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A NARRATIVE ON OVERSEAS LISTINGS BY CHINESE FIRMS

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Overseas listings by domestic firms are one of the ways for a country to attract foreign capital. China leads the world in the number and value of overseas listings. This paper documents the evolution of Chinese firms' initial public offerings outside mainland China. We pay special attention to the role of the listing criteria of various exchanges in this evolution. We discuss important reforms of the listing requirements in both mainland and Hong Kong and their effects on the listing location choices by Chinese firms. Finally, we examine the delisting pressure on Chinese stocks from the US exchanges from both the Chinese and US authorities.

Keywords: Overseas listing; listing requirements; stock exchange reforms; delisting pressure.

JEL Classifications: G10, G18, F31.

1. Introduction

With the integration of international capital markets, overseas listings are becoming common for companies to directly seek foreign capital. China leads the world in the number and value of overseas listing. Within mainland China, there were 4,181 listed

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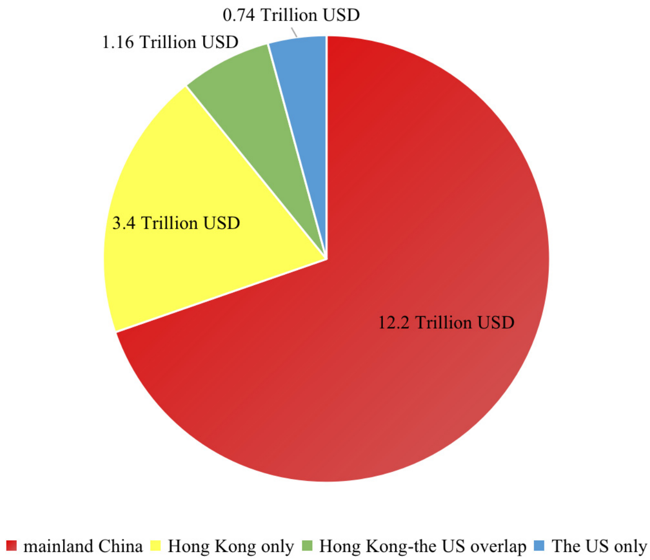


Figure 1. Market Capitalization of Chinese Firms Listed in Mainland China, Hong Kong, and the US in 2020

companies on Shanghai and Shenzhen stock exchanges as at the end of 2020.[1] Their total market capitalization reached nearly 80 trillion CNY (equivalent to 12.2 trillion USD), accounting for 78% of China's GDP in 2020 and making Chinese stock markets the second largest stock market in the world.[2] Outside mainland China, Hong Kong and US are the two most popular destinations of Chinese issuers. By the end of 2020, there were 1,323 Chinese companies listed on the Hong Kong Stock Exchange (HKEX) with a total market capitalization of 35.4 trillion HKD (equivalent to 4.56 trillion USD).[3] This is about 75% of the aggregate market capitalization of all Hong Kong-listed companies. At the same time, there were 265 Chinese companies listed on US bourses with a total market capitalization of USD 1.9 trillion.[4] This is about 3% of the total US stock market value, or 13% of the aggregate market capitalization contributed by all overseas companies listed in the US.

Figure 1 gives the total market capitalization of Chinese firms listed in mainland China, Hong Kong and the US at the end of 2020. The total market capitalization of Chinese firms listed overseas was 5.3 trillion USD, less than half of the market value of domestically

[1] The source comes from Wind Financial Terminal. Annual Report of the China Securities Regulatory Commission (CSRC) also reports the number of listed firms in Shanghai and Shenzhen stock exchanges. From the Annual report in 2020, there were 4,154 listed companies on Shanghai and Shenzhen stock exchanges. Among them, 2,053 are on the main board, 994 on the Small and Medium Enterprise (SME) Board, 892 on the Growth Enterprise Market (ChiNext) and 215 on The Science and Technology Innovation Board (STAR).

[2] The market capitalization is calculated using closing price on 31 December 2020. The market capitalization of 4,154 Chinese firms reported in Annual report of the China Securities Regulatory Commission is also around 80 trillion CNY.

[3] These 1,323 Chinese firms on HKEX are based on H-share, red chips, mainland private companies and overseas-listed Chinese firms from main board and GEM in Hong Kong, reported by Wind and CSMAR. The market capitalization is calculated using closing price on 31 December 2020.

[4] These 265 Chinese firms listed in the US are based on China concept stocks and overseas-listed Chinese firms on New York Stock Exchange (NYSE), NASDAQ and American Stock Exchange (AMEX), reported by Wind and CSMAR. The market capitalization is calculated using closing price on 31 December 2020.

listed firms. Among the overseas listed firms in Hong Kong and the US markets, many firms issued American Depositary Receipts (ADRs) in the US with their underlying shares listed on the HKEX, thus there is an overlap of market capitalization of 1.16 trillion USD between these two markets by 2020.

The sheer size of these overseas-listed Chinese firms suggests the importance of understanding the institutional background, the economic motivations and the far-reaching implications of their choices. In addition, the rising US-China tension and the recent changes in regulatory climate have led to growing uncertainty on whether Chinese firms can continue to list in the US and how the delisting pressure may affect the decision-making of firms, stock exchanges and policymakers.

As early as the 1990s, there were a large number of companies cross-listed in developed markets such as the US and UK. The literature has identified several important motives behind the boom: overcoming the investment barriers, improving corporate governance, getting a good reputation and expanding global business (Miller, 1999; Pagano *et al.*, 2002; Doidge *et al.*, 2009). While these general economic incentives also apply to the overseas-listed Chinese firms, they do face a very different financial, legal and regulatory environment from those cross-listed firms in advanced economies. On the other hand, besides a few recent exceptions, such as Liu (2014), Li (2019) and Shi (2020), there is very little systematic research on overseas-listed Chinese firms.

One of our following research focuses on overseas-listed Chinese firms (Feng *et al.*, 2023). We find that unlike the valuation premium of overseas-listed firms found in many other countries (Stulz and Wasserfallen, 1995; Domowitz *et al.*, 1997), the overseas-listed Chinese firms face valuation discounts compared with their domestically listed counterparts. The valuation discount is associated with cross-border capital controls and behind-the-border capital market regulations. A comprehensive review of the listing criteria and recent reforms in mainland China and overseas exchanges helps us better comprehend and explain the puzzling valuation discount of overseas-listed Chinese firms. Many studies also show the importance of investigating listing requirements institutional backgrounds and exchange reforms. Davis *et al.* (2023) investigate the cash holding and indebtedness of non-financial firms in the US and highlight the importance of institutional reforms in equity finance. Zhang and King (2010) indicate the legal and accounting standards, listing requirements and regulatory monitoring affect the choices of Chinese firms to cross-list overseas.

In the rest of this paper, we first document the evolution of Chinese firms' overseas initial public offerings (IPOs). We then examine how the financial standards, regulatory requirements and IPO processes at various exchanges have shaped this evolution. Next, we discuss some major reforms of the listing requirements in both mainland and Hong Kong and the effects on the listing location choices by Chinese firms. Finally, we review the delisting pressure on Chinese stocks from the US exchanges from both the Chinese and US authorities.

2. Evolution of Chinese Firms Overseas Listing

In 1972, Shenzhen International Holdings Limited, a state-owned developer and operator of municipal ancillaries, was listed on the main board of the HKEX as a red-chip company.

It thus became the first Chinese stock listed outside mainland China. In 1992, before asking permission from the Chinese authorities, Brilliance China Automotive Holdings Limited successfully went IPO on the NYSE, which opened the prelude of Chinese firms listing in the US. In 1993, SINOPEC Shanghai Petrochemical Company issued H-shares on the HKEX, becoming the first Chinese company listed in Shanghai, Hong Kong and New York at the same time. On 19 September 2014, Alibaba's IPO on the NYSE raised USD 25 billion, giving the company a market value of USD 231 billion and making it by then the largest IPO in history. On 26 July 2022, Alibaba announced that in addition to its NYSE primary listing, it is applying for the dual primary listing status in Hong Kong and expects the primary listing to be completed by the end of 2022. However, in November 2022, Alibaba delayed dual primary listing in Hong Kong in view of the changing market and other external circumstances.

In between these milestones, an increasing number of Chinese firms have been listing their shares on offshore exchanges, which can be broadly characterized as three big waves. The first wave was mainly driven by the reform and restructuring of Chinese SOEs from 1990 to 2000. At this early stage, most of the Hong Kong or US-listed Chinese companies were financially strong, profitable, and large SOEs that were chosen by the government to showcase Chinese firms on international markets (Liu, 2014). The overseas listing on advanced markets not only facilitated privatization, but also improved corporate governance. Those overseas listed companies established boards of directors, implemented high corporate governance standards and developed managerial infrastructures based on the requirements of Hong Kong or US bourses.

Table 1 gives the total number of Chinese companies listed in mainland China, Hong Kong, the US, Singapore and UK from 2000 to 2023. As of the end of August 2023, they are 5,266, 1,404, 301, 84 and 13, respectively.[5] The numbers of newly listed Chinese companies in each year in these markets are also reported in Table 1. Figure 2 visualizes the total number of active Chinese companies listed in mainland China, Hong Kong and the US at the end of each year since 2000. Figure 3 depicts the number of Chinese companies newly listed each year.

