externally listing groups. Still, one conclusion is that, with a few exceptions, even at the cash flow level, the exposure of the internationally available shares to the Chinese market and economy seems somewhat limited.

The second group of results in both Panels A and B (Columns IV-VI), report the A-share and global betas of portfolios of A-shares matched to the cross-listed and homeless shares. The main takeaway of these estimates is that for the matched A-share firms, the global ROE betas are

invariably quite low (at most 0.2 for B-Homeless shares) and often even negative. In contrast, the domestic cash flow betas are much higher, varying between 0.33 for firms matching U.S. Homeless shares and 1.52 for Hong Kong cross-listed shares. Importantly, the global exposures are invariably lower than the A-market exposures and these differences are mostly statistically significant, the exceptions being U.S. cross-listed shares and B homeless shares. Columns VII-VIII of Table 2 provides Wald tests of the difference between the betas for the matched versus the original sample. Global betas are invariably smaller with the differences statistically significant in half the cases. The ROE betas with respect to the A-share market are larger in all cases except for the B- homeless shares, but they are only significantly larger for the cross listed B-shares. We conclude that in terms of cash flow exposure, externally listed firms generally feature higher global exposure and mostly rather modest A-share exposure relative to comparable domestic A-share firms.

3. A Tale of Two Betas

Section 3.1 further explains and examines our key results in Figure 1. In Section 3.2, we compare the Chinese results with results for domestic and cross-listed Brazilian, Indian and Mexican firms. Finally, Section 3.3 considers a panel model for the (time-varying) risk exposures.

3.1. Risk Exposures Characterizing Various Channels for Investing in China

In Table 3, we re-organize the main findings of Figure 1 and provide statistical tests. For each category l, representing a particular listing category, we estimate its A-share beta β_l^A and global beta β_l^G from a simple two factor model:

$$EXRET_{l,t} = \alpha_l + \beta_l^G MKT_t^G + \beta_l^A MKT_t^A + \varepsilon_{l,t} \quad (2)$$

where $EXRET_{l,t}$ is the value-weighted monthly excess returns of all stocks in category l (using the one-month U.S. Treasury bill rate as the risk-free rate), MKT_t^G is the monthly excess return for the Datastream World Market Index (TOTMKWD), MKT_t^A is the monthly A-share market excess return. Analogous models are popular in international asset pricing to reflect a partially segmented world in which both local and global factors affect returns (see e.g. Bekaert, Hodrick and Zhang, 2009; Bekaert, Ehrmann, Fratzscher and Mehl, 2014). Karolyi (1998) applies a similar model to trace out the cost of capital implications of ADR listings.

Panel A of Table 3 reports global and A-share betas results for the MSCI China index and the MSCI China A index. Not surprisingly, the MSCI China A index has an A share beta that effectively equals 1.0, while its world beta is 0.003 and insignificantly different from zero. However, the main international China index is the MSCI China Index, not the A share index. Until June 2018, no A shares were represented in that index, and they remain a small part of this index, now accounting for about 15% of total market capitalization. For this index, the global beta is 0.859, which far exceeds its beta with respect to the A share market at 0.354. For both indices, the difference between global and A share betas are highly statistically significant. Note that all standard errors, reported in parentheses, are heteroskedasticity-consistent, adjusted for serial correlation using 6 Newey-West (1987) lags.

Columns I-III of Panels B and C report the same statistics for the three cross-listed and the three homeless categories, respectively, with the third column again showing the difference between the global and A share betas, providing a Wald test of equality between the two betas. B-shares exhibit substantially larger betas with respect to the A-share market factor compared to the global market factor, with the difference in the 0.8-0.9 range. In contrast, Chinese firms listed in Hong Kong and the U.S. display significantly higher global betas compared to their A-share betas, with the effect being more pronounced for U.S. cross-listed and U.S. homeless firms. These differences are smaller, in the 0.30-0.65 range. The differences between A-share and global betas are statistically significant across all listing locations.

The next three columns in Panels B and C (Columns IV-VI), provide the same information but for the matched A-share portfolios. For cross-listed firms, we simply use their A-share returns; for homeless shares, as before, the match uses industry classification and sales. The final two columns test the equality of the A-share and global betas, respectively, between the original and matched domestic shares. For both cross-listed (Panel B) and homeless firms (Panel C), the global betas are now negative in 5 out of 6 cases, and the A-share beta is close to 1. The exception is the portfolio matching Hong Kong cross-listed shares, where the global beta is 0.114 and the A-share beta is 0.871. In all 6 cases, the difference between the two betas is highly significantly different

from zero. Comparing the betas of the original alternative listing location portfolios with the matched A-share portfolios, they are statistically significantly different from one another for both global and A-share betas for the listing locations outside Mainland China but not for the B-listed shares.

To further clarify our findings, in Panel D, we re-organize the portfolios in homeless and cross-listed external securities, with one version including the B-shares, another version excluding these shares, as they are still listed on a Mainland China market. Again, we report the betas from the original externally listed firms and the matched A shares, with tests for their differences reported in Columns VII and VIII. The lines in between the various sets of externally listed portfolios report a test of the equality of the corresponding beta in the column between cross-listed and homeless shares in the first two blocks of results and between B-shares and shares listed outside Mainland China for the next two blocks. The former characterizes differences between firms in the same alternative listing location (thus, with the same investor base) but potentially having very different firm characteristics given the listing requirements in the A-share market. The latter pits shares with a mixed Chinese/foreign investor base against firms priced by a global investor base.

First, focusing on the first two blocks and Columns I-III, for all groups A-share betas are smaller than global betas. This gap between A-share and global betas is substantially larger for homeless firms. For example, for Cross-Listed Overall, the A-share beta is 0.456, 0.176 lower than the global beta. In contrast, Homeless Overall has a lower A-share beta of 0.315 and a higher global beta of 0.858, yielding a beta gap of 0.543. These beta differences are statistically insignificant for "Cross-Listed Overall" but highly statistically significant for the homeless firms. This insignificance is driven by the inclusion of B-shares in the first group. Recall that for most of our sample period, B-shares are accessible to mainland Chinese investors, differentiating their investor base from the other externally listed shares. Excluding the B-shares in the second block, global betas exceed A-share betas significantly for both cross-listed and homeless shares.

The differences with the matched A-share firms (see Columns VII and VIII) remain stark

and statistically significant, no matter whether the B-shares are included or excluded. For example, for the cross-listed shares outside Mainland China, their A share beta is 0.397, which is 0.317 lower than their global beta with the difference statistically significant. In contrast, the A share beta of the matched sample is 0.873, whereas its global beta is only 0.108, with the difference between the two highly statistically significant. Comparing the original with the matched sample, the A share market risk exposure of the matched sample is 0.476 higher than that of the original sample, whereas the global beta of the matched sample is 0.605 lower. The beta differences are all highly statistically significantly different from zero. The local/global beta discrepancies and differences with the matched sample are more extreme for homeless shares, yet, the difference in A share and global betas between externally cross-listed and homeless stocks are economically small and statistically insignificant. The last two blocks show the fundamental difference between B-shares and the shares listed outside Mainland China. B-shares continue to have significantly larger A-share betas and significantly smaller global betas, but show no significantly different risk exposures relative to matched A-shares. Listing outside Mainland China is associated with the factor exposures flipping from dominant A share China exposure to dominant global exposure. Notably, this discrepancy is more pronounced for homeless firms, which are only listed abroad, compared to cross-listed firms, which have both domestic and foreign listings.

Given that some large Chinese firms are traded on the U.S. OTC market, we also examine this market in Panel E. In Columns I–III, we find that for both cross-listed and homeless firms listed in the U.S. OTC market, the global and A-share betas are between 0.45 and 0.60, with the difference between them being small and statistically insignificant. Columns IV–VI present results for the matched A-share portfolio. The global betas are close to zero, while the A-share betas are approximately one. The differences between the global and A-share betas are large and highly statistically significant. Consistent with our previous findings, the matched portfolio exhibits substantially lower global betas (by about 0.35 to 0.58) and higher A-share betas (by around 0.4) relative to the original sample. These differences are statistically significant, except for the A-share beta of U.S. homeless firms.

The findings above reveal "a tale of two betas", highlighting the importance of listing locations in shaping risk exposures. Chinses firms listing outside Mainland China feature high global betas and much smaller A-share betas.[4] In contrast, Chinese shares listed onshore, such as B-shares, exhibit significantly larger A-share betas compared to global betas. These findings depart from earlier studies, which largely examine U.S. cross-listings and report modest changes in market betas. The predominant finding is that the betas of cross-listing firms increase with respect to the host market (the U.S). and either decrease or are unchanged versus the home market (e.g., Foerster and Karolyi, 1999, Miller, 1999, Errunza and Miller, 2000, Sarkissian and Schill, 2004). For instance, Karolyi (1998) documents a 0.1 decline in the beta with respect to the home market and mixed effects for U.S. beta. Lewis (2017) confirms these findings but shows that most of the increase in the betas with respect to the U.S. market is due to the general increased market integration of the home market in general. However, for China, we still observe actual segmented pricing for the various listing locations, which was not applicable to previous studies who mostly focused on listings from developed markets, or from emerging markets after they had undergone a comprehensive liberalization process. Still, it is important to verify that the Chinese "tale of two betas" is unique and does not pertain to other major emerging markets.

3.2. Other Emerging Markets

To investigate whether the prominent differences between the local and global risk exposures of domestic A shares and Chinese firms trading elsewhere is unique to China, we extend our analysis to three other major emerging markets: India, Brazil, and Mexico. We replicate the methodology outlined in Section 3.1 for S&P Dow Jones indices of American Depository Receipts (ADRs) for India, Brazil, and Mexico, sourced from Datastream.[5] We re-estimate Equation (2) by replacing $EXRET_{l,t}$ with the monthly excess return of the ADR index and substituting MKT_t^A

4 Still, they do have positive exposure to the A-share market, consistent with the finding in Hu, Wang and Zhong (2025) that "China Concept stocks" (that is, Chinese stocks listed outside Mainland China) feature a China factor absent in similar U.S. or Hong Kong stocks.

5 As of the end of 2023, the Brazilian ADR index comprises 28 constituents, the Indian ADR index consists of 6 constituents, and the Mexican ADR index includes 11 constituents.

with the monthly excess returns of the respective local market index from Datastream.[6] Our data start in 2000 and end in 2022. In the panel on the left of Table 4, we use returns denominated in USD. We repeat the results for Chinese firms listed in the U.S. as comparison. Column II shows that the home betas vary between 0.684 for India and 0.903 for Brazil. The global betas reported in Column I are (much) smaller, varying between 0.175 for Brazil and 0.567 for India. As a result, we reject equality for Brazil and Mexico, but not for India (see Column III). Importantly, home betas remain larger than global betas unlike what we observe for the Chinese firms.

In the panel on the right (Columns IV-VI), we report results in local currency. The currency denomination does not matter much for China, because the RMB has been part of a strictly managed exchange rate regime for most of our sample period and shows little variation. However, this is not the case for Brazil and Mexico, and to a lesser extent for India, whose currencies show much more variation and tend to be positively correlated with equity markets (see e.g. Bekaert and Sokolovski, 2025). Therefore, results expressed in local currency and dollars may well differ, potentially substantially. However, this is not the case and home betas for the ADRs continue to exceed their global betas, with the differences even slightly larger.

