

Diversification of pre-IPO ownership and foreign IPO performance

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Abstract We examine the diversification of pre-IPO ownership of foreign-listed firms and how the presence of pre-IPO shareholders from the host country affects foreign issuer's subsequent IPO and post-IPO activities. Using a sample of foreign-listed Chinese firms, we find that the presence of pre-IPO shareholders from the host country is associated with a significant reduction in direct and indirect IPO costs, especially for issuers without international sales and for firms operating at a loss. Benefits of such pre-IPO affiliation persist into the post-IPO period as manifested in greater analyst coverage and better acquisition performance in the host country. Our paper provides new insight on the value of pre-IPO ownership diversification and identifies one strategy that firms can use to overcome the liability of foreignness.

Keywords Foreign IPO · Liability of foreignness · Pre-IPO ownership · Issuance costs · Acquisition

JEL Classification G15 · G24 · F30

1 Introduction

Globalization and integration of international capital markets have had a profound impact on corporate financing strategies and have prompted more firms to pursue an initial public offering (IPO) in foreign capital markets (Bell et al. 2014). Between 1990 and 2001, approximately 12 % of new capital raised from public equity offerings was conducted cross-border (Henderson et al. 2006), and between 1995 and 2007, firms listing in foreign capital markets accounted for approximately 20 % of all IPO proceeds (Caglio et al. 2011).

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Historically, a foreign IPO represents the first time that a firm globalizes its shareholder base and accesses investors in the host country. However this has changed significantly in recent years as a result of explosive growth of cross-border private equity activities. Entrepreneurial companies now have the luxury to raise private capital from investors around the globe, which greatly expanded the geographic diversity of their shareholder composition *prior to* the IPO. As a result, for some firms, foreign IPO is no longer the first time that they establish affiliations with host country investors. One such example is Alibaba Group (Ticker: BABA). The company received 1 billion USD from Yahoo! Inc. in 2005 before its U.S. debut in October 2014. The leading Internet search provider of China, Baidu Inc. (Ticker: BIDU) is another example. The company received multiple rounds of investment from IDG and DFJ, two leading U.S. venture capital firms before its U.S. IPO in 2005.

In light of this changing trend, we ask: does pre-IPO shareholder diversity, especially the presence of pre-IPO shareholders from the host country (hereafter referred to as “local pre-IPO investors”) affect foreign issuer’s subsequent capital market and corporate development activities in that country? This inquiry is meaningful and relevant for at least two reasons. First, it is well known that firms tapping into foreign markets encounter significant barriers to entry. They face high level of cross-border information asymmetry that renders them to severe problems of adverse selection and *ex ante* valuation uncertainty. Although prior studies have examined the causes and consequences of cross-border financing friction, so far academic research has provided little insight about what foreign issuers can do to overcome these obstacles (Bell et al. 2012). Our inquiry on the impact of pre-IPO shareholders from the host country on foreign issuer’s IPO and post-IPO activities can potentially shed new light on this issue. Second, extant finance and strategy literature has predominantly focused on the operational dimension of diversification and paid less attention to the financial dimension that emphasizes foreign ownership and international corporate governance (Hassel et al. 2003; Hasan et al. 2011). Our study intends to provide new evidence on the optimal pre-IPO ownership structure for firms who have intention to pursue foreign public equity offerings and M&A activities.