There are three simple facts about the IPOs of Chinese firms suggested in Table 1 and Figures 2 and 3. First, in terms of the total number and number of newly listed firms each year, mainland China Hong Kong and the US can be characterized as big, medium and small markets for Chinese firms, suggesting the importance of these three markets for financing Chinese firms. Second, there has been a fast-growing trend in the total number of listed firms in mainland China and Hong Kong since 2000, while the growing trend has stopped in the US since 2010. Third, the total numbers of listed Chinese companies in Singapore and UK are much smaller than those in mainland China, Hong Kong and the US, and the IPOs of Chinese companies in the Singapore and UK became inactive after 2010. Given these facts, our analysis below focuses on the three markets-mainland China, Hong Kong and the US.

[5] Our numbers are slightly different from those reported in HKEX and by other authors. This difference comes from the definition of Chinese firms listed overseas and data sources. For a detailed discussion, please refer to the Appendix A.

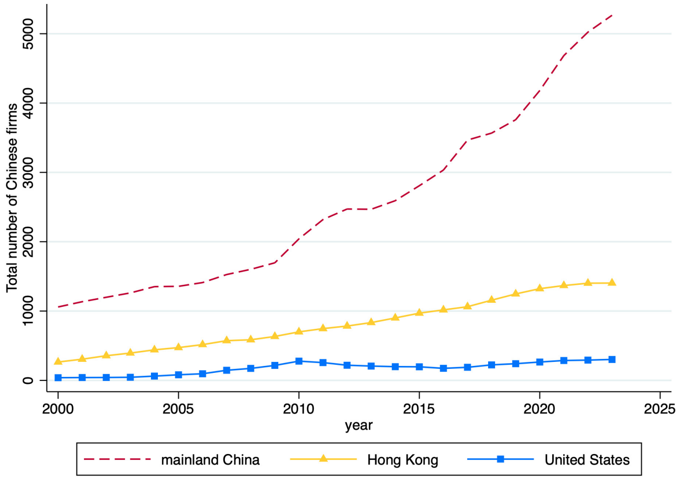
Table 1. Chinese Companies Listed in Mainland China and Oversea Markets: Number and Proceeds Raised

	Mainland China				HK				US				Singapore		UK	
Year	Total No.	Annual No.	Annual Proceeds (Billion CNY)	Cumulative Proceeds (Billion CNY)	Total No.	Annual No.	Annual Proceeds (Billion HKD)	Cumulative Proceeds (Billion HKD)	Total No.	Annual No.	Annual Proceeds (Billion USD)	Cumulative Proceeds (Billion USD)	Total No.	Annual No.	Total No.	Annual No.
2000	1,059	136	82.7	292.4	265	42	102.9	224.4	39	11	0.7	0.8	38	5	6	2
2001	1,135	79	61.0	353.4	306	41	20.3	244.7	41	2	1.7	2.4	44	6	6	0
2002	1,199	71	48.9	402.3	356	50	36.4	281.1	42	1	0.0	2.4	48	4	7	1
2003	1,262	67	47.2	449.6	394	39	53.7	334.7	45	3	2.7	5.1	65	17	8	1
2004	1,352	100	36.1	485.7	441	48	76.3	411.0	62	17	3.6	8.7	100	35	9	1
2005	1,357	15	5.8	491.4	473	40	148.7	559.7	81	20	1.5	10.2	125	25	16	7
2006	1,411	66	134.2	625.6	516	47	281.9	841.6	96	17	1.9	12.1	156	31	36	20
2007	1,527	126	477.1	1,102.7	573	62	237.4	1,079.0	146	51	5.4	17.5	186	32	47	11
2008	1,602	77	103.4	1,206.1	586	19	44.3	1,123.3	173	28	0.3	17.8	194	10	47	5
2009	1,696	99	187.9	1,394.0	634	52	192.6	1,315.9	216	45	1.0	18.8	197	9	43	1
2010	2,041	349	491.1	1,885.1	700	69	215.6	1,531.5	278	66	3.4	22.2	195	9	38	4
2011	2,320	282	282.4	2,167.5	747	49	89.8	1,621.2	257	15	1.7	23.9	179	2	32	0
2012	2,472	155	103.4	2,271.0	784	42	76.9	1,698.1	219	4	0.2	24.0	173	2	32	3
2013	2,468	2	0.0	2,271.0	834	55	136.3	1,834.4	207	9	0.8	24.8	163	0	28	0
2014	2,592	125	66.9	2,337.8	901	70	163.0	1,997.4	198	17	11.4	36.2	154	2	22	0
2015	2,808	223	157.6	2,495.5	970	73	237.7	2,235.1	196	14	0.3	36.6	148	1	16	0
2016	3,034	227	149.6	2,645.1	1,017	57	177.4	2,412.4	174	12	2.1	38.7	142	2	15	0
2017	3,467	438	230.1	2,875.2	1,063	60	99.2	2,511.6	189	30	3.5	42.2	131	1	11	0
2018	3,567	105	137.8	3,013.0	1,157	99	260.0	2,771.7	224	40	8.5	50.6	121	0	10	0

Table 1. (*Continued*)

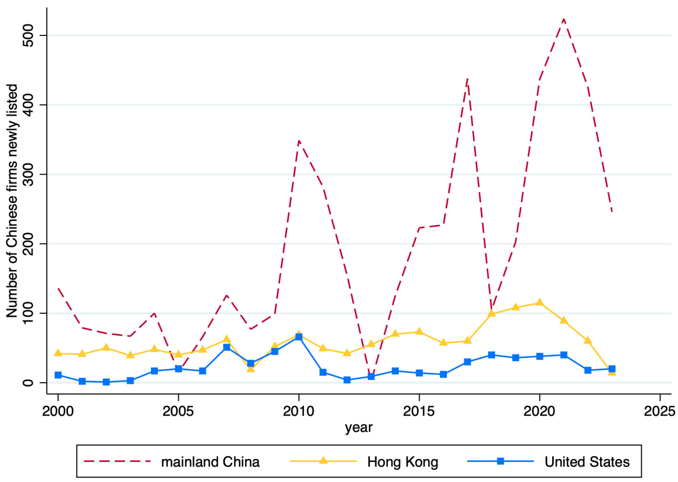
	Mainland China				HK				US				Singapore		UK	
Year	Total No.	Annual No.	Annual Proceeds (Billion CNY)	Cumulative Proceeds (Billion CNY)	Total No.	Annual No.	Annual Proceeds (Billion HKD)	Cumulative Proceeds (Billion HKD)	Total No.	Annual No.	Annual Proceeds (Billion USD)	Cumulative Proceeds (Billion USD)	Total No.	Annual No.	Total No.	Annual No.
2019	3,760	203	253.3	3,266.3	1,247	108	243.8	3,015.5	241	36	3.3	53.9	113	0	11	1
2020	4,181	437	480.6	3,746.8	1,323	115	386.6	3,402.1	265	38	13.1	67.0	95	1	13	3
2021	4,685	524	542.6	4,289.5	1,368	89	319.8	3,722.0	287	40	14.3	81.3	86	0	13	0
2022	5,023	425	586.9	4,876.4	1,402	60	91.1	3,813.0	292	18	0.7	82.0	84	2	13	0
2023-08	5,266	246	305.6	5,181.9	1,404	14	11.7	3,824.7	301	20	0.7	82.7	84	0	13	0

Notes: Chinese firms listed overseas defined as those meeting any of the following criteria:
[a]Incorporated in mainland China.
[b]Headquarters in mainland China.
[c]Controlling shareholder is individual, company and state entity in mainland China.
[d]More than 55% of sales revenue come from mainland China.
Source: Wind financial terminal and CSMAR.



Notes: (1) Special purpose acquisition companies listed in US are excluded.
(2) Companies with missing IPO dates are excluded.
Sources: Wind financial terminal and CSMAR.

Figure 2. Total Number of Chinese Firms Listed in Mainland China, Hong Kong and the US



Notes: (1) Special purpose acquisition companies listed in US are excluded.
(2) Companies with missing IPO date are excluded.
Sources: Wind financial terminal and CSMAR.

Figure 3. Number of Chinese Firms Newly Listed in Mainland China, Hong Kong and the US

As a result of the first wave of going public abroad, as of 2,000 there were 265 Chinese companies listed in Hong Kong, issuing H-shares, Red Chips and P-shares, 39 and 38 Chinese companies in the US and Singapore, respectively.[6] The second wave of offshore listing by Chinese firms appears in the first decade of the 21st century. Around 2,000, the

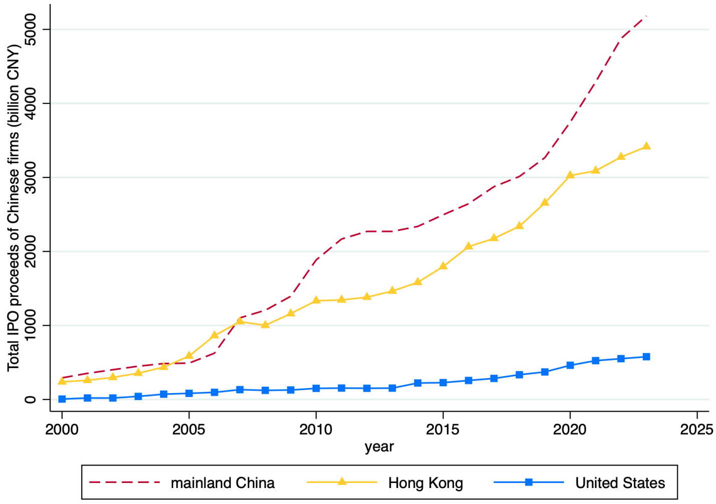
[6] An overview of Chinese share classes can be found in Table A.1.

internet sector in China emerged rapidly. However, most firms in this sector were unable to raise funds by listing on the A-share markets due to the difficulty to achieve profitability before the IPO. In contrast, the US exchanges have no profitability requirements, and the US stock market usually gives high valuations and recognition to technology companies. Under such circumstances, domestic portal representatives, such as Sina, NetEase and Sohu, and communication companies, such as China Unicom, have been listed in the US in the form of common stock or American Depositary Receipts (ADRs). From 2007 to 2010, on average 48 Chinese companies were listed in the US bourses each year. Meanwhile, Singapore and London also attracted many Chinese companies from 2003 to 2007 due to geographical proximity, advanced capital markets and relatively low listing requirements.