3.3. A Panel Model on Return Betas

This purpose of this section is twofold. First, we revisit the key results regarding the location dependence of global and A-share risk exposures in a panel setting containing all firm specific observations across all markets, with the A-share market as the benchmark. Second, we investigate how much of the location differences can be soaked up by differences in industry exposures, firm characteristics and cash flow betas. Of course, for cross-listed firms (one firm with two listings), we know that the exposure differences are largely driven by the differential pricing of the same stocks by two different investor bases (but the regression can still quantity differences associated with the listing decision, which we documented in Section 2.1). For homeless firms, the regression quantifies how much of the actual exposure differences between A-share and externally

[6] Importantly, these indices feature many purely domestic firms, encompassing a larger number of stocks compared to the ADR indices. Currently, the Brazilian index comprises 100 constituents, the Indian index includes 200 constituents, and the Mexican index consists of 36 constituents.

listed firms is driven by these features, as opposed to differential pricing. Our matched A-share analysis in Table 3 also reveals that the main reason for the different exposures is the differential pricing of Chinese stocks across different listing locations (different discount rates).

Methodology

Our main results in Figure 1 and Table 2 use portfolios and unconditional statistics. In this section, we use a panel model on individual stocks to examine the determinants of domestic and global betas. For each firm i at the end of each quarter q, we calculate its A-share (global) return beta $\beta_{i,q}^{A}(\beta_{i,q}^{G})$ from the global-local model in Equation (2), using monthly returns over a 60-month rolling window. We then estimate a firm-quarter panel model with these betas as the dependent variables to align with the availability of accounting variables:

$$\beta_{i,q}^{A}(\beta_{i,q}^{G}) = a + b' LocationDummies_i + c' X_{i,q} + industry\ dummies + \varepsilon_{i,q} \qquad (3)$$

For each listing location, we create a dummy that equals 1 if the firm is listed in that location, and we include six location dummies to represent cross-listed and homeless B, Hong Kong, and U.S. shares. The vector X represents a variety of firm characteristics that we considered before as potentially affecting listing decisions. The first category is firm size, which we capture using both market value and total sales (in USD millions), and we take the natural logarithm of both variables, denoted as $LogMV$ and $LogSales$. The second category includes profitability and style. We use the return on equity, ROE, calculated as trailing 4-quarter net income dividend by the beginning-of-period book value, as a proxy for profitability. The book-to-market ratio, BM, defined as book value divided by market value, characterizes firms as value or growth firms. Firms with low book to market ratios may have high growth opportunities.

The third category aims to measure the domestic versus global cash flow exposure of each firm. A first indicator is the proportion of foreign sales, $\%Foreign\ Sales$, calculated as the percentage of foreign sales divided by total sales (in %). A potentially more comprehensive measure includes the A-share ROE beta and global ROE beta we computed in Section 2.1. To create a panel, we regress quarterly ROEs on A-share and world market ROEs over the previous 5 years. In this case, these betas are identical for firms listed on multiple markets. All continuous

variables are winsorized at the 1% and 99% levels. To facilitate comparability and interpretation, we standardize the firm characteristics outlined above across the entire sample.

We consider specifications with and without industry dummies. We compute t-statistics using Driscoll and Kraay (1998) standard errors with 20 lags to account for the overlap in the return beta estimation. This standard error correction method extends Newey-West-style autocorrelation-robust standard errors to panel data settings and is robust to both cross-sectional and serial dependence.

Empirical Results

Columns I through III of Table 5 show the results for global betas. It is important to note that the constant in the regression approximates the global beta for an average A-share firm, which is around -0.19. In Column I, we only include the location dummies and no other independent variables. The location dummies therefore provide an equally weighted panel alternative to our previous results regarding global betas (see Figure 1 and Table 3). To compare their values with the numbers in Table 3, note that the benchmark A-share global beta (of -0.196) must be added. The resulting global betas are clearly of about the same magnitude as our unconditional, value-weighted results. The location dummies are all highly statistically significantly different from zero and thus significantly different from the benchmark A-share beta.

In Column II, we add industry dummies. Introducing these dummies does not meaningfully change the global betas for the different locations. The largest effect is a 0.1 drop for U.S. cross-listed firms. The Online Appendix reports the estimated industry dummy coefficients. The industries with the highest global betas are Alternative Energy and Oil, Gas and Coal; the industries with the lowest global betas are Tobacco and Consumer Services.

In Column III, we add firm characteristics. Market value and total sales have statistically significant but economically modest effects on global return betas: a one standard deviation increase in $LogMV$ and $LogSales$ raises global betas by only 0.06 and 0.05, respectively. A one standard deviation increase in ROE raises global betas significantly but by a small magnitude of 0.02. Both BM and % of foreign sales show positive coefficients with the magnitudes also

economically tiny. Finally, the ROE betas are statistically significant and positive. This is even true for the A-share ROE beta. However, the economic magnitude of these coefficients is tiny. In terms of the location dummies, once we control for firm characteristics, the benchmark A-share global beta decrease slightly by 0.02 to -0.229. The location dummies for the homeless shares all increase in value, suggesting that they have relatively low size and ROE characteristics, which are associated with relatively high global exposure. The same is true for B share cross-listed securities. For the cross-listed firms in Hong Kong and the U.S., we do find lower global betas, once we control for firm characteristics, but the effects are modest, in the 0.1 to 0.15 range. The final rows present a test for the equality of coefficients between the homeless and cross-listed dummies, consistently revealing that cross-listed shares generally exhibit lower global betas than homeless shares, with the effects statistically significant for Columns II and III. Thus, the panel model has more econometric power to detect differences between homeless and cross-listed shares than did our portfolio analysis of Table 3.

Columns IV-VI of Table 5 present the results for A-share betas. Again, the constant in the regression represents the domestic beta for an average A-share firm and is slightly above 1 in all specifications. The firms listed on the B-market have domestic betas around 0.18-0.25 lower than the typical Chinese firm, with the difference statistically significant. Again, the panel model proves more powerful than the portfolio approach of Table 3. For the Hong Kong listed firms, the dummy coefficients are about -0.57 for the cross-listed, -0.74 for the homeless firms. These numbers are even lower for the U.S. listed firms, at about -0.75 for cross-listed firms, -0.94 for homeless firms. All these dummy coefficients are highly statistically significant. Including industry dummies does not meaningfully change the location dummy coefficients. Not surprisingly, the firm characteristics have mostly the opposite effect on domestic betas than they have on global betas. For example, large and high ROE firms have lower A-share betas. However, again the effects are economically tiny. Adding the firm characteristics does lower the A-share betas of all cross-listed securities, but the effects remain small (in the 0.04-0.06 range), whereas the effects on homeless firms are even smaller. The final row indicates that cross-listed shares tend to have significantly

higher A-share betas than homeless shares, suggesting that they remain more closely tied to domestic market dynamics. Overall, homeless firms appear more integrated into global capital markets than cross-listed firms, with higher global and lower A-share betas.

We conclude that a firm panel model confirms our unconditional portfolio results, even when allowing for time-variation in A share and global betas. Controlling for industry structure, firm characteristics and cash flow betas seems economically not important. The alternative econometric approach does yield significant results where the portfolio approach failed to do so, that is, we now find homeless (B-shares) shares to be significantly more global than cross-listed shares (A-shares). One potential reason for these more powerful results is that the panel model implicitly equally weights individual firms, whereas the portfolio approach is value-weighted.

4. Asset Management and Cost of Capital Implication

The very different risk exposures of domestic and international Chinese firms have important implications for global asset management and the investment decisions of Chinese firms. We first discuss the implications for global investors investing in China, then focus on the cost of capital implications.

4.1. Asset Management Implications

The Chinese equity investments of most global investors are highly correlated with whatever Chinese exposure the main index vendors provide. The most well-known index, the MSCI Emerging market index, has now more than 30% China exposure, but up until a few years ago, none of that China exposure was comprised of A-shares. Because betas constitute an important component of correlations, the diversification benefits of international China indices are worse than those of A-share investments. While the availability of A-share investments has increased over the last decade, it is important to trace out the practical investment implications of primarily investing in externally listed Chinses shares versus A-shares.

To illustrate the implications of these differences in correlations, we provide a number of back-of-the-envelope calculations using unconditional statistics in a mean-variance framework. To set the stage, consider Panel A of Table 6, which reviews some basic return, volatility and

correlation properties of the global portfolio, the A-share portfolio and the portfolio of externally listed Chinese shares. In the latter, we also include the B-shares, but their presence does not substantially alter these fundamental portfolio properties. Note that historically Chinese shares have outperformed the global portfolio over our sample period, with the A-share market outperforming externally listed shares by about 0.9% per year.[7] The two Chinese portfolios are also similar in terms of volatility (around 27%, annualized). However, they of course differ considerably in terms of their correlation properties with the global market, with the A-share market only showing a 0.372 correlation, the externally listed portfolio a 0.636 correlation.

As is well known, optimal mean-variance portfolios are very sensitive to expected return assumptions, prompting us to not rely on noisy historical average returns for any of our computations. First, we derive the additional allocation global investors would allocate to Chinese equity shares if the correlations would reflect those of the A-share market rather than those of the global shares. To do so, we use a simple mean variance framework, assuming a global investor with risk aversion equal to 1.88 who invests in the global stock market and Chinese stocks.[8] For the current global equilibrium, we assume that the Chinese market comprises 5% of total world market capitalization (this fraction varies over time, but a 33% allocation to China in emerging market indices, combined with a 15% share of emerging markets in the world equity market delivers a number close to 5%). This represents the international investable part of the Chinese market. Using the unconditional correlations and volatilities reported in Panel A of Table 6 for the global market and the externally listed Chinese shares, we can reverse engineer the risk premiums consistent with the 95%-5% market holdings, using the formula:

$$\mu = \gamma \Sigma w, \tag{4}$$

where γ is risk aversion, Σ the variance covariance matrix and w the equilibrium asset holdings. We find that $\mu = [4.90\%, 5.78\%]'$, that is the equilibrium risk premium is lower for

[7] These results appear inconsistent with the results in Allen, Qian, Shan and Zhu (2024), who claim that externally listed shares outperform A-shares in their sample (which is slightly different from ours). This extreme sensitivity of average returns to sample period prompts us to avoid using historical averages in our analysis here.

[8] This risk aversion reflects a reasonable global price of risk, but it also reflects the price of risk for the global portfolio based on sample moments (see Table 6, Panel A), which is $1.8788 = 4.87\%/(16.1\%^2)$.

the global market than for Chinese shares. These computations reflect the relatively high global betas exhibited by globally available Chinese equities. Now, imagine that, all else equal, we change the betas or correlations to those of the Chinese A -share market, what would be the new Chinese allocation? The univariate beta of the Chinese A-share market relative to the global stock market is only 0.611 whereas the beta for the portfolio of the externally listed stocks is 1.093. The implications for the global investor are quite dramatic. Let's first assume the investor maintains a 5% allocation to the Chinese market. Panel B shows that the new portfolio has lower volatility by about 0.37%. The shift from externally listed Chinese shares to A-shares also increases utility. Assuming the same expected returns, the change in the certainty equivalent or utility simply equals $\frac{1}{2}\gamma \times$ the change in portfolio variance. We report the utility change for three different γs. The utility improvement ranges from 0.16% to 0.64%. When the allocation to Chinese A-shares is increased to 10%, both the reduction in volatility and the associated utility gains are approximately doubled relative to a portfolio with a 10% allocation to externally listed Chinese shares.