As elaborated in the next section, we expect pre-IPO shareholders from the host country to facilitate foreign firm’s subsequent capital market and corporate development activities in that country. Local pre-IPO investors may be valuable resources that foreign issuers can leverage to overcome the liabilities of foreignness. These investors possess unique advantages in that as firm insiders, they have superior firm knowledge and access to senior management. At the same time they also possess extensive local knowledge and connections in their home market. These qualifications enable them to advise and assist foreign issuers in navigating through the complexities of capital market and corporate activities in the host country. In addition, their presence in and of itself may serve to certify the quality of foreign issuers, thereby reducing the *ex ante* valuation uncertainty. We test this conjecture by examining whether the presence of pre-IPO shareholders from the host country facilitates foreign firm’s subsequent IPO and post-IPO activities in that country. Our sample includes 305 foreign-listed Chinese firms between 1999 and 2012. We choose this sample for several reasons. First, Chinese firms have been dominating the global IPO market in recent years. The country’s rapid economic growth has led to a strong global investor demand for Chinese stocks.¹ At the same time, restricted access to domestic

¹ Claessens et al. (2006) suggest that better economic fundamentals for a country such as higher income and growth opportunities are associated with more internationalization of the firms including listing, trading and capital raising in international exchanges.

capital markets and severe backlog of IPO applications have prompted firms with urgent fundraising needs to turn to foreign equity markets for expansion capital (Wu 2014).² In 2010, China has surpassed Israel as NASDAQ's number one foreign market.³ Second, China is the world's largest market for private equity investments by foreign institutions (Ahlstrom et al. 2007). Prior to 2008, approximately 80 % of private capital in China was provided by foreign investors with USD-denominated funds. Large number of foreign IPOs, combined with a high frequency of pre-IPO equity participation by global investors, creates a unique opportunity to examine the impact of pre-IPO ownership diversification on IPO and post-IPO activities in the global context. Third, from research design perspective, examining foreign IPO firms that originate from the same country can effectively control for differences in home country institutions (Bell et al. 2012) and allow us to focus on firm-level characteristics.

Our empirical results suggest that foreign issuers significantly benefit from pre-IPO affiliations with host country investors in their subsequent IPO and post-IPO activities. Our main findings are summarized as follows: (1) The presence of local pre-IPO investors is associated with a statistically and economically significant reduction in direct and indirect IPO costs. We address selection bias and endogeneity concerns with the Heckman (1979) two-stage approach, propensity score matching method, and a comparison of firm performance respectively, and confirm the robustness of our findings. (2) Cross-sectional analyses show that the benefits of pre-IPO local affiliation are more pronounced for foreign issuers with higher *ex ante* information asymmetry and uncertainty. (3) The presence of local pre-IPO investors, especially local venture capitalists, is conducive to post-IPO analyst coverage and forecast performance. (5) Benefits of pre-IPO local affiliation appear to expand into post-IPO period and into other corporate activities. In particular, affiliated foreign issuers experience significantly better post-IPO acquisition performance in the host country than their unaffiliated peers.

Our study contributes to the growing literature on foreign listing and the capital market liabilities of foreignness (Bell et al. 2012). Scholars in this stream of research have tried to answer two fundamental questions. First, what are the underlying factors that cause foreign firms to incur higher issuance costs in host capital markets? Second, what can foreign issuers do to mitigate or even eliminate these costs? (Bell et al. 2012; Lundholm et al. 2014). The extant literature has mainly focused on the first question. It is often believed that a significant portion of foreign fundraising friction can be accounted for by greater information asymmetries and *ex ante* valuation uncertainty facing foreign issuers due to geographic, economic, cultural and institutional distances between their home country and host country (see, for example, Merton 1987; Coval and Moskowitz 1999; Kang and Stulz 1997; Grinblatt and Keloharju 2001). In contrast to the growing literature on the causes of foreign fundraising friction, there is scant research on potential remedies. Little is known

² Despite of rapid economic development, China's capital markets remain tightly regulated by the government. IPOs are subject to approval by the China Securities Regulatory Commission (CSRC). Approximately 80 % of firms listed on the mainboard (A-share market) are state-owned-enterprises (SOEs). Domestic IPO option is limited for private firms as few of them are able to meet the stringent criteria for listing on the mainboard. The situation is gradually improved after the launch of the Small-and-Medium Enterprise (SME) Board in 2004 and the ChiNext board in 2009, respectively. Nevertheless, as Chinese government maintains a tight grip on supply concerns, slow approval process has resulted in a mounting backlog of IPO applications. Over 800 Chinese companies were seeking approval for a domestic listing at the end of 2012, resulting in a waiting period of approximately 5 years. See Reuters' article at <http://www.reuters.com/article/2012/12/18/china-ipo-idUSL4N09S2ZV20121218>.