However, the boom did not last long. In 2010, Muddy Waters Research, a company dedicated to studying "financial fraud" in China concept stocks, released a report claiming that Orient Paper had committed financial fraud, firing the first shot of shorting China concept stocks. Thus, China's concept stocks suffered an unprecedented integrity crisis and experienced a prolonged downturn. That is why there was a notable decline in the total number of Chinese companies listed in the US in 2012 and 2013 as in Figure 2, due to a significant number of Chinese companies delisted in consecutive years after 2010. The negative impact also spread to Singapore and London markets, and the total number of Chinese companies listed on these markets declined as well in the next 6 to 7 years since 2010, as shown in Table 1.

The third wave of overseas listing by Chinese companies happened in the last three years — right after the trade-war in 2018 and before the tightening of the regulatory environment. During 2018–2020, there were around 40 firms listed in the US stock exchanges each year. At the same time, the number of Chinese companies going public in Hong Kong increased sharply, with approximately 100 firms newly listed each year. This rapid growth may be attributed to the HKEX's reforms in 2018, which relaxed the listing requirements for bio-tech companies, accepted the listing of "New Economy" companies with weighted-voting rights, and welcomed secondary listings of overseas-listed mainland China companies. However, this third wave soon met its Waterloo in the past two years, as both Washington and Beijing sharpened scrutiny over Chinese companies' listings.

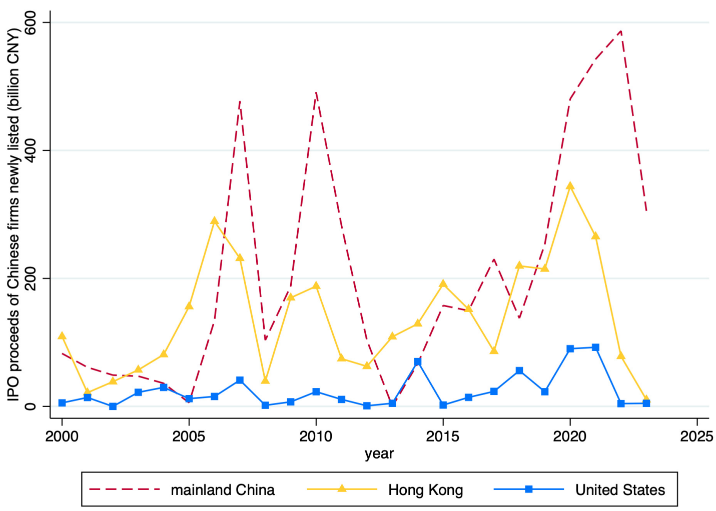
Table 1 also reports annual and cumulative IPO proceeds that Chinese firms raised from the domestic and overseas markets during 2000–2023. First, consistent with the pattern reflected on the number of firms and market capitalization in Table 1 and Figure 1, the mainland China, Hong Kong and the US markets can be characterized as big, medium and small markets for Chinese firms in terms of total annual IPO proceeds. Second, HKEX is the most important offshore platform for financing Chinese firms. By the end of August 2023, Chinese firms had cumulatively received 3,824.7 billion HKD from Hong Kong markets, much more than the capital raised from the US markets, 82.7 billion USD. Third, in 2022, there was a sharp drop in IPO proceeds of overseas-listed Chinese firms, with 91.1 billion HKD and 0.7 billion USD for Chinese firms listed on Hong Kong and the US markets, respectively.



Notes: Missing values are treated as 0 in our calculation.
Source: Wind financial terminal.

Figure 4. Cumulative IPO Proceeds of Chinese Firms Raised from Mainland China, Hong Kong and the US

Figures 4 and 5 visualize the cumulative and annual proceeds of Chinese firms raised from mainland China, Hong Kong and the US during 2000–2023. To make them comparable, the proceeds recorded in HKD and USD in Table 1 have been translated into CNY in these two figures.



Notes: Missing values are treated as 0 in our calculation.
Source: Wind financial terminal.

Figure 5. Annual IPO Proceeds of Newly Listed Chinese Firms Raised from Mainland China, Hong Kong and the US

3. Listing Criteria

The ups and downs in the number of overseas listed Chinese companies and their choice of listing location are, on the one hand, driven by the increasing demand of foreign capital, and on the other hand, greatly shaped by the listing criteria at various stock exchanges home and abroad. In this section, we review the financial requirements, regulatory requirements and IPO processes across various exchanges.

3.1. *Financial requirements*

The ultimate trade-off facing any stock exchange in designing listing criteria is a tension between attracting more firms to seek listing and protecting investors with high-quality firms. Table 2 summarizes the operating history and threshold financial requirements that the issuer must satisfy for Ian PO in mainland China (main board, ChiNext and STAR). The requirements for listing in Hong Kong (main board and GEM), and NYSE and NASDAQ in the US are presented in Tables A.2–A.4 for comparison.[7]

Not surprisingly, China's domestic stock market, which is well-known for its emphases on investor protection, sets more stringent listing standards than its Hong Kong and US counterparts. One of the most criticized financial requirements of the Chinese stock market is the requirement for profitability. A positive net profit in two or three consecutive years before filing an IPO application was required for all issuers, regardless of which board they applied for. The profitability requirement increases the manager's propensity to manipulate earnings (Chen *et al.*, 2001). Before the opening of STAR in 2019, this requirement also prevented some companies with good growth potential from going public and raising capital in the homeland.

In contrast to mainland China stock exchanges imposing the *ex-ante* stringent financial requirements for IPOs, the US stock market focuses on full disclosure and strong enforcement. The HKEX utilizes a combination of financial requirements and legal arrangements somewhere in the middle of the two ends. That is why the financial criteria for listing in Hong Kong and the US bourses as illustrated in Tables A.2–A.4 are much more flexible than those in mainland China.

There are several alternative standard categories for companies applying for IPOs on these exchanges. The standards typically include the earnings test, capitalization or revenue test, cash flow test or some combination of them. A company that fits any one of these standards can be listed. For example, if a company satisfies the capitalization test or cash flow test, the company doesn't need to be profitable before the IPO. As indicated in Table A.2., no net profit is required for IPO in standard categories 2 and 3 of the main board, and GEM in Hong Kong. The US exchanges may place more emphasis on cash holding and indebtedness than on profitability (Davis *et al.*, 2023). Given the stringent

[7] The requirements for GEM in Hong Kong in Table A.2. and Global Market in NASDAQ in Table A.4 are updated, and the rest of Tables A.2–A.4 are same as Shi's (2020) Appendix B. Table A.2. to Table A.4. are attached here for comparison. Besides financial criteria, there are other legal requirements on listing. For example, both Hong Kong and New York require an authorized local representative. There are also disclosure requirements, both in offering documents and in continuing compliance. We refer interested readers to Tsang (2010) for a more detailed discussion and comparison between Hong Kong and New York.

Table 2. Financial Requirements for Listing in Mainland China

	Main Board						ChiNext					STAR					
	2006–2023		2023-Present				2009–2019		2020-Present			2020-Present					
Standard category[a]	1	2	1	2	3	4	1	2	1	2	3	1	2	3	4	5	6
Operating history	≥ 3 years		≥ 3 years						≥ 3 years								
Net profit	>30 M in 3 years; >0 in each year		≥ 150 M in 3 years; >0 in each year; ≥ 60 M in most recent year		>0 in most recent year		>10 M in 2 years; >0 in each year	≥ 5 M in 1 year	≥ 50 M in 2 years; >0 in each year	>0 in 1 year		≥ 50 M in 2 years; >0 in each year	>0 in 1 year				
Net cash flow	>50 M in 3 years		≥ 100 M in 3 years		≥ 150 M in 3 years										≥ 100 M in 3 years		
Sales revenue		>300 M in 3 years		≥ 1 B in 3 years	≥ 6 B in most recent year	≥ 8 B in most recent years		≥ 50 M in 1 year		≥ 100 M in 1 year	≥ 300 M in 1 year		≥ 100 M in 1 year	≥ 200 M in 1 year	≥ 300 M in 1 year	≥ 300 M in 1 year	
Sales revenue growth								≥ 30% in 1 year									
Intangible assets	<20% of net assets																
Net assets							≥ 20 M										
Market value					≥ 5 B	≥ 8 B				≥ 1 B	≥ 5 B	≥ 1 B	≥ 1 B	≥ 1.5 B	≥ 2 B	≥ 3 B	≥ 4 B
R&D investment														≥ 15% of sales revenue in 3 years			

Notes: [a]A company needs to meet only one of the standard categories for IPO.
[b]Units: 1 M = 1 million CNY, 1 B = 1 billion CNY.

listing requirements and the preference for state-owned enterprises in mainland China, many private companies with high growth potentials turned to Hong Kong or US to raise funds when the offshore markets opened the door for them.