Of course, with the Chinese A-shares being so much more attractive, the global investor, ceteris paribus, would want to allocate a larger fraction of her portfolio to Chinese shares. We find that the equilibrium allocation changes to [85.39%, 24.68%]. The global investor now leverages the more attractive equity investments. The mean variance efficient risky portfolio is [77.58%, 22.42%]. Thus, under the current correlation properties, the allocation to China would more than quadruple. Whether such a strong re-allocation to Chinese shares would actually happen once the A-share market becomes fully accessible, remains to be seen, as more likely than not, the pricing of the A-share stocks would change dramatically.

Of course, these computations assume that the risk premiums for the Chinese A shares and the Chinese externally listed shares are the same but we simply do not know what the risk premiums on Chinese A shares would be in an international equilibrium. Another way to show the relative attractiveness of Chinese A-shares versus global Chinese shares is to compute "hurdle" equilibrium risk premiums. Imagine a global investor 100% invested in the global market; we can compute the minimum required risk premium on various Chinese portfolios such that adding a

marginal investment of Chinese shares increases the overall Sharpe ratio. This hurdle risk premium is simply the beta (or the correlation times the ratio of Chinese to global volatility) times the global risk premium. Detailed derivations are shown in the Appendix.

In Table 6, we show these hurdle equilibrium risk premiums for our different Chinese portfolios, varying the global risk premium from 6% to 8%. The first column repeats each portfolio's global beta which is the key input into the computations. Let's first focus on portfolios of externally listed stocks and a 6% global risk premium. From Hong Kong cross-listed to U.S. homeless stocks, the hurdle premium ranges between 5.73% and 6.96%. For three of the four portfolios, the risk premium on Chinese stocks must be larger than for the global stock market before any investment in China is valuable (in Sharpe ratio terms). This is of course due to the relative high correlations these portfolios display relative to the global stock market and their relatively high volatility. In fact, as Table 6 indicates three of the portfolios have betas higher than 1, which renders their hurdle risk premium higher than the global risk premium. The exception is Hong Kong cross-listed stocks, but its hurdle premium is still pretty close to 6%.

The B-shares fare much better and have hurdle risk premiums of the same order of magnitude as the A-share market, namely 3.45% for the cross-listed shares and 3.08% for the Homeless shares. The hurdle premium for the A-share market is 3.67%. That means that the risk premium on Chinese A-shares can be 2.37% lower than for the global stock market and yet, a (marginal) Chinese investment would still increase the portfolio's Sharpe ratio. In general, the hurdle equilibrium risk premiums for firms listed in China are considerably lower than that for Chinese firms listed abroad, outside Mainland China. Thus, investing in companies listed within China yields substantially larger diversification benefits for global investors, compared to investing in Chinese companies listed outside of China, all else equal. When the global risk premium increases, the hurdle equilibrium risk premiums for all portfolios increase commensurate with their implied betas relative to the global stock market.

During the early sample period, the China A-share market is best characterized as fully/partially segmented from global capital markets, and as the Chinese government continues

its gradual liberalization program, betas and expected returns are likely to change. The different risk exposures we observe for the cross-listed shares are evidence of this. Still, these computations show that it is rather foolhardy to think that the China exposure most global investors experience is anything like that of the A-share market.

4.2 Cost of Capital Implications

The different risk exposures have another important implication: Chinese firms face potentially very different costs of equity capital at home as opposed to abroad. Using the two-factor model we employed in Figure 1 (See Equation (2)), the risk premium for any firm is the product of the local and global risk exposures with the corresponding market risk premiums. Comparing Panels A and B in Figure 1 tells the tale of two betas. For domestic firms, the cost of capital can be approximated on average by the local market risk premium (assuming a beta of one). The relative beta on the local versus global market differs across different listing locations but as a rough approximation consider a local beta of 0.1 and a global beta of 0.9. The implication is then straightforward: the difference between the domestic and international cost of capital is 0.9 times the difference between the Chinese and global equity risk premium.

While it is quite hard to compute risk premiums from data, most valuation models would suggest the conditional risk premium moves in line with valuation ratios such as the earnings or dividend yield. Here, we use the "sum of parts" model of Ferreira and Santa Clara (2011) to infer monthly risk premiums for the world and China. To be more specific, we compute the predicted logarithm market return (μ) by adding the logarithm of the 10-year moving average growth in earnings (trailing 12-month) and the logarithm of one plus the dividend yield. The expected market excess return is then calculated as:

$$EXRET = exp\left(\mu + \frac{\sigma^2}{2}\right) - 1 - r_f, \tag{5}$$

where σ is the standard deviation of returns over the last 10 years, and we assume lognormality to transform the expected log-return into an actual expected return. The monthly U.S. dollar data from the Datastream Total Market China A-share (World) index is used for the A-share (global)

market. We use the one-month U.S. Treasury bill rate as the risk-free rate.

While the resulting risk premiums vary over time, the dependence on valuation ratios and very long-run earnings growth rates imply that the temporal variation is rather modest, and we focus on unconditional risk premiums for our calculations. Table 7, Panel A, reveals that the Chinese equity premium is 4.74%, about 1.7% higher than the world equity premium, which is 3.05%. We also compute standard errors for our estimates, with the standard error accommodating the overlap in the earnings growth data using Hansen and Hodrick' (1980)'s methodology. The standard error is about 40 (20) basis points for the Chinese (global) equity premium. Carpenter, Lu and Whitelaw (2021), using a very different methodology, also claim that Chinese firms face a higher cost of capital than U.S. firms.

With these risk premiums in hand, we can use our multifactor model from Equation (2) to compute the cost of capitals relevant for the various listing locations, depending on their risk exposures. This approach is reminiscent of the approach used in the cross-listing literature to quantify the cost of capital implications of cross-listings. For example, Karolyi (1998) suggests that a cross-listing lowers the cost of capital on average by 126 basis points, mostly due to lower exposures to the higher domestic versus lower global risk premiums. Panel B shows the implied costs of capital for the various alternative location portfolios. In comparing their costs of capital to those of "average" A-share firms (which feature a cost of capital of 4.74%), it is important to remember that firm characteristics differ across typical A-share firms and firms that list elsewhere (see Section 2.1). For example, the joint exposures of the externally listed portfolio invariably exceed 1 making a comparison with a "beta =1" A-share firm perhaps unfair. Still, except for U.S. cross-listed shares, the global costs of capitals are lower than domestic costs of capitals by at least 50 basis points. Recall that there are very few U.S. cross-listed firms and Table 7, Panel B reveals that they are best characterized as high beta firms.

Of course, these findings generate an interesting puzzle, as the higher expected returns in China are not reflected in lower valuations. Bekaert, Ke, Wang and Zhang (2025) show that the Chinese equity market is very unusual in that increased international accessibility for A-shares has

been associated with lower market valuations. Still, the price premium for the A-share market has persisted despite an extensive but very gradual liberalization process of the Chinese domestic stock market (See Carpenter, Whitelaw and Zou, 2020). One reason, of course, is that arbitraging price differentials across listing locations is practically impossible, given short-selling restrictions in the A-share market and remaining capital controls.

5. The Time Variation in Domestic and Global Betas

While our panel model accommodated time-varying betas, there are prima facie reasons for the betas to change over time. Since the start of the 21st century, China gradually opened its equity market to foreign investors and also allowed Chinese nationals to engage on a limited basis in foreign investments. Against this backdrop, it is important to verify whether the risk exposures have changed over time as the Chinese A-share market became more and more accessible to foreign investors. In this section, we analyze the effects of these internationalization events on the local and global risk exposures of domestic A shares and Chinese firms trading elsewhere, and their time series dynamics more generally. Our main framework to do so modifies Equation (2) by interacting with a time trend or financial openness (FO) indicators:

$$EXRET_{l,t} = \alpha_l^1 + \alpha_l^2 trend_t(FO_t) + \beta_l^{G,1} MKT_t^G + \beta_l^{G,2} MKT_t^G \times trend_t(FO_t)$$

$$+\beta_l^{A,1} MKT_t^A + \beta_l^{A,1} MKT_t^A \times trend_t(FO_t) + \varepsilon_{l,t} \quad (6)$$

While Hong Kong and U.S. markets have long been fully accessible to international investors, China's domestic market has historically been subject to strict capital controls. Before 2003, foreign investors could only invest in B shares. Access to A shares began in November 2002 under the QFII program, which required license approval and was subject to quotas. The Qualified Domestic Institutional Investor (QDII) program released in April 2006, permits domestic institutional investments abroad, and the RMB Qualified Foreign Institutional Investor (RQFII) program issued in December 2011, enabling overseas RMB investments in China. Regulatory guidelines for overseas listings were relaxed in January 2013. The Shanghai-Hong Kong Stock Connect (announced in November 2014), and Shenzhen-Hong Kong Stock Connect (announced

in December 2016) facilitated cross-border trading between mainland China and Hong Kong, while the inclusion of China A-shares in MSCI indices in June 2018 made a subset of A-shares more easily investable globally. The Shanghai-London Stock Connect announced in June 2019 further expanded market access, and investment quotas for QFII and RQFII were abolished in September 2019, underscoring China's commitment to financial openness and integration with global markets.

To quantify this complex liberalization process, we consider three variables. First, a time trend may potentially capture the gradual changes in financial openness. Trend is defined as the time index (in months) divided by the total number of months in the sample period. Second, we create a count index to reflect the staggered nature of the various reforms. IN refers to the type of regulations that facilitate the inflow of foreign funds into China and ranges between 0 and 7 (see the table notes for details). OUT refers to the type of regulations that facilitate China's outbound investment and ranges between 0 and 1. Finally, we use a more continuous international accessibility (IA) measure, proposed in Bekaert, Ke, Wang and Zhang (2025). Specifically, IA is the ratio of the overall market capitalization of B shares, H shares, and ADRs to the China's overall market capitalization, including A-shares.

Table 8 reports the results from estimating Equation (6) for the three different interaction variables with Panel A focusing on the different externally listed portfolios and Panel B on the A-share matched portfolios. The latter panel thus measures the time variation in domestic and global betas for A-shares.

Focusing first on the trend results, there are few statistically significant trend coefficients. For Hong Kong and U.S. Homeless shares, the trend coefficients for the global betas are surprisingly negative and economically large. For the domestic (A-share) betas, we also observe two significant interactive trend coefficients, but only at the 10% significance level. The coefficient is positive for Hong Kong cross-listed securities, the only coefficient in line with ex-ante expectations, and negative for B Homeless securities. Both coefficients are reasonably large. Interestingly, in Panel B, for the A-share matched portfolios, there is only one statistically

significant trend coefficient, namely for the domestic beta of the A share counterpart to the Hong Kong cross-listed securities, and the coefficient is negative. These coefficients may reflect some convergence of the domestic betas of these securities across the two markets.

