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The Internationalization of China's Equity Markets

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ABSTRACT: China's equity markets internationalization process started in the early 2000s but accelerated after 2012, when Chinese firms' shares listed in Shanghai and Shenzhen gradually became available to international investors. This paper studies the effects of the post-2012 internationalization events by comparing the evolution of equity financing and investment activities for: (i) domestic listed firms relative to firms that already had access to international investors and (ii) domestic listed firms that were directly connected to international markets relative to those that were not. The paper finds large increases in financial and investment activities for domestic listed and for connected firms, with significant aggregate effects. The evidence also suggests the rise in firms' equity issuances was primarily and initially financed by domestic investors. International investors' portfolio holdings in Chinese equity markets and ownership in firms increased markedly only once Chinese firms' locally issued shares became part of the MSCI Emerging Markets Index.

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I. Introduction

The integration of mainland China into global financial markets in recent decades is considered of central importance for economic development both within and outside China (Cerutti and Obstfeld, 2019). Prior to China' accession to the World Trade Organization (WTO) in 2001, international investors' access to Chinese stocks was very restricted and segmented.[1] After China became a WTO member, it established a Qualified Foreign Institutional Investor (QFII) program that gave limited access to selected investors to purchase shares issued in the Shanghai and Shenzhen stock markets. After 2012, the internationalization process accelerated significantly as Chinese authorities steadily eased restrictions that prevented international institutional and retail investors from buying shares in Chinese firms listed in domestic markets (the so-called A shares). China's equity markets grew markedly following the post-2012 internationalization events, becoming the second largest equity markets in the world in terms of market capitalization by 2020, just below those in the United States.

This paper studies the impact of the post-2012 internationalization events on firms' equity financing and investment activities. In 2013, the QFII program and the Renminbi Qualified Foreign Institutional Investor (RQFII) program (initiated in 2011) expanded significantly, while Morgan Stanley Capital International (MSCI) announced a review process to eventually incorporate domestic listed Chinese stocks into its closely followed Emerging Markets Index. In 2014 and 2016, China "connected" its equity markets in Shanghai and Shenzhen, respectively, with that in Hong Kong SAR, China. This so-called Stock Connect programs not only further facilitated the entry of institutional investors, but also granted foreign retail investors' access to Chinese equity markets for the first time. In 2018, Chinese A shares were incorporated in the MSCI Emerging Market Index, and their relative importance was allowed to increase over time. We offer a comprehensive review to evaluate the impact of these events, while attempting to distinguish it from that of contemporary domestic changes and other shocks.

We construct a rich panel dataset that combines transaction-level data on equity issuances with firm-level balance sheet data between 2000 and 2020. The dataset allows us to distinguish four groups of Chinese publicly listed firms with operations in mainland China that differ in the extent to which they were targeted by the post-2012 internationalization events. First, the *foreign listed group* is composed of firms with stocks listed in international (or foreign) markets (mainly, Hong Kong SAR, China and the United States) available for purchase

[1] Foreigners could only buy specific shares denominated in foreign currency (B shares) issued by a very limited number of firms in the mainland stock markets or invest in Chinese stocks by buying shares in Hong Kong (H shares).

by international investors during the entire sample period. The post-2012 internationalization events had no direct implications for this group. Second, the *domestic listed group* includes firms with stocks listed only in domestic (mainland China) markets, which became increasingly available to international investors. Third, the *connected group* encompasses a subgroup of firms within the domestic listed group whose stocks became available for purchase by international investors through the Stock Connect programs and China's A shares MSCI incorporation. Fourth, the *unconnected group* refers to the remaining firms in the domestic listed group. Both the connected and unconnected groups were covered by the expansions of the QFII and RQFII programs.

We conduct difference-in-differences estimations to analyze the evolution of firms' equity financing and investment activities in China following the post-2012 internationalization events. We systematically compare the groups of firms more directly targeted by the post-2012 internationalization events with those not targeted. Specifically, we separately compare domestic to foreign listed firms and connected to unconnected domestic listed firms. The panel dataset enables us to examine the yearly differentials between the treatment and control groups over a long time period. As explained in the paper, we put more emphasis on the estimations for connected versus unconnected firms because the comparison between these two groups of firms is less subject to omitted variable bias and other identification concerns.

We find statistically significant and economically large changes in the financial and investment activities of the domestic firms targeted by the post-2012 internationalization of China's equity markets. The effects are not only significant, but also long-lasting. By contrast, we do not find significant changes in financial or investment activities before 2013. The first part of our analysis shows that domestic listed firms increased their equity issuance relative to foreign listed firms after 2013, despite having started from similar levels up to 2013. The second part of the analysis shows that the increase in issuance activity since 2013 was driven mostly by domestic listed stocks that became available to international investors through the Stock Connect programs and the MSCI incorporation events. For instance, in 2016, connected firms increased their equity issuance (over initial assets) 18 percentage points relative to unconnected firms of similar initial characteristics. Compared to the change observed for the unconnected group, connected firms also increased their capital expenditures (capex), acquisitions, research and development (R&D) expenditures, and cash holdings and short-term investments by 8, 6, 2, and 28 percentage points, respectively, in 2016 relative to before 2013. Both sets of firms started from similar levels relative to initial assets. Financial and investment changes remained large and significant by 2020. Moreover, the increase in investments can be associated with the equity issuances.

Exploring separately the Stock Connect events in the Shanghai and Shenzhen markets, confirms that the increase in equity financing for the connected firms was larger than for the unconnected firms. Each Stock Connect event targeted firms listed in that specific exchange and the two events occurred at different points in time. Thus, analyzing these events separately provides additional evidence supporting the view that the internationalization events had an impact on firm financing.

We take a first step toward understanding the aggregate impact of the post-2012 internationalization events in China by aggregating the firm-level effects estimated from the difference-in-differences regressions. Based on our estimation, around 28 percent of all equity raised by domestic listed firms and 20 percent of all equity raised in China between 2013 and 2020 could be associated with these events. The estimates for the impact on market capitalization are of similar magnitudes. For investment activity, these events could be associated with about 10 percent of all capex, 12 percent of acquisitions, 24 percent of R&D expenditures, and about a quarter of all cash and short-term investments by all domestic listed firms between 2013 and 2020.[2]

In the last part of the paper, we study the behavior of international investors in Chinese equity markets by analyzing changes in foreign equity inflows into China, foreign ownership ratios of domestic listed firms, and the share of China in emerging market portfolios. We find that all these measures increased post 2012. For instance, foreign equity inflows increased from about $30 billion in 2012 to more than $80 billion in 2020; foreign ownership of domestic listed stocks increased from 1.3 percent of the total Chinese equity value in 2012 to 3.7 percent in 2020; the share of China in emerging market portfolios increased from 23 percent in 2012 to 30 percent in 2020. The entry of international investors was gradual at the beginning and accelerated since 2017, when MSCI announced the incorporation of the A shares in its Emerging Markets Index. Moreover, equity inflows by international investors were smaller than the issuance activity of domestic firms before 2018, suggesting that domestic investors were the ones that financed the initial boom in equity issuance activity and sold some of those shares to international investors after 2018. This is consistent with the observed substantial increase in international ownership toward the end of the sample.

Our paper relates to a growing literature studying the integration of China into global financial markets. Some papers cover the internationalization of China in the early periods of liberalization, studying the entrance

[2] Mapping firm-level estimates into macro-economic outcomes is non-trivial. Without a structural model, we cannot capture the general equilibrium effects associated with the liberalization reforms. As we discuss in Section 4.4, it is difficult to predict *ex ante* whether these effects will dampen or amplify the direct responses estimated here. Thus, our estimates of the aggregate effect provide a useful benchmark for any future work that investigates the aggregate impact through the lens of a model.

of foreign institutional investors, the lifting of foreign exchange restrictions, and the extent of financial integration (Lane and Schmukler, 2007; Chiang et al., 2008; Huang and Zhu, 2015; Yao et al., 2018). Other papers study the internationalization of bond markets (Cerutti and Obstfeld, 2019; Mo and Subrahmanyam, 2020; Clayton et al., 2022). One central message from this literature is that China has followed a gradual process of opening its financial system, by allowing certain investors to progressively invest within China, with different markets integrating at different points in time, and by enabling certain firms to raise capital and trade their securities abroad.

In contrast to this literature, our paper focuses specifically on the integration of Chinese equity markets in the post-2012 period. We concentrate on this period because domestic equity markets had not been significantly integrated until then, and the period covers the most significant internationalization events for equity markets, encompassing the easing of restrictions over time for the entry of different international investors and the connection of firms to international equity markets. This allows us to better identify the potential impact of the internationalization process on firms. This type of analysis is harder to do with bonds because the bond liberalization of July 2017 did not target specific types of publicly listed firms.

We are not the first ones to focus on the post-2012 period of internationalization of Chinese equity markets. Previous work finds that equity prices increased after the connection between stock markets in mainland China and Hong Kong SAR, China and that connected firms exhibited higher investment rates subsequently relative to unconnected ones (Bai and Chow, 2017; Chan and Kwok, 2017; Li et al., 2020; Ma et al., 2021; Peng et al., 2021; Wang, 2021; Chen et al., 2022). Some of these studies have performed their analyses within narrow time windows around the implementation of the Shanghai Connect program in 2014. Other papers study the investor base and capital flows reactions to the internationalization process in China. Aggregate data show a higher foreign participation in China's stock markets around the Shanghai Connect program (Cerutti and Obstfeld, 2019). Moreover, the inclusion of China's A shares in the MSCI Emerging Markets Index in 2018 had negative spillover effects on capital flows to emerging economies that were part of the same index (Antonelli et. al., 2022).

We contribute to this literature by offering a relatively longer-term perspective with a focus on firms' equity issuance activity and different measures of investment activity: capital expenditures, spending on

acquisitions, spending on R&D, and cash and short-term investments.[3] We go beyond the Shanghai Connect program and systematically investigate the impact of different internationalization events on different groups of firms since 2012. In addition, we provide estimates of how changes at the firm level translated into aggregate effects. Furthermore, complementing the literature on foreign ownership, we show increases in firm-level foreign participation after 2012. We show that this is especially the case following China's MSCI incorporation announcement in 2017 and for firms with stocks included in the MSCI index, consistent with investors closely following this benchmark. We also examine the behavior of portfolio flows into China and the importance of China relative to other emerging markets. Again, bilateral cross-country equity allocations show a rise in portfolio equity investments in China after it was incorporated in the MSCI index.

Lastly, our paper relates to a much broader literature that studies the internationalization of equity markets in emerging economies and its impact on firm financing and real activities. Within this literature, several studies focus on equity prices following liberalizations events and argue that improved international risk sharing of domestic stocks effectively reduce the cost of capital for firms (Stulz, 1999; Henry, 2000; Chari and Henry, 2004, 2008). The evidence on the real impact is more mixed, partly because isolating the effects of liberalization policies from those of other concurrent policy reforms is difficult, especially with aggregate data. Some argue that stock market liberalizations can boost investment and growth (Bekaert et al., 2001, 2005; Mitton, 2006; Quinn and Toyoda, 2008; Gupta and Yuan, 2009), while others show that the internationalization of domestic stock markets does not necessarily have real effects (Edison et al., 2004; Prasad et al., 2007; Kose et al., 2009; Mclean et al., 2022).[4]

We contribute to this literature in two ways. First, to the best of our knowledge, there is little evidence on the impact of internationalization on the domestic firms' external financing activities, namely equity issuances, for emerging economies. We fill this gap by documenting the evidence from China. Second, existing, mixed evidence from the literature on the economic impact of liberalizing stock markets is mostly based on cross-country studies. We contribute to this literature by conducting a within-country study on the largest emerging economy that liberalized much later than other countries and that selectively allowed different firms to integrate gradually.

[3] We focus on the most common investment-related uses of the proceeds raised through equity issuances (Kim and Weisbach, 2008; Erel et al., 2012; Bruno and Shin, 2017; Acharya et al., 2020a).

[4] A separate broad literature analyzes the relation between de facto internationalization (like ADR issuance and capital flows) and firm performance, including equity issuance (Flavin and O'Connor, 2010; Calomiris et al., 2021, among others). Relative to that literature, we focus on measures taken by policy makers or market makers that are exogenous to the firms.

The rest of the paper is organized as follows. Section 2 details the institutional setting and describes the main internationalization events in China. Section 3 describes our data and empirical strategy. Section 4 reports our results. Section 5 concludes.

II. Institutional Setting

Chinese equity markets were established in the early 1990s with the opening of the Shanghai "SSE" and Shenzhen "SZSE" stock exchanges. These equity markets remained largely closed to international investors until the early 2000s. This section discusses key events in the internationalization process of Chinese equity markets: the Institutional Investor Programs, the Stock Connect programs, and the incorporation of Chinese stocks into MSCI Emerging Markets Index.[5]

The Start of the Internationalization Process: The Institutional Investor Programs

The internationalization process started in 2002, when China allowed some foreign institutional investors to invest in China through the Qualified Foreign Institutional Investor (QFII) Program. Foreign institutions that qualified for this program could buy stocks issued by Chinese firms listed in domestic capital markets (Shanghai and Shenzhen). There were many restrictions for foreign institutions to access this program, such as strict quota restrictions, both at the country level (maximum quota limits for each country) and at the institutional level (maximum quota limits per investment firm). There were also restrictions based on the investors' characteristics, such as minimum years of experience and market capitalization requirements. The licensed investors for the QFII included: Asset management companies, insurance companies, securities companies, pension funds, banks, and other institutional investors.

In 2011, China launched the Renminbi Qualified Foreign Institutional Investor (RQFII) program. While QFII quota-holders had to convert foreign currency into renminbi to invest in Chinese securities, RQFII quota-holders could invest into China's domestic markets with offshore renminbi accounts. Initially, only Hong Kong subsidiaries of Chinese fund management companies qualified for the RQFII program. In 2013, both the QFII and RQFII experienced important expansions. The total investment quota allowed through the QFII almost doubled in size (to $150 billion) from previous years ($80 billion). Moreover, the RQFII program expanded to

[5] The online appendix provides a comprehensive timeline of equity market events between 2000 and 2021, along with all the institutional details mentioned in this section.

Hong Kong subsidiaries of Chinese banks and insurance companies, as well as financial institutions with the place of incorporation and major business in Hong Kong SAR, China. The RQFII also expanded to overseas economies (the United Kingdom and Singapore) for the first time and has kept expanding to other countries since then.

The Stock Connect Programs

The opening of China's equity markets to foreign investors substantially widened since 2014. Before that year, the QFII and the RQFII were the only two schemes through which foreign institutions could buy securities listed in mainland China (A shares).

In April of 2014, the mainland China–Hong-Kong Connect program (Stock Connect program) was officially approved by the Securities and Futures Commission (SFC) in Hong Kong SAR, China and the China Securities Regulatory Commission (CSRC). The Shanghai-Hong Kong Stock Connect was launched in November of 2014; the Shenzhen-Hong Kong Stock Connect was launched in December 2016. Under these programs, investors in each market can trade shares on the other market using their local brokers and clearinghouse: international investors of any type (institutional and retail) can invest in eligible stocks listed in mainland China through the Hong Kong Stock Exchange (HKSE); eligible Chinese investors can access Hong Kong stocks through the Shanghai and Shenzhen exchanges. The programs also allowed foreign institutions to circumvent most of the previous restrictions linked to the QFII and RQFII schemes.[6] More than half of the Chinese stocks listed in domestic equity markets were connected (eligible) through these programs. The connected stocks primarily included the constituent stocks of local benchmark indexes (SSE 180 Index, SSE 380 Index, and SZSE Component Index), as well as stocks cross-listed in the domestic (Shanghai or Shenzhen) and Hong Kong SAR, China markets.[7]

The Incorporation of Chinese Domestic Stocks into the MSCI Emerging Markets Index

MSCI indexes are the most widely followed equity market benchmarks by institutional investors around the world (Hau, 2011; Cremers et al., 2016). In June 2013, MSCI released the first official document about the potential inclusion of domestic Chinese stocks (also called A shares) into MSCI benchmark indexes. Until then, the only Chinese stocks tracked by MSCI indexes were primarily those listed in Hong Kong SAR, China and overseas –

[6] Unlike previous schemes, which were non-anonymous and highly restrictive in cross-border fund flows, under the new reform, investors can trade these stocks anonymously on a centralized trading platform set up by the SSE and Hong Kong Stock Exchange (HKEX), subject to an overall quota of 250 billion yuan (40 billion USD) (Chan and Kwok, 2017).

[7] The Shenzhen Connect also includes SZE Small/Mid Cap Innovation Index with a minimum market cap of 6 billion renminbi.

in other words, the foreign listed stocks. Among the main reasons given by MSCI to support this potential incorporation were the increasing efforts by Chinese authorities to open domestic equity markets to foreign investors, notably through the Stock Connect programs.

MSCI performed several official consultations with its clients about the potential incorporation of A shares into the MSCI Emerging Markets Index. These consultations were part of the MSCI Annual Market Classification Reviews. Following the Stock Connect programs and the positive feedback and support from investors, MSCI concluded the fourth consultation and publicly announced in June 2017 the inclusion of Chinese stocks in the MSCI Emerging Markets Index. Given the large size of the Chinese A-share market, only large capitalization (large-cap) shares were initially included (with an inclusion factor of 5 percent) between May 2018 and August 2018.[8] A consultation about including mid-cap A shares and increasing the inclusion factor to 20 percent was launched in September 2018 and confirmed in 2019. The increase of the inclusion factor occurred in three steps: it rose to 10 percent in May 2019, to 15 percent in August 2019, and, finally, to 20 percent in November 2019.[9]

Aggregate Trends

The internationalization of equity markets in China coincided with a period of fast growth in equity market capitalization. The market capitalization of domestic listed firms grew especially fast during the second period of internationalization events that started in 2013 with the RQFII expansion to overseas countries (2013), the first MSCI incorporation review process announcement (2013), the Stock Connect programs (2014-2016), the MSCI incorporation announcement (2017), and the MSCI incorporation implementation (starting in 2018). During this period, aggregate domestic equity market capitalization grew faster than the Chinese GDP, as well as capital markets in Hong Kong SAR, China and Singapore (Figure 1, Panel A).[10] By 2020, Chinese equity markets had become the second largest in the world in terms of market capitalization, just below those in the United States.

The expansion of market capitalization coincided with increases in both equity prices and issuance activities. The price index in China had risen rapidly, and significantly diverged from the indices in Hong Kong

[8] The inclusion factor is the proportion of a security's free float-adjusted market capitalization that is allocated to the Index.

[9] Other foreign equity benchmark indexes followed MSCI. In September 2018, the Financial Times Stock Exchange (FTSE) Russell announced the official inclusion of China's A shares into its Global Equity Index Series (FTSE GEIS). In September 2019, A shares were officially included in the FTSE indexes with an inclusion factor of 5 percent. In August 2019, FTSE Russell increased the inclusion factor of A shares from 5 percent to 15 percent. In September 2019, Standards and Poor's (S&P) Dow Jones Indices added China's A shares to its S&P Global Broad Market Index (BMI) at an inclusion factor of 25 percent.

[10] One of the key internationalization reforms– the Stock Connect programs – also affected the capital market in Hong Kong SAR, China. Indeed, part of the growth in the market capitalization in Hong Kong SAR, China since 2013 could be attributed to Southbound trading activities from the Connect program. Nonetheless, the market capitalization in mainland China rose substantially more after 2013 (Figure 1, Panel A).

SAR, China and Singapore since 2013, despite having very similar trends before 2013 (Figure 1, Panel B). Moreover, equity issuances also surged in China during this period (Figure 1, Panel C).[11] While mainland China and Hong Kong SAR, China share similar equity issuance trends before 2014, there has been a clear divergence since then. The patterns on equity issuances suggests a significant effect of the internationalization events on firm financing that has not yet been fully explored in the literature, which has mostly focused on the impact on prices. We fill this gap by using a rich micro dataset on equity issuances, to which we now turn.

III. Data and Methodology

3.1. Data

We merge transaction-level data on equity issuances with balance-sheet data of domestic and foreign listed firms. The transaction-level data come from Refinitiv's Security Data Corporation (SDC) Platinum, which provides transaction-level information on new issuances of equity during 1990-2020. We exclude all public-sector issuances, comprising issuances by national, local, and regional governments, government agencies, regional agencies, and multilateral organizations. We also exclude Initial Public Offerings (IPOs), so we can focus the analysis on capital raisings of already publicly listed firms. We augment (match) SDC with Worldscope, which provides annual balance sheet and income statement information for publicly listed Chinese firms. All variables in our sample are in 2011 U.S. dollars.

We define *domestic listed firms* as those that had only issued equity (A shares) in the Shanghai Stock Exchange and/or the Shenzhen Stock Exchange up to 2013. We define *foreign listed firms* as those that had issued equity (at least once) in the Hong Kong Stock Exchange and/or other stock exchanges (such as New York) before 2013. Therefore, the foreign listed group includes: Chinese firms that only issued equity in international markets and firms issuing equity in domestic and international markets (dual listed firms).[12] Dual listed firms mostly include Chinese companies issuing both A shares and H shares (in the domestic and Hong Kong stock markets, respectively).

[11] The figure only considers Secondary Equity Offerings (SEOs), which explain most of the growth in Chinese equity issuances since 2013 (Appendix Figure 1).

[12] Foreign listed firms include Chinese firms that raise capital in international markets through Variable Interest Entities (VIEs). Chinese firms issuing American Depository Receipts (ADRs) are also categorized as foreign listed firms. ADRs are certificates issued by U.S. banks representing the stocks of foreign listed firms. The ADRs trade on U.S. stock market as any other U.S. stock. Our equity issuance data from SDC treats ADRs linked to Chinese firms as regular foreign equity issuances by Chinese listed firms. Alternatively, we exclude the dual listed firms from the foreign listed group, restricting this group to firms that are exclusively listed abroad.

To ensure sample stability, we require firms to be listed in 2013 in our baseline study. Therefore, we exclude firms that became publicly listed after 2013 from the sample. The year 2013 marks the beginning of most internationalization announcements and reforms, including the QFII and RQFII expansions (2013), the first announcement of MSCI incorporation (2013), the Stock Connect programs announcements and implementation (2014 - 2016), the official announcement of MSCI incorporation (2017), and its implementation (2018). As forward-looking investors typically respond to information about future government interventions before their implementation, we believe that 2013 could mark a change in financial and real trends in China.

Within domestic listed firms, we distinguish between connected and unconnected firms. We retrieve from the Hong Kong Stock Exchange webpage the firm identification information of connected and unconnected Chinese stocks through the Stock Connect programs. We define as *connected firms* those whose A shares became available for purchase by international investors through the Stock Connect programs and the MSCI incorporation. We focus on the group of domestic firms that became connected during 2014-17, dropping the most recent (post-2017) connected firms from the analysis. *Unconnected firms* are the remaining domestic listed firms; in other words, these are firms that did not gain direct access to foreign capital through the Stock Connect and MSCI incorporation events. Because we classify dual listed firms as foreign listed firms, these firms are excluded from the domestic listed firms' comparisons (connected vs. unconnected). All firms in the analyses (foreign listed, connected, and unconnected) have residence and major operations and business in mainland China.

According to the definitions above, our sample consists of 2,017 domestic listed (82 percent) and 438 foreign listed firms (18 percent). Among the domestic listed firms, there are 1,289 connected firms and 728 unconnected firms (Table 1, Panel A). Between 2000 and 2012, foreign listed firms raised more than two thirds of the total amount of equity (Table 1, Panel B). However, there was a notable change thereafter: the total amount of equity raised by connected firms more than tripled in 2013-2020. During this period, they accounted for more than 60 percent of total equities raised by publicly listed firms with residence in mainland China. By contrast, the total amount of equity raised by foreign listed firms significantly declined in both absolute and relative terms in 2013-2020.