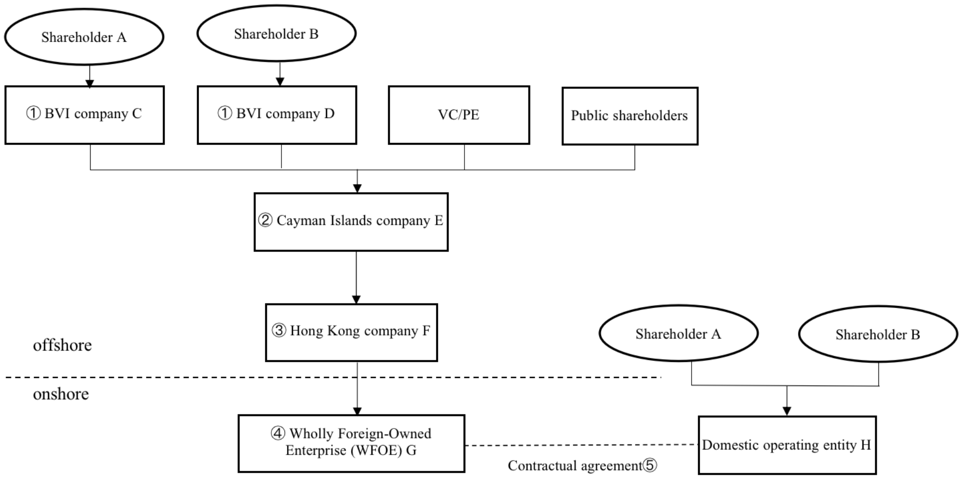
3.2. *Regulatory requirements*

In addition to the financial requirements set by stock exchanges, governing authorities in mainland China also impose many regulations on firms seeking public offering at home and abroad. To bypass these regulations, Chinese firms have been strategically and creatively searching for ways of circumvention, which leads to several offshore listing modes with Chinese characteristics.

Direct listing and *indirect listing* are the two principal modes for Chinese firms to go public outside mainland China. Direct listing refers to a Chinese firm listed abroad with itself as the listing entity. In order to list overseas, companies need to submit required materials and satisfy certain stringent listing requirements set forth by the China Securities Regulatory Commission (CSRC). On 14 July 1999, CSRC issued the "Notice on Issues Concerning Enterprises' Application for Overseas Listing," which sets the mandatory financial requirements for domestic companies seeking overseas listings.[8] Given such strict listing requirements, except for large SOEs, few enterprises were able to go public directly on foreign markets. After 2012, the government lowered the requirements for a direct listing, eliminated the restrictions on financial indicators, and simplified the filing documents and review procedures, greatly encouraging SMEs to tap into offshore capital markets. Although the listing requirements have been greatly relaxed and the procedures streamlined, *direct listing* still requires review and approval by the CSRC. At the end of August 2023, there are 323 Chinese companies, dominated by large and mature firms, incorporated in mainland China and listed directly in Hong Kong as the so-called H-shares, e.g., Tsingtao Brewery, China Eastern Airlines and Wuxi AppTec.

To avoid the stringent listing requirements and complex approval procedures of direct listing, many Chinese companies choose *indirect listing*, such as listing through traditional red-chip structures, Variable Interest Equity (VIE), reverse merger, or Special Purpose Acquisition Company (SPAC). The listing through a red-chip structure refers to a company in mainland China setting up a company outside of China and then injecting or transferring the assets from the domestic company to the offshore company for the purpose of overseas listing. To transfer assets into the offshore company, the shareholder of a Chinese company usually establishes a SPAC outside mainland China and then acquires the domestic company via the SPAC. Although this mode avoids the financial requirements of the direct listing, after the issuing of "Interim Provisions for Foreign Investors to Merge Domestic Enterprises" in 2006, it also needs review and approval by the Ministry of Commerce and the CSRC.

[8] Companies applying for an overseas listing need to meet the following criteria: (1) the company's net assets are not less than 400 million CNY; (2) the company's profit after tax in the previous year is not less than 60 million CNY and the company has high growth potential; and (3) the funds raised by the company are not less than 50 million USD, calculated based on a reasonable expected price-to-earnings ratio.



Notes: (1) In the example of ZTO Express (2057.HK), Shareholder A is Lai Meisong and Shareholder B is Lai Jianfa.
(2) E = ZTO Express (Cayman) Inc.
(3) F = ZTO Express (Hong Kong) Limited.
(4) G = Shanghai Zhongtongji Network Technology Co., Ltd.
(5) H = ZTO Express Co., Ltd.

Figure 6. Listing Procedure via a VIE Structure

At the same time, due to the restrictions or prohibitions on foreign investment in certain industries in mainland China, which is known as the "Negative List",[9] companies in these industries are not allowed to list overseas under either direct listing or the traditional red-chip structure. The VIE structure circumvents these regulations by effectively disguising foreign ownership. It is especially common for high-tech companies that raise equity financing earlier and often, frequently from foreign investors. That is why many private shares listed in Hong Kong and about two-thirds of Chinese firms listed on the NYSE and NASDAQ have employed the VIE structure, including the most well-known internet giants Baidu, Alibaba and Tencent (BAT).

The VIE structure is similar to the red-chip structure, but it separates the listed entity from the operational entity in terms of shareholding, as the listed entity controls the operating business through a series of contracts. Figure 6 illustrates the five steps to set up a VIE for the purpose of overseas listing, e.g., ZTO Express. In the first step, the individual shareholders (A and B indicated in Figure 6, Lai Meisong, Lai Jianfa in our example) of a domestic equity company (H, ZTO Express Co., Ltd as our example) set up a company (C) outside mainland China, such as in the British Virgin Islands (BVI) or

[9] China's negative list is formally known as the Special Administrative Measures for Access to Foreign Investment. It is released annually by the Ministry of Commerce and National Development and Reform Commission and outlines the country's restricted and prohibited industries for foreign investment. The 2021 version, released on 27 December 2021 and effective on 1 January 2022, can be found on the official website of the Ministry of Commerce and National Development and Reform Commission. The most recent negative list for the first time declares China's jurisdiction over (and detailed regulatory requirements on) overseas listings made by Chinese firms in the so-called "prohibited industries", in which China prohibits foreign investment.

other tax-exempt locations. The second step is to establish a company (E), owned by the BVI entities, in a place like the Cayman Islands as the subject of an offshore listing. The main purpose of establishing a BVI entity (C) in the first step to control the listing objective is that individual shareholders can gain tax benefits by holding shares through a BVI entity (C), rather than holding the shares directly by themselves. In the third step, the company (E, ZTO Express (Cayman) Inc. in our example) in the Cayman Islands establishes a Special Purpose Vehicle (SPV) (F, ZTO Express (Hong Kong) Limited) in Hong Kong, due to its advanced financial service system, and the tax benefits to shareholders when the domestic company distributes dividends and profits to them. In the fourth step, the SPV (the Hong Kong company F) establishes a Wholly Foreign-Owned Enterprise (WFOE) (G in Figure 6, Shanghai Zhongtongji in our example) in mainland China. Finally, the WFOE (G) engages in a series of contractual arrangements to share the interest of the actual operating entity (H in Figure 6) whose shareholders are domestic individuals or institutions.

It is permissible for the operating entity (H, ZTO Express Co., Ltd in our example) to engage in businesses that are restricted or prohibited from foreign investment as long as the operating entity (H) is still controlled by domestic individuals or entities. Foreign investors can share the benefits by investing in the Cayman Islands entity (E, ZTO Express (Cayman) Inc. in our example). From the perspective of investors in the US or Hong Kong, the listing entity is a company in the Cayman Islands (E). However, being in the regulatory gray area for many years, the legal standing of this VIE structure under Chinese law remains unclear until very recently.[10]

Reverse mergers, commonly known as backdoor listings, are also a simplified and fast way to go public abroad. A domestic company buys a publicly listed company in Hong Kong or US as a “shell” company, and then the “shell” company reverse acquires the domestic company to achieve an offshore listing. Reverse mergers are popular in the capital market due to their low cost and less onerous procedures without the need for approval by local authorities. However, they are also prone to issues such as false financial statements and inadequate information disclosures. In the early stage, many Chinese firms listed in the US were through reverse merger, including Orient Paper, a target of short-seller Muddy Waters in 2010.

Listing through an SPAC may avoid the common issues arising from reverse mergers to a certain extent. Listing through an SPAC is common in the US and is one of the legal ways to go public there. The difference between a SPAC listing and a traditional backdoor listing

[10] On 24 December 2021, the CSRC released the *Provisions of the State Council on the Administration of Overseas Securities Offering and Listing by Domestic Companies* (Draft for Comments) and the *Administrative Measures for the Filing of Overseas Securities Offering and Listing by Domestic Companies* (Draft for Comments) for public review. These administrative measures would implement a new regulatory framework requiring Chinese firms to file with CSRC when pursuing overseas listings, both direct listing and indirect listing, which includes the VIE structure. These administrative measures were officially released on 17 February 2023, and became effective on 31 March, which clearly indicate that VIE-structured overseas listings of Chinese companies that meet the compliance requirements will be filed. However, the specific meaning and criteria of “compliance” remain unclear. The administrative measures and the most recent negative list, taken as a whole, indicate the latest attitude of Chinese regulators toward VIE-structured overseas listings of Chinese firms in the negative-listed industries.

lies in that a SPAC is a shell company created with the purpose of finding companies that seek to go public. That is, the sponsor first establishes an SPAC in the US, which has only cash without any other assets and business. This company will initially raise funds through an IPO and then invest in or acquire a target company. Through mergers and acquisitions with the listed SPAC, the target company will quickly go public. SPAC, which appeared as early as the 1980s, has set off a wave in the past two years. In 2020, more than 200 SPACs went public in the US, raising over 80 billion USD, and several Chinese companies, such as UCOMMUNE, benefited. It is likely that with the unresolved legitimacy of the VIE structure, SPAC may become an important alternative for Chinese firms to list abroad.