Considering the IN/OUT regulatory count index results, we observe a lot more significant coefficients, especially for the IN variable. Global betas generally decrease as the inflow liberalization process proceeds, with the effects statistically significant for 5 out of 6 variables. The OUT variable delivers negative coefficients for the U.S. and Hong Kong listed homeless securities (which are statistically significant), but positive coefficients for the other 4 listing locations, with only the U.S. and Hong Kong cross-listed portfolios generating statistical significance. There are fewer significant coefficients for the A share betas. Higher IN values are associated with higher A-share betas for Hong Kong and U.S. homeless firms, and for U.S. cross-listed firms but with lower A-share betas for B Homeless shares. For the OUT variable, there is only one statistically significant variable—a large negative coefficient for U.S. Homeless shares. For the matched A-share portfolios, we only observe 3 statistically significant coefficients. Hong Kong cross-listed A share betas decrease with the IN variable; U.S. cross-listed A share betas increase with the OUT variable and Hong Kong homeless global betas increase with the IN variable.

For the IA variable, the externally listed sample reveals more statistically significant coefficients with most of them consistent with the results observed for the trend regression. For example, the global betas decrease with IA for the Hong Kong and U.S. homeless portfolios (with only the latter significant) but increase with IA for the other portfolios. The A-share beta for U.S. homeless shares decreases with IA and that is the only statically significant effect we observe for A-share beta interactions. For the matched A-share sample, we only observe statistically significant effects for the A-share betas, with positive interaction effects for B cross listed and homeless shares and negative effects for U.S. homeless shares.

Overall, we do not find strong statistical and economically intuitive patterns in the time variation of domestic and global betas of the various Chinese portfolios stratified across listing

location. To gain more insight into why this is happening, we show two more results. First, Figure 3 shows a set of time dummy coefficients over time. To obtain these time dummies, we revisit our panel model of Section 2.3 and add time dummies to the various specifications. Because the panel model uses all Chinese firms, they measure the overall time variation in global, respectively A-share betas for all firms, which are dominated by A-share firms. Neither the global, nor the A-share beta time dummies show a clear trend over time. If anything, the time trends for the overall sample are downward for global betas and upward for A-share betas. However, in the very last few years we observe an upward trend in global betas (from a very low level) and a downward trend in A-share beta. This time series pattern is confirmed in Figure 4, where we simply graph the global and A-share betas for the various listing portfolios in a 60-month rolling window. Perhaps, the most recent reforms have affected the risk exposures in the expected direction, but we clearly lack econometric power to detect such a very recent change in risk exposures.

6. Conclusion

Using a comprehensive data set on Chinese firm listings, which range from the main A-share market, over B-shares and shares listed on Hong Kong and U.S. exchanges, we document that shares listed outside Mainland China have large (small) global (domestic) exposures, while the opposite is true for A and B-shares. For every listing location, the difference between global and domestic betas is economically large and statistically significant. For the shares listed outside Mainland China, their risk exposures are economically and statistically significantly different from those of matched A-shares. Externally listed shares include homeless shares, which have no A-share listing, so that we match them with firms in the A-share market on size and industry. While homeless shares are more global than cross-listed shares, both in terms of their cash flow and return exposures, the differences relative to cross-listed shares are mostly not statistically significant. The risk exposures of B-shares are economically and statistically very different from those of the shares listed outside Mainland China. Clearly, the key contributor to the differences is the investor base.

Such differences in beta between domestically and internationally traded stocks are not observed for other countries, because, at least for cross-listed shares, arbitrage between the two exchanges ensures consistent pricing across the two markets. However, for Chinese stocks, relatively large price differentials have persisted across listing locations, despite the gradual liberalization process instituted by the Chinese government over the last few decades. The inability to short-sell stocks in the A-share market may contribute to these price differentials.

Because beta is an important component of correlation, the diversification benefits of the "international" Chinese shares are much worse than those of A-shares. For example, using a standard mean-variance framework, a representative global investor would, all else equal, triple its China exposure when A-share correlations apply or would require a much lower expected return to invest in domestic A-shares than in externally listed shares. Of course, once China fully opens up to foreign investors, and further develops its stock market to allow short selling, the equilibrium might change, and these benefits may no longer be available.

We were hoping to document that the gradual financial openness process led to changes in risk exposures over time, but did not find strong statistical results. Rolling correlations suggest that the very recent financial opening efforts may potentially lead to "internationalizing" the Chinese market, and Bekaert, Ke, Wang and Zhang (2025) suggest that the financial openness efforts have contributed to lower valuations in the A-share market, all else equal. Whether the tale of two betas will disappear in the future, only time can tell, but for now, global investors earn better diversification benefits from A-shares than from externally listed shares.

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Table 1. Summary Statistics

This table presents the average number of firms and firm characteristics by listing location. Panel A presents the results for the original sample. For each listing location, we calculate the cross-sectional equally-weighted averages of the relevant statistics in each quarter, and then report the time-series averages. The sample period is January 2000 to December 2022. All the return and accounting data are denominated in U.S. dollars. Panel B presents the results for the matched sample. For each non-A-share stock in each year, we match it with an A-share in the same industry (Datastream level 4) and closest in total sales. The first row presents the time-series average of the cross-sectional equally-weighted average of the relevant statistics in each quarter, except market value and sales, which are presented after adjusting for industry structure. Specifically, for each listing location, we first calculate the relative market capitalization of each industry in each quarter, defined as the total market value of the industry divided by the total market value of all stocks in the listing location. We then multiply these weights by the average market value or sales of the corresponding industry in the A-share market for the same quarter. Summing across industries yields the industry-structure-adjusted market value or sales for the location, and we then compute the time-series averages. The second row shows the difference between the matched sample and the original sample, and the third row presents the t-statistics in parentheses, adjusted using Newey-West standard errors with 6 lags.

Panel A. Original Sample

	Average Number of Firms	Market Value ($million)	Sales ($million)	%Foreign Sales	BM	ROE
A Share	2042	1663.91	1311.15	9.56	0.42	7.66%
B Crosslist	76	196.43	1293.93	9.82	2.93	7.30%
HK Crosslist	69	15784.66	18841.03	11.24	1.17	10.65%
U.S. Crosslist	6	5434.03	9949.50	13.54	1.09	4.53%
B Homeless	19	465.46	660.06	12.72	0.71	4.68%
HK Homeless	583	2040.52	1508.84	15.87	1.30	7.02%
U.S. Homeless	99	6080.95	2436.38	9.51	1.33	4.95%

Panel B. Matched Sample (by Sales)

		Market Value ($million)	Sales ($million)	%Foreign Sales	BM	ROE
B Crosslist	Mean	1588.89	1047.90	9.20	0.46	8.74%
	Dif. (Matched-Original)	1392.46	-246.03	-0.61	-2.48	1.44%
		(4.71)	(-3.17)	(-1.28)	(-11.08)	(3.23)
HK Crosslist	Mean	21164.61	16068.07	6.58	0.58	13.29%
	Dif. (Matched-Original)	5379.95	-2772.96	-4.66	-0.59	2.64%
		(2.93)	(-3.44)	(-5.94)	(-5.57)	(3.35)
U.S. Crosslist	Mean	3069.30	3894.24	3.18	0.64	13.60%
	Dif. (Matched-Original)	-2364.73	-6055.26	-10.36	-0.45	9.07%
		(-4.23)	(-4.80)	(-9.20)	(-4.31)	(3.42)
B Homeless	Mean	4183.78	6772.19	8.52	0.40	6.84%
	Dif. (Matched-Original)	3718.32	6112.13	-4.20	-0.31	2.16%
		(5.03)	(4.79)	(-4.78)	(-5.90)	(2.42)
HK Homeless	Mean	3369.95	2622.46	8.26	0.40	6.95%
	Dif. (Matched-Original)	1329.43	1113.63	-7.61	-0.90	-0.07%
		(3.21)	(3.82)	(-4.43)	(-10.68)	(-0.08)
U.S. Homeless	Mean	1764.39	1847.80	7.79	0.37	6.62%
	Dif. (Matched-Original)	-4316.55	-588.58	-1.72	-0.96	1.67%
		(-5.96)	(-1.22)	(-1.24)	(-6.56)	(0.87)

Table 2. Global and A Share ROE Betas by Listing Location

This table presents the global and A share ROE betas and their differences. Panel A (B) presents global and A-share ROE betas for the original and matched samples of crosslist (homeless) firms and test their differences. The ROE betas are estimated using quarterly ROEs over the full sample. For each non-A-share stock in each quarter, we match it with an A-share in the same industry (Datastream level 4) and closest in total sales, excluding all A-shares with cross listings from the matching pool. Columns VII and VIII report the GMM result by estimating the two regressions for original and matched samples as a system. T-statistics are presented in parentheses, with standard errors adjusted using Newey-West (1987) with 6 lags.

Panel A. Cross-Listed Sample

	Original Sample			Matched Sample			Matched-Original	
	I	II	III	IV	V	VI	VII	VIII
	Global Beta	A Beta	Dif.	Global Beta	A Beta	Dif.	Global Beta	A Beta
B Crosslist	0.281	0.478	-0.197	0.015	0.831	-0.816	-0.266	0.353
	(5.33)	(7.06)	(-2.65)	(0.15)	(6.32)	(-7.48)	(-2.29)	(2.36)
HK Crosslist	0.299	1.011	-0.711	-0.380	1.523	-1.903	-0.680	0.512
	(1.28)	(5.20)	(-4.73)	(-2.37)	(6.68)	(-11.08)	(-2.39)	(1.71)
U.S. Crosslist	0.569	0.305	0.263	0.054	0.439	-0.384	-0.514	0.133
	(2.31)	(1.10)	(1.04)	(0.26)	(1.23)	(-1.22)	(-1.68)	(0.31)

Panel B. Homeless Sample

	Original Sample			Matched Sample			Matched-Original	
	I	II	III	IV	V	VI	VII	VIII
	Global Beta	A Beta	Dif.	Global Beta	A Beta	Dif.	Global Beta	A Beta
B Homeless	0.394	1.312	-0.917	0.207	0.680	-0.473	-0.187	-0.631
	(1.24)	(4.55)	(-2.95)	(0.72)	(2.39)	(-1.51)	(-0.44)	(-1.58)
HK Homeless	0.593	0.282	0.310	-0.157	0.616	-0.774	-0.750	0.334
	(2.20)	(1.30)	(1.72)	(-1.48)	(5.39)	(-8.75)	(-2.56)	(1.31)
U.S. Homeless	0.369	0.120	0.249	-0.473	0.325	-0.798	-0.842	0.205
	(1.17)	(0.31)	(0.86)	(-1.16)	(0.95)	(-3.45)	(-1.63)	(0.39)

Table 3. Global and A Share Return Betas by Listing Location

This table presents the global and A share return betas and their differences. Panel A presents the results for MSCI China A and MSCI China indices. Panel B (C) presents global and A-share return betas for the original and matched samples of cross-listed (homeless) firms and test their differences. The return betas are estimated using monthly over the full sample. For each non-A-share stock in each quarter, we match it with an A-share in the same industry (Datastream level 4) and closest in total sales. For a cross-listed stock, its matched pair is the A share of the same firm. Panel D presents the results by category. "Cross-listed overall" include stocks in B Crosslist, HK Crosslist, and US Crosslist and "Homeless overall" include stocks in B Homeless, HK Homeless, US Homeless. "Cross-listed outside mainland China" include stocks in HK Crosslist and US Crosslist and "Homeless outside mainland China" include stocks in HK Homeless and US Homeless. Panel E presents the results for Chinese firms list in the U.S. OTC markets. Columns VII and VIII report the GMM result by estimating the regressions for original and matched samples as a system. T-statistics are presented in parentheses, with standard errors adjusted using Newey-West (1987) with 6 lags.