Before delving into the firm-level analysis, we examine the differences in firm characteristics across domestic and foreign listed firms *before* most of the internationalization events took place (i.e., before 2013).[13] On average, domestic firms raised less equity, and were smaller and less leveraged than foreign listed firms (Table 2, Panel A). Moreover, domestic listed firms held less cash, and engaged in smaller acquisition activities on average, but they had higher and more stable cash flows (income). Investment rates were similar across the two groups. Among domestic listed firms, connected firms were on average much larger, and had higher and more stable cash flows than unconnected firms before 2013 (Table 2, Panel B). We take into account these *ex-ante* differences in firm characteristics in our empirical analysis, to which we now turn.

3.2. Empirical Strategy

The baseline empirical framework is a difference-in-differences approach that exploits firm heterogeneity in their exposure to the equity market internationalization process. We use the following specification throughout the analysis:

$$y_{it} = \sigma + \theta \times D_i^{Treated} + \sum_{t=1}^{T} [\gamma_t \times time_t + \beta_t (time_t \times D_i^{Treated})] + \alpha_j + \varepsilon_{it}, \quad (1)$$

where the dependent variable y_{it} is our variable of interest (issuance activity variables to analyze financial effects, and balance-sheet variables to analyze real effects) for firm i at time t. $D_i^{treated}$ is a dummy variable that equals one if firm i is in the treatment group (i.e., exposed to the internationalization process) and zero otherwise. We include a set of year dummies $time_t$ and their interactions with the treatment dummy. Therefore, γ_t measures the change in each variable for the control group of firms in year *t* relative to 2012, while β_t measures the differential effect for the treated firms in year *t* relative to 2012. Industry fixed effects are denoted by α_j. σ is a constant. Since 2013 marks the beginning of most of the internationalization events, we set 2012 to be the comparison year in our analysis. In our baseline estimation, we normalize each variable of interest by the firm's total assets in 2012, i.e., prior to the post-2012 internationalization events. To minimize the impact of outliers, we remove for each variable of interest values above the 99th percentile.[14]

[13] See Appendix Table 1 for a detailed definition of the main firm-level variables used in the paper.

[14] We only remove the largest (and not the smallest) outliers because we want to consider zero equity issuance values, which would be removed if we drop the smallest values.

We follow a three-step approach to analyze the evolution of firms' equity financing activities in China following the post-2012 internationalization events. First, we distinguish between Chinese firms listed in international markets, which had access to foreign financing before and after the events, and those listed in mainland China's capital markets. In this case, $D_i^{Treated}$ is a dummy variable that is equal to one for domestic listed firms, and zero for foreign listed firms. We consider three variants of the control group: all foreign listed firms, foreign listed excluding those with A shares (dual listed), and foreign listed excluding dual listed and those listed in Hong Kong SAR, China.[15] In these regressions, we analyze the 2000-2020 period so we can test equity patterns around the early internationalization reforms, especially the QFII (2001) and RQFII (2011), as well as the post-2012 episodes. Finding statistically significant differences in firm financing activities between domestic listed and foreign listed firms around the internationalization events would be suggestive of internationalization effects. Nonetheless, we cannot rule out potential confounding effects from contemporary reforms or financial shocks affecting domestic capital markets, such as the rise in shadow banking around 2010 (Acharya et al., 2020b; Chen et al., 2020).

Second, to remove such confounding effects, we conduct another difference-in-differences analysis focusing on domestic listed companies and distinguishing between connected and unconnected firms.[16] This is the most studied comparison in the related literature on price revaluations during the internationalization of Chinese equity markets (see, for example, Ma et al., 2021). Here $D_i^{Treated}$ is a dummy variable that equals one if a domestic listed firm is connected, and zero otherwise. In this analysis, we focus on the 2007-2020 period, which is a long enough window to examine the behavior of the variables of interest before and after the events. Although these events happened sequentially, in our baseline specification a firm is either connected or unconnected throughout the sample (2000-2020). Our reasoning is as follows. On the one hand, there could be anticipation effects in financial markets. After the Shanghai Connect, for example, firms and investors might have anticipated the Shenzhen Connect program before its announcement. Moreover, there were many MSCI reviews during 2013-17 and investors could have anticipated the eventual incorporation of A shares to the MSCI benchmark indexes. Even if the concern is that by classifying a firm as "connected" before it actually became

[15] By including the dual listed firms in the control (foreign) group, our estimates of the impact of liberalization reform are arguably biased downward, since dual listed firms are also exposed to the liberalization events. Offshore listed firms are those listed in foreign markets other than Hong Kong SAR, China.

[16] In the second treatment analysis, our focus is on understanding the impact of post-2012 internationalization events. In our analysis of the early internationalization events (QFII in 2002 and RQFII in 2011), we can only exploit the distinction between domestic and foreign listed firms.

connected we might introduce a bias to the difference-in-differences estimates, the bias could make our estimates of the impact of the Connect events lower than they should be. This is because firms that were not yet connected might not fully react before they were actually connected.

Third, we conduct separate event studies for the implementation of the Shanghai-Hong Kong Stock Connect (2014) and the Shenzhen-Hong Kong Stock Connect (2016), respectively (Section 4.2). In each event study, we restrict the sample to firms in each specific stock market, and the dummy variable captures connected firms during each event. This exercise not only allows us to compare the impact of different internationalization events, but also provides additional evidence that our estimates are likely to be capturing the impact of these episodes, instead of other concurrent shocks or policy changes in the domestic financial markets.

It is also important to acknowledge that the selection of which firms are connected and which ones are not is not random, and that the connected treatment group may be fundamentally different from the unconnected control group. Indeed, we have shown that there are significant differences in both financial and real variables between connected and unconnected firms (Table 2, Panel B) before the internationalization process. These variables capture most of the heterogeneity across firms in 2010-12, just before the majority of equity internationalization events materialized. Notably, the largest differences between connected and unconnected firms show up in size-related variables, such as total assets, market capitalization, and total debt.[17]

We attempt to address endogeneity concerns related to the systematic difference between the connected and unconnected groups in two ways. First, we systematically analyze the long-term trend in our variables of interest (issuance and investment activities) between the treatment and control groups. If the two groups had similar trends before the internationalization events, one could plausibly argue that the unobservable variables should not affect these firms in a differential way during the post-internationalization period. Therefore, instead of running difference-in-differences regressions comparing two periods, we use a yearly difference-in-differences specification. We examine the yearly differentials in each outcome variable between connected and unconnected groups between 2007 and 2020.

Second, we run propensity score matching (PSM) regressions to create a matched subsample of firms in the connected and unconnected groups with similar characteristics before the reform (Chan and Kwok, 2017; Ma et al., 2021). To this end, we estimate a Logit model to predict the probability of being connected based on

[17] Because the addition of domestic stocks to domestic equity indexes highly depends on the size of the firm (in terms of market capitalization), it is expected that size is the mayor difference between connected and unconnected firms.

the broad set of variables from Table 2. The estimated model is used to match firms in the treatment group to their nearest neighbors in the control group based on their propensity scores (predicted probability of being connected).[18] After the matching, most of the *ex-ante* differences in firm characteristics between connected and unconnected firms in the PSM sample become significantly smaller or disappear (Table 2, Panel C). Although the difference in market capitalization remains significant in the PSM sample, it is much smaller in magnitude than in the full sample. Moreover, as we show below, larger firms have more muted responses to internationalization events. Thus, the fact that connected firms are on average larger than unconnected firms in the sample would most likely bias our estimates downward; in other words, the actual impact of the internationalization events on firms of similar characteristics is likely larger than that implied by our PSM estimates.

Even after addressing selection issues between connected and unconnected firms, the difference-in-difference estimates comparing these firms could be biased if the unconnected firms are indirectly affected by the internationalization events. For instance, as connected firms tap into the international markets for funding, they might become less reliant on domestic finance, and the supply of finance to the unconnected firms could rise as a result. In other words, there might be spillover effects to the unconnected firms due to the portfolio rebalancing of domestic investors after the internationalization events. Although this is theoretically plausible, we do not find supporting evidence on the investors' side, as we discuss in Section 4.5. In particular, we find that the supply of domestic finance actually increased for the connected firms during the internationalization events.

IV. Results

Consistent with the aggregate data, our firm-level dataset shows that the post-2012 internationalization events coincided with a surge in equity issuance activities by domestic listed firms that became connected (Figure 2, Panel A).[19] The growth in equity issuance by connected firms began in 2013 and accelerated since 2014. By

[18] We use Logit regressions to estimate the probability of being connected, where the explanatory variables are those listed in Table 2. These estimations allow us to obtain comparable subsamples of connected and unconnected firms based on their equity and debt financing, size, cash flow volatility, and investment ex-ante. Moreover, because the largest differences between connected and unconnected firms are related to firm size (Table 2, Panel B), in unreported results we also use exclusively size-related variables to predict the probability of becoming a connected firm. The main results are very similar to our baseline results. Although we analyze it later, we do not use R&D to perform the PSM because of the higher incidence of missing values (only about 54 percent of firms have non-missing R&D data).

[19] We focus on Seasoned Equity Offerings (SEOs) as opposed to Initial Public Offerings (IPOs) because most equity issuances after 2013 were SEOs, and because SEOs allow us to compare firm performance before and after the capital raising activity. We do not have issuance or balance sheet information of firms before their IPO.

2016, the aggregate amount of equity raised by connected firms had quadrupled compared to 2013. In contrast, the issuance activities of unconnected firms and foreign listed firms remained relatively stable.

We observe similar patterns for equity raised as a fraction of total assets in 2012 at the firm level (Figure 2, Panel B). Notably, connected and unconnected firms in our sample had very similar equity issuances-to-asset ratios up to 2014, but the divergence since then is apparent and remains significant to date. For connected firms, the average equity raised as a fraction of total assets in 2012 more than tripled between 2014 and 2016. Unconnected firms, on average, also raised more equity as a fraction of total assets, but to a much smaller extent. Foreign listed firms, by contrast, experienced no growth in equity raised over assets during the same period. By 2020, the average ratio of cumulative equity raised over assets for connected firms was about 1.5 times the ratio for unconnected firms, and twice of that for foreign firms (Figure 2, Panel C).

4.1 Firm Financing

Baseline Results

We begin our econometric analyses by examining the effect of internationalization on firms' equity issuance activity. To this end, we consider two dependent variables (y_{it}): the amount of equity raised per firm-year and the cumulative amount of equity raised per firm up to each year. We normalize both measures by the size of each firm (measured by total assets) in 2012.

First, we run our baseline difference-in-differences regression (Equation 1) to assess the difference in issuance activity between *domestic* and *foreign listed* firms around the internationalization episodes. The results of these regressions are reported in Table 3. In Figure 3, we plot the estimated difference-in-differences coefficient $\hat{\beta}_t$ for each year, which measures the differential change for the treated group of firms (domestic listed firms) relative to the non-treated group (foreign listed firms). The regression results confirm that equity issuance activities only started to diverge across the two groups in the years following the Shanghai Stock Connect program. In fact, the estimates show no statistically significant difference for equity raised over assets between domestic and foreign listed firms up to 2014. The differences become statistically and economically significant in 2015, when domestic listed firms increased the equity to asset ratio by 4 percentage points (p.p.) more than foreign listed firms did. This difference increased to more than 10 p.p. in 2016 (Figure 3, Panel A). By 2020, the cumulative amount of equity raised over assets was 21 p.p. higher for the domestic listed firms relative to the foreign listed ones (Figure 3, Panel B). Consistent with the findings in Figure 2, we do not find significant

differences in the equity issuance behavior across firms around the reforms introduced before 2013 (such as the QFII and RQFII implementations). These results are similar when dual listed firms and Hong-Kong listed firms are excluded from the foreign listed sample (Table 3).

Next, because comparisons between foreign and domestic listed firms could be affected by confounding domestic events unrelated to internationalization, we focus on the domestic listed firms. We thus estimate difference-in-differences regressions to compare the issuance activity of *connected* and *unconnected* firms (Table 4 and Figure 4). We present the results from two different samples: the full sample (left-hand panels), and the PSM sample (right-hand panels). Both groups of firms show similar equity issuance patterns before the Stock Connect programs, but since then, connected firms raised substantially more equity than unconnected firms did. The results from the full sample echo the results from the comparison of domestic and foreign listed firms: the impact of the Stock Connect became evident in 2015, when the ratio of equity raised over assets was about 4 p.p. higher than for connected firms than for unconnected firms, and the difference rose to about 6 p.p. in 2016 (Figure 4, Panel A). By 2020, the cumulative amount of equity raised over assets was approximately 18 p.p. higher for connected firms than unconnected firms, starting from similar values before 2014 (Figure 4, Panel B).

The results from the PSM sample, which arguably delivers cleaner estimates of the post-2012 internationalization events by addressing sample selection issues, suggests that the differential effect was already significant in 2014 (Figure 4, Panel A), i.e., at the start of the Stock Connect programs. Moreover, the estimates from the PSM sample are also larger in magnitude: the ratio of equity raised over assets was about 8 p.p. higher for connected firms than for unconnected firms in 2015, and the difference rose to 18 p.p. in 2016. The fact that both types of firms had a low level of equity issuance during the 2012 baseline year (about 1 percent of equity raised over assets) highlights the large magnitude of the differences starting in 2014 (Appendix Figure 3). By 2020, the cumulative amount of equity raised over assets was 51 p.p. higher for connected firms than unconnected firms (Figure 4, Panel B).

One plausible reason why the PSM results show larger equity issuance differentials than the full sample relates to differences in firm size. As shown above, size is the most important difference between the full samples of connected and unconnected firms. As such, the full sample distribution of connected firms is to the right of the distribution of unconnected firms; in other words, connected firms are, on average, significantly larger (Appendix Figure 2, Panel A). In the PSM sample, by contrast, the two groups have approximately similar size distributions (Appendix Figure 2, Panel B). Hence, the average firm size in the PSM sample is smaller than that in the full

sample, as the PSM sample excludes the very large firms in the full sample. If smaller firms were more reactive to the equity internationalization events, the difference in the average firm size between the two sample groups could explain -at least in part- the differences between the full sample and PSM sample results.

To verify this formally we disaggregate the connected firms in the PSM sample by size (defined by total assets in 2010-12). We then re-estimate the difference-in-differences equation for each subgroup (Table 5 and Figure 5). We find that relative to the unconnected firms, the smallest firms (in the lowest quartile) in the PSM sample raised the most equity (as a fraction of total assets in 2012) following the reform, and the magnitude of the impact decreases monotonically in firm size (Figure 5, Panel A). Consistent with this pattern, we show that within the group of connected firms, the relatively smaller ones (below the median) increased significantly more their equity issuances than the larger ones (above the median) (Table 6). The difference rose from 4 p.p. in 2014 to 23 p.p. in 2016, and the cumulative difference rose above 73 p.p. by 2020. The correlation between equity issuance reactions and firm size survives even when excluding firms with strong political connections, or state-owned enterprises (SOEs), from the sample. This is important because SOEs are relatively large corporations and other studies have already shown that their investment reacted less to the Stock Connect than that of private owned firms (Ma et al., 2021).[20]

Taken together the evidence suggests that the magnitude of the internationalization effects depends crucially on firm size. Smaller firms, which tend to be more financially constrained, react more to these events than larger corporations. This suggests the presence of financial frictions in China, and is consistent with the market internationalization process helping, to some extent, the more constrained firms to overcome these frictions and raise external capital.[21]

Robustness and Extensions

We perform four sets of robustness tests for the full sample and the PSM sample, respectively: (1) use the log of equity raised as the dependent variable; (2) add additional controls; (3) exclude financial firms; (4) exclude margin

[20] We follow Ma et al. (2021) and define as SOEs firms whose main (top 1) shareholder is a government related entity. To construct this variable, we merge our main dataset with 2007-2020 firm-level data on firm ownership structure downloaded from Wind. We consider SOEs all firms with a government related principal shareholder any year between 2007-2020, so our sample of SOEs is balanced over time. According to this definition, around 37 percent of firms in our domestic listed sample are SOEs and are about twice as large as the rest of (private) firms.

[21] Typically, smaller firms face greater frictions than larger firms in credit markets. However, this channel arguable affects unlisted firms the most. Our sample consists of only listed firms, even the smallest ones are on average larger than unlisted firms.

trading firms (Table 7).[22] The main takeaway is that the difference in issuance activity between connected and unconnected firms is robustly significant during the post-2012 internationalization period.

We start by repeating the main analysis using the logarithmic transformation of (one plus) equity raised as the dependent variable in Equation (1) instead of the scaled version of equity raised over firms' assets in 2012. Besides serving as a robustness check, these results complement our baseline estimations in that they inform the overall changes in equity raised, in percentage terms. For instance, in the PSM sample, connected firms increased their equity raising activity approximately 169 percent more in 2014 than the increase for unconnected firms (the differential change between these groups was zero in 2012). The differences in the growth of equity issuance between the two groups rose to 307 percent in 2015 and to 223 percent in 2016.

We consider additional control variables such as lagged total assets and lagged sales growth, to make sure that our estimates of the impact of internationalization are not confounded by changes in firm size or demand conditions. Our estimates remain significant, although they are slightly smaller than those in the baseline regression. This could be because the control variables are also affected by the internationalization process. That is, these time-varying controls might be affected by the treatment and may introduce endogeneity. For instance, if firms were able to raise more equity financing through the Stock Connect, they might be able to grow faster and have higher total assets as a result. Financial firms, on the other hand, only constitute around 3.4 percent of our sample; excluding them barely changes the results (Table 7).[23]

As mentioned above, the comparison between connected and unconnected firms (within the group of domestic listed firms) helps us disentangle the impact of the equity market internationalization process from other financial shocks to the domestic capital markets. However, there might be other domestic policies affecting connected and unconnected firms in a differential way around the internationalization events. One potentially important confounding event is the implementation of margin trading, which began in 2010 and expanded in 2013 to some eligible stocks. By allowing investors to borrow to buy shares, margin trading could have fueled equity issuances, potentially explaining the differential equity issuance trends between connected and unconnected firms around the same dates. To ensure that our estimates are not confounded by this event, we conduct robustness tests by excluding from the sample firms whose stocks became eligible for margin trading.[24] This is

[22] In unreported results, we also exclude SOEs from the analysis and find that main baseline equity effects go up.

[23] We define financial firms as those with Standard Industrial Classification (SIC) codes between 60 and 67.

[24] We define margin trading firms as those whose stocks became available for margin trading during 2010-2017. According to this definition, around 39 percent of our firms in the domestic listed sample are margin trading firms.

important because most of the stocks that became eligible for margin trading were issued by connected firms. Still, the estimates of the impact of internationalization become larger when we exclude the margin trading firms (Table 7). Because margin trading firms are relatively large corporations (about 36 percent larger than the rest of domestic listed firms), the increasing equity issuance effect that we find when excluding them might be explained, once again, by the size-related reaction to the internationalization events.

4.2 Event Studies

So far, our analysis has focused on the impact of several, sequential internationalization events, as outlined in Section 2. In this section, we present event specific results for the Shanghai Connect (2014), and the Shenzhen Connect (2016), respectively. The key difference from our baseline analysis is that now we restrict the sample in each event study to firms in that specific stock market, so the treatment group dummy variable $D_i^{Treated}$ in Equation (1) becomes event specific. To reduce endogeneity concerns, we remove margin trading eligible firms and only include the first group of connected firms in Shanghai (2014) and Shenzhen (2016). This exercise not only allows us to understand and compare the impact of different events, but also helps us better identify the impact of the Connect programs from other potential confounding factors. If our baseline estimates were confounded by the impact of other concurrent shocks or policy changes in the domestic financial markets, then we would not see significantly positive $\hat{\beta}_t$ for both events, unless there is a reason to believe that the confounding factors also occurred in two different periods and in each equity market.

We run PSM regressions for each event to ensure that for each sample, firms in the treatment and control groups have similar characteristics before the reform. As there is significant variation in firm size for each sample – especially for the Shanghai exchange – we use total assets in 2010-2012 to predict the probability of being connected within each exchange, and hence to remove as much as possible the ex-ante difference in size between connected and unconnected firms (Appendix Figure 4).

We find a positive and significant impact of the Connect program for each stock market (Table 8). After the Shanghai Connect, connected firms increased the ratio of equity raised over assets by about 7 p.p. more than unconnected firms in 2015 (Figure 6, Panel A), and the cumulative difference was 17 p.p. in 2020 (Figure 6, Panel B). The impact of the Shenzhen Connect is larger in magnitude: the increase in the ratio of equity raised over assets was 22 p.p. higher for connected firms than for unconnected firms in 2016 (Figure 6, Panel B), and the cumulative difference was 42 p.p. in 2020 (Figure 6, Panel B). Since firms listed in Shanghai are on average

larger than firms listed in Shenzhen (Appendix Figure 4), the fact that connected firms in Shenzhen reacted by more than connected firms in Shanghai is consistent with our size-related results mentioned above.[25]

4.3 Investment Activity

Next, we examine the effect of internationalization on firms' investment activity. We focus on capital expenditures (capex), spending on acquisitions, R&D, and cash and short-term investments.[26] Cash and short-term investments differ in nature from the other two variables because they are not immediate investments in real assets, however, firms can deploy those assets for real investments at a later stage. While cash and short-term investments are measured as stock values in each year, capex, acquisitions, and R&D are flows, so the changes in those variables are not easily comparable.

In our analysis of the investment activity, we focus again on the differences between connected and unconnected firms. We run the baseline difference-in-differences specification (Equation 1), using the following variables as the dependent variable, y_{it}, in turn: capex over total assets, acquisitions over assets, R&D over assets, and cash and short-term investments over assets, where the denominator is measured as of 2012. We report the estimated difference-in-differences coefficients, $\hat{\beta}_t$, from each regression using both the full sample and the PSM sample (Table 9 and Figure 7). The key takeaway is that both connected and unconnected firms followed similar trends in investment activity (of all types) before 2013, but since then, the behaviors of the two groups diverged, with the connected group investing significantly more than the unconnected group. For instance, we show from the PSM sample that by 2016, the difference between the two groups was approximately 8 p.p. for the growth in capex-to-asset, 6 p.p. for the growth in acquisitions-to-asset, 2 p.p. for R&D-to-asset, and 28 p.p. for the growth in cash-to-asset (Figure 7).[27]

Whereas our estimates indicate that capex, acquisitions, R&D, and cash increased more for connected firms relative to unconnected firms following the internationalization events, we have not so far not directly associated the rise in investment activity with the surge in equity issuances documented earlier. To examine how much of the increase in each investment measure was financed by equity issuances - the main variable of interest

[25] In unreported regressions we checked that smaller connected firms within the Shanghai and Shenzhen events were more reactive than larger ones, which is consistent with the pattern shown in Table 6 for all firms.

[26] We use the Worldscope definition for each of these variables, as detailed in Appendix Table 1.