3.3. *IPO processes*

Even if some Chinese firms manage to meet the financial standards and regulations at home, they may still look for a timely IPO abroad, deterred by the prolonged, complicated and opaque IPO process in mainland China. Cong and Howell (2021) portray the four major steps an issuer must go through to list on the main board under an administrative approval-based system.

As shown in the upper panel of Figure 7, first, the company needs to hire a large team of professionals, such as underwriters or accountants, to help them with restructuring, due diligence, and drafting of financial materials and other legal documentation. It typically takes between one to two years for the professionals to finish this “tutorship”. Next, the company and its underwriters submit an IPO application to the CSRC. As mainland China conducts the administrative approval-based system before 2023, the company often needs to wait a long time for a reply, leading to a long queue for listing based on the order of application. After the application, the Stock Issuance Examination and Verification

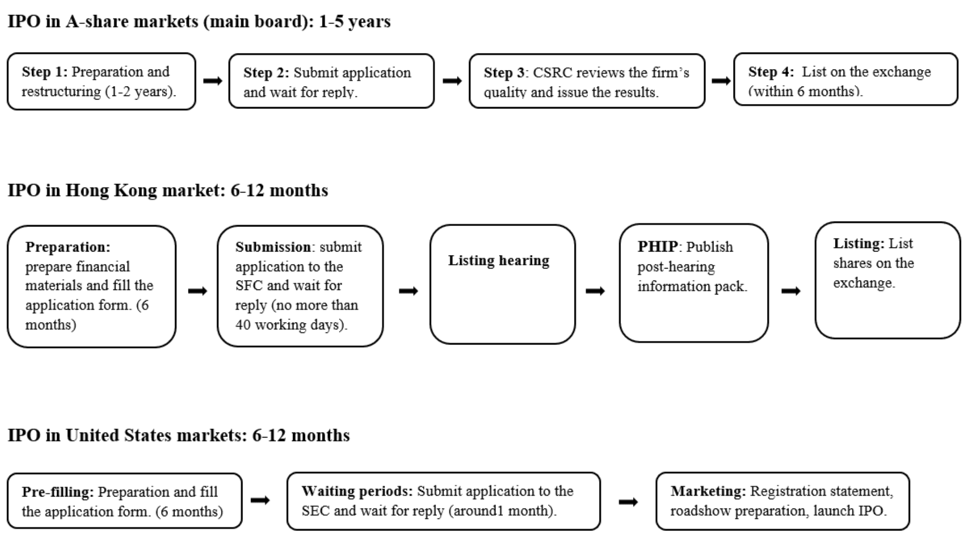


Figure 7. IPO Processes in Mainland China, Hong Kong and the US

Committee of the CSRC will review the firm's quality and determine whether the company is qualified for listing. The CSRC will not only pay attention to the authenticity of the information disclosed by the company but will also conduct substantive reviews of the company to ensure that the company's financial status is healthy, and its growth is sustainable. During this review process, the CSRC will doubt the materials provided by the applicants, and the company should address these questions fully. Typically, the listing committees reject 10–30% of applications. Last, after having obtained the approval document on the issuance, the company can apply to list on one of the domestic exchanges. The issuer and underwriters need to negotiate and determine the share price, launch the roadshow, publish the prospectus and then list its shares on the exchange. The entire process from approval to launch is usually completed within six months unless there is any policy change such as IPO suspension. Generally, it takes one to five years for a company from preparation and restructuring to final listing on the main board in mainland China.

Under the disclosure-centric and registration-based system, the IPO processes in Hong Kong and the US, are in contrast more transparent, better streamlined and less time-consuming. As illustrated in the middle panel of Figure 7, when a company attempts to list on the HKEX, first and foremost, it hires investment bankers or accountants to prepare the application materials and fill out the application form. Second, the exchange or Securities and Futures Commission (SFC) determines whether to accept or reject the company's listing application. If it is accepted, the exchange or SFC conducts the first inquiry within 10 working days. The inquiries are conducted with a maximum of four rounds, taking up to 40 working days, to require the applicant to address some issues before the hearing. A listing hearing refers to a comprehensive assessment of the listing applicant. Experts evaluate face to face whether the application will be approved. Approved applicants will publish the post-hearing information pack (PHIP) on the HKEX within three days after the hearing. After that, the company and its underwriters commence a roadshow, determine the price, report the placement results and list its shares on the board.

The lower panel of Figure 7 summarizes the three stages of the IPO process in the NYSE. The pre-filing phase is the time for a company and financial professionals to have organizational meetings, prepare the draft of the registration statement and other legal documents, conduct due diligence and determine the listing location. After the company submits the draft statement to the Securities and Exchange Commission (SEC), the IPO process turns to the second phase, the waiting period, where the company receives and replies to the comments from the SEC and agrees on the offering structure with existing shareholders. The last period of the IPO process in the US is the marketing or execution phase. The company conducts management presentations and roadshows, determines the offering price and begins publicly trading on an exchange. As Hong Kong and the US implement the registration-based IPO system, the exchanges or SFC (SEC) focus on the review of the authenticity of disclosure documents and therefore do not spend a long time for approval. In fact, the whole IPO process typically takes six months to one year when Chinese companies conduct IPOs in Hong Kong or the US.

4. Reforms at Various Exchanges

4.1. *Reforms in mainland China*

In this section, we summarize the important reforms related to IPO systems in mainland China and recent trends in four oversea markets, including Hong Kong, US, Singapore and London. Overall, the IPO system in mainland China evolves from an administrative examination and approval system to an administrative approval system, and then gradually towards a market-oriented registration system. Table 3 illustrates the major reforms from 1993 to the most recent years in mainland China, which also explains the policy factors behind the large fluctuations in the number of domestic IPOs depicted in Figure 3 and Table 1. As the existing literature has documented the reforms in earlier years, for example, Allen *et al.* (2020a), here we focus on the three most recent reforms.

The first reform comes from the "Opinions on further promoting the reform of the IPO system" issued by the CSRC in November 2013. After that, China's IPO system starts a new chapter. Although the IPO issuance is still the sponsorship system, many adjustments have been made at the issuance level, pricing level, information disclosure, and legal liability levels, and some features of the registration system have emerged. Particularly, during the IPO process, the impact of the CSRC on assessing the firm's value has been gradually diminished. Instead, the focus has been shifted to the quality of information disclosure.

The second reform is the real trial of the registration system in mainland China in 2019. The opening of the Science and Technology Innovation Board (STAR) at the Shanghai Stock Exchange (SSE) officially kicked off the prologue of the IPO registration-based system. Under the registration system, the CSRC examines the authenticity of registration documents and makes few determinations on the value of the company. Subsequently, in June 2020, the CSRC announced the implementation of the IPO registration system on the Growth Enterprise Market (ChiNext), thereby further facilitating the reform of the IPO registration system in mainland China to promote the listing of high-quality enterprises on ChiNext.[11]

The third reform is the official release of a series of institutional rules for fully implementing the registration system in mainland China in February 2023. Under the registration system, restrictions on the IPO price-to-earnings ratio are no longer in place in mainland China. The issue price of IPOs is primarily determined by the market and thus reflects the value of companies. Meanwhile, two sets of listing standards have been added to the main board, providing more financing opportunities for high-growth, high-tech and innovative firms and enhancing the inclusiveness of the capital market.

[11] The registration IPO system is expected to reduce the severe IPO underpricing in China's capital market. According to recent research, such as Li and Xu (2022), the reform has improved price efficiency in both short and long run. However, Liao (2023) proposes that the implementation of the registration IPO system in STAR and ChiNext only improves IPO pricing efficiency of premarket but reduces the aftermarket pricing efficiency. As shown in Sun *et al.* (2022), the introduction of mutual fund bids on STAR dramatically boosts the IPO offer price, leading to low initial short-term returns and reduced IPO underpricing.

Table 3. IPO System Evolution in Mainland China

Time	IPO System	Specifics	Characteristics
1993–1995	Administrative examination and approval system	Single quota management	The government determines the total quota for stock issuance each year and selects listed firms. An application needs to be approved by both local government and relevant central ministries, commissions and by CSRC.
1996–2000	Administrative examination and approval system	Two-tier quota management	The government determines the total quota for stock issuance and limits the number of firms to be listed. Almost no Non-SOEs were approved to be listed.
2001–2003	Administrative examination and approval system	Channel management	Issuers need to join a tutorship and subsequently submit related materials every two months during the one-year tutoring period. The government limits the number of channels of qualified underwriters for IPO applications.
2004–2013	Administrative approval system	Sponsorship system	No limit on the number of companies one underwriter can underwrite. Listing requirements become stringent. Private firms are given more opportunities to list.
2013–2019	Administrative approval system	Sponsorship system with registration system features	The impact of CSRC on selecting the listed firms is weakened. Regulations are more focused on information disclosure to improve information quality and listing process transparency.
2019–2023	Administrative approval system/ Registration system	Sponsorship system (main board); Registration system (STAR and GEM after 2020)	CSRC examines the authenticity of information rather than selecting the companies worth investing in under registration system.
2023-Present	Registration system	Registration system for all boards	The government fully implements the registration system for stock issuance. Diverse and inclusive listing requirements across boards. No administrative restrictions on the price and size of IPO.

Source: China Securities Regulatory Commission and Tebon Securities.

Currently, in mainland China, the registration system is adopted for the main boards of the SSE and the Shenzhen Stock Exchange (SZSE), the ChiNext of the SZSE, and the STAR of the SSE.