Panel A. MSCI

	I Global Beta	II A Beta	III Dif.
MSCI China A	0.003	1.014	-1.011
	(0.14)	(57.11)	(-31.32)
MSCI China	0.859	0.354	0.505
	(7.85)	(6.60)	(5.14)
Dif ($Beta_{MSCI\ China}$, $Beta_{MSCI\ China\ A}$)	-0.856	0.660	
	(-7.67)	(11.68)	

Panel B. Cross-Listed Sample

	Original Sample			Matched Sample			Matched-Original	
	I Global Beta	II A Beta	III Dif.	IV Global Beta	V A Beta	VI Dif.	VII Global Beta	VIII A Beta
B Crosslist	0.051	0.857	-0.806	-0.020	1.028	-1.048	-0.071	0.171
	(0.29)	(9.70)	(-5.88)	(-0.61)	(36.17)	(-19.95)	(-0.39)	(1.85)
HK Crosslist	0.709	0.402	0.306	0.114	0.871	-0.757	-0.595	0.469
	(5.58)	(5.92)	(2.39)	(2.01)	(13.32)	(-10.10)	(-4.27)	(4.94)
U.S. Crosslist	0.914	0.404	0.511	-0.003	1.066	-1.069	-0.917	0.662
	(7.49)	(6.04)	(3.60)	(-0.04)	(17.25)	(-9.90)	(-6.24)	(7.29)

Panel C. Homeless Sample

	Original Sample			Matched Sample			Matched-Original	
	I	II	III	IV	V	VI	VII	VIII
	Global Beta	A Beta	Dif.	Global Beta	A Beta	Dif.	Global Beta	A Beta
B Homeless	-0.045	0.914	-0.959	-0.130	1.024	-1.154	-0.085	0.109
	(-0.22)	(8.07)	(-5.47)	(-2.05)	(24.43)	(-12.84)	(-0.40)	(0.91)
HK Homeless	0.846	0.333	0.513	-0.044	1.025	-1.068	-0.889	0.692
	(6.93)	(4.84)	(4.45)	(-0.48)	(18.08)	(-11.82)	(-5.92)	(8.30)
U.S. Homeless	0.913	0.260	0.652	-0.065	1.016	-1.080	-0.977	0.755
	(6.92)	(3.53)	(4.89)	(-0.52)	(12.05)	(-7.81)	(-5.31)	(7.29)

Panel D. Original vs. Matched Sample

	Original Sample			Matched Sample			Matched-Original	
	I	II	III	IV	V	VI	VII	VIII
	Global Beta	A Beta	Dif.	Global Beta	A Beta	Dif.	Global Beta	A Beta
Cross-Listed Overall	0.632	0.456	0.176	0.105	0.877	-0.772	-0.527	0.421
	(4.28)	(6.27)	(1.42)	(2.01)	(13.97)	(-11.09)	(-3.36)	(4.36)
Homeless Overall	0.858	0.315	0.543	-0.054	1.026	-1.079	-0.912	0.711
	(7.21)	(4.86)	(4.81)	(-0.53)	(15.77)	(-10.40)	(-5.86)	(8.39)
Dif. ($Beta_{\text{Cross-Listed Overall}}$, $Beta_{\text{Homeless Overall}}$)	-0.226	0.141		0.159	-0.148			
	(-1.19)	(1.39)		(1.40)	(-1.65)			
Cross-Listed Outside Mainland China	0.714	0.397	0.317	0.108	0.873	-0.991	-0.605	0.476
	(5.76)	(5.85)	(2.49)	(1.91)	(13.43)	(-11.78)	(-4.43)	(5.03)
Homeless Outside Mainland China	0.867	0.309	0.558	-0.053	1.026	-1.052	-0.921	0.717
	(7.19)	(4.74)	(4.91)	(-0.52)	(15.67)	(-8.07)	(-5.85)	(8.39)
Dif ($Beta_{\text{Cross-Listed Outside Mainland China}}$, $Beta_{\text{Homeless Outside Mainland China}}$)	-0.154	0.088		0.162	-0.152			
	(-0.89)	(0.89)		(1.40)	(-1.66)			
Cross-Listed B-Share	0.051	0.857	-0.806	-0.020	1.028	-1.048	-0.071	0.171
	(0.29)	(9.70)	(-5.88)	(-0.61)	(36.17)	(-19.95)	(-0.39)	(1.85)
Cross-Listed Outside Mainland China	0.714	0.397	0.317	0.108	0.873	-0.765	-0.605	0.476
	(5.76)	(5.85)	(2.49)	(1.91)	(13.43)	(-10.33)	(-4.43)	(5.03)
Dif ($Beta_{\text{Cross-Listed B-Share}}$, $Beta_{\text{Cross-Listed Outside Mainland China}}$)	-0.663	0.460		-0.128	0.155			
	(5.76)	(4.09)		(-1.93)	(2.18)			
Homeless B-Share	-0.045	0.914	-0.959	-0.130	1.024	-1.154	-0.085	0.109
	(-0.22)	(8.07)	(-5.47)	(-2.05)	(24.43)	(-12.84)	(-0.40)	(0.91)
Homeless Outside Mainland China	0.867	0.309	0.558	-0.053	1.026	-1.079	-0.921	0.717
	(7.19)	(4.74)	(4.91)	(-0.52)	(15.67)	(-10.33)	(-5.85)	(8.39)
Dif ($Beta_{\text{Homeless B-Share}}$, $Beta_{\text{Homeless Outside Mainland China}}$)	-0.912	0.605		-0.077	-0.002			
	(-3.86)	(4.54)		(-0.64)	(-0.03)			

Panel E. U.S. OTC Sample

	Original Sample			Matched Sample			Matched-Original	
	I	II	III	IV	V	VI	VII	VIII
	Global Beta	A Beta	Dif.	Global Beta	A Beta	Dif.	Global Beta	A Beta
U.S. Crosslist OTC	0.479	0.483	-0.004	0.134	0.890	-0.756	-0.345	0.406
	(3.54)	(5.41)	(0.00)	(1.85)	(14.68)	(9.00)	(-2.93)	(5.58)
U.S. Homeless OTC	0.596	0.563	0.033	0.016	1.004	-0.988	-0.580	0.441
	(1.97)	(1.90)	(0.10)	(0.29)	(20.91)	(10.85)	(-1.92)	(1.47)

Table 4. Global and A Share Return Betas of Other Major Emerging Markets

This table presents the global and A share return betas and their differences for Brazilian, Indian, Mexican ADRs. We obtain monthly returns on S&P Brazil (India/Mexico) ADR index. Local market excess return is the monthly return on Datastream Brazil (India/Mexico) Market Index minus the monthly Brazil (India/Mexico) risk-free rate. Global market excess return is the monthly return on Datastream World Market Index minus the monthly Brazil (India/Mexico) risk-free rate. T-statistics are presented in parentheses, with standard errors adjusted using Newey-West (1987) with 6 lags.

	USD			Local Currency		
	I Global Beta	II Local Beta	III Dif.	IV Global Beta	V Local Beta	VI Dif.
U.S. Crosslist	0.914	0.404	0.511	0.906	0.405	0.501
	(7.49)	(6.04)	(3.60)	(7.33)	(5.89)	(3.51)
U.S. Homeless	0.913	0.260	0.652	0.902	0.262	0.640
	(6.92)	(3.53)	(4.89)	(7.50)	(3.80)	(4.78)
Brazil	0.175	0.903	-0.728	0.251	0.985	-0.734
	(1.85)	(8.84)	(-7.30)	(1.48)	(12.14)	(-10.83)
India	0.567	0.684	-0.117	0.573	0.726	-0.153
	(2.30)	(4.41)	(-0.44)	(2.75)	(4.90)	(-0.60)
Mexico	0.304	0.865	-0.561	0.236	0.964	-0.728
	(2.36)	(7.69)	(-2.98)	(2.52)	(7.55)	(-4.34)

Table 5. Panel Variation in Global and Local Return Betas

This table present the stock-quarter panel regression results of global (A-share) return beta on listing location dummies, natural logarithm of market value (LogMV), natural logarithm of total sales (LogSales), book-to-market ratio (BM), return on equity (ROE), percentage of foreign sales (%Foreign Sales), and global (A-share) ROE beta. Independent variables except listing location dummies and ROE beta are standardized across the entire sample. T-statistics are presented in parentheses, with standard errors adjusted using Driscoll and Kraay (1998) 20 lags.

	Global Beta			A Beta		
	I	II	III	IV	V	VI
B Crosslist	0.269***	0.264***	0.317***	-0.250***	-0.244***	-0.181***
	(3.66)	(3.56)	(3.62)	(-3.49)	(-3.48)	(-2.78)
HK Crosslist	0.930***	0.873***	0.769***	-0.566***	-0.522***	-0.485***
	(8.41)	(7.36)	(5.97)	(-21.91)	(-12.17)	(-9.15)
U.S. Crosslist	1.198***	1.095***	0.948***	-0.752***	-0.695***	-0.653***
	(8.49)	(7.60)	(6.01)	(-13.22)	(-9.85)	(-7.41)
B Homeless	0.217**	0.194*	0.268***	-0.162***	-0.144***	-0.147**
	(2.16)	(1.90)	(2.91)	(-2.96)	(-2.79)	(-2.52)
HK Homeless	0.814***	0.816***	0.870***	-0.738***	-0.741***	-0.730***
	(5.78)	(5.86)	(6.91)	(-28.38)	(-26.06)	(-26.44)
U.S. Homeless	1.402***	1.420***	1.469***	-0.935***	-0.960***	-0.945***
	(15.89)	(17.86)	(20.93)	(-29.72)	(-35.13)	(-29.42)
LogMV			0.063**			0.013
			(2.12)			(0.83)
LogSales			0.046**			-0.031***
			(2.42)			(-3.41)
ROE			0.019***			-0.025***
			(2.91)			(-5.39)
BM			0.006			-0.014**
			(0.36)			(-2.43)
%Foreign Sales			0.010			0.005
			(1.08)			(1.51)
Global ROE Beta			0.014***			-0.003
			(7.63)			(-1.30)
A ROE Beta			0.004			0.004
			(1.29)			(1.58)
Constant	-0.196***	-0.209***	-0.229***	1.181***	1.280***	1.262***
	(-5.07)	(-4.24)	(-6.36)	(55.94)	(61.29)	(47.17)
Observations	188,448	188,448	188,448	188,448	188,448	188,448
Adjusted R^2	0.314	0.331	0.355	0.424	0.450	0.460
Industry Dummies	No	Yes	Yes	No	Yes	Yes
Test (B Crosslist+ HK Crosslist+U.S. Crosslist)/3-(B Homeless+HK Homeless+U.S. Homeless)/3=0						
Coeff.	-0.012	-0.067	-0.191	0.090	0.128	0.168
t-stat	-0.47	-5.05	-5.56	6.22	10.67	5.60

Table 6. Diversification Benefits of Chinese Portfolios

This table shows the diversification benefits of investing in Chinese portfolios. Panel A presents the annualized average return, annualized volatility, correlation with the global portfolio and global beta obtained from time-series regressions of monthly excess returns on global market excess returns, for the global portfolio, the A-share portfolio and the portfolio of externally listed Chinese shares. Panel B presents the annualized change in portfolio volatility and certainty equivalent compared to invest 95% in a global portfolio and 5% in the portfolio of externally listed Chinese shares. Certainty equivalent is calculated using $\mu_p - \frac{1}{2}\gamma\sigma_p^2$ where μ_p is the average return of portfolio p, γ is the coefficient of risk aversion, and σ_p^2 is the return variance of portfolio p. Panel C reports hurdle equilibrium risk premium of Chinese portfolios with the assumption of global risk premium equals to 6%, 7% and 8%.