[27] As in the case for equity financing, the differential effect is sizeable relative to the impact of reform policies on connected firms. Taking 2016 as an example, the differential impact accounts for approximately 60 percent, 50 percent, and 70 percent of the predicted effect on connected firms' capex, cash, and acquisitions, respectively (Appendix Figure 5).

in this paper - we follow the methodology pioneered by Kim and Weisbach (2008). An advantage of this approach is that it controls for other sources of financing.[28]

First, we start from the full sample and construct a panel dataset such that for each firm *i*, we keep the observations in each year $t \in (2013, 2020)$ with positive equity issuances ($issuance\ value_{it}$>0), as well as the observations in the pre-issuance (t-1) and post-issuance (t+1) years. Then, we estimate the following regression for the period of 2013 and 2020:

$$Y_{it+k} = \beta_1 \ln\left[\left(\frac{issuance\ value_{it}}{assets_{it-1}}\right) + 1\right] + \beta_2 \ln\left[\sum_{j=t}^{t+k}\left(\frac{\left(total\ sources_{ij} - issuance\ value_{it}\right)}{assets_{it-1}}\right) + 1\right] + \beta_3 \ln[assets_{it-1}] + \alpha_j + \gamma_t + \varepsilon_{it}, \quad (2)$$

where $assets_{it-1}$ denote firm *i*'s total assets in the pre-issuance year *t-1*; *total resources* represent the total funds generated by the firm internally and externally. The dependent variable is:

$$Y_{it+k} = \begin{cases} \ln\left[\frac{V_{it} - V_{it-1}}{asset_{it-1}} + 1\right] & \text{for V = cash} \\ \ln\left[\sum_{j=t}^{t+k} \frac{V_{ij}}{asset_{it-1}} + 1\right] & \text{for V = capex, acquisitions, R\&D.} \end{cases}$$

We estimate a separate regression for *k* = 0 (issuance year) and *k*=1 (post-issuance year). Because the dataset used in this exercise is an unbalanced panel by construction, all firm-level variables in Equation (2) – i.e. Y_{it+k}, $issuance\ value_{it}$, $assets_{it-1}$, $total\ sources_{ij}$ – are only defined if $issuance\ value_{it}$>0; otherwise they are treated as missing values. α_j denotes industry fixed effects, derived from all firms that have issued equity between 2013 and 2020. γ_t denotes year fixed effects.

The coefficient of interest here is β_1, which measures the proportion of proceeds raised per issuance for each type of investment (capex, acquisitions, R&D, and cash). We report the estimated elasticities and dollar effects for both the issuance year and the post-issuance year (Table 10). To calculate the dollar effects, we first

[28] This is important because in unreported difference-in-differences estimations for bond issuances and debt, we find that both increase relatively more for connected firms than for unconnected firms during the post-2012 period. Nonetheless, the increase is substantially smaller compared to equity issuances. The relative increase in debt financing for connected firms might be consequence of a spillover effect from the equity market liberalization to debt markets (Liu et al., 2020). However, it is more difficult to associate the rise in debt financing to the internationalization of debt markets in China (which occurred in 2017), because that internationalization did not differentially target connected relative to unconnected firms.

compute the predicted values of the dependent variable by plugging into Equation (2) the value of equity issuance. We then re-compute the predicted values of the dependent variable by adding one U.S. dollar to the issuance value. Next, we calculate the difference between the two predicted values to obtain the marginal change in the use of proceeds. Lastly, we compute the average difference per firm, which we report.

The results show that in the issuance year, for every dollar raised in equity at time *t*=1, the median connected firm invested on average 15 cents in capex, 28 cents in acquisitions, 3 cents in R&D, and 58 cents in cash and short-term investments in the same year (Table 10). In the following year (*t*=2), only investment in capex increased compared to the previous year, to 27 cents per dollar raised. But cash and short-term investments were still the most common use of proceeds.

4.4 Aggregate Impact

So far, we have focused on firm-level estimates of the impact of the internationalization events. Next, we seek to understand the aggregate implications of these events. We ask the following question: since 2013, how much did the internationalization of Chinese equity markets contribute to financing and investment activities by publicly listed firms in China? For financing activity, we look at total equity raised and total market capitalization; for investment activity, we consider capex, acquisitions, R&D, and cash and short-term assets. We calculate the aggregate impact on these variables using estimates from the difference-in-differences regressions in the full sample, where we distinguish between connected and unconnected firms. Since we are interested in the impact on the level of each variable, we estimate Equation (1) with the dependent variable in levels. To differentiate from our baseline regressions where the dependent variable (y_{it}) is normalized by firms' initial assets, for the rest of this section we let Y_{it} denote the dependent variable in levels.[29]

The difference-in-differences coefficient estimate $\hat{\beta}_t$ captures, for each year *t*, not only the differential change for the connected group (relative to the unconnected group), but also the difference between the average

[29] We use the superscript *T* to denote the treated group (the connected firms in this exercise), and the superscript *CF* to denote the counterfactual outcome for the treated group. The average *actual* outcome among the connected firms in post-reform year *t* is given by $\bar{Y}_t^T = \hat{\sigma} + \hat{\theta} + \hat{\gamma}_t + \hat{\beta}_t$. The average *counterfactual* outcome for this group, by definition, is given by $\bar{Y}_t^{CF} = \bar{Y}_0^T + (\bar{Y}_t^C - \bar{Y}_0^C) = \hat{\sigma} + \hat{\theta} + \hat{\gamma}_t$, where the superscript *C* denotes the control group (the unconnected firms). The alternative interpretation of the difference-in-differences coefficient follows directly, as $\hat{\beta}_t = \bar{Y}_t^T - \bar{Y}_t^{CF}$.

actual outcome among the connected firms $\bar{Y}_t^T \equiv E[Y_{it}^T]$ and the average *counterfactual* outcome $\bar{Y}_t^{CF} \equiv E[Y_{it}^{CF}]$.[30] The counterfactual outcome is the outcome among connected firms in a post-reform year, had there been no internationalization. As a result, the aggregate impact of the internationalization (in dollar amount), for each year *t*, is given by the average impact $\hat{\beta}_t$ multiplied by the number of connected firms N_C, i.e., $Y_t^T - Y_t^{CF} = N_C\hat{\beta}_t$.[31] The estimated coefficients $\hat{\beta}_t$ are reported in Appendix Table 2 (full sample) and Appendix Table 3 (PSM sample). Insignificant estimates are treated as zeros in our calculations.

For each variable of interest, we compute the cumulative aggregate effect of the internationalization events between 2013 and 2020 as a percentage of the actual aggregate outcomes (Table 11). More specifically, for equity raised, capex, acquisitions, and R&D, we calculate the ratio of the cumulative aggregate impact to the cumulative aggregate outcomes, i.e., $\frac{\sum_{t=2013}^{t=2020}(Y_t^T - Y_t^{CF})}{\sum_{t=2013}^{t=2020} Y_t}$. We consider three candidates for the denominator Y_t: the actual aggregate outcome among all connected firms, all domestic listed firms (connected and unconnected), and all publicly listed firms (domestic and foreign listed.[32] For market capitalization and cash, which are already cumulative, we calculate the ratio of the aggregate impact in 2020 to the aggregate outcome in the same year.

Our back-of-the-envelope calculations suggest that the internationalization events have a sizeable aggregate impact on both financing and investment activities by firms in China. For instance, around 33 percent of all equity raised by connected firms, 28 percent of all equity raised by domestic listed firms, and 20 percent of all equity raised in China between 2013 and 2020 are associated with the internationalization events (Table 11, columns 5-7). The effects on market capitalization by 2020 are of similar magnitudes. Moreover, these events have contributed toward growth in all types of investments. According to our regression estimates, the post-2012 internationalization process can plausibly explain about a quarter of all cash and short-term investments, 24

[30] From our baseline regressions where the dependent variable is normalized by initial assets, we can obtain firm-level counterfactual estimates that are also normalized by initial assets, i.e. $E\left(\frac{Y_{it}^{CF}}{A_{io}}\right) = E(Y_{it}^{CF})E\left(\frac{1}{A_{io}}\right) + cov\left(Y_{it}^{CF}, \frac{1}{A_{io}}\right)$, for each year *t*. To back out the $E(Y_{it}^{CF})$, we $cov\left(Y_{it}^{CF}, \frac{1}{A_{io}}\right)$. Thus, we re-run the difference-in-difference regression (Equation 1) in level for the purpose of computing the aggregate effects. For robustness, we also approximate the aggregate effects using the log regression results reported in Table 7, and the results are available upon request.

[31] As in our baseline estimation, we remove the top 1 percent of each variable ("outliers") before running each difference-in-differences regression in order to obtain clean estimates of $\hat{\beta}_t$. Nonetheless, since our goal here is to compute the aggregate effect, we multiply $\hat{\beta}_t$ by the total number of connected firms; in other words, we are assigning the average impact to both outliers and non-outliers.

[32] For consistency with the numerator and the purpose of measuring aggregate effect, the aggregate data (the denominator) also contains the values for the top 1 percent of each variable.

percent of all R&D expenditures, 12 percent of acquisitions, and 11 percent of all capex by all domestic listed firms between 2013 and 2020.[33]

While these estimates of the aggregate effect are based on regression results from the full sample, we also explore the "aggregate" impact within the PSM sample of firms (Table 11, column 4). Since the coefficient estimates are larger in the PSM sample for the reasons discussed above, the "aggregate" impact of these events (in percentage terms) on this subsample of firms is also notably larger than the overall impact in the full sample. For example, approximately 35 to 40 percent of investment activities (of all types, including cash and short-term investments) by all connected firms in the PSM sample can be attributed to the internationalization events.

While our estimates emphasize potentially sizeable aggregate effects, it is difficult to pin down the precise magnitude. Aggregating firm-level responses is non-trivial, and it is important to acknowledge the limitations associated with our approach. Some of these limitations are arguably related to the firm-level estimates, to the extent that it is extremely difficulty to fully disentangle the impact of internationalization events from other concurrent aggregate shocks in the domestic financial markets. In order to identify the impact of the events as cleanly as possible, we have defined connected firms as those that were exposed to internationalization for the first time since the Stock Connect Program, but in reality, the dual listed firms also have A shares that participate in the program. In this regard, our estimates of aggregate effects do not include the impact on their equity issuances and investment activities.

Other limitations are related to the partial equilibrium approach we take in aggregation. For instance, our regression estimates only measure the direct impact on connected firms, and do not include any potential spillover effects from connected to unconnected firms, or the general equilibrium effects on prices and wages. Without a structural model that incorporates these channels, it is difficult to predict whether the general equilibrium effects will dampen or amplify the firm-level responses. Nevertheless, our simple and transparent approach provides a useful first step toward understanding the potential aggregate impact of internationalization events in China.

4.5 Investor Behavior

In this section, we explore the behavior of investors during the reform period. In particular, we provide descriptive evidence on foreign participation in China's stock market, and the importance of China in foreign equity portfolios

[33] Appendix Table 4 explores a range of plausible values for the aggregate effect on each variable of interest.

during the internationalization episodes. To this end, we use firm-level data on the domestic and foreign ownership structure from Refinitiv, as well as aggregate country-level data on foreign equity inflows and asset holdings from the International Monetary Fund (IMF) and the Coordinated Portfolio Investment Survey (CPIS), respectively.

First, we analyze the evolution of aggregate foreign equity inflows toward China using the balance of payments data from the IMF.[34] These data show a gradual increase in foreign inflows into Chinese equity markets over the years: in 2010, the total amount of foreign equity inflows was about $30 billion; in 2020, it was more than $80 billion (Figure 8, Panel A). Moreover, the data show increases around the Shanghai Connect (2014) and the announcement and incorporation of Chinese stocks to MSCI indexes (2017-2019). Nonetheless, if we compare the level of foreign equity inflows with the level of equity issuance in China during this period, the former was much lower. This comparison suggests that domestic investors rather than international investors bought most of the new shares issued.[35] However, the figure also shows that foreign inflows appeared to increase steadily closer to the date of MSCI incorporation. Therefore, domestic investors seemed to provide "bridge financing" for domestic firms between the early stages of internationalization and the arrival of international investors.[36]

To delve deeper into the role of domestic vis-à-vis international investors during the internationalization period, we collect data from Refinitiv, which provides information on the nationality of the main shareholders of each firm listed in Chinese equity markets. We compute the ratio of foreign ownership as the total value of shares held by investors whose main residence address is outside mainland China over the total value of shares across listed companies. We plot the foreign ownership ratio across firms for each year (Figure 8, Panel B). As shown in the figure, before 2016, foreign ownership remained more or less stable: on average, domestic investors own over 98.5 percent of each domestic listed firm in China. Nevertheless, there has been a notable increase in the foreign ownership ratio after 2016. By 2020, the average ratio of foreign owned shares per firm almost tripled: it rose from 1.3 percent (2016) to 3.8 percent (2020).

[34] We estimate equity inflows as the net variation in foreign equity positions in China.

[35] International investors might have also bought shares of existing stocks trading on Chinese equity markets.

[36] Some minimum degree of bridge financing had to occur because, by regulation, firms could sell the shares of the primary issuance activity (IPOs or SEOs) only to domestic investors. However, after purchasing them from firms, domestic investors could have immediately sold those shares to international investors. Thus, this regulation fails to explain the number of years of bridge financing that domestic investors provided. International investors could have bought domestic shares as rapidly as the firms that issued them were connected through the Stock Connect program.

China's weight in foreign equity portfolios increased gradually between 2010 and 2017, but has accelerated since (Figure 9, Panel A). This is evident in the MSCI Emerging Markets Index: the weight of China has increased more rapidly since the inclusion of A shares in 2018. In addition, we simulate two alternative scenarios: (1) if all A shares were included in the index in 2018; (ii) if no A shares were included. As one would expect, the actual weight of China in the index is in between the two counterfactual scenarios, suggesting that it may continue to rise if market-makers increase the inclusion ratio.

We complement the MSCI weight with country-level bilateral data on foreign equity holdings from the IMF's Coordinated Portfolio Investment Survey (CPIS). We use this database to compute the weight of China within the set of MSCI Emerging Markets countries according to portfolio holdings by international investors and the evolution of investments in China vis-à-vis those in other countries. There is still a sizeable gap between the two series. If international investors had completely followed the MSCI Emerging Markets Index, the CPIS-weight of China should coincide with the MSCI weight. However, while the two were very similar before 2013, they started to diverge since then, with the CPIS-weight lagging behind the MSCI weight. By 2020, China constituted approximately 40 percent of the MSCI Emerging Markets Index, but the share of China in emerging market equity portfolios was less than 30 percent, suggesting that there is still ample room for further foreign participation in Chinese equity markets.

Lastly, we compare the evolution of the CPIS equity positions of all countries in the world (excluding China) in China and in the other emerging markets that constituted the MSCI Emerging Markets Index in 2022 (Figure 9, Panel B). Investments in China have surpassed investments in other emerging markets and have increased significantly since 2006. But the pace of growth has drastically changed since 2016 (and especially since 2018). This is consistent with the finding in Figure 8 that the arrival of international investors mostly happened at a later stage of the internationalization process.[37]

V. Conclusion

This paper studies the internationalization of China's equity markets, focusing on the post-2012 period. We show that the benefits have been large and spanned multiple years. At the firm level, those targeted by the post-2012

[37] The three economies that come behind China in size and growth of positions are India, South Korea, and Taiwan Province of China. Outside emerging markets, Hong Kong (which is unreported in Figure 9 and might have been a conduit for investments in China) received a sizeable share of investments in the early periods of the sample, but those positions have remained stable over the past decade as investors invested directly in mainland China.

internationalization events raised significantly more external financing, increased their cash position, and invested more than other domestic firms did. At the aggregate level, the internationalization process is associated with a significant fraction of equity raised and investment activities by all domestic listed firms in China between 2013 and 2020.

Until the late 2010s, foreign participation in China's equity markets lagged behind the internationalization reform. Most of the rise in equity issuances by connected firms was primarily supported by domestic investors that increased their investments in those firms. Foreign entry only accelerated after the incorporation of China's A shares in the MSCI Emerging Markets Index. Therefore, domestic investors provided bridge financing for domestic firms between the early stages of internationalization and the arrival of international investors.

The importance of China in emerging market equity portfolios has grown gradually but significantly over the last two decades. Market makers and authorities have integrated China progressively to minimize the potential for domestic disruptions caused by a surge in portfolio inflows and to avoid causing sudden large capital outflows from other emerging markets. Nevertheless, to the extent that the weight of China in emerging market equity portfolios still lags behind its weight in the MSCI Emerging Markets Index, a catch up in foreign investments is to be expected. If China's internationalization deepens, for example, by a full reflection of the size of its domestic markets in international benchmark indexes, it is likely that international investors' exposure to China and financing of domestic firms might expand even further.

It is not clear whether the case of China overstates or understates the benefits of internationalization of equity markets for other emerging economies. On the one hand, the exceptionally high savings rate in China prior and during the internationalization events might have allowed connected firms to obtain domestic financing, ultimately fueling the growth of the corporate sector before the arrival of international investors. In this regard, our results for China could overstate the benefits of internationalization for other emerging economies without a strong domestic investor base. On the other hand, to the extent that China remains underrepresented in the portfolios of international investors, the results in this paper could understate the benefits of internationalization for other countries with higher foreign participation.

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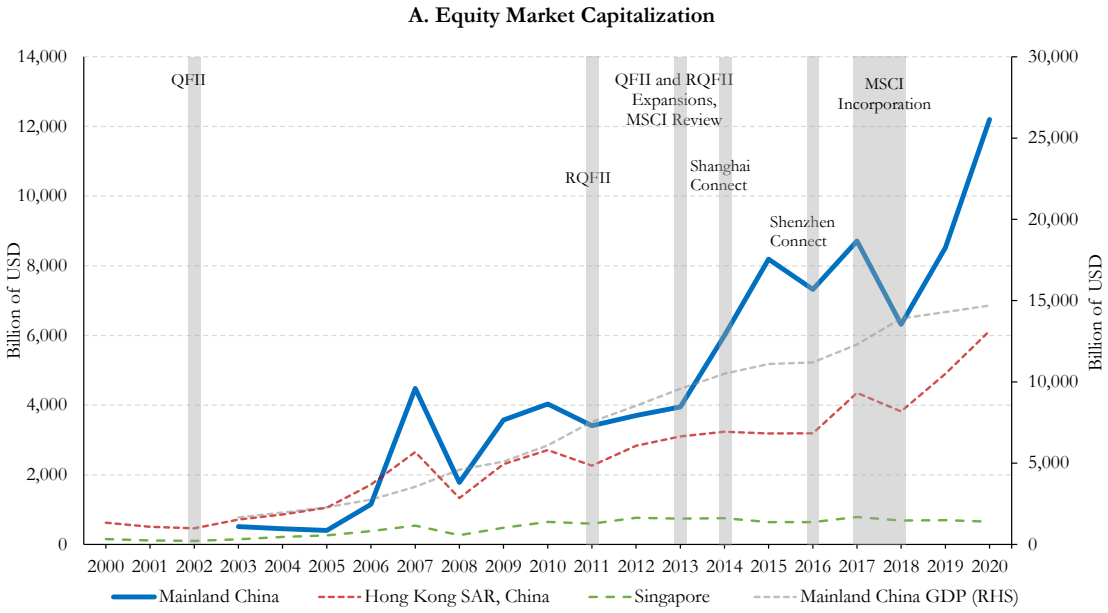
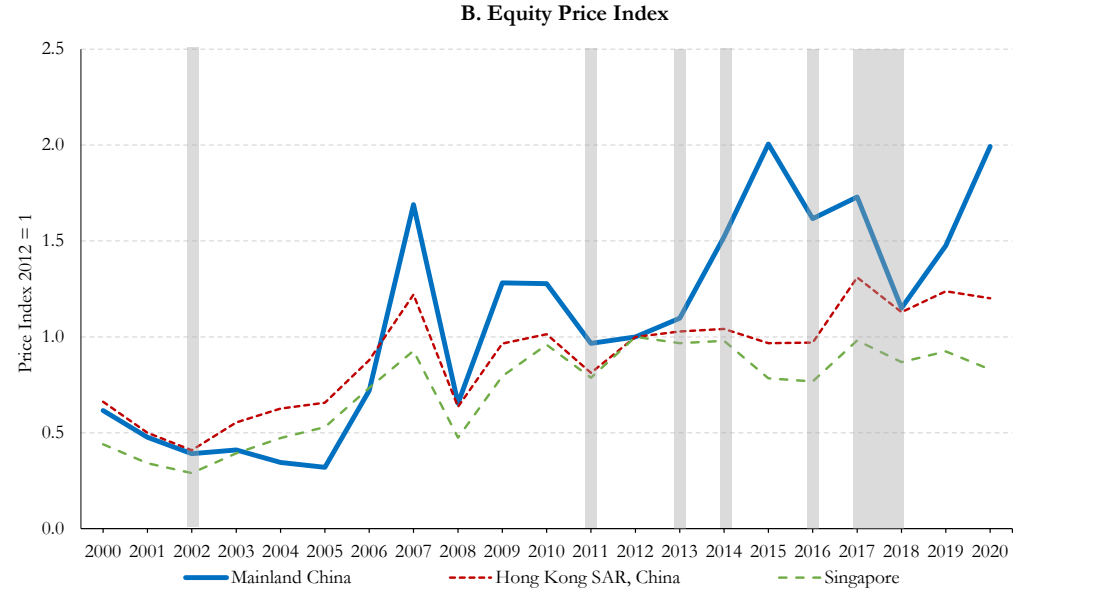
Figure 1. Aggregate Equity Market Indicators

This figure shows aggregate equity indicators for mainland China, Hong Kong SAR, China, and Singapore. Panel A shows the total equity market capitalization of domestic listed firms. Panel B shows domestic equity price indexes of domestic listed firms (2012=1). The mainland China equity index is the average between the Shanghai and Shenzhen composite equity indexes. The Hong Kong index is the Hang Seng index. The Singapore index is the STI index. Panel C shows aggregate equity issuance activity (excluding initial public offerings). Values are expressed in billions of 2011 U.S. dollars (USD). Sources: World Bank and Refinitiv.