³ See CNBC article at http://www.cnbc.com/id/39909357/Chinese_IPOs_Top_NASDAQ039s_Foreign_Market.

about available resources and strategies that foreign IPO firms can employ to mitigate cross-border information friction and the associated costs. Lundholm et al. (2014) examine the language used in annual filings and earnings press releases of foreign firms listed on U.S. stock exchanges. They argue and find evidence that foreign firms produce relatively more readable disclosures in order to attract more U.S. institutional ownership. Our empirical findings suggest that diversifying pre-IPO ownership structure and affiliating with host country pre-IPO investors is another strategy that firms with foreign listing intention can use to overcome the liabilities of foreignness.

Our study also contributes to the limited research on corporate ownership diversification that emphasizes foreign ownership and international corporate governance (Hassel et al. 2003; Hasan et al. 2011). Masulis et al. (2012) examine the diversification of corporate boards and the benefits and costs associated with foreign board members. They find that firms with foreign independent directors make better cross-border acquisitions in those directors' home region. However, foreign independent directors display poor board meeting attendance records and are associated with a greater likelihood of intentional financial misreporting, higher CEO compensation, and a lower sensitivity of CEO turnover to performance. Our study focuses on the diversification of pre-IPO ownership structure and examines the "extra-financial" roles of foreign investors (Hursti and Maula 2007; Humphery-Jenner and Suchard 2013).

The remainder of the paper proceeds as follows. Section 2 reviews the related literature and develops the hypotheses. Section 3 describes the data and presents descriptive statistics. Section 4 reports main empirical results. Section 5 presents the results of additional analyses. Section 6 concludes the paper.

2 Literature review and hypotheses

2.1 Capital market liability of foreignness

While a foreign IPO offers many advantages including expanded investor base, international reputation, marketing and political benefits (Biddle and Saudagaran 1991; Howe and Kelm 1987; Saudagaran 1988), it is also known that foreign issuers encounter significant barriers to entry and suffer from various liabilities of foreignness (Bell et al. 2012). Zaheer (1995, p. 343) defines liability of foreignness as "all additional costs a firm operating in a market overseas incurs that a local firm would not incur." An accumulating body of research shows that liability of foreignness in capital markets is prevalent and has substantial economic consequences (Stulz 1999). Foreign IPO firms are found to incur higher cost of capital as manifested in greater underpricing, lower liquidity and less analyst coverage than domestic firms (Zaheer 1995; Blass and Yafeh 2001; Ding et al. 2010).

In light of these evidence, scholars have tried to identify major causes of such liabilities (Ahearne et al. 2004; Chan et al. 2005; Tesar and Werner 1995; Bell et al. 2012). One major cause is severe information asymmetry between issuer's country of origin and the host country. Cross-border "distances" reduce both the quantity and quality of information available to host country investors, and impose additional challenges on them to acquire, analyze and interpret information (see, for example, Merton 1987; Coval and Moskowitz 1999; Kang and Stulz 1997; Grinblatt and Keloharju 2001). Accounting and finance literatures have demonstrated economic advantages of geographical proximity that is associated with informational advantage for various economic agents. For example, both retail

and institutional investors are found to benefit from their superior information about local firms due to physical proximity (e.g., Coval and Moskowitz 1999; Ivkovic and Weisbenner 2005; Baik et al. 2010; Tian 2011). Bae et al. (2008) show that analysts resident in the same country as covered firms enjoy superior access to firm information that result in more accurate earnings forecasts compared to their foreign counterparts. Kedia and Rajgopal (2011) find that firms located closer to the SEC, a proxy for information symmetry between the firm and the SEC, are less likely to restate their financial statements. Ayers et al. (2011), Masulis et al. (2012), and Chhaochharia et al. (2012), among others, show that corporate governance is also more effective when the actors reside near the firm.