Panel A. Historical Background Numbers

Portfolio	Average Return (Annualized)	Volatility (Annualized)	Corr with Global Market	β_G
Global	4.87%	16.1%	1	1
A All	9.49%	26.4%	0.372	0.611
Externally Listed	8.60%	27.6%	0.636	1.093

Panel B. Portfolio Implications of Reallocation to A-Shares

	Volatility Change	Certainty Equivalent Change (%)		
	(%)	$\gamma = 2$	$\gamma = 6$	$\gamma = 10$
95% Global+5% A All	-0.37	0.16	0.40	0.64
90% Global+10% A All	-0.72	0.32	0.79	1.24

Panel C. Hurdle Equilibrium Risk Premium

		Hurdle Equilibrium Risk Premium		
Portfolio	β_G	6%	7%	8%
A All	0.611	3.67%	4.28%	4.89%
B Crosslist	0.574	3.45%	4.02%	4.60%
HK Crosslist	0.954	5.73%	6.68%	7.64%
U.S. Crosslist	1.161	6.96%	8.12%	9.29%
B Homeless	0.514	3.08%	3.59%	4.11%
HK Homeless	1.049	6.29%	7.34%	8.39%
U.S. Homeless	1.072	6.43%	7.50%	8.57%
Externally Listed	1.093	6.56%	7.65%	8.74%
Externally Listed Outside Mainland China	1.105	6.63%	7.73%	8.84%

Table 7. Cost of Capital

This table presents the implications on the cost of capital. Panel A shows the mean and standard error of the expected global and A-share market risk premium estimated by the method in Ferreira and Santa-Clara (2011), Specifically, the predicted logarithm market return μ is the sum of the logarithm 10-year moving average of the growth in earnings (trailing 12-month) and the logarithm of one plus the dividend yield. The expected market risk premium is calculated as $\exp(\mu + \sigma^2/2) - 1 - r_f$, where σ is the standard deviation of returns over the last 10 years. Standard error is adjusted using Hansen and Hodrick (1980) with 119 lags. Panel B presents the cost of capital for each listing location, using the global and local betas over the full sample multiplied by their corresponding estimated risk premiums in Panel A and adding them up.

Panel A. Expected Market Risk Premium

	Mean	Standard Error
Global Market	3.05%	0.19%
A Market	4.74%	0.40%

Panel B. Cost of Capital

Portfolio	Global Beta	A Beta	Cost of Capital
A All	0	1	4.74%
B Crosslist	0.051	0.857	4.22%
HK Crosslist	0.709	0.402	4.07%
U.S. Crosslist	0.914	0.404	4.70%
B Homeless	-0.045	0.914	4.20%
HK Homeless	0.846	0.333	4.16%
U.S. Homeless	0.913	0.260	4.02%

Table 8. The Time-Variation in Return Betas by Listing Location

This table presents the stock-month panel regression results of monthly excess returns on time trend, regulation dummies or market international accessibility by listing locations. *trend* is defined as the time index (in months) divided by the total number of months in the sample period. *IN* refers to the type of regulations that facilitate the inflow of foreign funds into China and ranges between 0 and 7. It takes the value of 0 from 1995Q1 to 2000Q4, the value of 1 from 2001Q1 to 2002Q3 (Bshares), the value of 1.5 from 2002Q4 to 2003Q2 (the announcement of QFII), the value of 2 from 2003Q3 to 2011Q3 (the first transaction by QFII), the value of 3 from 2011Q4 to 2014Q1 (the announcement and market execution of RQFII), the value of 3.67 from 2014Q2 to 2014Q3 (the announcement and regulation execution of Shanghai-Hong Kong Connect), the value of 4 from 2014Q4 to 2016Q2 (the official start of Shanghai-Hong Kong Connect), the value of 4.67 in 2016Q3 (the announcement and regulation execution of Shenzhen-Hong Kong Connect), the value of 5 from 2016Q4 to 2017Q1 (the official start of Shenzhen-Hong Kong Connect), the value of 5.67 from 2017Q2 to 2018Q1 (the announcement of incorporating A share into MSCI index), the value of 6 from 2018Q2-2019Q2 (233 stocks listed in A-share market was officially incorporated MSCI emerging markets index and MSCI All Country World Index), and the value of 7 from 2019Q3-2022Q4 (removal of QFII and RQFII investment quota). *OUT* refers to the type of regulations that facilitate China's outbound investment and *r*anges between 0 and 1. It takes the value of 0.5 in 2006Q2 (the announcement of QDII), the value of 1 from 2006Q3 to 2022Q4 (market execution of QDII). Panel A (B) presents the results for the original (matched) sample. T-statistics are presented in parentheses, with standard errors adjusted using Newey-West (1987) with 6 lags.

Panel A. Original Sample

Interact with time trend

	B Crosslist	HK Crosslist	U.S. Crosslist	B Homeless	HK Homeless	U.S. Homeless
MKT^G	-0.105	0.841***	0.839***	-0.277	1.535***	1.536***
	(-0.24)	(2.94)	(3.06)	(-0.59)	(8.34)	(8.56)
MKT^G×trend	0.436	-0.314	0.119	0.665	-1.483***	-1.347***
	(0.67)	(-0.71)	(0.27)	(0.93)	(-4.44)	(-3.28)
MKT^A	1.094***	0.173	0.160	1.352***	0.149	0.078
	(4.27)	(0.99)	(0.84)	(4.49)	(0.84)	(0.37)
MKT^A×trend	-0.556	0.506*	0.520	-1.012*	0.456	0.448
	(-1.30)	(1.73)	(1.57)	(-1.92)	(1.28)	(0.97)
trend	-0.025	-0.031**	-0.032*	-0.029	-0.023**	-0.019
	(-1.17)	(-2.36)	(-1.94)	(-1.05)	(-2.19)	(-1.26)
Constant	0.016	0.021**	0.017*	0.019	0.015**	0.010
	(1.14)	(2.48)	(1.74)	(1.07)	(2.39)	(1.20)
Observations	276	276	276	276	276	276
Adjusted R^2	0.463	0.387	0.408	0.378	0.495	0.395

Interact with IN and OUT

	B Crosslist	HK Crosslist	U.S. Crosslist	B Homeless	HK Homeless	U.S. Homeless
MKT^G	-0.235	0.641**	0.580**	-0.466	1.536***	1.664***
	(-0.52)	(2.33)	(2.20)	(-0.95)	(7.99)	(10.34)
MKT^G×IN	-0.073***	-0.129***	-0.091**	-0.030	-0.176***	-0.137**
	(-2.66)	(-2.93)	(-2.06)	(-0.77)	(-3.35)	(-2.02)
MKT^G×OUT	0.773	0.606*	0.796***	0.799	-0.205	-0.438**
	(1.57)	(1.70)	(2.67)	(1.43)	(-0.85)	(-2.11)
MKT^A	1.154***	0.142	0.040	1.276***	0.234	0.251
	(3.57)	(0.65)	(0.16)	(3.37)	(1.23)	(1.14)
MKT^A×IN	-0.017	0.067	0.056*	-0.116**	0.097*	0.130*
	(-0.51)	(1.64)	(1.75)	(-2.43)	(1.76)	(1.91)
MKT^A×OUT	-0.352	0.070	0.224	-0.092	-0.192	-0.420**
	(-1.09)	(0.31)	(0.97)	(-0.24)	(-1.01)	(-2.06)
IN	-0.001	0.000	-0.000	-0.001	-0.002	-0.004
	(-0.43)	(0.02)	(-0.09)	(-0.49)	(-0.98)	(-1.38)
OUT	-0.018	-0.023**	-0.023*	-0.014	-0.008	0.006
	(-1.07)	(-2.19)	(-1.90)	(-0.69)	(-0.93)	(0.58)
Constant	0.020	0.022**	0.018*	0.019	0.015**	0.009
	(1.28)	(2.47)	(1.87)	(0.99)	(2.50)	(1.18)
Observations	276	276	276	276	276	276
Adjusted R^2	0.475	0.397	0.426	0.379	0.491	0.412

Interact with IA_t

	B Crosslist	HK Crosslist	U.S. Crosslist	B Homeless	HK Homeless	U.S. Homeless
MKT^G	-0.558	0.349	0.396	-0.795	1.134***	1.316***
	(-1.18)	(1.31)	(1.58)	(-1.54)	(3.55)	(4.09)
$MKT^G \times IA_t$	4.502*	2.434	3.638**	5.595*	-2.067	-2.617*
	(1.71)	(1.62)	(2.42)	(1.88)	(-1.24)	(-1.66)
MKT^A	0.863***	0.078	0.102	0.961**	0.330	0.645***
	(2.62)	(0.36)	(0.41)	(2.37)	(1.52)	(2.96)
$MKT^A \times IA_t$	-0.254	2.212	1.981	-0.608	0.088	-2.683**
	(-0.13)	(1.59)	(1.32)	(-0.24)	(0.06)	(-2.24)
IA_t	-0.102	-0.122	-0.174**	-0.153	-0.051	-0.001
	(-1.00)	(-1.65)	(-2.13)	(-1.17)	(-0.92)	(-0.01)
Constant	0.018	0.021*	0.024*	0.025	0.009	-0.002
	(1.07)	(1.90)	(1.96)	(1.21)	(1.01)	(-0.16)
Observations	276	276	276	276	276	276
Adjusted R^2	0.472	0.400	0.429	0.376	0.440	0.385

Panel B. Matched Sample

Interact with time trend

	B Crosslist	HK Crosslist	U.S. Crosslist	B Homeless	HK Homeless	U.S. Homeless
MKT^G	-0.030	0.146	0.025	-0.050	-0.243	-0.321
	(-0.46)	(1.29)	(0.18)	(-0.55)	(-1.16)	(-1.12)
MKT^G×trend	0.015	0.029	-0.062	-0.159	0.481	0.614
	(0.13)	(0.15)	(-0.23)	(-0.84)	(1.39)	(1.35)
MKT^A	1.008***	1.126***	1.027***	1.076***	1.186***	1.171***
	(18.24)	(9.50)	(8.05)	(15.43)	(7.64)	(4.98)
MKT^A×trend	0.045	-0.572***	0.084	-0.106	-0.380	-0.378
	(0.43)	(-2.96)	(0.34)	(-0.69)	(-1.35)	(-0.94)
trend	-0.000	-0.011*	-0.009	0.006	-0.009	-0.019
	(-0.10)	(-1.67)	(-0.84)	(0.44)	(-0.73)	(-1.17)
Constant	0.002	0.009**	0.003	-0.002	0.007	0.009
	(0.61)	(2.11)	(0.53)	(-0.35)	(0.91)	(0.87)
Observations	276	276	276	276	276	276
Adjusted R^2	0.886	0.766	0.665	0.717	0.729	0.525