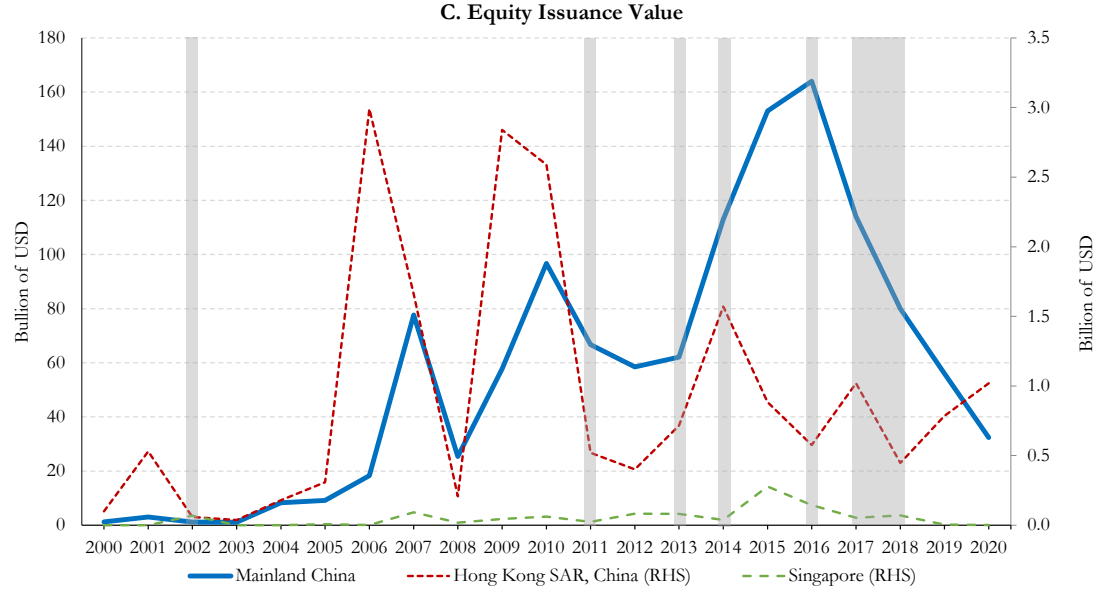
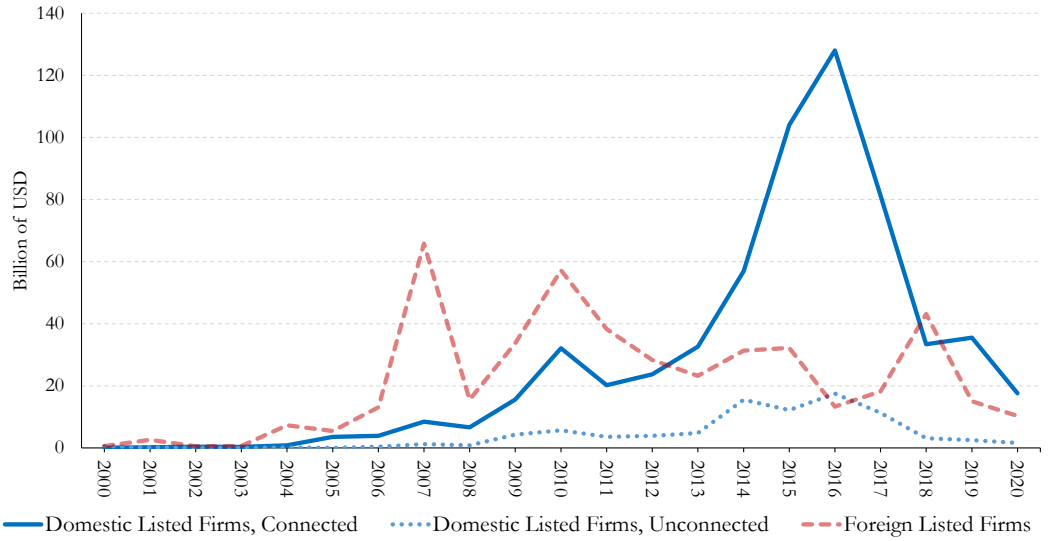


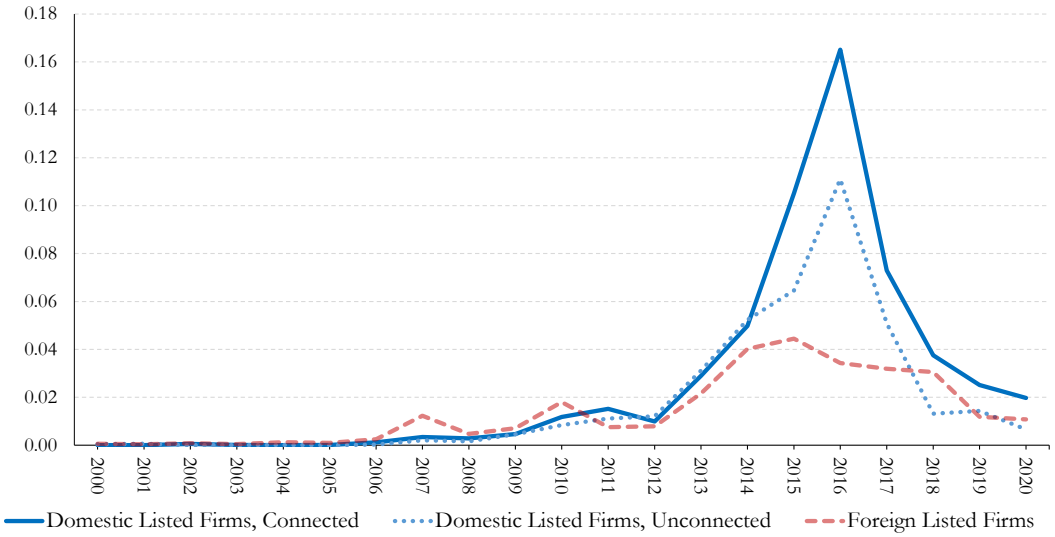
Figure 2. Equity Issuance Activity of Chinese Firms

This figure shows trends in equity issuance activity for different samples of Chinese listed firms. Panel A shows the aggregate amount of equity raised per type of firm. Panel B shows the average amount of equity raised per type of firm and year over 2012 assets. Panel C shows the average cumulative equity raised per type of firm and year over 2012 assets.

A. Aggregate Amount of Equity Issued



B. Equity Raised over 2012 Assets



C. Cumulative Equity Raised over 2012 Assets

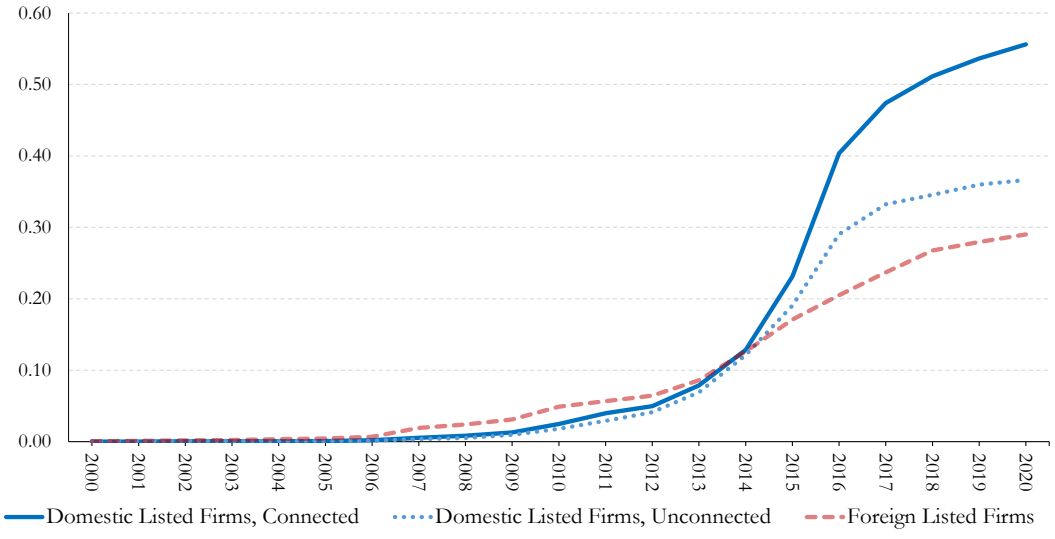
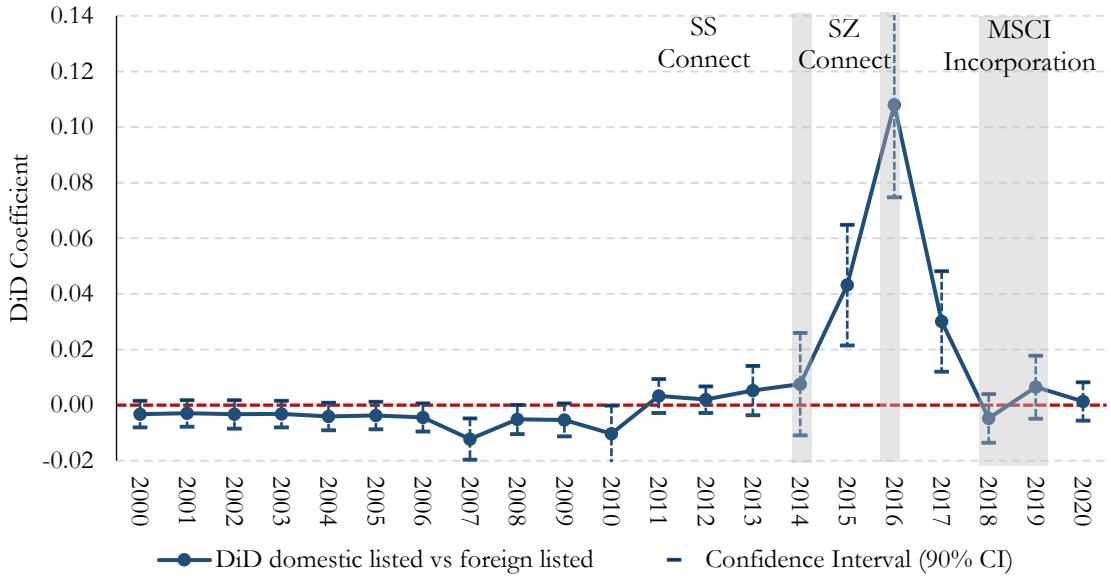


Figure 3. Differences in Equity Issuance Behavior: Domestic vs Foreign Listed Firms

This figure shows differences in equity issuances between Chinese firms listed in domestic markets and international markets. The figure plots, for each year, difference-in-differences (DiD) coefficients (and the 90% confidence interval) obtained by estimating Equation (1). Panel A uses the amount of equity raised over 2012 assets as dependent variable. Panel B uses the cumulative amount of equity raised over 2012 assets as dependent variable. The DiD coefficients estimate, for each year, average differences in equity issuances between domestic and foreign listed firms (relative to the 2012 difference). The 2012 coefficient shows the differences between domestic and foreign-listed firms in 2012. For more information about these estimations see Table 3.

A. Equity Raised over 2012 Assets



B. Cumulative Equity Raised over 2012 Assets

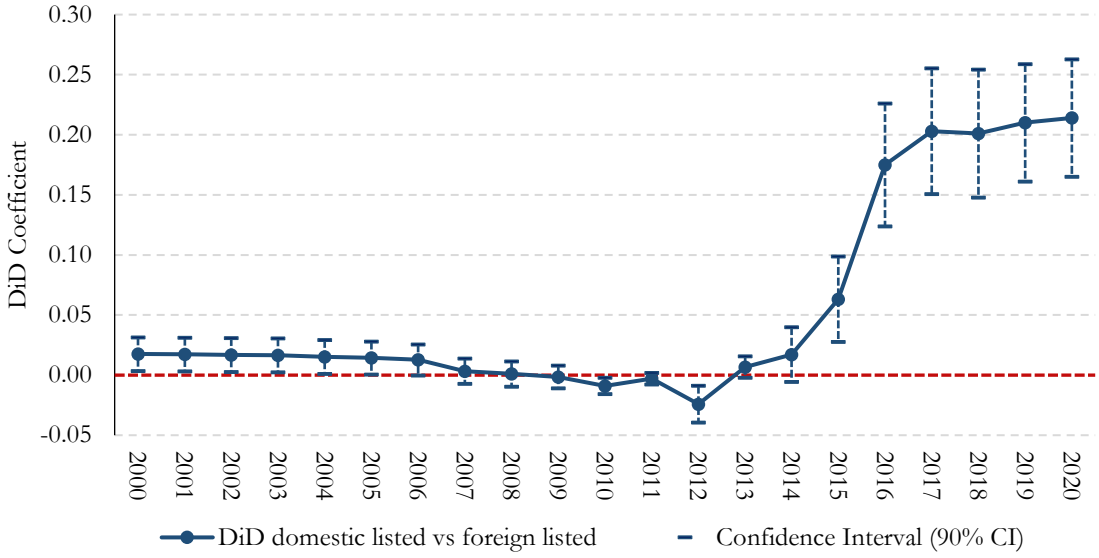
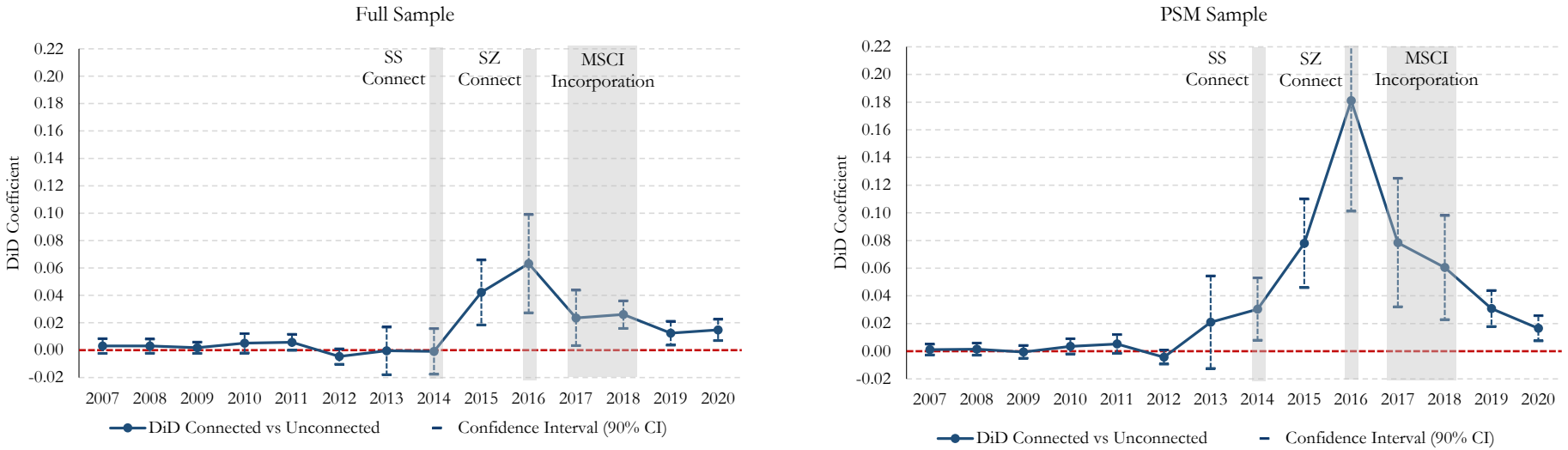


Figure 4. Differences in Equity Issuance Behavior: Connected vs Unconnected Domestic Listed Firms

This figure shows differences in equity issuances between connected and unconnected domestic listed firms. The figure plots, for each year, difference-in-differences (DiD) coefficients (and the 90% confidence interval) obtained by estimating Equation (1). Panel A uses the amount of equity raised over 2012 assets as dependent variable. Panel B uses the cumulative amount of equity raised over 2012 assets as dependent variable. The DiD coefficients estimate, for each year, average differences in equity issuances between connected and unconnected firms (relative to the 2012 difference). The 2012 coefficient shows the differences between connected and unconnected firms in 2012. Left-side panels use the full-sample of connected and unconnected firms. Right-side panels use the propensity-score-matched (PSM) sample of connected and unconnected firms. The grey bars capture the formal announcement and implementation of the Shanghai - Hong-Kong Stock Connect (SS Connect), Shenzhen - Hong-Kong Stock Connect (SZ Connect), and MSCI incorporation of domestic listed stocks from China. For more information about these estimations see Table 4.

A. Equity Raised over 2012 Assets



B. Cumulative Equity Raised over 2012 Assets

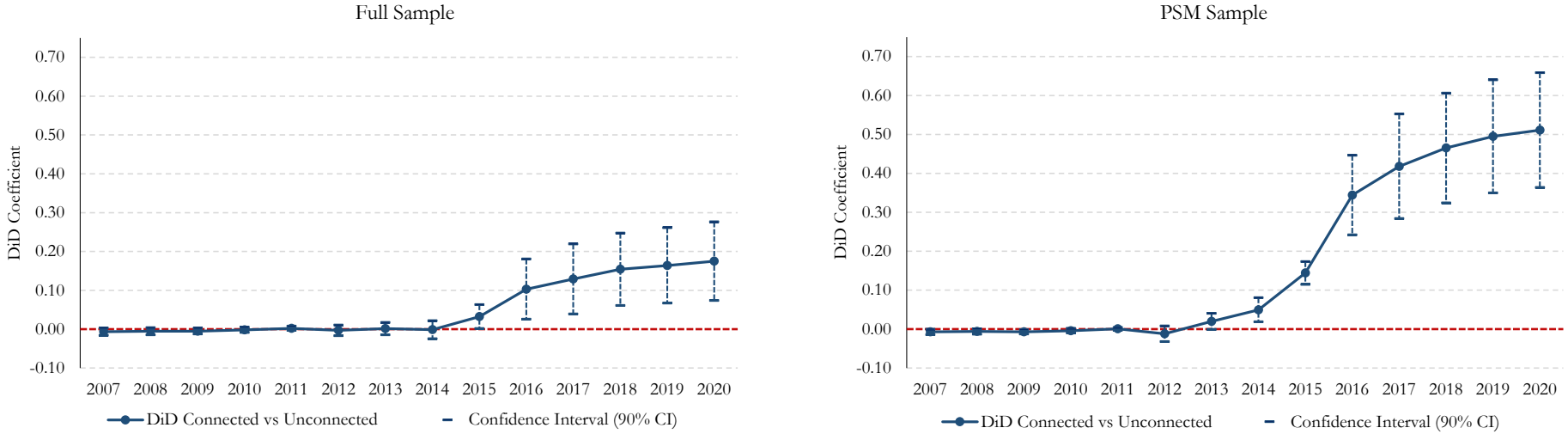
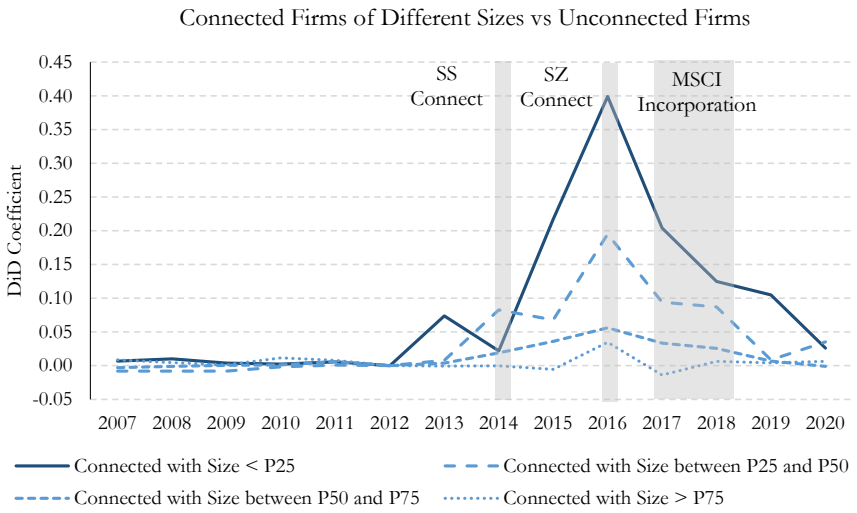
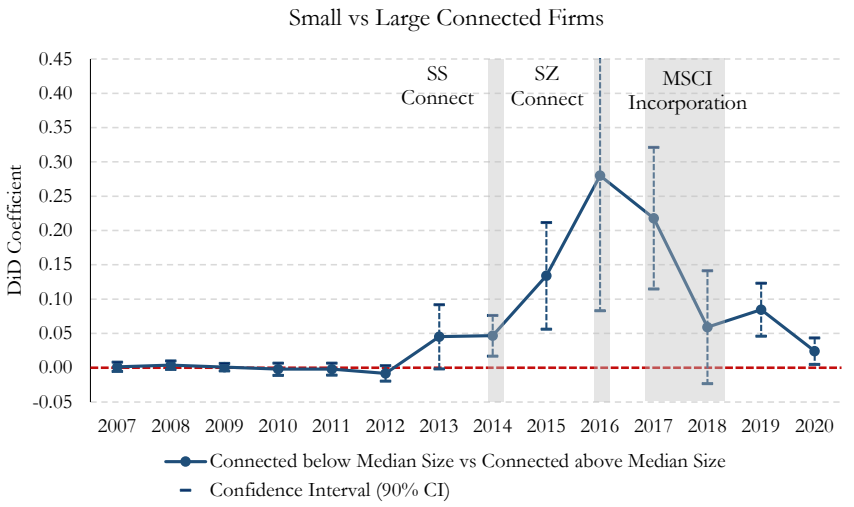


Figure 5. Differences in Equity Issuance Behavior: Connected Firms of Different Sizes

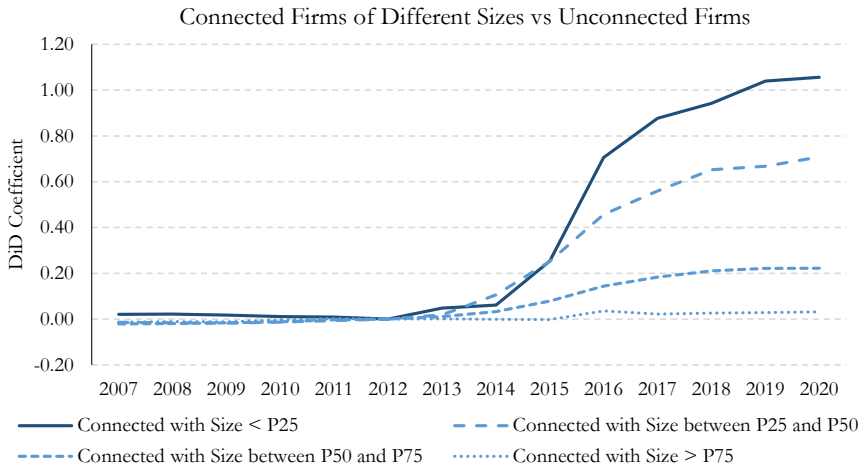
This figure shows differences in equity issuances among connected firms of different sizes. Firm size is measured as the average assets in 2010-12. Left-side panels compare connected firms of different sizes with unconnected firms. Connected firms are divided into four different groups according to their size: Firms with assets below the percentile 25, firms with assets between the percentile 25 and 50, firms with assets between the percentile 50 and 75, and firms with assets above the percentile 75 of the firm size distribution of connected firms. Right-side panels compare connected firms with size below the median (percentile 50) with those with size above the median. The figure plots, for each year and group, difference-in-differences (DiD) coefficients (and the 90% confidence interval) obtained by estimating Equation (1). The 2012 coefficient shows the differences across groups that year. Panel A uses the amount of equity raised over 2012 assets as dependent variable. Panel B uses the cumulative amount of equity raised over 2012 assets as dependent variable. The regressions use the propensity-score-matched (PSM) sample of connected and unconnected firms. The grey bars capture the formal announcement and implementation of the Shanghai - Hong-Kong Stock Connect (SS Connect), Shenzhen - Hong-Kong Stock Connect (SZ Connect), and MSCI incorporation of domestic listed stocks from China. For more information about these estimations see Table 5 and Table 6.