Another source of capital market liability of foreignness is unfamiliarity. Unfamiliarity costs result from a firm's lack of knowledge of, or experience in, the host country (Bell et al. 2012). As companies make initial forays into foreign markets, they face unfamiliar political regimes, regulatory environments, cultural and social norms (Masulis et al. 2012). As Caves (1971: 5) points out, "the foreign firm must pay dearly for what the native has acquired at no cost to the firm.....or can acquire more cheaply". The international experience of top management teams, international scope of operations, and industry have all been shown to impact firms' decision to seek equity resources outside their home capital markets (Bell et al. 2008; Blass and Yafeh 2001; Hursti and Maula 2007). Finance literature shows that investors exhibit unfamiliarity bias in that they tend to only invest in a subsample of securities they are familiar with (Merton 1987). Chan et al. (2005) also find strong support for irrational familiarity by documenting the overweighting of investment portfolios in investors' home markets.

Other causes of capital market liability of foreignness include institutional and cultural differences that render foreign firms to a lack general acceptance by the local environment (DiMaggio and Powell 1983; Hannan and Freeman 1977). Acceptance by local environment is especially important to startup firms entering a market because it enhances the organizations' chances of survival (Aldrich and Fiol 1994; Baum and Oliver 1992; Rao 1994) and increased acceptance has been associated with generating increased resource flows for the IPO firm (Meyer and Rowan 1977). One way to enhance acceptance by local stakeholders is endorsement by local organizations that are known and trusted.

2.2 Pre-IPO shareholders from the host country and foreign issuer's subsequent IPO and post-IPO performance

We postulate that host country pre-IPO shareholders are part of foreign issuer's resource stock that can be used to mitigate the liability of foreignness. There are two possible ways by which foreign issuers benefit from pre-IPO local affiliation: local knowledge and connections, and certification of firm quality. Living or working in the host country give local pre-IPO investors first-hand knowledge of local businesses and institutions, and enable them to develop a network of local contacts. These local knowledge and resources enable host country pre-IPO investors to help foreign issuers navigate through the complexities of equity issuance and business transactions with local partners. During the IPO process, local pre-IPO investors can advise management, for example, on the choice of investment banks, auditors, and the preparation of an equity story that is compelling and attractive to local investors. Unlike underwriters and other intermediaries, pre-IPO investors typically stay with the firm for an extended period after the IPO as they are subject to a lockup period during which they are unable to sell shares in the open market. Therefore, they may continue to advise management on various post-IPO corporate development activities in the host country, helping managers make more informed

investment, operating, and distribution decisions. Local pre-IPO investors may also have access to a larger and superior pool of local partners, help foreign issuers forge new business relationships and facilitate corporate transactions in the host country.

Compared to IPO underwriters and other intermediaries, local pre-IPO investors are more qualified for the advising and intermediary role given their position as firm insiders. The underwriting relationship typically starts shortly before the IPO process and only lasts for about six months. In contrast, pre-IPO investment relationship is much longer and deeper. Pre-IPO investors typically go through a detailed due-diligence process before investing and then potentially reinvesting. This process gives them access to much internal information. After the investments, pre-IPO investors typically engage in close monitoring and advising of their investee companies. In many cases, pre-IPO investors would obtain board seats and/or board observation rights along with their investments, which enable them to easily acquire knowledge about firm's internal operations and build a close relationship with senior management. They can advise senior managers either formally at a board meeting (for those investors who obtain board seats), or informally through conversations with senior management.