Interact with IN and OUT

	B Crosslist	HK Crosslist	U.S. Crosslist	B Homeless	HK Homeless	U.S. Homeless
MKT^G	0.012	0.103	0.001	-0.082	-0.215	-0.289
	(0.17)	(0.88)	(0.00)	(-1.21)	(-0.95)	(-0.92)
MKT^G×IN	0.015	0.039	0.038	-0.007	0.066*	0.058
	(0.88)	(1.38)	(0.84)	(-0.16)	(1.65)	(1.14)
MKT^G×OUT	-0.104	-0.113	-0.192	-0.043	0.002	0.125
	(-1.19)	(-0.73)	(-0.96)	(-0.27)	(0.01)	(0.41)
MKT^A	1.030***	1.040***	0.936***	1.051***	1.261***	1.293***
	(16.63)	(9.46)	(6.85)	(18.07)	(6.77)	(4.49)
MKT^A×IN	0.006	-0.094***	-0.053	-0.028	-0.044	-0.017
	(0.33)	(-2.97)	(-1.54)	(-0.96)	(-1.35)	(-0.42)
MKT^A×OUT	-0.020	0.124	0.369***	0.079	-0.146	-0.308
	(-0.26)	(0.85)	(2.72)	(0.81)	(-0.95)	(-1.25)
IN	-0.000	-0.000	0.001	0.003	-0.001	-0.002
	(-0.35)	(-0.13)	(0.67)	(1.14)	(-0.47)	(-1.38)
OUT	-0.001	-0.004	-0.013*	-0.011*	-0.004	-0.002
	(-0.12)	(-0.75)	(-1.75)	(-1.71)	(-0.52)	(-0.22)
Constant	0.003	0.007*	0.003	-0.000	0.007	0.010
	(1.19)	(1.71)	(0.57)	(-0.08)	(0.92)	(0.83)
Observations	276	276	276	276	276	276
Adjusted R^2	0.886	0.761	0.672	0.717	0.729	0.524

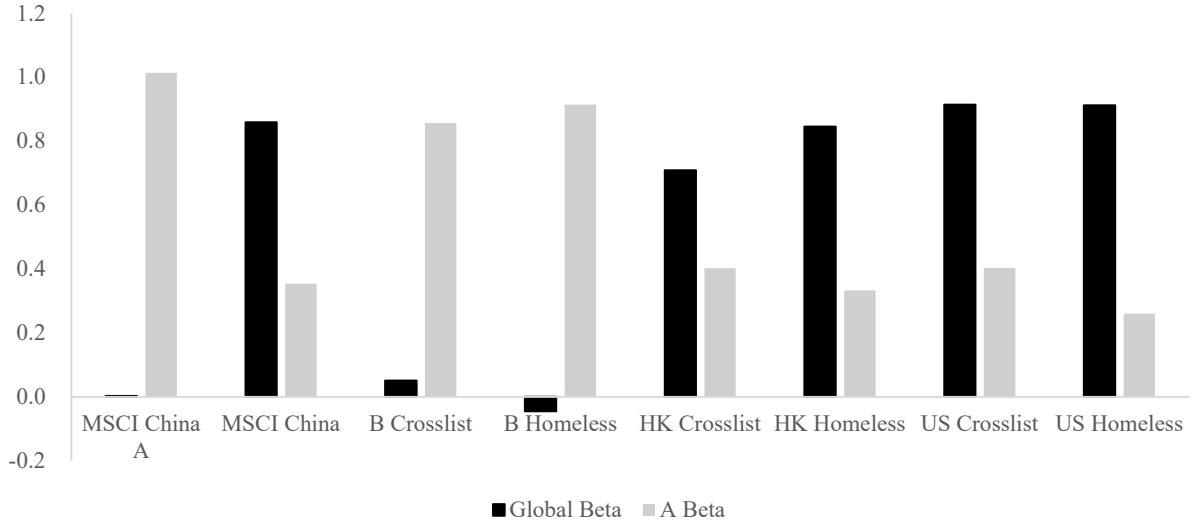
Interact with IA_t

	B Crosslist	HK Crosslist	U.S. Crosslist	B Homeless	HK Homeless	U.S. Homeless
MKT^G	0.043	0.102	0.078	-0.179*	-0.150	-0.279
	(0.64)	(0.82)	(0.45)	(-1.66)	(-0.56)	(-0.78)
$MKT^G \times IA_t$	-0.577	0.316	-0.659	0.310	0.964	1.946
	(-1.31)	(0.43)	(-0.53)	(0.40)	(0.62)	(0.88)
MKT^A	0.907***	1.073***	0.889***	0.894***	1.234***	1.448***
	(14.57)	(6.41)	(5.55)	(9.90)	(6.10)	(4.97)
$MKT^A \times IA_t$	0.907*	-1.501	1.274	0.896*	-1.565	-3.224*
	(1.85)	(-1.56)	(1.36)	(1.67)	(-1.27)	(-1.81)
IA_t	0.029	-0.093***	-0.113***	-0.093**	-0.034	-0.052
	(1.02)	(-2.84)	(-2.84)	(-2.09)	(-0.60)	(-0.66)
Constant	-0.002	0.016***	0.014**	0.013*	0.007	0.006
	(-0.56)	(2.87)	(2.16)	(1.83)	(0.76)	(0.49)
Observations	276	276	276	276	276	276
Adjusted R^2	0.889	0.758	0.671	0.721	0.726	0.533

Figure 1. Return Betas by Listing Location

This figure presents the global and A-share return betas by listing location, based on monthly excess returns over the full sample. Panel A presents the results for the original sample. Panel B presents the results for the matched sample based on sales. For each non-A-share stock, we match it with an A-share in the same industry (Datastream level 4) and closest in total sales. For a cross-listed stock, the match is its corresponding A-share.

Panel A. Original Sample



Panel B. Matched Sample (by Sales)

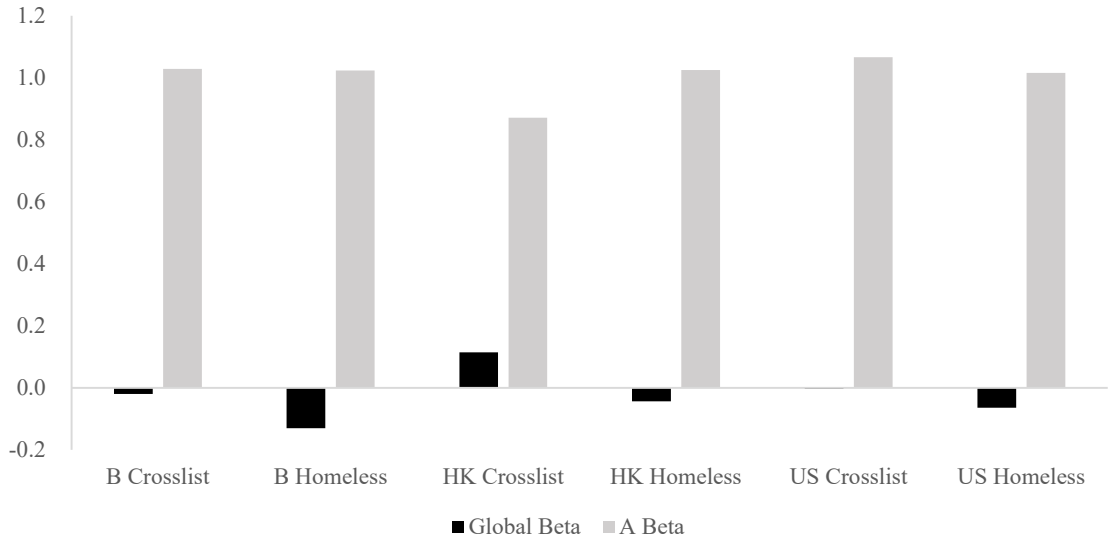


Figure 2. Top Industries Based on Market Capitalization

This figures shows the top industries based on market capitalization for each listing location. Specifically, for each listing location, we first calculate the relative market capitalization of each industry in each quarter, defined as the total market value of the industry divided by the total market value of all stocks in the listing location. We then calculate the time-series average of the relative market capitalization (shown above the bar) and report the top two industries.

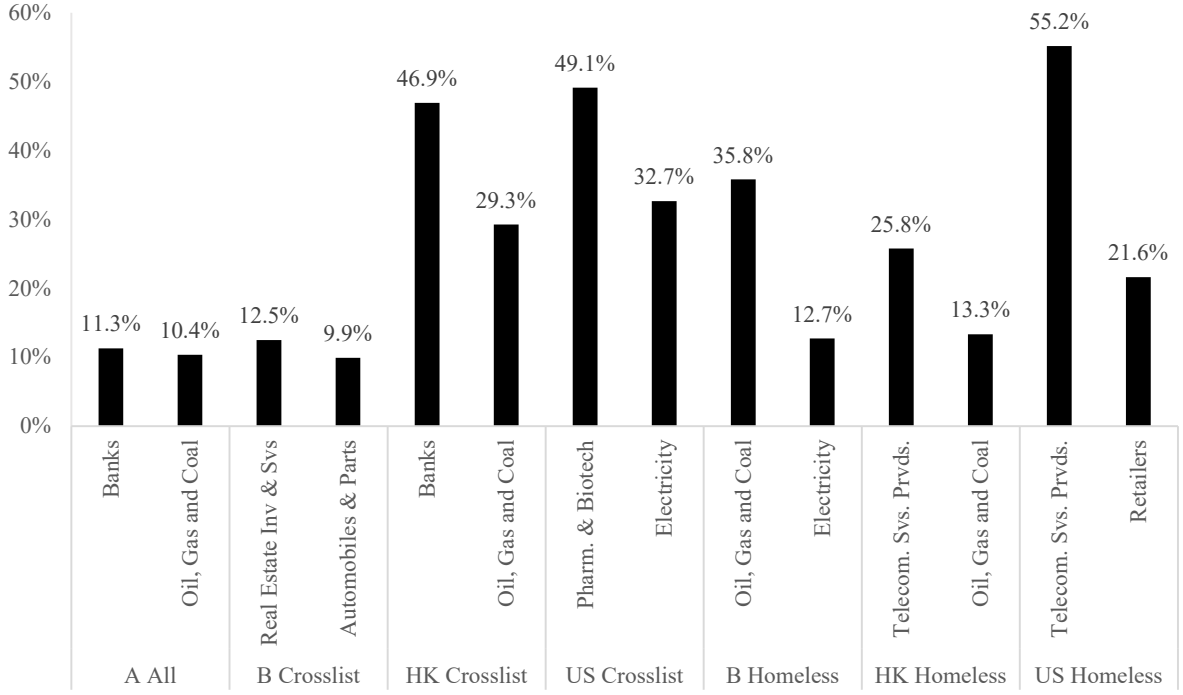
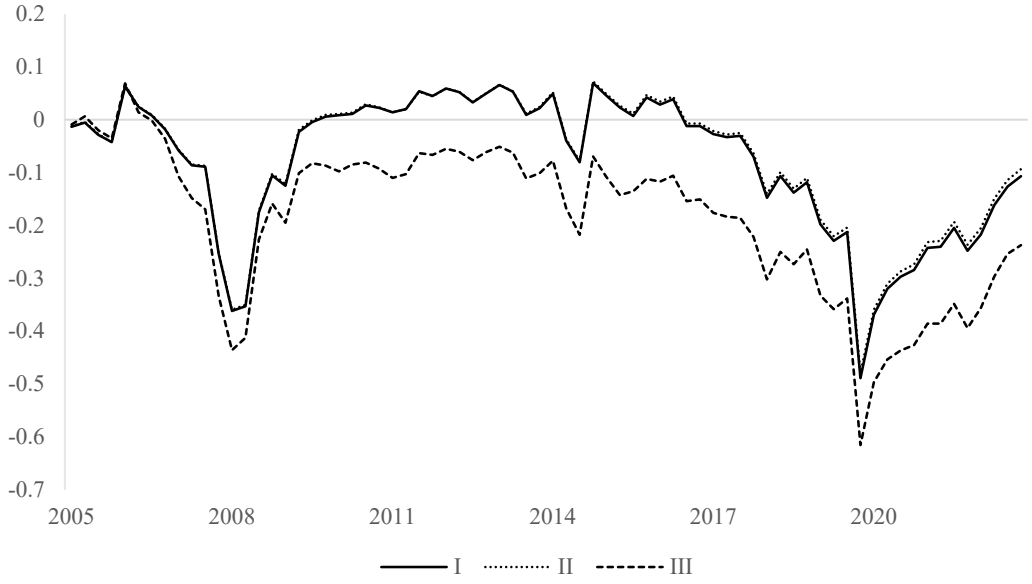


Figure 3. Coefficient on Time Dummies

This figure presents the coefficients on time dummies from the stock-quarter panel regression in Table 5, after adding time dummies to the various specifications (omit the first quarter).