A. Equity Raised over 2012 Assets





B. Cumulative Equity Raised over 2012 Assets



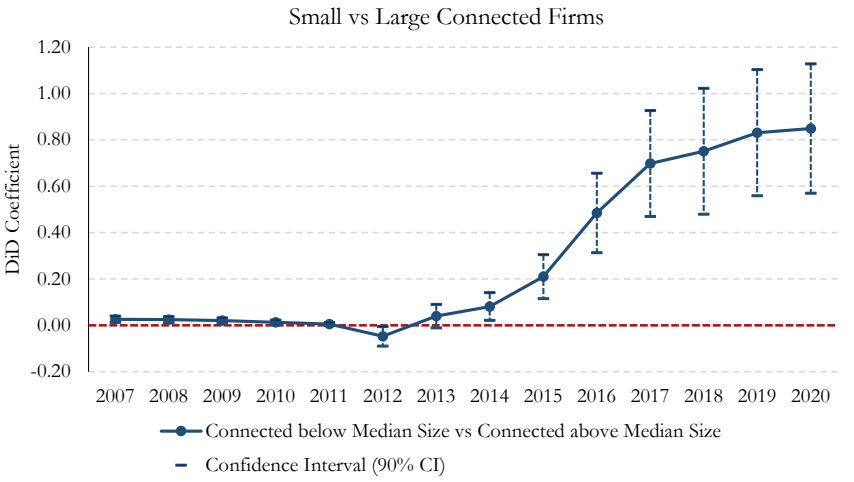
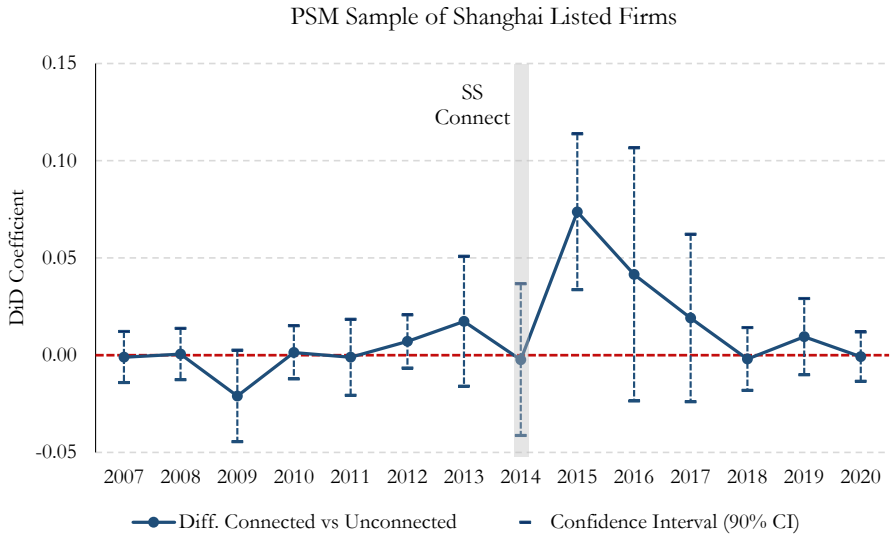
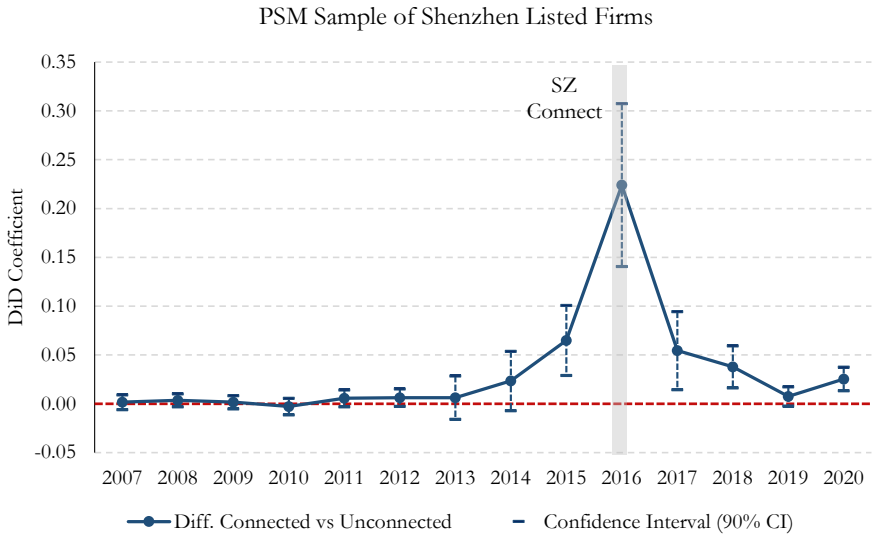


Figure 6. Differences in Equity Issuance Behavior: Shanghai and Shenzhen Events

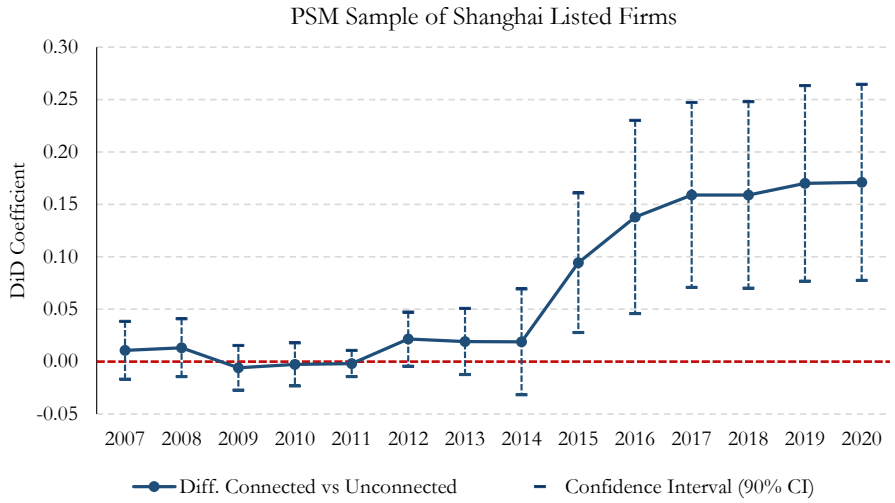
This figure shows differences in equity issuances between connected and unconnected domestic listed firms. The figure plots, for each year, difference-in-differences (DiD) coefficients (and the 90% confidence interval) obtained by estimating Equation (1). Panel A uses the amount of equity raised over 2012 assets as dependent variable. Panel B uses the cumulative amount of equity raised over 2012 assets as dependent variable. The DiD coefficients estimate, for each year, average differences in equity issuances between connected and unconnected firms (relative to the 2012 difference). The 2012 coefficient shows the differences between connected and unconnected firms in 2012. Left-side Panels show the results for the propensity-score-matched (PSM) sample of firms listed in Shanghai. Right-side panels show the results for the propensity-score-matched (PSM) sample of firms listed Shenzhen. The grey bars capture the formal announcement and implementation of the Shanghai - Hong-Kong Stock Connect (SS Connect) and Shenzhen - Hong-Kong Stock Connect (SZ Connect). For more information about these estimations see Table 8.

A. Equity Raised over 2012 Assets





B. Cumulative Equity Raised over 2012 Assets



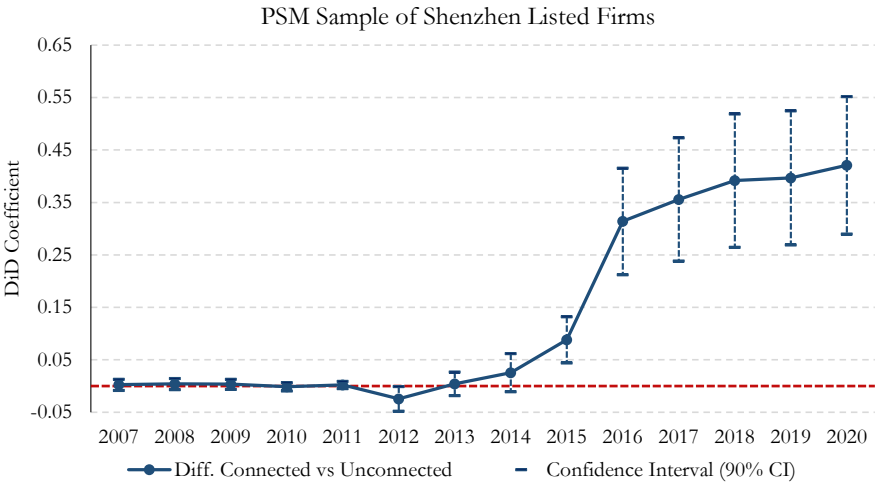


Figure 7. Differences in Investment Behavior:
Connected vs Unconnected Domestic Listed Firms

This figure shows differences in investment behavior between connected and unconnected domestic listed firms. The figure plots, for each year and variable, difference-in-differences (DiD) coefficients (and the 90% confidence interval) obtained by estimating Equation (1). The DiD coefficients estimate, for each year, average differences for each dependent variable between connected and unconnected firms (relative to the 2012 difference). The 2012 coefficient shows the differences between connected and unconnected firms in 2012. The figure shows the results for the propensity-score-matched (PSM) sample of connected and unconnected firms. The grey bars capture the formal announcement and implementation of the Shanghai - Hong-Kong Stock Connect (SS Connect), Shenzhen - Hong-Kong Stock Connect (SZ Connect), and MSCI incorporation of domestic listed stocks from China. For more information about these estimations see Table 9.

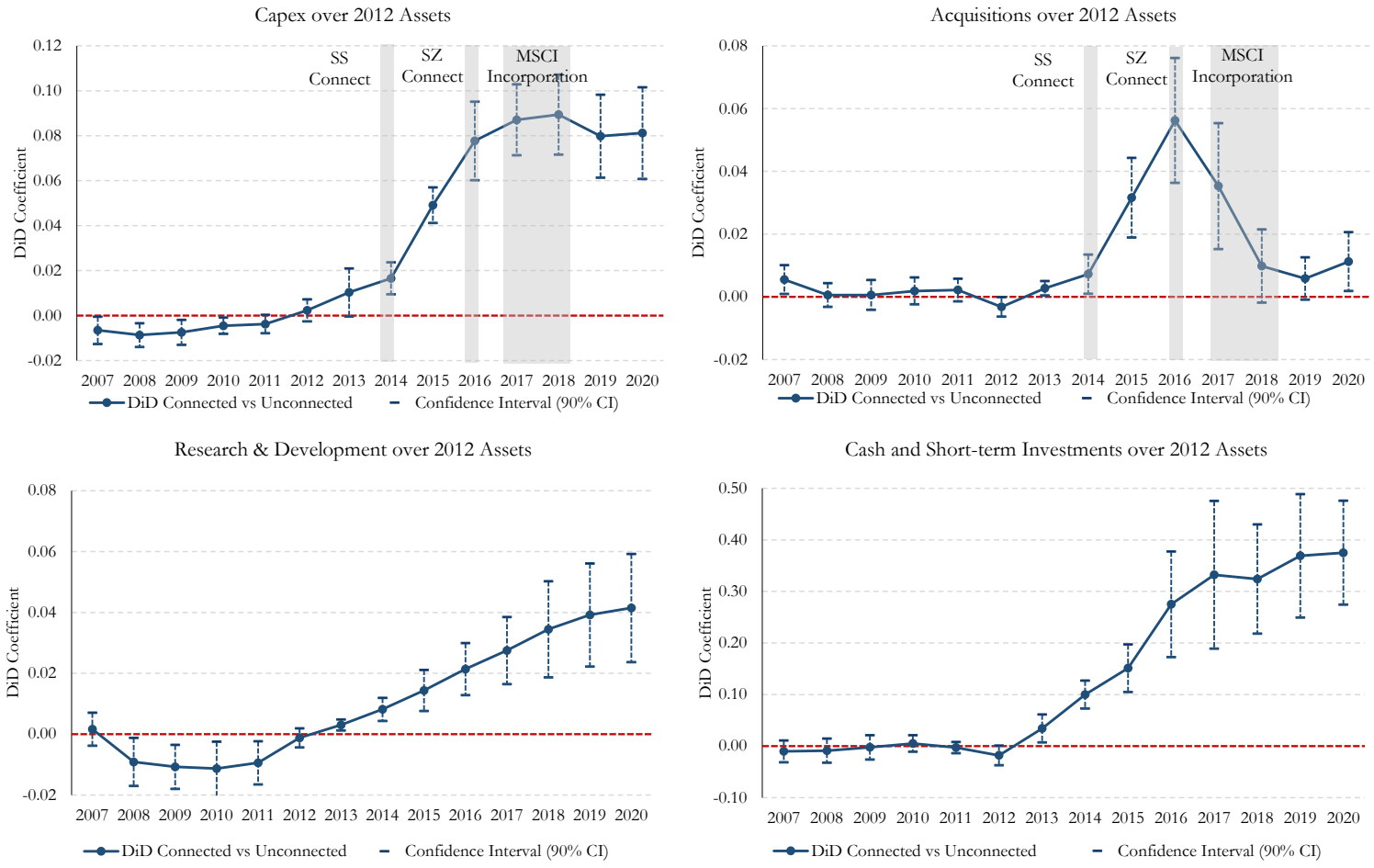


Figure 8. Foreign Equity Ownership

This figure shows the trends in foreign equity ownership in China. Panel A shows annual foreign equity inflows into China compared with the aggregate value of equity issuances by Chinese listed companies in domestic equity markets (excluding initial public offerings). Foreign inflows correspond to net changes of foreign equity positions in China. Equity positions include stocks, participations, depositary receipts, private equity of unlisted firms, mutual funds, and investment trusts. Values are expressed in billions of 2011 U.S. dollars (USD). Panel B shows the evolution in the ratio of foreign ownership in the total market capitalization of domestic listed firms in China. Sources: Authors' calculations based on Balance of Payments data from the IMF and Refinitiv.

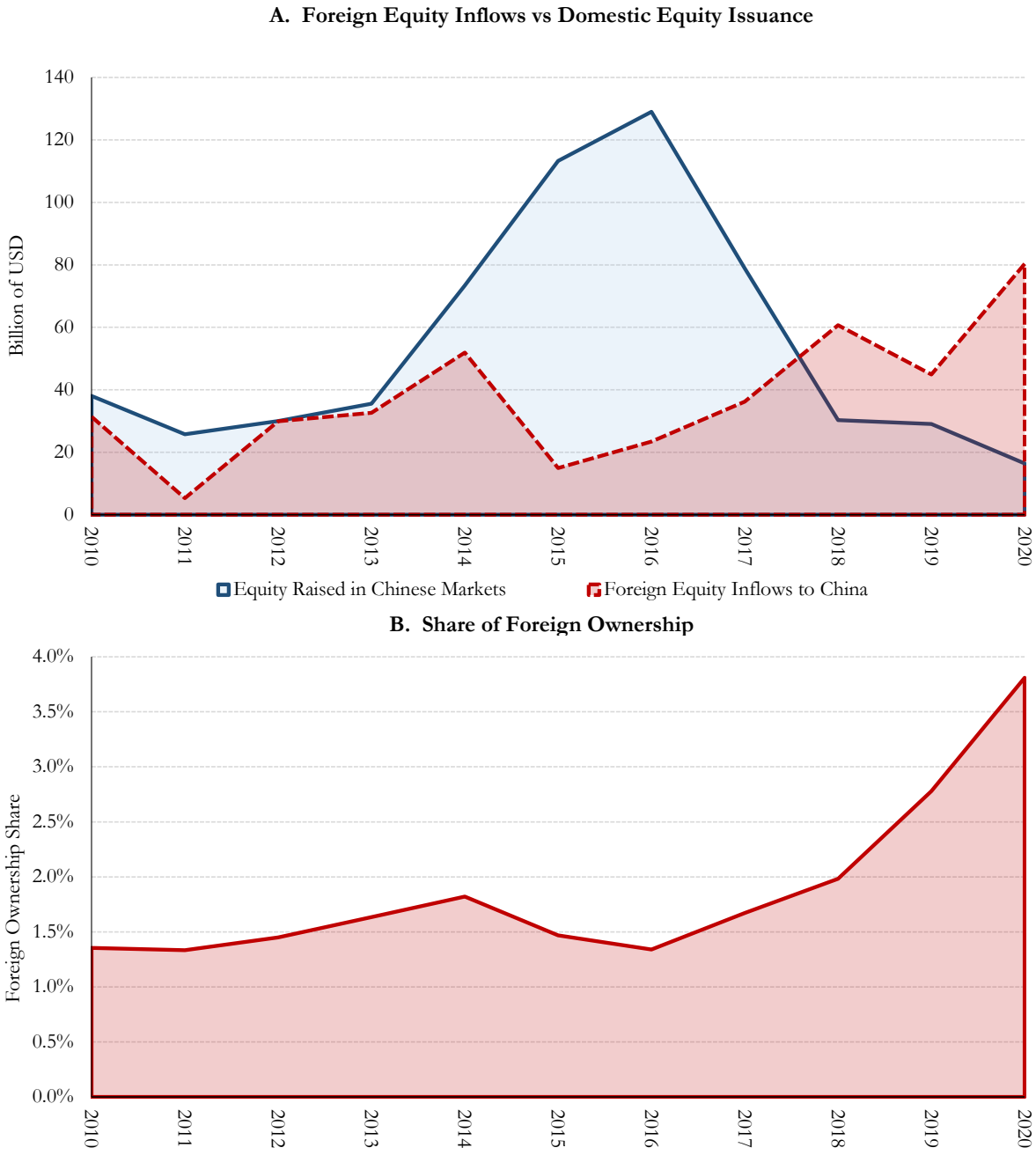
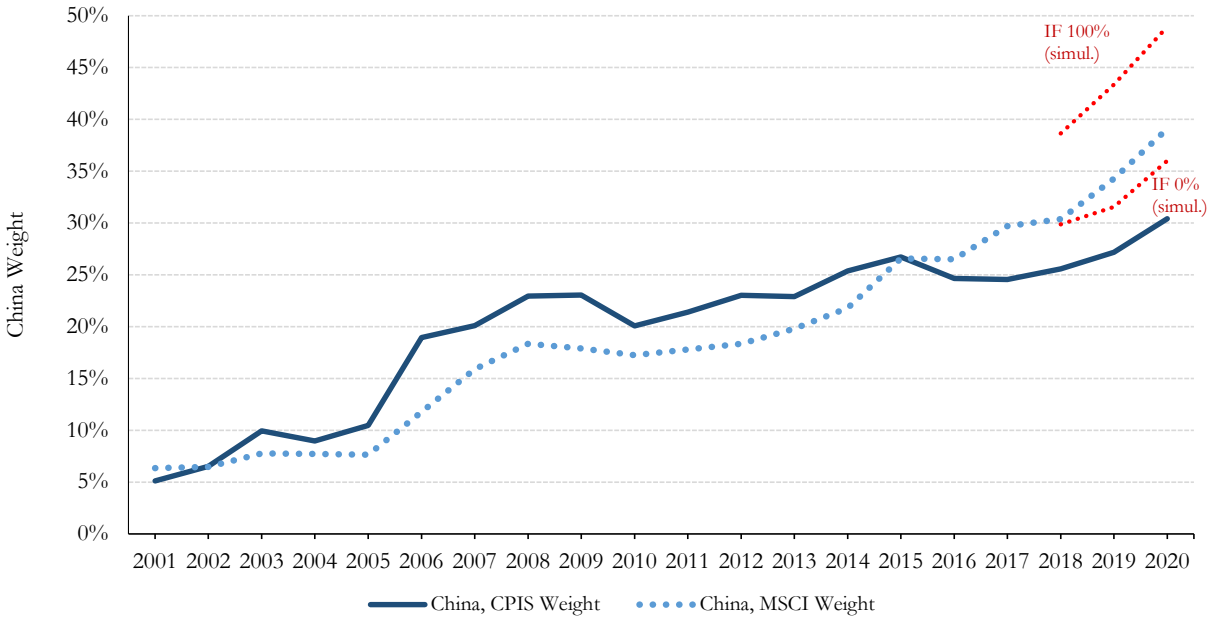


Figure 9. Importance of China in International Equity Portfolios

This figure shows the evolution of foreign equity position in China. Panel A shows the evolution of the Chinese weight in the MSCI Emerging Markets Index, the conterfactuals weights of China with no inclusion/full inclusion of A shares for the period 2018-2020, and the weight of China in the equity positions of all the countries relative to emerging economies. Panel B shows the evolution of foreign equity positions in China and other emerging economies (in grey) separately in billions of 2011 U.S. dollars (USD). The definition of emerging economies follows the MSCI classification of emerging countries in 2020. Sources: Authors' calculations based on CPIS and MSCI.

A. China Weight in Foreign Portfolios and MSCI Emerging Market Benchmark Index



B. Evolution of Equity Positions of the Rest of the World in Emerging Markets

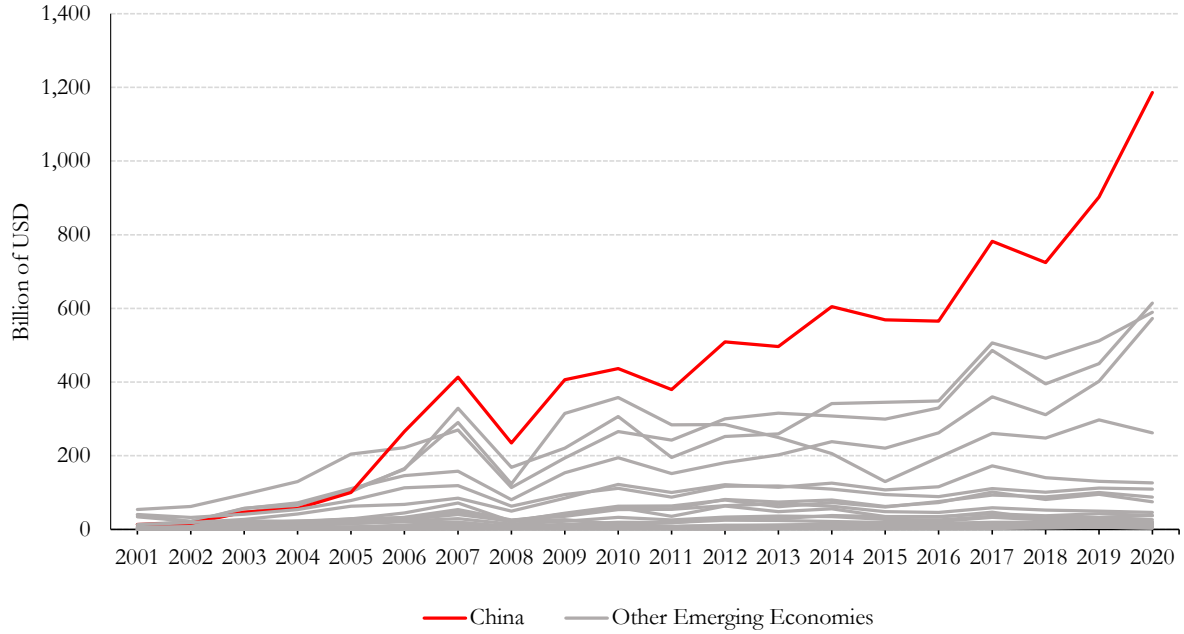


Table 1. Number of Firms and Issuance Activity

This table shows the number of firms and equity issuance activity indicators for the different samples of Chinese listed firms. Panel A shows the total number of firms and equity issued per type of firm. Panel B show the aggregate amount of equity issued over time per type of firm.

A. Total Number of Firms and Equity Raised (2000-2020)

Firm Type	No. of Firms		No. of Equity Issuances		Equity Raised	
	Total	Share	Total	Share	$ Million	Share
Foreign Listed	438	18%	866	26%	455,681	43%
Domestic Listed, Unconnected	728	30%	629	19%	89,216	8%
Domestic Listed, Connected	1,289	53%	1,821	55%	523,612	49%

B. Equity Raised over Time

Firm Type	2000-2005		2006-2012		2013-2020	
	$ Million	Share	$ Million	Share	$ Million	Share
Foreign Listed	17,142	73%	251,939	66%	186,600	28%
Domestic Listed, Unconnected	950	4%	19,794	5%	68,471	10%
Domestic Listed, Connected	5,369	23%	109,657	29%	408,587	62%

Table 2. Differences in Firm Characteristics

This table shows average firm characteristics during 2010-12 and reports tests for differences in means across firm types. Panel A compares the full sample of domestic and foreign listed firms. Panel B compares the full sample of connected and unconnected domestic listed firms. Panel C compares the propensity-score-matched (PSM) sample of connected and unconnected domestic listed firms. *, **, and *** indicate statistical significance for the mean difference tests at the 10%, 5%, and 1% levels, respectively.