These recent reforms have successfully promoted IPOs in mainland China. Some high-tech and fast-growing firms, which would otherwise have to seek overseas listing, chose STAR as an alternative. During 2016–2022, on average there were 337 IPOs on Chinese domestic stock market every year. From its launch in 2019 till the end of August 2023, there have been 556 firms going public on STAR, raising total proceeds of 892 billion CNY at IPO and reaching a market capitalization of 6.2 trillion CNY.

4.2. *Reforms in HKEX*

The HKEX also made several important reforms in recent years to cater to the need of overseas listing of Chinese firms. In 2018, the HKEX launched the most important new rules to attract companies with high growth potential and broaden Hong Kong's market presence. Specifically, the exchange added three new chapters in the main board listing rules, including: (1) the listing of biotech companies that do not meet any of the main board financial eligibility tests or even do not have positive revenue; (2) the listing of New Economy companies with weighted voting right structures; (3) establishment of a new concessionary secondary listing route for firms from Greater China and qualified international companies wishing to a secondary listing in Hong Kong.

The subsequent years have witnessed an increasing number of Chinese companies listed in Hong Kong. Xiaomi Corporation was the first issuer listed in Hong Kong on 9 July 2018 with a weighted voting right structure, followed by Meituan on 20 September 2018. The Chinese e-commerce giant Alibaba's secondary listing debuted on 26 November 2019 on the HKEX, raising at least 11.3 billion USD. In 2021, three years after the reform, Hong Kong became Asia's largest biotech fundraising hub and the second largest globally, only behind NASDAQ. Sixty-one percent of the IPOs in Hong Kong from 2018 to 2021 came from New Economy companies.

Amid the delisting pressure of Chinese stocks on the US market due to the rising US-China tension, the HKEX furthers its reforms. In December 2021, the bourse established the SPAC listing regime to enhance its competitiveness as an international financial center. On 1 January 2022, the revised listing rules were launched to simplify the listing regime for companies incorporated outside Hong Kong and provide more opportunities for Chinese companies. The Greater China-based companies in any industry without a weighted voting right structure are eligible for a secondary listing in Hong Kong, provided that they satisfy the market capitalization test. In addition, dual primary listing on the HKEX is permitted for both Greater China issuers and non-Greater China issuers who are qualified for secondary listing with their current weighted voting rights or VIE structures. These amendments to listing rules provide support for the return of Chinese stocks. On 22 April 2022, Zhihu became the first China Concept Stock that returned to the Hong Kong market with a dual primary listing. Many Chinese companies upgraded from secondary to primary listings. In March 2022, Bilibili applied to voluntarily convert its secondary listing to a dual primary listing in Hong Kong. Four months later, Alibaba also announced its plan to seek a primary listing in Hong Kong to attract investors in mainland China.

In 1993, Tsingtao Brewery became the first state-owned enterprise to be listed and issue H-share in Hong Kong, and since then Hong Kong has become the popular financing platform for mainland companies. Some mainland companies are dual-listed and issue both A-shares on the Shanghai or Shenzhen stock exchanges and H-shares on the Hong Kong stock exchange. The "A+H" model between the mainland and Hong Kong is conducive to the interconnection of the two markets, and for enterprises, it can further broaden their financing channels, improve their financing efficiency, and enhance their financing capacity. On 29 June 2023, to broaden the coverage of "A+H" shares, HKEX signed a Memorandum of Understanding (MOU) with the Beijing Stock Exchange (BSE) to support eligible companies to apply for listing on each other's markets.[12] Under the agreement, eligible companies trading on the BSE can apply for listing on the HKEX and register with CSRC in accordance with the regulations on the issuance of securities outside mainland China. Companies trading in Hong Kong may also do so by listing their shares on the BSE.

To support the development of the Renminbi in the Hong Kong market, HKEX launched the HKD-RMB dual counter model on 19 June 2023, which allows investors to trade the shares of Hong Kong-listed companies in either HKD or RMB. Shares listed under the two counters are of the same class and are fully interchangeable under the HKD-RMB dual counter model. Investors can trade in HKD or RMB and in either counter have identical rights, such as dividend and voting rights. The first batch includes 24 dual counter shares for the first time, such as Tencent Holdings, Alibaba, ANTA Sports and Hang Seng Bank. These companies cover industries in technology, finance, consumer products and real estate, and account for around 40% of the average daily turnover on Hong Kong's stock market.

4.3. *Reforms in other stock exchanges*

Other major stock exchanges, such as Singapore Stock Exchange (SGX) and London Stock Exchange (LSE), also respond quickly to the changing overseas listing climate facing Chinese firms. After all, Chinese firms are arguably the largest IPO clients in the world at present. On 26 June 2018, SGX reformed its listing requirements, providing a channel for companies with dual-class share structures to seek primary listing on its main board. In March 2021, SGX provided clear guidelines and disclosure requirements in assessing the listing suitability of a VIE structure. On 2 September 2021, SGX introduced the regulatory framework for listing on the main board via SPAC, offering Chinese firms another method of listing on the SGX. On 24 May 2023, SSE and SGX formally signed

[12] Beijing Stock Exchange (BSE) was established in September 2021 and mainly serves innovative small- and medium-sized enterprises. It was reformed from the top "select tier" of the National Equities Exchange and Quotation (NEEQ), which was an over-the-counter market for small business stock trading.

MOU on ETF product connectivity to support cooperation in ETF product connectivity and provide diversified cross-border investment choices for investors.

On 17 June 2019, the Shanghai-London Stock Connect officially started in London.[13] The Shanghai-London Stock Connect is a two-way program that allows the Chinese companies listed in Shanghai to issue Global Depositary Receipts (GDRs) for listing on the LSE and also allows the companies listed in London to be traded as Chinese Depositary Receipts (CDRs) in Shanghai. After this stock connect program, several Chinese companies issued GDRs in London, such as Huatai Securities and China Pacific Insurance. On 17 December 2021, the stock connects expanded to Chinese firms listed on the SZSE and capital markets in Germany and Switzerland. To attract more companies listed on the LSE by SPACs, the Financial Conduct Authority (FCA) in the UK revised the listing rules of SPACs with effect from 10 August 2021. To make the UK listing regime more in line with other leading global markets, the FCA also allows the dual-class share structures for premium listings and reduces free float requirement from 25% in "public hands" to 10% in December 2021.

5. Delisting Pressures

The recent delisting pressure on Chinese stocks from the US stock exchanges has grown significantly since the US-China trade war. As early as December 2018, the SEC and the Public Company Accounting Oversight Board (PCAOB) issued a joint warning to investors about the challenges US regulators face when trying to regulate US-listed companies from mainland China and Hong Kong. Chinese regulations require that the financial records of these Chinese companies need to remain in China and are restricted from being accessed due to concerns on national security. The SEC and PCAOB state that China challenges transparent financial reporting on the US market by refusing to provide financial records.

In 2019, US Senator Marco Rubio introduced the Equitable Act, in response to the non-compliance and non-transparency of Chinese companies listed on the US stock exchanges. The Equitable Act is an amendment to the Sarbanes-Oxley Act that requires the SEC to delist the foreign companies listed on the US exchanges that do not comply with supervision and audit requirements. More than 150 Chinese companies listed on US stock exchanges are required to provide audit trails and are subject to stricter regulations, otherwise forced to be delisted.

On 2 April 2020, Luckin Coffee, a beverage retailer in China mainly selling coffee and tea, was revealed to fabricate performance via inflated revenue, coupon sales, and redemptions from the second to fourth quarters of 2019, involving sales of approximately 2.2 billion CNY. After the announcement, its stock price plunged by 80% and its stock

[13] The Shanghai-Hong Kong Stock Connect and Shenzhen-Hong Kong Stock Connect were introduced in 2014 and 2016, respectively, to allow both domestic investors and investors in Hong Kong to trade on both markets. For details, see Miao and Deng (2020). Changes in financial openness in mainland China, such as the implementation of Stock Connects, are one of the key contributors to explain the variations in China-US equity valuation gap, see Bekaert *et al.* (2021). There is also a growing number of studies exploring the broader impact of China's Stock Connects, such as Ma *et al.* (2021).

trading was suspended several times. In June of 2020, Luckin was delisted from NASDAQ. The Luckin Coffee accounting fraud has caused widespread concern, triggering a new round of trust crises in Chinese stocks since 2010.

The US Senate and House of Representatives further passed the Holding Foreign Companies Accountable Act (HFCAA) in May and December 2020, respectively. According to the HFCAA, any foreign company that fails to comply with the audit requirement of the PCAOB for three consecutive years will be prohibited from trading and then be delisted. The SEC adopted the Final Rule of the HFCAA on 9 December 2021 and announced the bill would become effective on 10 January 2022. Moreover, the SEC also issued a statement warning investors of the risks of investing in Chinese companies due to not only non-transparent financial statements but also the VIE structure.

The Chinese authorities also increased scrutiny on overseas listed Chinese firms in recent years. On 7 February 2021, China's State Administration for Market Regulation (SAMR) published the finalized Anti-Monopoly Guidelines for the Platform Economy issued by the Anti-Monopoly Commission of State Council ("Guidelines"). This follows a high-profile consultation process on the draft version, which began on 10 November 2020. The Guidelines expressly state that transactions involving VIEs are subject to merger control in China. Three companies (Alibaba, China Literature and Hive Box) with VIE structures received the legal maximum and highest ever fines imposed for failing to notify their respective notifiable transactions for merger control.