Panel A. Coefficient on Time Dummies: Global Beta



Panel B. Coefficient on Time Dummies: A Beta

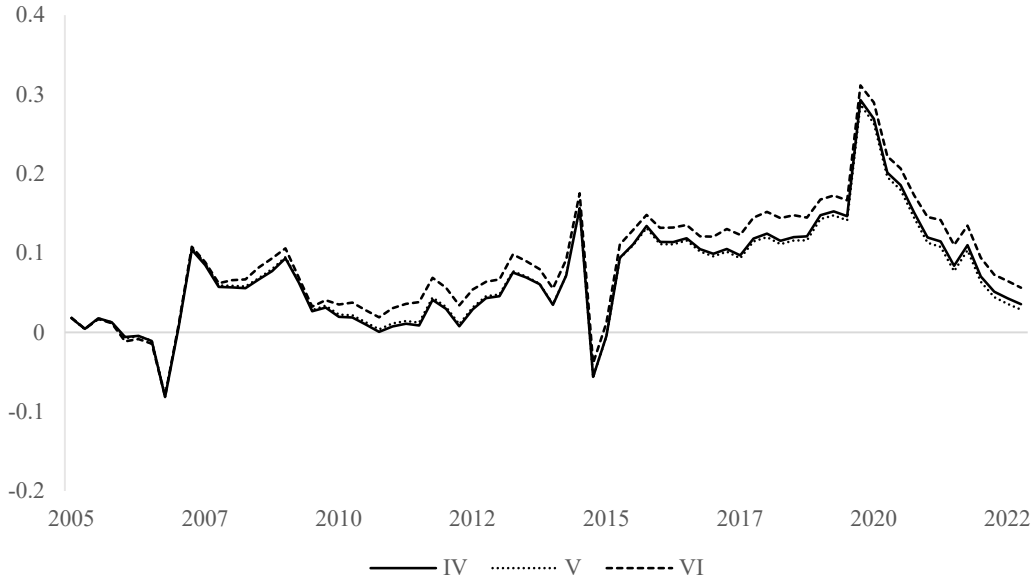
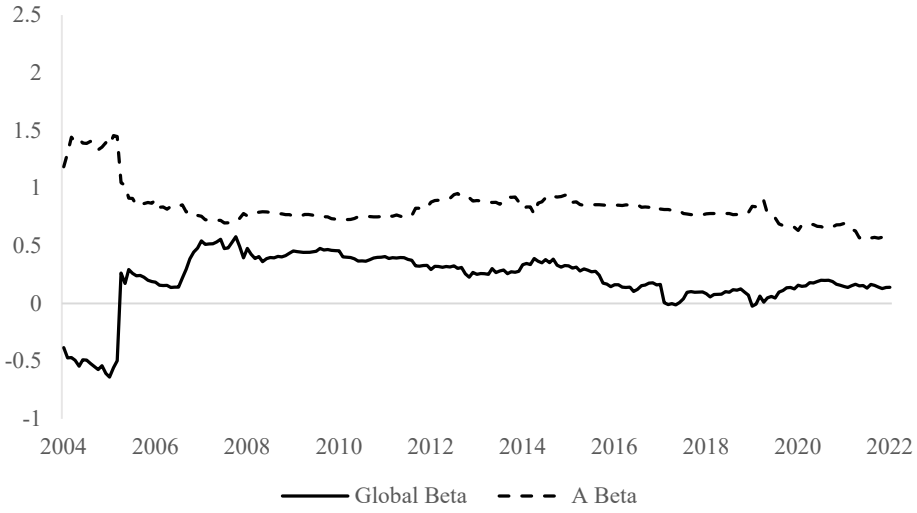


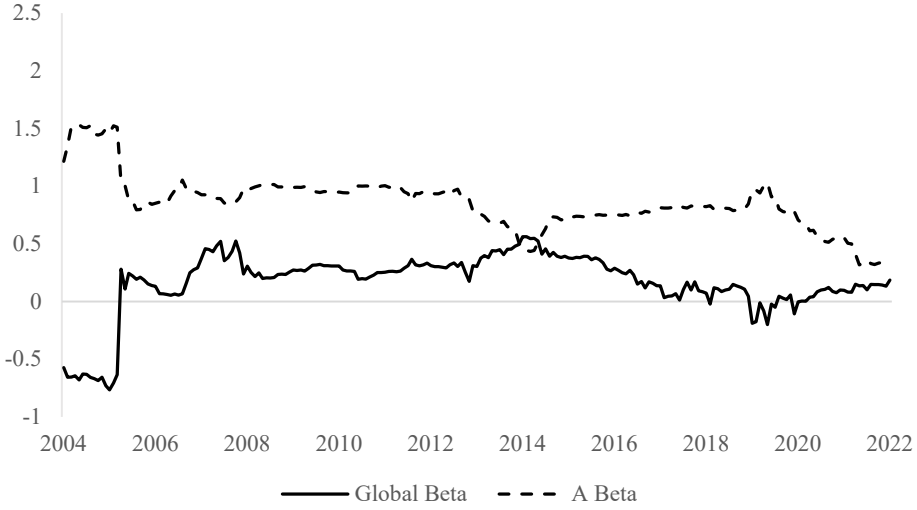
Figure 4. Time-Varying Return Betas by Listing Location

This figure presents the global and A-share return betas by listing location, based on 60-month rolling window regressions using monthly excess returns.

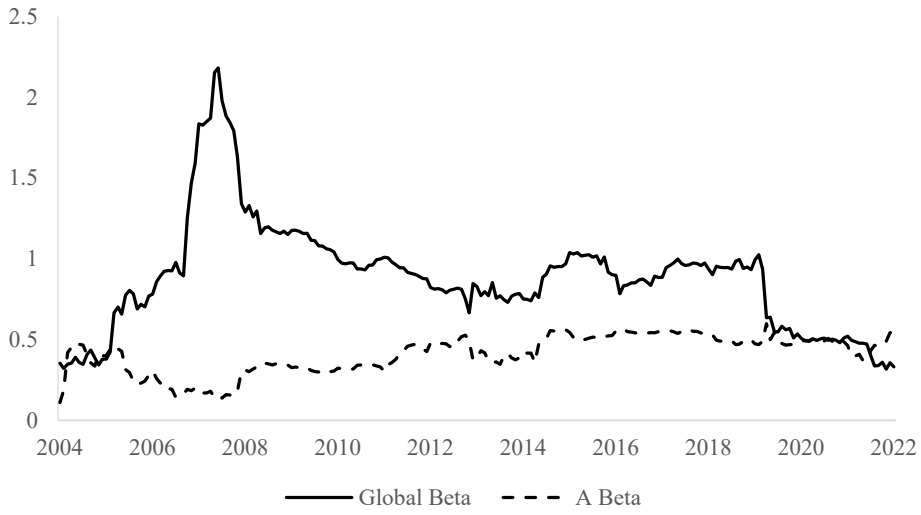
Panel A. B Crosslist



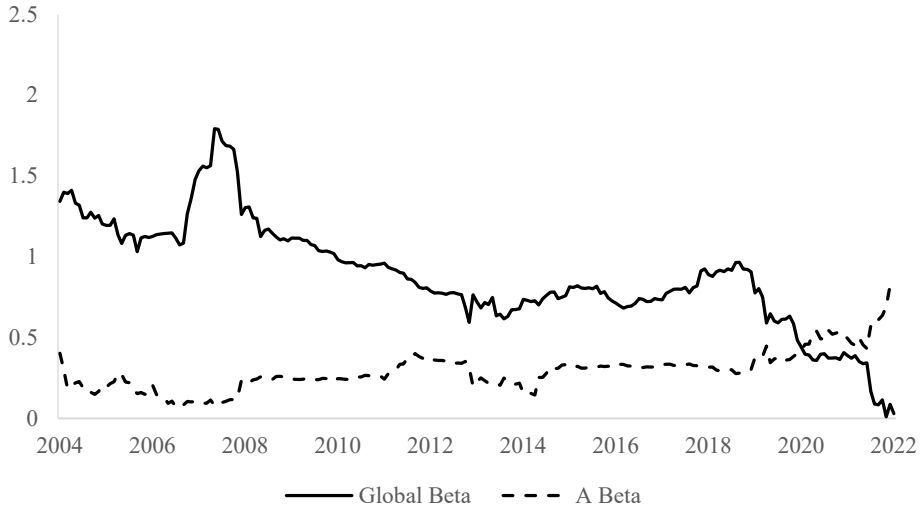
Panel B. B Homeless



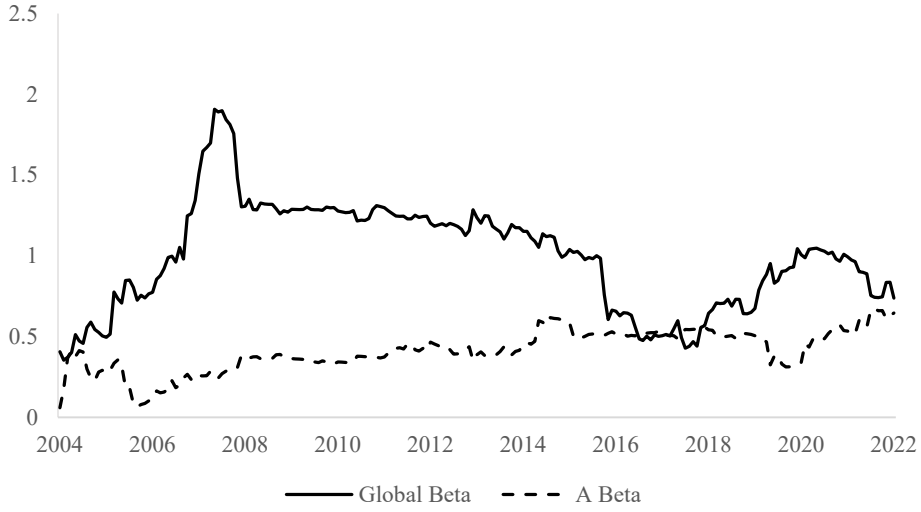
Panel C. HK Crosslist



Panel D. HK Homeless



Panel E. US Crosslist



Panel F. US Homeless