A. Foreign Listed vs. Domestic Listed

Variables	Foreign	Domestic	Difference
Equity Raised over Assets	0.07	0.03	-0.04 ***
Assets (Logs)	20.42	19.70	-0.72 ***
Market Capitalization (Logs)	20.02	20.21	0.20 ***
Total Debt (Logs)	18.65	17.71	-0.94 ***
Leverage	0.20	0.21	0.004 **
Cash Flow	0.07	0.06	-0.01 **
Cash Flow Volatility	0.10	0.06	-0.03 ***
Capex over Assets	0.07	0.07	0.00
Cash over Assets	2.89	0.22	-2.67 **
Acquisitions over Assets	0.009	0.005	-0.004 **
Number of Firms	438	2,017	

B. Unconnected vs Connected Domestic Listed

Variables	Unconnected	Connected	Difference
Equity Raised over Assets	0.03	0.04	0.01 **
Assets (Logs)	19.19	19.99	0.79 ***
Market Capitalization (Logs)	19.70	20.50	0.80 ***
Total Debt (Logs)	17.29	17.95	0.67 ***
Leverage	0.22	0.20	-0.02 **
Cash Flow	0.04	0.07	0.02 ***
Cash Flow Volatility	0.07	0.06	-0.02 ***
Capex over Assets	0.10	0.06	-0.04
Cash over Assets	0.21	0.23	0.02 **
Acquisitions over Assets	0.003	0.006	0.002 **
Number of Firms	728	1,289	

C. Unconnected vs Connected Domestic Listed, PSM Sample

Variables	Unconnected	Connected	Difference
Equity Raised over Assets	0.02	0.03	0.01
Assets (Logs)	19.28	19.38	0.09
Market Capitalization (Logs)	19.74	19.87	0.13 ***
Total Debt (Logs)	17.33	17.39	0.06
Leverage	0.22	0.21	-0.01
Cash Flow	0.05	0.06	0.01 **
Cash Flow Volatility	0.07	0.06	-0.01
Capex over Assets	0.06	0.06	0.00
Cash over Assets	0.22	0.22	0.01
Acquisitions over Assets	0.003	0.003	0.000
Number of Firms	534	534	

Table 3. Difference-in-Differences Equity Issuance Estimates: Domestic Listed vs Foreign Listed Firms

This table shows difference-in-differences (DiD) regressions comparing equity issuances by Chinese firms listed in domestic and international markets. The table shows regression results obtained by estimating Equation (1) using two different dependent variables: The amount of equity raised over 2012 assets and the cumulative amount of equity raised over 2012 assets. The treated variable equals one for domestic listed firms and zero otherwise (foreign listed firms). The table shows DiD coefficients, which estimate, for each year, average differences in equity raised between domestic and foreign listed firms (relative to the 2012 differences). The 2012 coefficient shows the differences between domestic and foreign listed firms in 2012. The regressions include year and industry fixed effects. Standard errors are clustered at the industry (two-digit SIC) level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Middle-side columns exclude foreign listed firms that have some A shares listed in domestic markets (dual listed firms). Right-side columns exclude dual listed firms and those listed in Hong Kong SAR, China.

Sample:	Domestic vs Foreign Listed		Domestic vs Foreign Listed, Excluding Dual Listed		Domestic vs Offshore Listed, Excluding Dual Listed	
Dependent Variable:	Equity over 2012 Assets	Cum. Equity over 2012 Assets	Equity over 2012 Assets	Cum. Equity over 2012 Assets	Equity over 2012 Assets	Cum. Equity over 2012 Assets
Y_2005 x Treated	-0.004	0.014 *	-0.004	0.013	0.000	0.049 ***
	[0.00]	[0.01]	[0.00]	[0.01]	[0.01]	[0.02]
Y_2006 x Treated	-0.004	0.013	-0.004	0.013	0.003	0.050 ***
	[0.00]	[0.01]	[0.00]	[0.01]	[0.01]	[0.02]
Y_2007 x Treated	-0.012 ***	0.003	-0.008	0.007	-0.011	0.037 **
	[0.00]	[0.01]	[0.01]	[0.01]	[0.01]	[0.02]
Y_2008 x Treated	-0.005	0.001	-0.005	0.005	-0.001	0.034 **
	[0.00]	[0.01]	[0.00]	[0.01]	[0.01]	[0.02]
Y_2009 x Treated	-0.005	-0.002	-0.007	0.002	-0.005	0.026 *
	[0.00]	[0.01]	[0.00]	[0.01]	[0.01]	[0.01]
Y_2010 x Treated	-0.010	-0.009 **	-0.013	-0.008 *	-0.023	0.001
	[0.01]	[0.00]	[0.01]	[0.00]	[0.01]	[0.01]
Y_2011 x Treated	0.003	-0.003	0.002	-0.003	0.004	0.002
	[0.00]	[0.00]	[0.00]	[0.00]	[0.01]	[0.01]
Treated (2012 Diff.)	0.002	-0.026 **	0.002	*	-0.001	-0.045 **
	[0.00]	[0.01]	[0.00]	[0.01]	[0.01]	[0.02]
Y_2013 x Treated	0.005	0.007	0.002	0.005	0.007	0.004
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Y_2014 x Treated	0.008	0.017	0.003	0.011	0.025	0.027 *
	[0.01]	[0.01]	[0.01]	[0.02]	[0.02]	[0.02]
Y_2015 x Treated	0.043 ***	0.063 ***	0.041 ***	0.057 **	0.065 ***	0.091 ***
	[0.01]	[0.02]	[0.01]	[0.03]	[0.01]	[0.02]
Y_2016 x Treated	0.108 ***	0.176 ***	0.120 ***	0.182 ***	0.127 ***	0.219 ***
	[0.02]	[0.03]	[0.02]	[0.04]	[0.02]	[0.04]
Y_2017 x Treated	0.030 ***	0.204 ***	0.029 ***	0.210 ***	0.020	0.232 ***
	[0.01]	[0.03]	[0.01]	[0.03]	[0.02]	[0.04]
Y_2018 x Treated	-0.005	0.202 ***	-0.004	0.210 ***	-0.015	0.215 ***
	[0.01]	[0.03]	[0.01]	[0.03]	[0.02]	[0.06]
Y_2019 x Treated	0.007	0.211 ***	0.004	0.217 ***	-0.007	0.206 ***
	[0.01]	[0.03]	[0.01]	[0.03]	[0.03]	[0.06]
Y_2020 x Treated	0.001	0.215 ***	0.005	0.226 ***	0.016	0.219 ***
	[0.00]	[0.03]	[0.00]	[0.03]	[0.01]	[0.06]
No. of observations	38,496	38,496	35,680	35,680	32,272	32,288
No. of clusters	68	68	68	68	67	68

Table 4. Difference-in-Differences Equity Issuance Estimates: Connected vs Unconnected Domestic Listed Firms

This table shows difference-in-differences (DiD) regressions comparing equity issuances by connected and unconnected domestic listed firms. The table shows regression results obtained by estimating Equation (1) using two different dependent variables: The amount of equity raised over 2012 assets and the cumulative amount of equity raised over 2012 assets. The treated variable equals one for connected firms listed in domestic markets and zero otherwise (unconnected firms listed in domestic markets). The table shows DiD coefficients, which estimate, for each year, average differences in equity raised between connected and unconnected firms (relative to the 2012 differences). The 2012 coefficient shows the differences between connected and unconnected firms in 2012. The regressions include year and industry fixed effects. Standard errors are clustered at the industry (two-digit SIC) level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The left-side panel uses the full sample of domestic listed firms. The right-side panel uses the propensity-score-matched (PSM) sample of connected and unconnected domestic listed firms.

Sample:	Full Sample Connected vs Unconnected		PSM Sample Connected vs Unconnected	
Dependent Variable:	Equity over 2012 Assets	Cum. Equity over 2012 Assets	Equity over 2012 Assets	Cum. Equity over 2012 Assets
Y_2005 x Treated	0.002	-0.009	0.000	-0.008
	[0.00]	[0.01]	[0.00]	[0.01]
Y_2006 x Treated	0.003	-0.008	0.000	-0.008
	[0.00]	[0.01]	[0.00]	[0.00]
Y_2007 x Treated	0.003	-0.007	0.001	-0.007
	[0.00]	[0.01]	[0.00]	[0.00]
Y_2008 x Treated	0.003	-0.005	0.001	-0.006
	[0.00]	[0.01]	[0.00]	[0.00]
Y_2009 x Treated	0.002	-0.005	-0.001	-0.007 **
	[0.00]	[0.00]	[0.00]	[0.00]
Y_2010 x Treated	0.005	-0.002	0.003	-0.004
	[0.00]	[0.00]	[0.00]	[0.00]
Y_2011 x Treated	0.006	0.002	0.005	0.000
	[0.00]	[0.00]	[0.00]	[0.00]
Treated (2012 Diff.)	-0.005	-0.003	-0.004	
	[0.00]	[0.01]	[0.00]	[0.01]
Y_2013 x Treated	0.000	0.001	0.021	0.020
	[0.01]	[0.01]	[0.02]	[0.01]
Y_2014 x Treated	-0.001	-0.001	0.031 **	0.050 **
	[0.01]	[0.01]	[0.01]	[0.02]
Y_2015 x Treated	0.042 ***	0.032 *	0.078 ***	0.144 ***
	[0.01]	[0.02]	[0.02]	[0.02]
Y_2016 x Treated	0.064 ***	0.103 **	0.181 ***	0.344 ***
	[0.02]	[0.05]	[0.05]	[0.06]
Y_2017 x Treated	0.024 *	0.130 **	0.079 ***	0.418 ***
	[0.01]	[0.05]	[0.03]	[0.08]
Y_2018 x Treated	0.026 ***	0.154 ***	0.061 **	0.465 ***
	[0.01]	[0.06]	[0.02]	[0.09]
Y_2019 x Treated	0.013 **	0.165 ***	0.031 ***	0.495 ***
	[0.01]	[0.06]	[0.01]	[0.09]
Y_2020 x Treated	0.015 ***	0.176 ***	0.017 ***	0.511 ***
	[0.00]	[0.06]	[0.01]	[0.09]
No. of observations	31,952	31,952	16,928	16,928
No. of clusters	66	67	59	59

Table 5. Difference-in-Differences Equity Issuance Estimates: Connected Firms of Different Sizes vs Unconnected Firms

This table shows difference-in-differences (DiD) regressions comparing equity issuances by connected firms of different sizes with unconnected firms. Connected firms are divided into four different groups according to their size: connected firms with assets below the percentile 25; firms with assets between the percentile 25 and 50, firms with assets between the percentile 50 and 75, and firms with assets above the percentile 75 of the firm size distribution of connected firms. Firm size is measured as the average amount of assets in 2010-12. For each comparison, the table shows the regression results obtained by estimating Equation (1) using two different dependent variables: The amount of equity raised over 2012 assets and the cumulative amount of equity raised over 2012 assets. The treated variable equals one for connected firms listed in domestic markets and zero otherwise (unconnected firms listed in domestic markets). The table shows DiD coefficients, which estimate, for each year, average differences in equity raised across groups of firms (relative to the 2012 difference). The 2012 coefficient shows the differences across groups of firms in 2012. The regressions include year and industry fixed effects. Standard errors are clustered at the industry (two-digit SIC) level. , , and indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The regressions use the propensity-score-matched (PSM) sample of connected and unconnected firms.

	PSM Sample: Connected of Different Sizes vs Unconnected							
Sample:	Connected with Size > P75 vs Unconnected		Connected with Size between P50 and P75 vs Unconnected		Connected with Size between P25 and P50 vs Unconnected		Connected with Size < P25 vs Unconnected	
Dependent Variable:	Equity over 2012 Assets	Cum. Equity over 2012 Assets	Equity over 2012 Assets	Cum. Equity over 2012 Assets	Equity over 2012 Assets	Cum. Equity over 2012 Assets	Equity over 2012 Assets	Cum. Equity over 2012 Assets
Y_2005 x Treated	0.002	-0.020 ***	-0.003	-0.021 ***	-0.006	-0.013	0.009 ***	0.022 ***
	[0.00]	[0.01]	[0.01]	[0.01]	[0.00]	[0.01]	[0.00]	[0.01]
Y_2006 x Treated	0.003	-0.020 ***	-0.003	-0.021 ***	-0.007	-0.013	0.008 ***	0.022 ***
	[0.00]	[0.01]	[0.01]	[0.01]	[0.00]	[0.01]	[0.00]	[0.01]
Y_2007 x Treated	0.009 **	-0.014 **	-0.003	-0.021 ***	-0.008	-0.015	0.007 ***	0.021 ***
	[0.00]	[0.01]	[0.01]	[0.01]	[0.00]	[0.01]	[0.00]	[0.01]
Y_2008 x Treated	0.005	-0.011 *	-0.001	-0.019 **	-0.008 *	-0.016 *	0.010 **	0.022 ***
	[0.00]	[0.01]	[0.01]	[0.01]	[0.00]	[0.01]	[0.00]	[0.01]
Y_2009 x Treated	0.001	-0.013 **	0.000	-0.016 ***	-0.008	-0.018 **	0.004 *	0.017 ***
	[0.00]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.00]	[0.01]
Y_2010 x Treated	0.012 **	-0.003	0.001	-0.012 *	-0.002	-0.013	0.002	0.011 **
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.00]	[0.01]
Y_2011 x Treated	0.008	0.002	0.006	-0.003	0.001	-0.006	0.006	0.009 ***
	[0.01]	[0.00]	[0.01]		[0.00]	[0.00]	[0.01]	[0.00]
Treated (2012 Diff.)	-0.001	0.027 ***	0.003	0.023 **	0.003	0.001	-0.010 **	-0.047 ***
	[0.00]	[0.01]	[0.00]	[0.01]	[0.00]	[0.02]	[0.00]	[0.02]
Y_2013 x Treated	-0.001	0.001	0.004	0.011	0.008	0.019	0.074	0.048
	[0.01]	[0.01]	[0.02]	[0.01]	[0.01]	[0.01]	[0.07]	[0.05]
Y_2014 x Treated	0.000	-0.001	0.019	0.033 *	0.083 **	0.106 ***	0.022	0.061
	[0.02]	[0.01]	[0.02]	[0.02]	[0.04]	[0.04]	[0.02]	[0.04]
Y_2015 x Treated	-0.005	-0.002	0.036 *	0.079 ***	0.068 *	0.252 ***	0.217 ***	0.253 ***
	[0.01]	[0.02]	[0.02]	[0.02]	[0.04]	[0.06]	[0.04]	[0.04]
Y_2016 x Treated	0.035	0.036	0.056 *	0.144 ***	0.195 ***	0.457 ***	0.399 ***	0.706 ***
	[0.04]	[0.05]	[0.03]	[0.03]	[0.04]	[0.06]	[0.13]	[0.16]
Y_2017 x Treated	-0.014 *	0.022	0.033	0.183 ***	0.094 *	0.559 ***	0.204 ***	0.877 ***
	[0.01]	[0.05]	[0.03]	[0.03]	[0.05]	[0.06]	[0.05]	[0.19]
Y_2018 x Treated	0.006	0.026	0.026	0.211 ***	0.087 *	0.652 ***	0.125 *	0.942 ***
	[0.01]	[0.05]	[0.02]	[0.03]	[0.05]	[0.08]	[0.07]	[0.19]
Y_2019 x Treated	0.004	0.028	0.007	0.221 ***	0.009	0.667 ***	0.105 ***	1.039 ***
	[0.01]	[0.05]	[0.01]	[0.03]	[0.02]	[0.08]	[0.03]	[0.18]
Y_2020 x Treated	0.006	0.032	-0.001	0.222 ***	0.035	0.708 ***	0.026 **	1.056 ***
	[0.01]	[0.05]	[0.00]	[0.03]	[0.02]	[0.09]	[0.01]	[0.18]
No. of observations	10,624	10,624	10,608	10,608	10,592	10,592	10,560	10,560
No. of clusters	55	55	53	53	55	55	56	56

Table 6. Difference-in-Differences Equity Issuance Estimates: Small vs Large Connected Firms

This table shows difference-in-differences (DiD) regressions comparing equity issuances by connected firms with size below the median (percentile 50) with connected firms with size above the median. Firm size is measured as the average amount assets in 2010-12. The table shows regression results obtained by estimating Equation (1) using two different dependent variables: The amount of equity raised over 2012 assets and the cumulative amount of equity raised over 2012 assets. The table shows DiD coefficients, which estimate, for each year, average differences in equity raised between small and large connected firms (relative to the 2012 difference). The 2012 coefficient shows the differences between small and large connected firms in 2012. The regressions include year and industry fixed effects. Standard errors are clustered at the industry (two-digit SIC) level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The regressions use the propensity-score-matched (PSM) sample of connected firms. Right-side panels exclude state owned enterprises (SOEs) from the sample.

Sample:	Small Connected (Below Median) vs Large Connected (Above Median)			
	PSM Sample		PSM Sample, Excluding SOEs	
Dependent Variable:	Equity over 2012 Assets	Cum. Equity over 2012 Assets	Equity over 2012 Assets	Cum. Equity over 2012 Assets
Y_2005 x Small	0.001	0.025 ***	0.011 **	0.034 ***
	[0.00]	[0.01]	[0.00]	[0.01]
Y_2006 x Small	0.001	0.025 ***	0.011 **	0.033 ***
	[0.00]	[0.01]	[0.00]	[0.01]
Y_2007 x Small	-0.004	0.020 **	0.009 *	0.031 ***
	[0.00]	[0.01]	[0.00]	[0.01]
Y_2008 x Small	-0.001	0.018 **	0.011 *	0.031 ***
	[0.00]	[0.01]	[0.01]	[0.01]
Y_2009 x Small	-0.003	0.014 **	0.009	0.029 ***
	[0.00]	[0.01]	[0.01]	[0.01]
Y_2010 x Small	-0.006	0.006	0.001	0.019 ***
	[0.01]	[0.01]	[0.01]	[0.01]
Y_2011 x Small	-0.004	0.001	0.003	0.011 **
	[0.00]	[0.00]	[0.01]	
Small (2012 Diff.)	-0.003	-0.037 *	-0.006	-0.039
	[0.01]	[0.02]	[0.01]	[0.02]
Y_2013 x Small	0.039	0.027	0.037	0.009
	[0.03]	[0.02]	[0.03]	[0.02]
Y_2014 x Small	0.043 **	0.068 **	0.015	0.014
	[0.02]	[0.03]	[0.04]	[0.03]
Y_2015 x Small	0.127 ***	0.215 ***	0.116 ***	0.102 **
	[0.03]	[0.04]	[0.04]	[0.04]
Y_2016 x Small	0.230 **	0.470 ***	0.271 **	0.410 ***
	[0.10]	[0.10]	[0.10]	[0.12]
Y_2017 x Small	0.139 ***	0.594 ***	0.194 ***	0.533 ***
	[0.04]	[0.13]	[0.06]	[0.15]
Y_2018 x Small	0.090 **	0.657 ***	0.102	0.533 ***
	[0.03]	[0.14]	[0.07]	[0.15]
Y_2019 x Small	0.051 ***	0.706 ***	0.084 **	0.580 ***
	[0.01]	[0.14]	[0.04]	[0.14]
Y_2020 x Small	0.028 ***	0.733 ***	0.011	0.580 ***
	[0.01]	[0.14]	[0.02]	[0.13]
No. of observations	8,448	8,448	5,360	5,360
No. of clusters	53	53	44	44

Table 7. Difference-in-Differences Equity Issuance Estimates: Alternative Specifications

This table shows difference-in-differences (DiD) regressions comparing equity issuances by connected and unconnected firms. The table shows regression results obtained by estimating Equation (1) using four different specifications: The first column shows results using the ln (1 + equity raised) as the dependent variable. The second column shows results using the amount of equity raised over 2012 assets as dependent variable after adding lagged assets and sales growth as controls. The third column shows results after excluding financial firms from the analysis. The fourth column shows results after excluding firms with stocks available for margin trading. The treated variable equals one for connected firms listed in domestic markets and zero otherwise (unconnected firms listed in domestic markets). The table shows DiD coefficients, which estimate, for each year, average differences in equity raised across groups of firms (relative to the 2012 differences). The 2012 coefficient shows the differences across groups of firms in 2012. The regressions include year and industry fixed effects. Standard errors are clustered at the industry (two-digit SIC) level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Left-side columns show results using the full sample of firms. Right-side columns show results using the propensity-score-matched (PSM) sample of firms.

Sample:	Full Sample				PSM Sample			
Robustness:	Ln (1 + Equity Raised) as Dependent Variable	Controlling for Lagged Assets and Sales Growth	Excluding Financial Firms	Excluding Margin Trading Firms	Ln (1 + Equity Raised) as Dependent Variable	Controlling for Lagged Assets and Sales Growth	Excluding Financial Firms	Excluding Margin Trading Firms
Y_2005 x Treated	-0.339 **	-0.002	0.001	0.005	0.003	0.002	0.001	0.000
	[0.17]	[0.00]	[0.00]	[0.00]	[0.16]	[0.00]	[0.00]	[0.00]
Y_2006 x Treated	-0.129	0.004	0.002	0.005	0.036	0.008	0.001	-0.001
	[0.17]	[0.00]	[0.00]	[0.00]	[0.16]	[0.01]	[0.00]	[0.00]
Y_2007 x Treated	0.035	0.003	0.002	0.006	0.182	0.011 *	0.001	0.000
	[0.21]	[0.00]	[0.00]	[0.00]	[0.19]	[0.01]	[0.00]	[0.00]
Y_2008 x Treated	-0.012	0.004	0.002	0.006	0.136	0.009 **	0.002	0.001
	[0.21]	[0.00]	[0.00]	[0.00]	[0.21]	[0.00]	[0.00]	[0.00]
Y_2009 x Treated	-0.065	0.004	0.001	0.002	-0.109	0.003	0.000	-0.002
	[0.21]	[0.00]	[0.00]	[0.00]	[0.23]	[0.00]	[0.00]	[0.00]
Y_2010 x Treated	0.247	0.008	0.005	0.005	0.244	0.009 *	0.004	0.001
	[0.23]	[0.00]	[0.00]	[0.01]	[0.29]	[0.00]	[0.00]	[0.00]
Y_2011 x Treated	0.158	0.006 *	0.004	0.005	0.292	0.009 **	0.005	0.001
	[0.21]	[0.00]	[0.00]	[0.01]	[0.33]	[0.00]	[0.00]	[0.00]
Treated (2012 Diff.)	0.347 **	-0.006	-0.003	-0.009	0.002	-0.013 **	-0.005	-0.003
	[0.17]	[0.00]	[0.00]	[0.01]	[0.16]	[0.00]	[0.00]	[0.00]
Y_2013 x Treated	0.513 *	0.002	0.000	0.017	1.336 ***	0.021	0.021	0.018
	[0.30]	[0.01]	[0.01]	[0.01]	[0.37]	[0.02]	[0.02]	[0.01]
Y_2014 x Treated	0.816 **	0.001	-0.002	0.014	1.692 ***	0.025 *	0.032 **	0.032 **
	[0.35]	[0.01]	[0.01]	[0.01]	[0.50]	[0.01]	[0.01]	[0.01]
Y_2015 x Treated	1.779 ***	0.043 ***	0.038 ***	0.068 ***	3.077 ***	0.070 ***	0.072 ***	0.057 ***
	[0.41]	[0.01]	[0.01]	[0.01]	[0.50]	[0.02]	[0.02]	[0.02]
Y_2016 x Treated	1.253 ***	0.070 ***	0.056 **	0.187 ***	2.231 ***	0.175 ***	0.186 ***	0.211 ***
	[0.43]	[0.02]	[0.02]	[0.04]	[0.51]	[0.05]	[0.05]	[0.05]
Y_2017 x Treated	0.844 **	0.032 **	0.019	0.065 ***	1.512 **	0.082 ***	0.073 **	0.068 **
	[0.35]	[0.01]	[0.01]	[0.02]	[0.59]	[0.03]	[0.03]	[0.03]
Y_2018 x Treated	0.257	0.034 ***	0.025 ***	0.056 ***	0.818 **	0.062 ***	0.061 **	0.038 **
	[0.20]	[0.01]	[0.01]	[0.02]	[0.32]	[0.02]	[0.02]	[0.01]
Y_2019 x Treated	-0.214	0.020 ***	0.012 **	0.021 ***	0.342	0.034 ***	0.031 ***	0.026 ***
	[0.24]	[0.01]	[0.01]	[0.01]	[0.29]	[0.01]	[0.01]	[0.01]
Y_2020 x Treated	0.157	0.023 ***	0.012 ***	0.020 ***	0.361 *	0.022 ***	0.017 ***	0.017 **
	[0.23]	[0.00]	[0.00]	[0.01]	[0.21]	[0.01]	[0.01]	[0.01]
No. of observations	31,952	27,968	31,008	19,408	16,928	16,928	16,768	14,112
No. of clusters	66	66	60	65	58	58	56	60

Table 8. Difference-in-Differences Equity Issuance Estimates: Shanghai and Shenzhen Events

This table shows difference-in-differences (DiD) regressions comparing equity issuances by connected and unconnected domestic listed firms, distinguishing between firms listed in Shanghai and Shenzhen. For each comparison, the table shows regression results obtained by estimating Equation (1) using two different dependent variables: The amount of equity raised over 2012 assets and the cumulative amount of equity raised over 2012 assets. The treated variable equals one for connected firms listed in domestic markets and zero otherwise (unconnected firms listed in domestic markets). The table shows DiD coefficients, which estimate, for each year, average differences in equity issuances across groups of firms (relative to the 2012 difference). The 2012 coefficient shows the differences across groups of firms in 2012. The regressions include year and industry fixed effects. Standard errors are clustered at the industry (two-digit SIC) level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Left-side columns show results for the propensity-score-matched (PSM) sample of firms listed in Shanghai. Right-side columns show results for the PSM sample of firms listed in Shenzhen.