Shortly after its rushed IPO in June 2021 on NYSE, ride-hailing giant Didi was banned from accepting new users in its App. The Cyberspace Administration of China (CAC) initiated a cybersecurity review against Didi and two other Chinese companies that were recently listed in the US, citing concerns over data and national security. On 4 January 2022, the CAC issued "the New Measures for Cybersecurity Review" ("New Measures") with effect from 15 February 2022, amending the drafted rules released on 10 July 2021. The new measures provide that if a network platform operator who possesses the personal information of more than one million users plans to be listed in foreign countries, it must apply to the office of Cybersecurity review for review before its overseas listing.

Being under the regulatory spotlight and unusual uncertainties in the past two years, the US-listed Chinese companies, most of which are in the internet sector, data-intensive, and adopted the VIE structure, have experienced an unrelenting slide in their stock prices. Almost no new Chinese companies were listed in the US between July and October 2021. The first half of 2022 saw only four new listings of Chinese firms in the US. At present, nearly 200 US-listed Chinese stocks are on the provisional or conclusive list of issuers identified under HFCAA.[14]

The looming delisting risk and fast-approaching deadline have prompted some big firms to upgrade or to consider upgrading to dual primary listings in Hong Kong.

[14] Once the SEC identifies a non-compliant issuer, referred to as a 'Commission-Identified Issuer', the issuer is placed on a 'Provisional list of issuers identified under the HFCAA'. The issuer has fifteen business days to appeal the decision. After this period, confirmed non-compliant issuers are placed on a 'Conclusive list of issuers under the HFCAA' list ('Conclusive' list). Once placed on the 'Conclusive' list for three consecutive years, the delisting of the issuer will be effective on the fourth business day after the order is published. A detailed and updated Provisional and Conclusive list can be found here.

Chen *et al.* (2022) examine the economic value of dual-listing in Hong Kong. The paper finds that China concepts stocks with dual-listing status before implementing mandates of the HFCAA have a higher return than their peers that are only listed in US. A primary listing would allow these firms to seek inclusion in the Stock Connects, a link to the city's bourse which allows mainland Chinese investors to buy stocks more easily. It will also entrench Hong Kong's status as an alternative to the US markets ahead of a potential exodus of Chinese companies from the NYSE. Nevertheless, it is not clear whether Hong Kong could provide a sufficient substitute to the NYSE for these Chinese tech giants. For example, Alibaba's average daily trading volume in Hong Kong was about 700 million USD in the past year, only one-fifth of its trading volume in the US. Similarly, the percentage of Hong Kong trading volume for Baidu and JD.com is only 12% and 26% of those in the US.

To resolve the long dispute over the auditing of Chinese concept stocks between the US and China, the CSRC and the Ministry of Finance (MOF) in China formally signed an Audit Regulation Cooperation Agreement with PCAOB on 26 August 2022. The agreement allows US regulators to conduct inspections and investigations of Chinese firms listed in the US, including inspections of audit transcripts of these companies. In 2022, PCAOB successfully obtained full access to investigate and inspect audit companies in China for the first time. Therefore, the PCAOB voted to vacate the earlier determinations. The delisting risk for Chinese concept stocks was temporarily resolved. However, in May 2023, a report from PCAOB showed unacceptable rates of deficiencies for two audit firms inspected in 2022: KPMG Huazhen LLP in mainland China and PricewaterhouseCoopers in Hong Kong. The CSRC also responded rapidly, stating that they would be willing to work with US regulators to promote regulation and ensure the rights and interests of global investors. It remains to be seen whether Chinese concept stocks can get out of the woods.

6. Conclusion

As China continues its growth and participates globalization, it is expected that the increase in foreign capital demand will encourage more Chinese companies to seek IPO abroad. On the one hand, any stock exchange that manages to meet this demand will lead the world IPO market. On the other hand, easier access to the international capital market is crucial for the financing and investment of Chinese firms, which in turn enhances China's economic growth and global impact. At the same time, the overseas listing also provides an effective channel for international investors to share the rapid growth of China and diversify portfolio risk.

Inspired by this study, we attempt to portray the image of overseas-listed Chinese firms in feature research. By comparing the valuations of Chinese overseas-listed firms with their domestic counterparts, Feng *et al.* (2023) find that overseas-listed Chinese often face a valuation discount. The valuation discount implies the cost of capital market regulations. The reforms of such regulations would reduce the costs faced by entrepreneurs and increase their incentive to list domestically.

Given these profound implications of overseas listing by Chinese firms, and under overall geopolitical tension, further reforms in the Chinese capital market will be essential.

There are three specific challenges facing the governing authorities. First, how to foster accessible domestic IPO markets with transparent rules, streamlined processes and minimal *ad-hoc* intervention? Second, how to help those unlisted firms in the negative-listed industries that have absorbed foreign investments get listed on overseas capital markets with legitimacy? Last and probably also most urgently, how to negotiate with the US regulators to resolve the conflict between US inspection requirements and China's data security? We hope this paper provides some insights for a balanced, pragmatic, and successful policymaking.

Appendix A. More Information on Calculating the Number of Chinese Firms Listed Overseas

1. Formula:

Since the total number of Chinese firms listed in various markets in the past is not always available in some cases, we calculate this number using the following formula:

Total # of listed in Year 2021 = total # in 2020 + # of newly listed in 2021 − # of delisted in 2021.

2. Our criteria of Chinese firms listed overseas follow FTSE Russell's Guide to Chinese Share Classes. Chinese firms listed overseas refer to those that meet any of the following criteria:

(1) Incorporated in mainland China;
(2) Headquarters in mainland China;
(3) Controlling shareholders before IPO is individual, company and state entity in mainland China;
(4) More than 55% of sales revenue comes from mainland China.

3. How we calculate the number of Chinese firms using data:

(1) Number of Chinese firms listed in Hong Kong:

  (a) H shares, red chips and Chinese private shares as defined in Wind Financial Terminal +,
  (b) Firms filtered by our definition of Chinese firms in *delisted* firms on HKEX reported in Wind Financial Terminal +,
  (c) Additional Chinese firms listed in Hong Kong as defined in CSMAR.

(2) Number of Chinese firms listed in the United States:

  (a) China concept stocks as defined in Wind Financial Terminal +,
  (b) Delisted firms in the US reported in Wind Financial Terminal +,
  (c) Additional Chinese firms listed in the United States as defined in CSMAR.

(3) Number of Chinese firms listed in Singapore:

  (a) Chinese firms listed in Singapore as defined in Wind Financial Terminal +,
  (b) Delisted Chinese firms in Singapore as defined in Wind Financial Terminal +,
  (c) Additional Chinese firms listed in Singapore as defined in CSMAR.

(4) Number of Chinese firms listed in the United Kingdom:

(a) Chinese firms listed on LSE as defined in Wind Financial Terminal +,
(b) Delisted Chinese firms as defined in Wind Financial Terminal +,
(c) Additional Chinese firms listed on LSE as defined in CSMAR.

4. Comparison with other sources and authors:
In general, the numbers of Chinese firms listed overseas reported by Table 1 are larger than those reported by other sources and authors. The reason could be that our criteria above are broader.
(1) HKEX has started to report the number of (mainland) Chinese firms listed in Hong Kong and their market capitalization, and other information in its annual reports since 2015.

	Number from HKEX	Our Calculation in Table 1
2015	951	970
2016	1,002	1,018
2017	1,005	1,064
2018	1,146	1,158
2019	1,241	1,248
2020	1,319	1,324
2021	1,368	1,369

The difference is considerably small, especially in late years. More details can be found on HKEX official website:
https://www.hkex.com.hk/Market-Data/Statistics/Consolidated-Reports/HKEX-Fact-Book?sc_lang=zh-HK
(2) Chinese firms listed on major US stock exchanges
Their criteria for Chinese firms are

(1) Identified as being from the PRC by the NYSE or NASDAQ,
(2) List a PRC address as its principal executive office,
(3) Majority of operations in the PRC.

In the report by the United States-China Economic and Security Review Commission (USCC), there are 248 Chinese firms listed in the US as of 2021, smaller than 287 reported in our Table 1.
https://www.uscc.gov/sites/default/files/2022-03/Chinese_Companies_on_US_Stock_Exchanges.pdf
Besides their sample by stricter criteria above, we also include some firms whose controlling shareholders come from mainland China but their headquarters and business are overseas, such as O2Micro (OIIM.US).

(3) SGX reported the number of Chinese firms in its monthly reports

	Number from SGX	Our Calculation in Table 1
2019	93	113
2020	76	95
2021	70	86

The number reported by SGX is smaller than our number. This significant difference may come from different criteria between SGX and ours. In addition, for the firms listed in Singapore, CSMAR contains a larger number of firms that are not included in Wind Financial Terminal, and these companies may not be Chinese firms by our definition. More details can be found on SGX's official website.
https://www.sgx.com/zh-hans/research-education/historical-data/market-statistics
(4) Table 1 in Shi (2020):
Criteria for Chinese firms:

(1) The place of incorporation is mainland China,
(2) Controlling shareholders from mainland China.

Databases used: Wind, CSMAR, Hong Kong Stock Exchange, SGX, Compustat, Datastream.

Our numbers are larger than those reported in Table 1 by Shi (2020). The reason is that our criteria for Chinese firms listed overseas are broader. Thus, we include firms incorporated outside of mainland China and whose largest controlling shareholder is not an individual or a firm in mainland China, but whose main business is in the mainland such as Alibaba (BABA.US 9988.HK).
(5) Allen *et al.* (2020b)
Criteria of Chinese firms:
(1) Headquartered in mainland China
Databases used: Compustat, CSMAR, CRSP, Datastream.