In addition to serving an advising/intermediary role, the presence of local pre-IPO investors in and of itself may have a certifying effect on foreign issuer quality that alleviates local investors' valuation uncertainty. A growing stream of research, focusing on domestic IPOs, has shown that association with reputable third parties including underwriters (Carter and Manaster 1990; Chemmanur and Fulghieri 1994), venture capitalists (Barry et al. 1990; Megginson and Weiss 1991; Lee and Wahal 2004; Shu et al. 2011), and auditors (Titman and Trueman 1986) are effective strategies to mitigate IPO information asymmetry. For example, Carter and Manaster (1990) argue and find evidence that IPOs taken public by prestigious underwriters benefit from superior certification. Because of the greater reputation capital that is committed, investors do not demand as large a discount on these offers and therefore reduce the level of IPO underpricing.

Based on these prior studies, we conjecture that local pre-IPO investors may also represent a credible signal of value for two reasons. First, the sociology literature suggests that people tend to trust those with whom they recognize and share a group identity (such as geography and social norms) much more than those with whom they do not (Brewer 1981; Kramer et al. 1996). Thus, foreign issuers affiliated with local pre-IPO investors may be perceived by local IPO investors as more credible than other foreign issuers. Second, opportunistic behavior on the part of *ex ante* owners is an important consideration in investors' valuation. As long-term players in their home market, local pre-IPO investors have strong incentives to invest in reputational capital at home. Consequently, they may be reluctant to take advantage of cross-border information asymmetries to pursue self-interest at the expense of IPO investors, which will later prove to be false and damage their reputation. To the extent that IPO investors are aware of the importance of local institutions' self-reputation, they may view the presence of local pre-IPO investors as a valid indicator of foreign issuer quality.

2.3 Hypothesis development

We test the above conjecture by examining several aspects of IPO and post-IPO activities of foreign issuers in the host country. We start by examining two dimensions of IPO performance: issue expenses and underpricing. They represent direct and indirect costs of equity offering, and are commonly used proxies of cost of capital in the IPO literature that capture the extent of capital market liability of foreignness (Bell et al. 2012). Issue

expenses include registration, underwriting, attorney and auditing, and other miscellaneous fees. Bell et al. (2012) suggest that liability of foreignness manifests in the form of higher costs of raising capital, including higher underwriting fees, higher professional fees, and higher initial listing fees. If local pre-IPO investors help mitigate cross-border knowledge and information friction, underwriters and other stakeholders might incur lower costs in acquiring and interpreting information about those foreign issuers. Further, given the certification by local pre-IPO investors, investment bankers and auditors may perceive a lower underwriting and auditing risk associated with those issuers that result in lower issue expenses. This discussion leads to our first hypothesis:

Hypothesis 1a Pre-IPO affiliation with host country investors is related to lower foreign issue expenses.

When firms go public, they also incur indirect costs associated with the listing. The underpricing of IPOs is an indirect cost borne by the issuing firm. Underpricing presents direct wealth transfer from the founders and initial shareholders to new investors and is known as the amount of ‘money left on the table’ (Ibbotson 1975; Ritter 1984). Most research on IPO underpricing revolves around problems of information asymmetry and adverse selection (Baron 1982; Guo 2005). Guo (2005) shows that IPO underpricing is economic rents paid for investors to compensate them for costly information gathering. The greater *ex ante* uncertainty about firm value, the greater is (expected) underpricing (Beatty and Ritter 1986). In a comparative analysis of foreign and domestic IPOs in the U.S. during the 1990–1993 period, Francis et al. (2001) find that foreign IPOs on average underprice by 5 % more than matched domestic IPOs, which is consistent with capital market liabilities of foreignness argument. Chong et al. (2010) find that Chinese firms cross-listed in Hong Kong and America have higher underpricing levels. We postulate that if local pre-IPO investors become valuable part of the resource stock of foreign issuers and can be used to mitigate cross-border information asymmetry and certify foreign issuer quality, affiliated foreign firms are expected to experience a lower level of underpricing at the time of IPO. This discussion leads to our next hypothesis:

Hypothesis 1b Pre-IPO affiliation with host country investors is related to lower foreign IPO underpricing.