Sample:	PSM Sample Shanghai		PSM Sample Shenzhen	
Dependent Variable:	Equity over 2012 Assets	Cum. Equity over 2012 Assets	Equity over 2012 Assets	Cum. Equity over 2012 Assets
Y_2005 x Treated	-0.002	0.010	0.002	0.003
	[0.01]	[0.02]	[0.00]	[0.01]
Y_2006 x Treated	-0.002	0.010	0.002	0.003
	[0.01]	[0.02]	[0.00]	[0.01]
Y_2007 x Treated	-0.001	0.011	0.002	0.003
	[0.01]	[0.02]	[0.00]	[0.01]
Y_2008 x Treated	0.001	0.013	0.004	0.004
	[0.01]	[0.02]	[0.00]	[0.01]
Y_2009 x Treated	-0.021	-0.006	0.002	0.004
	[0.01]	[0.01]	[0.00]	[0.01]
Y_2010 x Treated	0.001	-0.003	-0.003	-0.001
	[0.01]	[0.01]	[0.01]	[0.00]
Y_2011 x Treated	-0.001	-0.002	0.006	0.002
	[0.01]	[0.01]	[0.01]	[0.00]
Treated (2012 Diff.)	0.007	0.022	-0.007	*
	[0.01]	[0.02]	[0.01]	[0.01]
Y_2013 x Treated	0.017	0.019	0.006	0.004
	[0.02]	[0.02]	[0.01]	[0.01]
Y_2014 x Treated	-0.002	0.019	0.024	0.026
	[0.02]	[0.03]	[0.02]	[0.02]
Y_2015 x Treated	0.074 ***	0.094 **	0.065 ***	0.088 ***
	[0.02]	[0.04]	[0.02]	[0.03]
Y_2016 x Treated	0.042	0.138 **	0.224 ***	0.314 ***
	[0.04]	[0.06]	[0.05]	[0.06]
Y_2017 x Treated	0.019	0.159 ***	0.055 **	0.356 ***
	[0.03]	[0.05]	[0.02]	[0.07]
Y_2018 x Treated	-0.002	0.159 ***	0.038 ***	0.392 ***
	[0.01]	[0.05]	[0.01]	[0.08]
Y_2019 x Treated	0.009	0.170 ***	0.008	0.397 ***
	[0.01]	[0.06]	[0.01]	[0.08]
Y_2020 x Treated	-0.001	0.171 ***	0.026 ***	0.421 ***
	[0.01]	[0.06]	[0.01]	[0.08]
No. of observations	2,736	2,736	11,344	11,344
No. of clusters	43	43	60	60

Table 9. Difference-in-Differences Investment Estimates

This table shows difference-in-differences (DiD) regressions comparing the investment behavior of connected and unconnected domestic listed firms. The table shows regression results obtained by estimating Equation (1) using four different dependent variables: capital expenditures (capex) over 2012 assets, spending on acquisitions over 2012 assets, research and development (R&D) expenditures over 2012 assets, and cash and short-term investments over 2012 assets. The treated variable equals one for connected firms listed in domestic markets and zero otherwise (unconnected firms listed in domestic markets). The table shows DiD coefficients, which estimate, for each year, average differences for each dependent variable between connected and unconnected firms (relative to the 2012 difference). The 2012 coefficient shows the differences between connected and unconnected firms in 2012. The regressions include year and industry fixed effects. Standard errors are clustered at the industry (two-digit SIC) level. , , and indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Left-side columns show results using the full sample of firms. Right-side columns show results using the propensity-score-matched (PSM) sample of firms.

Sample:	Full Sample Connected vs Unconnected				PSM Sample Connected vs Unconnected			
Dependent Variable:	Capex over 2012 Assets	Acquisitions over 2012 Assets	R&D over 2012 Assets	Cash and ST. Investments over 2012 Assets	Capex over 2012 Assets	Acquisitions over 2012 Assets	R&D over 2012 Assets	Cash and ST. Investments over 2012 Assets
Y_2005 x Treated	-0.017 ***	-0.002	-0.018 *	-0.040 ***	-0.015 ***	0.004		-0.009
	[0.01]	[0.00]	[0.01]	[0.01]	[0.01]	[0.00]		[0.01]
Y_2006 x Treated	-0.009 **	-0.002	-0.014	-0.038 ***	-0.009 **	0.004		-0.010
	[0.00]	[0.00]	[0.01]	[0.01]	[0.00]	[0.00]		[0.01]
Y_2007 x Treated	-0.010 **	-0.003	-0.003	-0.034 ***	-0.007 *	0.006 *	0.002	-0.010
	[0.00]	[0.00]	[0.00]	[0.01]	[0.00]	[0.00]	[0.00]	[0.01]
Y_2008 x Treated	-0.011 ***	-0.014	-0.007 **	-0.024 **	-0.009 ***	0.001	-0.009 *	-0.009
	[0.00]	[0.01]	[0.00]	[0.01]	[0.00]	[0.00]	[0.00]	[0.01]
Y_2009 x Treated	-0.012 ***	-0.003	-0.008 **	-0.010	-0.007 **	0.001	-0.011 **	-0.002
	[0.00]	[0.00]	[0.00]	[0.01]	[0.00]	[0.00]	[0.00]	[0.01]
Y_2010 x Treated	-0.010 ***	0.001	-0.005	0.003	-0.005 **	0.002	-0.011 **	0.005
	[0.00]	[0.00]	[0.00]	[0.01]	[0.00]	[0.00]	[0.01]	[0.01]
Y_2011 x Treated	-0.007 ***	0.001	-0.005	-0.006	-0.004	0.002	-0.009 **	-0.003
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.01]
Treated (2012 Diff.)	0.004	0.000	0.001	-0.001	0.002	-0.003 *	-0.001	-0.018
	[0.00]	[0.00]	[0.00]	[0.01]	[0.00]	[0.00]	[0.00]	[0.01]
Y_2013 x Treated	0.002	0.001	0.002	0.021 ***	0.010	0.003	0.003 ***	0.034 **
	[0.00]	[0.00]	[0.00]	[0.01]	[0.01]	[0.00]	[0.00]	[0.02]
Y_2014 x Treated	0.006	0.008 **	0.006 **	0.065 ***	0.017 ***	0.007 *	0.008 ***	0.101 ***
	[0.00]	[0.00]	[0.00]	[0.01]	[0.00]	[0.00]	[0.00]	[0.02]
Y_2015 x Treated	0.022 ***	0.013 *	0.009 **	0.110 ***	0.049 ***	0.032 ***	0.014 ***	0.152 ***
	[0.01]	[0.01]	[0.00]	[0.03]	[0.00]	[0.01]	[0.00]	[0.03]
Y_2016 x Treated	0.037 ***	0.028 ***	0.013 ***	0.158 ***	0.078 ***	0.056 ***	0.021 ***	0.276 ***
	[0.01]	[0.01]	[0.00]	[0.05]	[0.01]	[0.01]	[0.01]	[0.06]
Y_2017 x Treated	0.047 ***	0.013	0.018 ***	0.159 ***	0.087 ***	0.035 ***	0.028 ***	0.332 ***
	[0.01]	[0.01]	[0.01]	[0.05]	[0.01]	[0.01]	[0.01]	[0.09]
Y_2018 x Treated	0.044 ***	0.005	0.021 **	0.169 ***	0.090 ***	0.010	0.035 ***	0.325 ***
	[0.01]	[0.01]	[0.01]	[0.04]	[0.01]	[0.01]	[0.01]	[0.06]
Y_2019 x Treated	0.048 ***	-0.003	0.025 ***	0.206 ***	0.080 ***	0.006	0.039 ***	0.370 ***
	[0.01]	[0.00]	[0.01]	[0.05]	[0.01]	[0.00]	[0.01]	[0.07]
Y_2020 x Treated	0.044 ***	-0.002	0.028 ***	0.241 ***	0.081 ***	0.011 *	0.042 ***	0.376 ***
	[0.01]	[0.00]	[0.01]	[0.05]	[0.01]	[0.01]	[0.01]	[0.06]
No. of observations	28,857	19,342	15,346	28,785	15,100	10,216	8,569	15,117
No. of clusters	67	67	63	66	59	59	58	58

Table 10. Equity Issuances and Use of Funds by Connected Firms

This table shows the regressions that estimate how connected firms used proceeds raised with equity issuances during 2013-2020. The analysis follows Kim and Weisbach (2008). The regression specification follows Equation (2). Independent variables are the log of equity issuance value over total assets, the log of other sources of funds over total assets, and the log of total assets. Total assets are measured at the value of the year just before the issuance. The table only shows the beta coefficient linked to the equity issuance effect. We omit the beta coefficients on other sources of capital and total assets to save space because we use these variables as controls. The dollar effect estimates the change in the dependent variable resulting from one dollar increase in a firm's equity issuance. All regressions include industry and year fixed effects. Standard errors are clustered at the industry (two-digit SIC) level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The left-side panel uses the full sample of connected firms. The right-side panel uses the propensity-score-matched (PSM) sample of connected firms.

		Independent Variable: Equity Issuance Value					
		Full Sample			PSM Sample		
Dependent Variable:	Years Relative to Issuance (Issuance at t=1)	N	β1	Dollar effect	N	β1	Dollar effect
		(1)	(2)	(3)	(4)	(5)	(6)
∑Capex	1	868	0.15 ***	0.14	422	0.14 ***	0.13
	2	684	0.27 ***	0.26	335	0.27 ***	0.27
∑Acquisitions	1	808	0.28 ***	0.24	398	0.29 ***	0.25
	2	600	0.15	0.14	299	0.09	0.08
∑R&D	1	642	0.03 ***	0.02	340	0.03 ***	0.02
	2	499	0.04 *	0.03	267	0.04 *	0.04
Δ Cash and Short-term Investments	1	856	0.58 ***	0.52	422	0.54 ***	0.48
	2	675	0.68 ***	0.63	336	0.49 ***	0.44

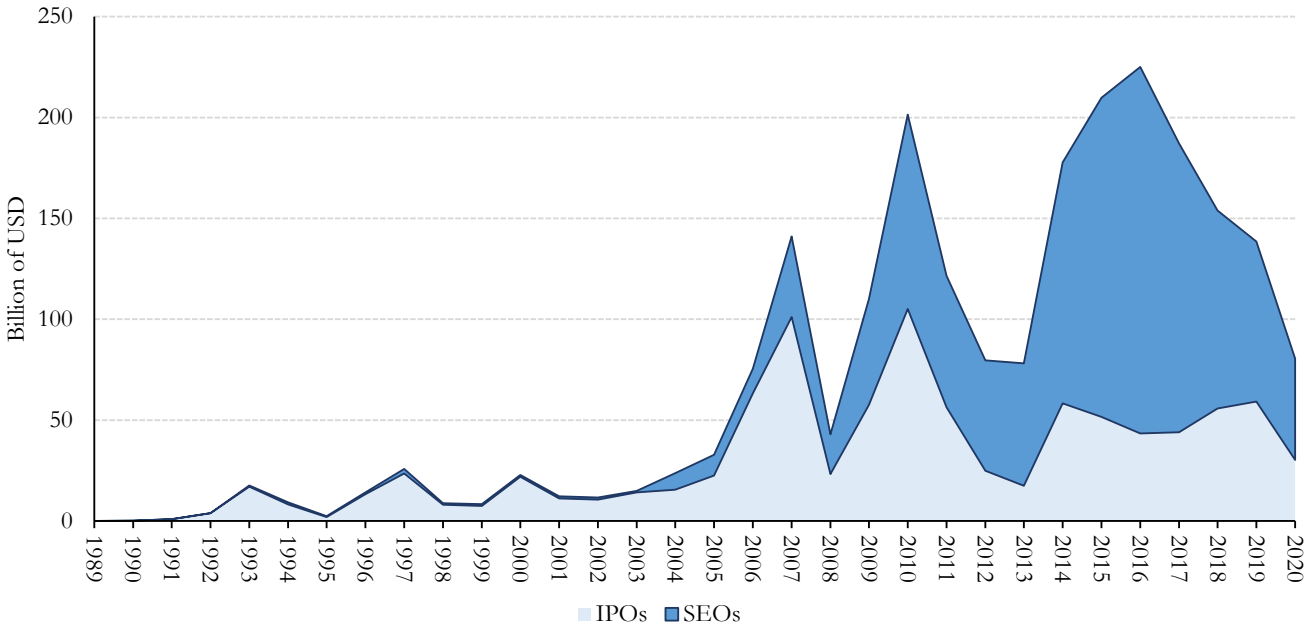
Table 11. Aggregate Impact of Internationalization Events

This table shows the aggregate implications of the 2013-2020 foreign internationalization events for firm equity financing and investment activity of publicly listed firms in China. We compute the aggregate impact for each variable using estimates from the difference-in-differences regressions in Appendix Table 2 and Appendix Table 3. Columns 1-4 show the actual cumulative aggregate outcomes (2013-2020) for each variable and group of firms. For market capitalization and cash, which are stock variables, the columns report the aggregate outcomes in 2020. Columns 5-8 show the aggregate effect of the internationalization events as a percentage of the actual aggregate outcomes.

	Aggregate Values (Trillion of 2011 USD)				**Share Attributed to Internationalization** (Percentage of Aggregate Values)			
Sample:	Full Sample			PSM Sample	Full Sample			PSM Sample
Comparison:	Connected	Domestic Listed	All Listed	Connected	% of Connected	% of Domestic Listed	% of All Listed	% of Connected
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Equity Raised (2013-20 cum.)	0.41	0.48	0.66	0.12	33.1	28.4	20.4	59.3
Market Cap. (2020)	4.42	4.87	8.15	0.89	32.5	29.9	17.8	46.8
Capex (2013-20 cum.)	1.17	1.35	2.72	0.23	12.4	10.7	5.3	37.3
Acquisitions (2013-20 cum.)	0.18	0.20	0.34	0.05	13.1	12.3	7.2	38.7
Cash and ST. Investments (2020)	1.06	1.17	1.89	0.18	26.6	25.2	15.6	35.6
R&D (2013-20 cum.)	0.27	0.31	0.47	0.07	27.7	23.9	16.0	37.0

Appendix Figure 1. Aggregate Trends in Equity Raised: IPOs vs SEOs

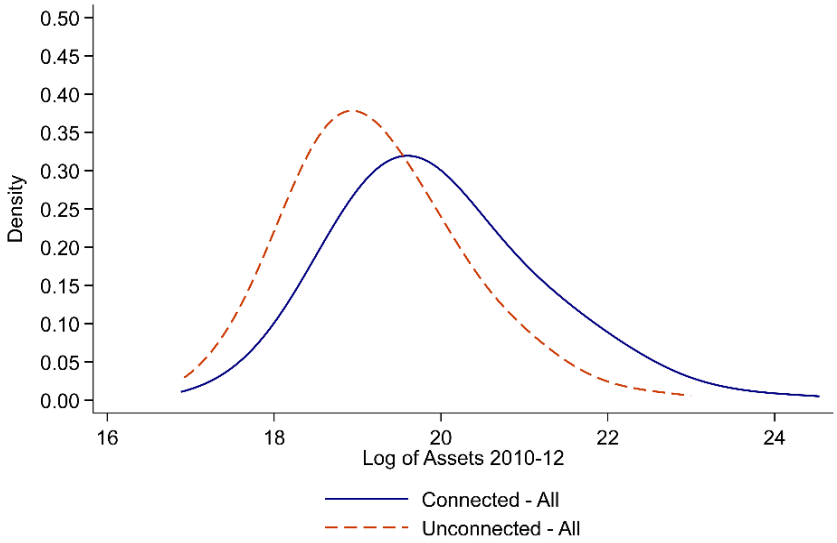
This figure shows the aggregate value raised through equity issuances per year by Chinese listed companies. The figure distinguishes Initial Public Offerings (IPOs) from Secondary Equity Offerings (SEOs). Values are expressed in billions of 2011 U.S. dollars (USD).



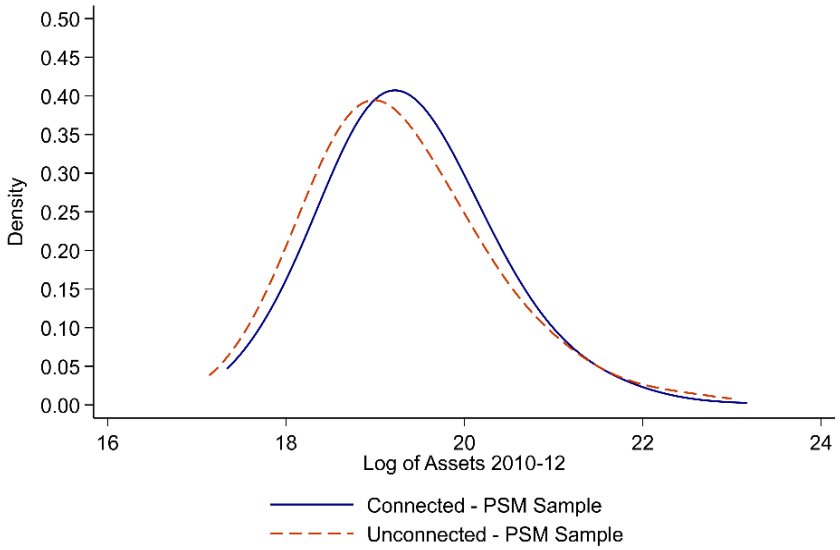
Appendix Figure 2. Firm Size Distributions

This figure shows the firm size distribution of domestic listed firms in China, distinguishing between connected and unconnected firms. Size is measured as average assets in 2010-12 (in logs). Panel A shows the firm size distributions using the full sample of connected and unconnected firms. Panel B shows the firm size distributions using the propensity-score-matched sample of connected and unconnected firms.

A. Full Sample



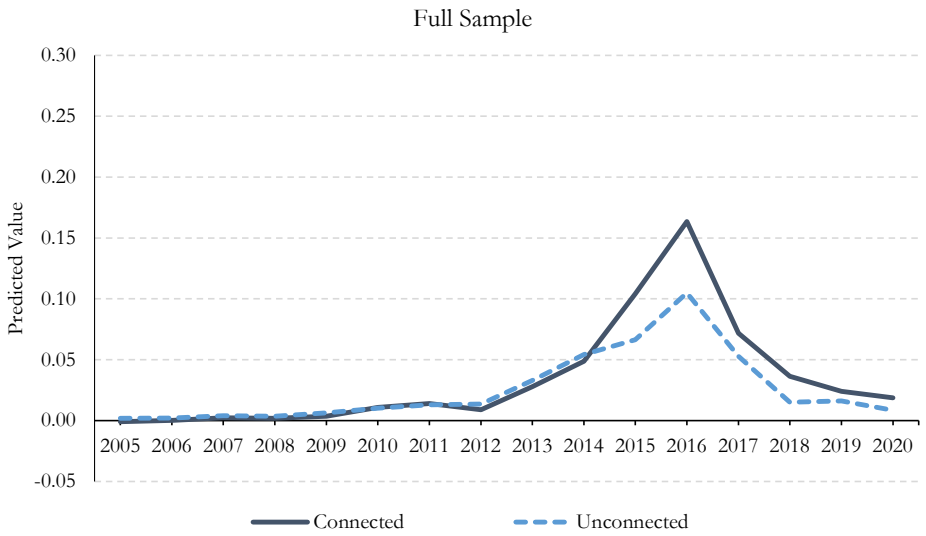
B. PSM Sample

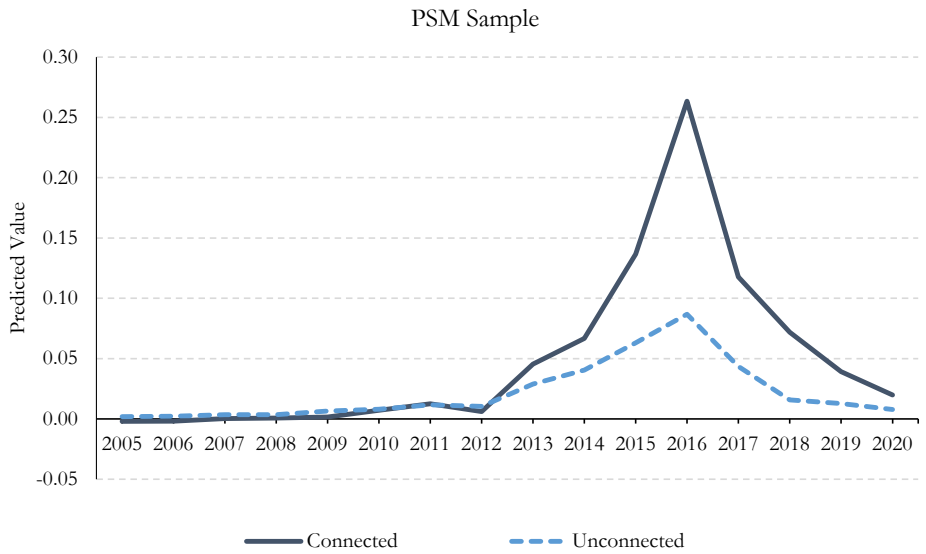


Appendix Figure 3. Predicted Equity Raised for Connected and Unconnected firms

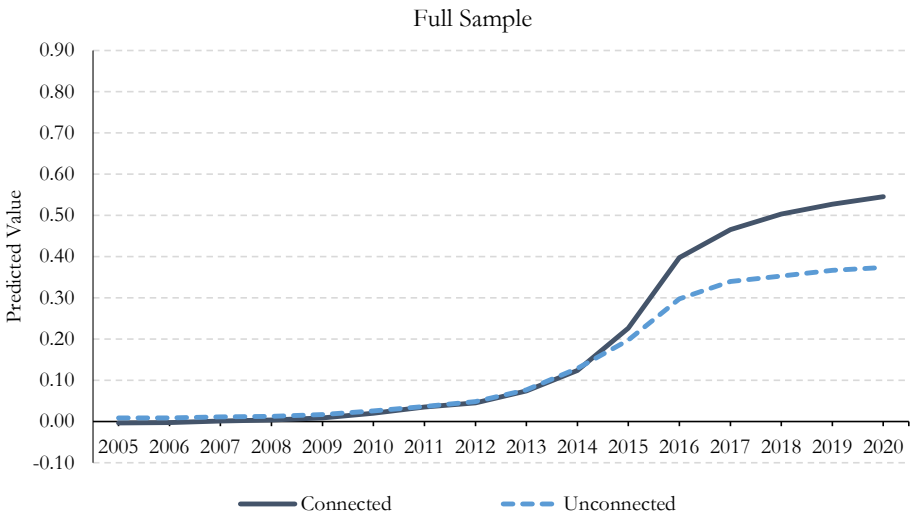
This figure shows the predicted values for the yearly amounts of equity issuances for connected and unconnected domestic listed firms. The figure plots, for each year, the predicted equity issuance value for the average firm obtained by estimating Equation (1). Panel A uses the amount of equity raised over 2012 assets as dependent variable. Panel B uses the cumulative amount of equity raised over 2012 assets as dependent variable. Left-side figures show results using the full sample of firms. Right-side figures show results using the propensity-score-matched (PSM) sample of firms. For more information about these estimations see Table 4.