In their sample, the numbers of Chinese firms listed on HKEX and SGX are smaller than ours, but the number of Chinese firms listed on the US exchanges is larger than ours. Allen *et al.* (2020b) collect Hong Kong-listed Chinese firms from CSMAR, different from our sample which combined those in Wind Financial Terminal and CSMAR defined as Chinese firms. For Chinese firms listed in Singapore, the study only includes those headquartered in mainland China. The data for Chinese firms listed in the US by Allen *et al.* (2020b) are from Compustat and CRSP. Their number is bigger than ours because we exclude those special-purpose acquisition companies from China and count them as delisted as long as they move to OTC.

(6) Pan and Brooker (2014)

Their criteria for Chinese firms are

(1) Their revenues are mainly from businesses in mainland China,
(2) Controlling shareholders are mainly from mainland China.

Their numbers are smaller than ours. The difference could be that our criteria for Chinese firms are broader and thus we included some firms that are incorporated or headquartered in mainland China, but with their main business or controlling shareholders outside of China.

(7) Luo *et al.* (2012)

This study selects Chinese firms directly on the NYSE and NASDAQ by defining "region" as China. Now the NYSE and NASDAQ no longer provide this portal. Their number is smaller than ours because they only include firms geographically located in mainland China. Our criteria are broader and thus we included some firms incorporated or headquartered outside of China, but with their main business or controlling shareholders in mainland China.

Table A.1. Chinese Share Classes

Share Class	Listing Location	Incorporation Location	Trading Currency	Investors
A-share	Mainland China	Mainland China	CNY	Domestic investors/ International investors under QFII and QRFII
B-share	Mainland China	Mainland China	HKD (Shenzhen)/ USD(Shanghai)	Domestic investors with foreign currency/ International investors
H-share	Hong Kong	Mainland China	HKD	International investors/ Domestic investors under QDII or
Red Chip	Hong Kong	Outside Mainland China	HKD	Shanghai(Shenzhen)- Hong Kong stock connects
P Chip	Hong Kong	Outside Mainland China	HKD	
N-share	United States	Outside Mainland China	USD SGD	International investors/ Domestic investors under QDII
S Chip	Singapore	Outside Mainland China	GBP	
L-share	London	Outside Mainland China	EUR	
D-share	Germany	Mainland China		

Source: Guide to Chinese share classes by FTSE Russell.

Table A.2. Financial Requirements for Listing in Hong Kong

	Main Board			GEM
Standard category[a]	1	2	3	1
Operating history		$\geq$ 3 years		$\geq$ 2 years
Net profit	$\geq$ 50 M in 3 years			
Net cash flow			$\geq$ 100 M in 3 years	$\geq$ 30 M in 2 years
Sales revenue		$\geq$ 500 M in 1 year	$\geq$ 500 M in 1 year	
Market value	$\geq$ 500 M	$\geq$ 4 B	$\geq$ 2 B	$\geq$ 150 M

Notes: [a]A company needs to meet only one of the standard categories for IPO.
[b]Units: 1 M = 1 million HKD, 1 B = 1 billion HKD.
[c]Requirements for GEM are updated, and the rest of the table is the same as Appendix B of Shi (2020).

Table A.3. Financial Requirements for Listing in the NYSE

Standard Category[a]	1	2	3	4
Operating history				$\geq$ 1 year
Adjusted cash flow		$\geq$ 100 M in 3 years; $\geq$ 25 M in each of most recent 2 years		
Sales revenue		$\geq$ 100 M in 1 year	$\geq$ 75 M in 1 year	
Pre-tax income	$\geq$ 100 M in 3 years; $\geq$ 25 M in each of most recent 2 years			
Market value		$\geq$ 500 M	$\geq$ 750 M	$\geq$ 500 M

Notes: [a]The company needs to meet only one of the standard categories.
[b]Unit: 1 M = 1 million USD.
[c]This table is the same as Appendix B of Shi (2020).

Table A.4. Financial Requirements for Listing in the NASDAQ

Standard	Global Select Market				Global Market				Capital Market		
Category[a]	1	2	3	4	1	2	3	4	1	2	3
Operating history						≥ 2 years				≥ 2 years	
Stockholder's equity				≥ 55 M	≥ 15 M	≥ 30 M			≥ 4 M	≥ 5 M	≥ 4 M
Total assets				≥ 80 M				≥ 75 M in last year or in two of last three years			
Cash flow		≥ 27.5 M in 3 years; ≥ 0 in each year									
Sales revenue		≥ 110 M in 1 year	≥ 90 M in 1 year		≥ 1 M in last year or in two of last three years			≥ 75 M in last year or in two of last three years			

Table A.4. (*Continued*)

Standard	Global Select Market				Global Market				Capital Market		
Category[a]	1	2	3	4	1	2	3	4	1	2	3
Pre-tax income	$\geq$ 11 M in 3 years; $\geq$ 0 in each year; $\geq$ 2.2 M in each of the two most recent years										
Net income									$\geq$ 0.75M in last year or in two of last three years		
Market value		$\geq$ 550 M in 1 year	$\geq$ 850 M in 1 year	$\geq$ 160 M			$\geq$ 75 M				$\geq$ 50 M

Notes: [a]The company needs to meet only one of the standard categories.
[b]Unit: 1 M = 1 million USD.
[c]Requirements for the global market are updated, and the rest of the table is the same as Appendix B of Shi (2020).

Table A.5. List of Acronyms

Acronyms	Proper Noun
SOEs	State-Owned Enterprises
COEs	Collectively Owned Enterprises
WFOE	Wholly Foreign-Owned Enterprise
SPAC	Special Purpose Acquisition Company
VIE	Variable Interest Equity
SPV	Special Purpose Vehicle
SZIH	Shenzhen International Holdings Limited
BCAH	Brilliance China Automotive Holdings Limited
SPC	Sinopec Shanghai Petrochemical Company Limited
ONP	Orient Paper, Inc.
HTSC	Huatai Securities
CPI	China Pacific Insurance
UCOMMUNE	Ucommune Group Holdings Ltd
SSE	Shanghai Stock Exchange
SZSE	Shenzhen Stock Exchange
BSE	Beijing Stock Exchange
HKEX	Hong Kong Stock Exchange
NYSE	The New York Stock Exchange
NASDAQ	National Association of Securities Dealers Automated Quotations
LSE	London Stock Exchange
SGX	Singapore Stock Exchange
SME board	Small and Medium Enterprise Board
GEM	Growth Enterprise Market
STAR	Science and Technology Innovation Board
GDRs	Global Depositary Receipts
ADRs	American Depositary Receipts
CDRs	Chinese Depositary Receipts
CSRC	China Securities Regulatory Commission
SAMR	State Administration for Market Regulation
SFC	Securities and Futures Commission
SEC	Securities and Exchange Commission
PCAOB	Public Company Accounting Oversight Board
MOU	Memorandum of Understanding
HFCAA	Holding Foreign Companies Accountable Act
“Guidelines”	Anti-Monopoly Guidelines for the Platform Economy
“New Measures”	New Measures for Cybersecurity Review
IPO	Initial public offering
PHIP	Post-Hearing Information Pack
BVI	British Virgin Islands

Appendix B. Calculation of Market Capitalization

We calculate the market capitalization of Chinese firms listed on mainland China, Hong Kong and United States markets based on their corresponding shares listed on that market. There are three cases. First, for the firms only listed in one market, market capitalization is the product of closing prices and outstanding shares. For example, XPeng Motors, an electric vehicle manufacturing company, was listed on the NYSE in 2020 by issuing ADRs. At the end of 2020, the total number of ADRs issued was 464,148,393 and each ADR represented two ordinary shares. The closing price for one ADR on 31 December 2020 was 42.83 USD. Thus, the total market capitalization of XPeng Motors was 42.83 × 464,148,393 = 19,879,475,672.19 USD. The blue area of Figure 1 represents the market capitalization of firms only listed in the US markets.

Second, many dual-listed Chinese firms issued ADRs in the US with their underlying assets as the shares listed in Hong Kong, e.g., Alibaba. Alibaba issued ADRs on the NYSE in 2014 and then listed on the Hong Kong Stock Exchange in 2020 by secondary listing. As of 2020, Alibaba issued 21,688,948,800 shares on HKEX and 2,711,118,600 ADRs on NYSE with each ADR representing eight ordinary shares on HKEX. The number of shares traded on the NYSE in the form of ADRs is equivalent to the number of shares traded on HKEX (2,711,118,600 × 8 = 21,688,948,800). Its market capitalization on HKEX was 5,044,849,490,880 HKD (=21,688,948,800 × 232.6 HKD) on 31 December 2020, while its market capitalization on the US market was 630,958,631,778 USD (=2,711,118,600 × 232.73 USD) on 31 December 2020. To avoid potential double counting for firms like Alibaba due to this dual-listing, we filter these firms and only count their market value once when obtaining the total market value of the overseas-listed Chinese firms. The green area of Figure 1 represents the market capitalization of those dual-listed Chinese firms such as Alibaba.

Third, some Chinese firms issue shares both in Hong Kong and the US. Take Yum China as an example. As a leading restaurant in China, it went public in 2016 on NYSE and started a secondary listing on HKEX in 2020. Different from Alibaba, Yum China issued 378,089,300 common shares in the US instead of ADRs. Thus, the market capitalization of Yum China on the US market was 21,585,118,137 USD (=57.09 × 378,089,300). In addition, Yum China issued 41,910,700 common shares on HKEX with a market capitalization in the Hong Kong market of 18,633,497,220 HKD (=444.6 × 41,910,700) on 31 December 2020. In this case, the market capitalization of Yum China on the US market falls into the blue area of Figure 1 while its market capitalization on HKEX is included in the yellow area of Figure 1.

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