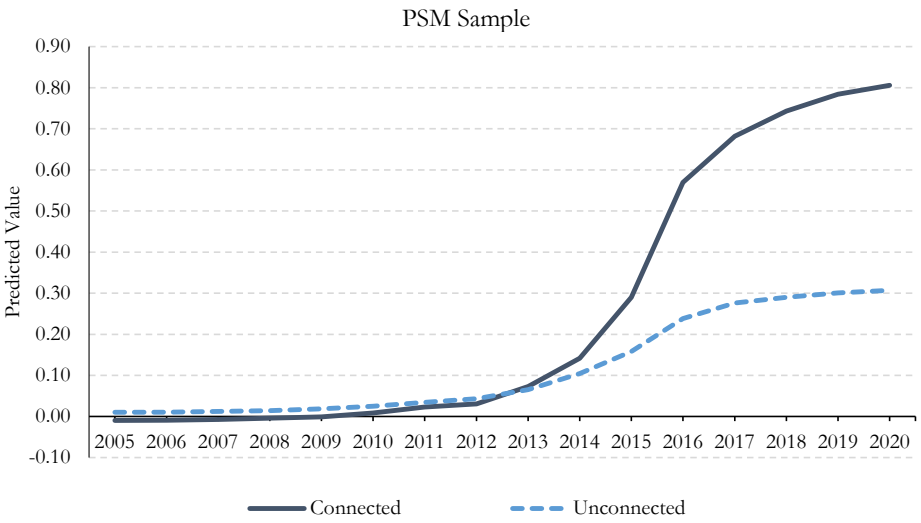
A. Equity Raised over 2012 Assets





B. Cumulative Equity Raised over 2012 Assets

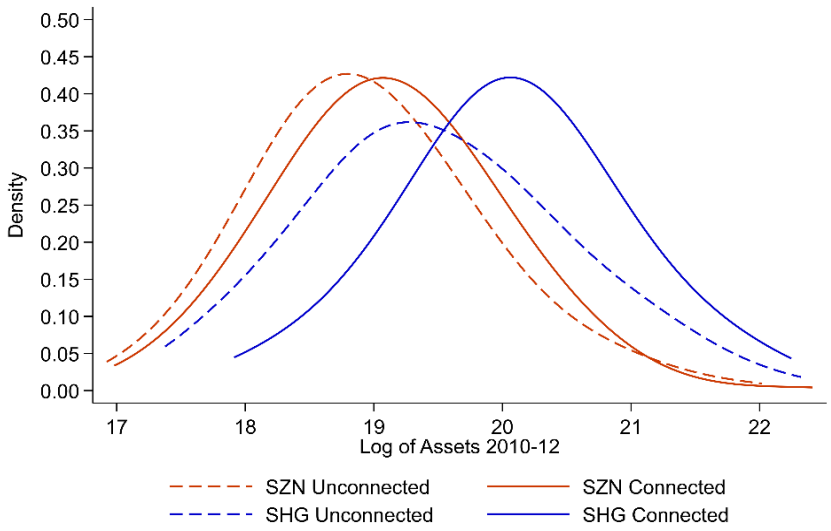




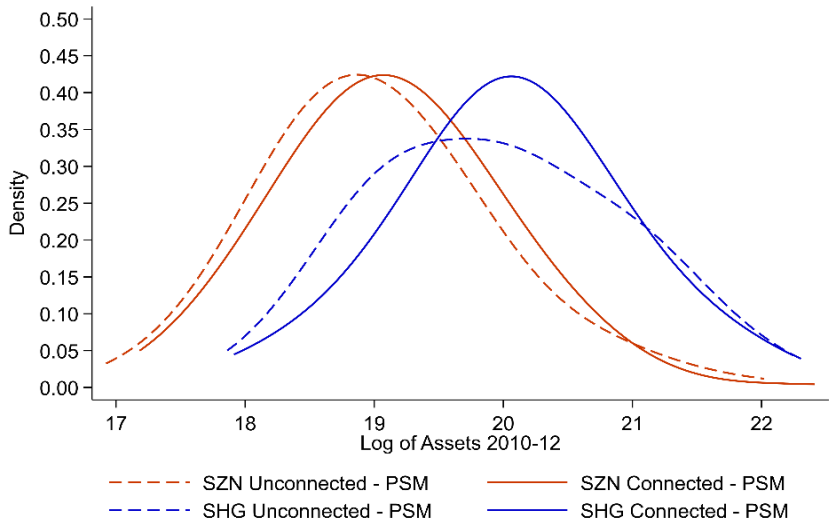
Appendix Figure 4. Firm Size Distributions: Shanghai and Shenzhen

This figure shows the firm size distribution of domestic listed firms in China, distinguishing between connected and unconnected firms and listing markets (Shanghai and Shenzhen). Size is measured as average assets in 2010-12 (in logs). Panel A shows the firm size distributions using the full sample of connected and unconnected firms. Panel B shows the firm size distributions using the propensity-score-matched sample of connected and unconnected firms.

A. Full Sample

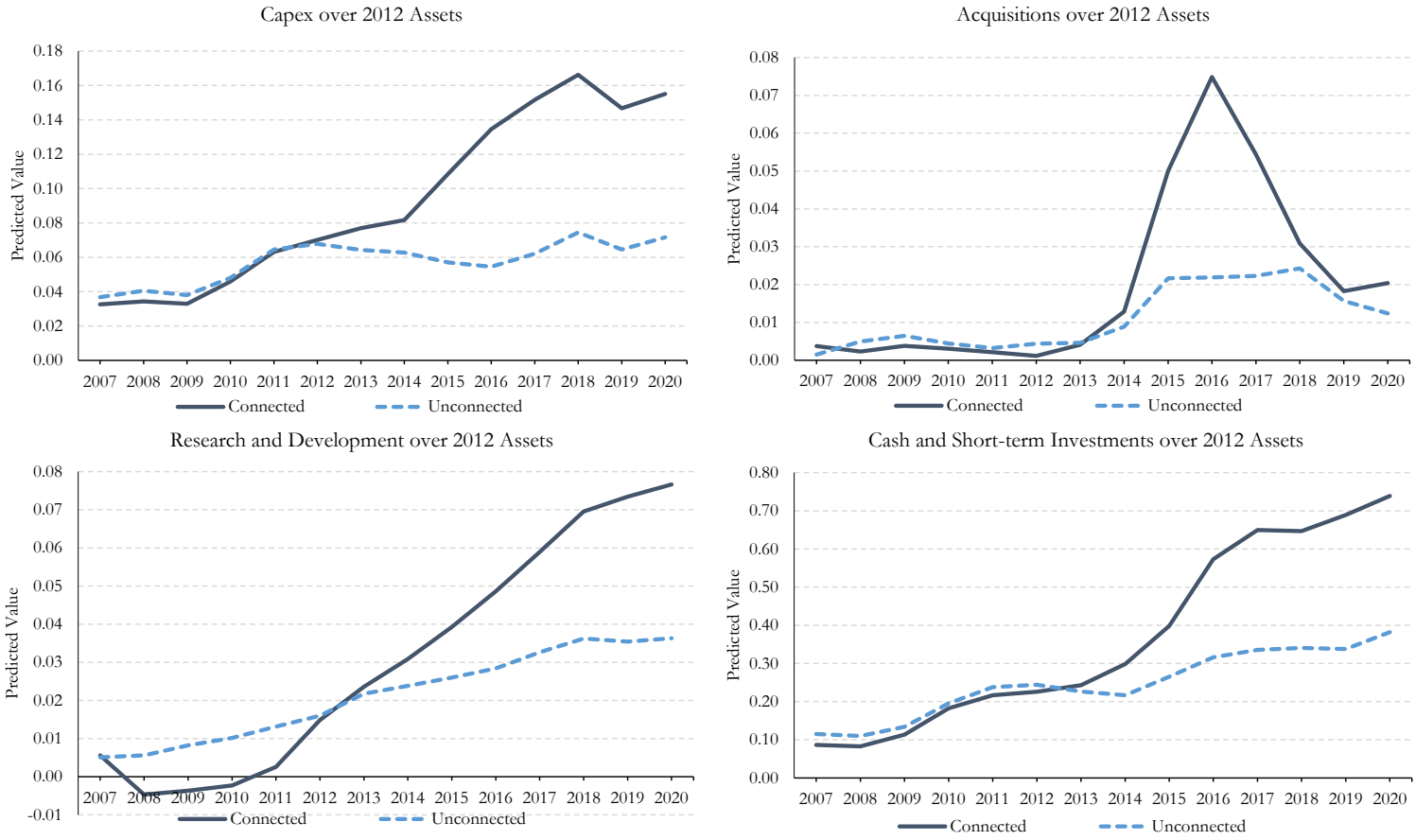


B. PSM Sample



Appendix Figure 5. Predicted Investment for Connected and Unconnected firms

This figure shows the predicted investment behavior of connected and unconnected domestic listed firms. The figure plots, for each year, the predicted investment value for the average firm obtained by estimating Equation (1). The figure shows the results for the propensity-score-matched (PSM) sample of connected and unconnected firms. For more information about these estimations see Table 9.



Appendix Table 1: Variable Definitions

This table describes the main firm-level variables used in the paper.

Variable	Definition
Acquisitions	Assets acquired through pooling of interests or mergers. It does not include capital expenditures of acquired companies. It includes net assets of acquired companies, additions to fixed assets from acquisitions, and working capital of companies acquired. Unit: Constant 2011 U.S. dollars. Source: Wordscope.
Capital Expenditure	Funds used to acquire fixed assets other than those associated with acquisitions. It includes additions to property and investments in plants, machinery, and equipment. Unit: Constant 2011 U.S. dollars. Source: Wordscope.
Cash Flow	Operating income over total assets. Operating income represents the difference between revenue and operating expenses. Source: Wordscope.
Cash Flow Volatility	Standard deviation of cash flow 1991-2012.
Cash and Short-term Investments	Sum of cash and short-term investments. It includes cash on hand, cash in banks, checks in transit, money orders, demand deposits (non-interest bearing), short-term obligations of the U.S. Government, stocks, bonds, other marketable securities listed as short-term investments, time deposits, and U.S. Government treasury bills. Unit: Constant 2011 U.S. dollars. Source: Wordscope.
Equity Raised	Total amount of equity raised per year. Unit: Constant 2011 U.S. dollars. Source: Refinitiv's SDC Platinum.
Financial Firms	Firms with a Standard Industrial Classification (SIC) code between 60 and 67. Source: Worldscope.
Leverage	Total debt over total assets.
Marging Trading Firms	Firms whose stocks became available for margin trading during 2010-2017. Source: Hong Kong Stock Exchange webpage.
Market Capitalization	Product of equity market price (fiscal period end) x common shares outstanding. For companies with more than one type of common/ordinary share, market capitalization represents the total market value of the company. Unit: Constant 2011 U.S. dollars. Source: Wordscope.
Research and Development	Direct and indirect costs related to the creation and development of new processes, techniques, applications and products with commercial possibilities. It includes software expense design and development expense. Unit: Constant 2011 U.S. dollars. Source: Wordscope.
State Owned	Firms whose main (top 1) shareholder is a government connected entity. Source: Wind.
Total Assets	Sum of total current assets, long term receivables, investment in unconsolidated subsidiaries, other investments, net property plant and equipment and other assets. Unit: Constant 2011 U.S. dollars. Source: Wordscope.
Total Debt	Sum of long and short term debt. Unit: Constant 2011 U.S. dollars. Source: Wordscope.
Total Sources of Funds	Total funds generated by the company internally and externally during the fiscal period. Unit: Constant 2011 U.S. dollars. Source: Wordscope.

Appendix Table 2. Difference-in-Differences Estimates: Dependent Variables in Nominal Values

This table shows difference-in-differences (DiD) regressions comparing the equity issuance and investment behavior for the full smaple of connected and unconnected domestic listed firms. The table shows regression results obtained by estimating Equation (1) using five different dependent variables: the amount of equity raised, capital expenditures (capex), cash and short-term investments, spending on acquisitions, market capitalization, and research & development. The treated variable equals one for connected firms listed in domestic markets and zero otherwise (unconnected firms listed in domestic markets). The table shows DiD coefficients, which estimate, for each year, average differences for each dependent variable between connected and unconnected firms (relative to the 2012 difference) The 2012 coefficient shows the differences between connected and unconnected firms in 2012.. The regressions include year and industry fixed effects. Standard errors are clustered at the industry (two-digit SIC) level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Units are in billions of 2011 U.S. dollars (USD)..

Dependent Variable:	Equity	Capex	Acquisitions	Cash and ST. Investments	Market Capitalization	Research & Development
Y_2005 x Treated	-0.008 **	-0.033 ***	-0.007 ***	-0.126 ***	-0.615 ***	
	[0.00]	[0.01]	[0.00]	[0.02]	[0.09]	
Y_2006 x Treated	-0.005 **	-0.027 ***	-0.005 **	-0.119 ***	-0.496 ***	
	[0.00]	[0.01]	[0.00]	[0.02]	[0.08]	
Y_2007 x Treated	-0.003	-0.020 ***	0.003	-0.091 ***	0.043	-0.001
	[0.00]	[0.01]	[0.00]	[0.02]	[0.09]	[0.00]
Y_2008 x Treated	-0.004	-0.015 ***	0.000	-0.087 ***	-0.398 ***	-0.004 **
	[0.00]	[0.00]	[0.00]	[0.02]	[0.07]	[0.00]
Y_2009 x Treated	-0.002	-0.017 ***	-0.001	-0.055 ***	0.117 *	-0.004 *
	[0.00]	[0.00]	[0.00]	[0.01]	[0.07]	[0.00]
Y_2010 x Treated	0.003	-0.014 ***	0.002	-0.022 **	0.220 ***	-0.001
	[0.00]	[0.00]	[0.00]	[0.01]	[0.05]	[0.00]
Y_2011 x Treated	0.000	-0.005 **	-0.033	-0.010	-0.052	0.000
	[0.00]	[0.00]	[0.03]	[0.01]	[0.03]	[0.00]
Treated (2012 Diff.)	0.007 **	0.037 ***	0.005 ***	0.134 ***	0.624 ***	0.007 ***
	[0.00]	[0.01]	[0.00]	[0.02]	[0.08]	[0.00]
Y_2013 x Treated	0.005	0.002	0.000	0.008 **	0.140 **	0.002 ***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.05]	[0.00]
Y_2014 x Treated	0.011 *	0.007 *	0.001	0.035 ***	0.560 ***	0.004 ***
	[0.01]	[0.00]	[0.00]	[0.01]	[0.11]	[0.00]
Y_2015 x Treated	0.029 ***	0.010 **	0.007 ***	0.091 ***	1.097 ***	0.005 ***
	[0.01]	[0.01]	[0.00]	[0.03]	[0.14]	[0.00]
Y_2016 x Treated	0.040 ***	0.012	0.004	0.117 ***	0.692 ***	0.007 ***
	[0.01]	[0.01]	[0.00]	[0.03]	[0.10]	[0.00]
Y_2017 x Treated	0.017 ***	0.020 **	0.007 ***	0.137 ***	0.822 ***	0.010 ***
	[0.01]	[0.01]	[0.00]	[0.03]	[0.08]	[0.00]
Y_2018 x Treated	0.007 *	0.026 ***	0.006 **	0.162 ***	0.407 ***	0.012 ***
	[0.00]	[0.01]	[0.00]	[0.04]	[0.06]	[0.00]
Y_2019 x Treated	0.001	0.023 ***	0.000	0.181 ***	0.701 ***	0.013 ***
	[0.00]	[0.01]	[0.00]	[0.04]	[0.09]	[0.00]
Y_2020 x Treated	0.001	0.027 ***	0.000	0.230 ***	1.128 ***	0.015 ***
	[0.00]	[0.01]	[0.00]	[0.04]	[0.17]	[0.00]
No. of observations	31,952	28,862	19,287	28,797	27,138	15,331
No. of clusters	66	67	67	66	67	63

Appendix Table 3. Difference-in-Differences Estimates: Dependent Variables in Nominal Values
PSM Sample

This table shows difference-in-differences (DiD) regressions comparing the equity issuance and investment behavior for the propensity-score-matched (PSM) sample of connected and unconnected domestic listed firms. The table shows regression results btained by estimating Equation (1) using five different dependent variables: the amount of equity raised, capital expenditures (capex), cash and short-term investments, spending on acquisitions, market capitalization, and research & development. The treated variable equals one for connected firms listed in domestic markets and zero otherwise (unconnected firms listed in domestic markets). The table shows DiD coefficients, which estimate, for each year, average differences for each dependent variable between connected and unconnected firms (relative to the 2012 difference). The 2012 coefficient shows the differences between connected and unconnected firms in 2012. The regressions include year and industry fixed effects. Standard errors are clustered at the industry (two-digit SIC) level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Units are in billions of 2011 U.S. dollars (USD).

Dependent Variable:	Equity	Capex	Acquisitions	Cash and ST. Investments	Market Capitalization	Research & Development
Y_2005 x Treated	0.002	-0.012 ***	-0.001	-0.010 **	-0.039	
	[0.00]	[0.00]	[0.00]	[0.00]	[0.03]	
Y_2006 x Treated	0.002	-0.009 **	0.000	-0.012 **	-0.066 **	
	[0.00]	[0.00]	[0.00]	[0.00]	[0.03]	
Y_2007 x Treated	0.003 **	-0.003	0.001	-0.007	-0.165 ***	0.000
	[0.00]	[0.00]	[0.00]	[0.00]	[0.06]	[0.00]
Y_2008 x Treated	0.002	-0.007 **	-0.003 *	-0.010 **	-0.072 **	-0.001
	[0.00]	[0.00]	[0.00]	[0.00]	[0.03]	[0.00]
Y_2009 x Treated	0.000	-0.007 **	-0.003	-0.005	-0.079 **	-0.002 ***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.03]	[0.00]
Y_2010 x Treated	0.002	-0.006 **	-0.005	0.001	-0.032	-0.003 ***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.03]	[0.00]
Y_2011 x Treated	0.004	-0.006 **	-0.002 *	0.004	-0.017 *	-0.003 ***
	[0.00]	[0.00]	[0.00]	[0.01]	[0.01]	[0.00]
Treated (2012 Diff.)	-0.002	0.003	0.000	0.011 *	0.008	0.001
	[0.00]	[0.00]	[0.00]	[0.01]	[0.03]	[0.00]
Y_2013 x Treated	0.011 ***	0.004 **	0.001	0.012 ***	0.140 ***	0.001 **
	[0.00]	[0.00]	[0.00]	[0.00]	[0.02]	[0.00]
Y_2014 x Treated	0.015 ***	0.007 ***	0.001	0.026 ***	0.320 ***	0.002 ***
	[0.00]	[0.00]	[0.00]	[0.01]	[0.04]	[0.00]
Y_2015 x Treated	0.023 ***	0.016 ***	0.009 ***	0.048 ***	0.924 ***	0.003 ***
	[0.00]	[0.00]	[0.00]	[0.01]	[0.10]	[0.00]
Y_2016 x Treated	0.040 ***	0.026 ***	0.011 ***	0.085 ***	0.738 ***	0.005 ***
	[0.01]	[0.01]	[0.00]	[0.01]	[0.08]	[0.00]
Y_2017 x Treated	0.024 ***	0.031 ***	0.012 ***	0.092 ***	0.722 ***	0.008 ***
	[0.01]	[0.01]	[0.00]	[0.01]	[0.06]	[0.00]
Y_2018 x Treated	0.015 ***	0.028 ***	0.004	0.104 ***	0.479 ***	0.010 ***
	[0.00]	[0.01]	[0.00]	[0.02]	[0.06]	[0.00]
Y_2019 x Treated	0.010 ***	0.023 ***	0.004 *	0.111 ***	0.645 ***	0.011 ***
	[0.00]	[0.01]	[0.00]	[0.02]	[0.09]	[0.00]
Y_2020 x Treated	0.005	0.026 ***	-0.001	0.118 ***	0.790 ***	0.012 ***
	[0.00]	[0.01]	[0.00]	[0.02]	[0.12]	[0.00]
No. of observations	16,928	15,100	10,202	15,110	14,101	8,541
No. of clusters	58	59	58	58	58	58

Appendix Table 4. Aggregate Impact of Internationalization Events: Robustness

This table shows additional results on the aggregate implications of the 2013-2020 foreign internationalization events for firm equity financing and investment activity of publicly listed firms in China. We compute the (2013-2020) aggregate impact for each variable - estimated by βN where β is the difference-in-difference coefficient in the full sample, and N is the number of connected firms - as a fraction of the aggregate data (for connected firms, domestic listed firms, and all listed firms, respectively). For cleaner identification, we remove the top 1 percent of outliers in the difference-in-difference regressions. In columns 1, 4 and 7, we remove outliers from the total number of connected firms (in the numerator). In columns 3, 6, and 9, we remove outliers from both the numerator and the denominator. Columns 2, 5, and 8 are our baseline estimates reported in Table 11. For equity raised, capex, and acquisitions, we compute the cumulative aggregate impact; for market capitalization and cash, which are stock variables, the columns report the aggregate outcomes in 2020.

	Share Attributed to Internationalization (Percentage of Aggregate Values)								
Comparison:	% of Connected			% of Domestic Listed			% of All Listed		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Equity Raised (2013-20 cum.)	32.7	33.1	41.7	28.0	28.4	35.3	20.1	20.4	25.2
Market Cap (2020)	32.4	32.9	45.5	29.4	29.9	39.8	17.6	17.8	27.0
Capex (2013-20 cum.)	12.2	12.4	18.1	10.6	10.7	15.4	5.2	5.3	8.8
Acquisitions (2013-20 cum.)	13.8	14.0	21.8	12.1	12.3	18.8	7.1	7.2	11.0
Cash (2020)	27.5	27.9	44.6	24.8	25.2	38.5	15.4	15.6	24.0
R&D (2013-20 cum.)	27.3	27.7	35.3	23.6	23.9	31.6	15.7	16.0	23.9

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