Next, we seek to understand how the relation between pre-IPO local affiliation and foreign IPO performance varies in the cross section. The literature on the role of pre-IPO affiliations in IPO success has emphasized uncertainty as an important contingency factor (Arikan and Capron 2010). The general finding is that pre-IPO affiliations play a more vital role when the firm’s *ex ante* information asymmetry and valuation uncertainty are high (Spence 1974; Podolny 1994). In the case of foreign IPOs where host country investors have greater difficulty in directly assessing issuer quality (i.e., by visiting the firm on site or discerning firm quality from public financial disclosure), they are expected to rely more heavily on information intermediation or signals of value in forming investment decisions. Following existing literature, we employ two measures of firm-level information asymmetry and uncertainty—international sales and profitability level. Increased geographic scope and operations in diverse regions could signal that a firm has well-established ties with various constituencies in the global market. Additionally, a wide scope of operations could suggest that the firm possesses experience in managing diverse stakeholders, while developing the flexibility required to compete with more established competitors (Bell et al. 2012). Foreign issuers without international sales prior to IPO are expected to suffer

greater cross-border information asymmetry and valuation uncertainty due to investor recognition barrier.

As an alternative measure, we follow the accounting literature and use whether a firm operates at a loss at the time of IPO to capture a firm's underlying economic uncertainties (Huddart and Ke 2007). Hayn (1995) suggests that loss firms may be valued differently from profit firms because the liquidation option is more likely to be exercised. She finds that the association between earnings and returns is weaker for loss firms. Loss firms may exhibit greater information asymmetry because the informativeness of earnings with respect to future cash flows is weaker than it is for profit firms. Ertimur (2004) finds supporting evidence that a firm's loss status is associated with wider spreads.

Based on our prior conjecture, we expect foreign issuers with greater information asymmetry and valuation uncertainty to benefit more from affiliation with host country investors in the pre-IPO period.

Hypothesis 2 Impact of pre-IPO affiliation with host country investors on foreign IPO performance is greater for firms without international sales (H2a) and for loss firms (H2b).

Firms access foreign equity markets not only to raise capital, but also for strategic purposes. Hasan et al. (2011) argue that firms use global IPOs as a deliberate strategic tool to increase international visibility and propensity to expand their operations beyond home market. One way to quickly expand business in a new market is through acquisitions, and IPO would provide an infusion of cash that allows companies to pursue those activities. In fact, scholars argue that acquisition is an important motive for IPO (Brau and Fawcett 2006; Celikyurt et al. 2010). Consistent with this argument, Schultz and Zaman (2001) and Celikyurt et al. (2010) among others, provide empirical evidence that the frequency of acquisitions significantly increases after an IPO.

The existing literature is thin on how pre-IPO affiliations affect post-IPO acquisition activities. Arikan and Capron (2010) examine the impact of pre-IPO affiliations with underwriters and venture capitalists on post-IPO acquisitions using a sample of U.S. firms. They document a positive association between acquirer's performance and pre-IPO affiliations with prestigious underwriters, but the association becomes negative when the lead underwriter serves as the acquisition advisor. They also find pre-IPO affiliation with venture capitalists improves acquirer's performance when those venture capitalists commit to a longer lockup period. We seek to provide new evidence on cross-border acquisitions and examine how pre-IPO affiliations with host country investors affect foreign issuers' post-issue acquisitions in that country. Compared to intra-country acquisitions, cross-border acquirers face significantly greater challenges since they must contend with unfamiliar social, economic and political conditions, as well as limited information and access to potential targets. Eckbo and Thorburn (2010) and Moeller and Schlingemann (2005) find supporting evidence that acquirers perform significantly worse in cross-border deals than in domestic deals. Local pre-IPO investors could prove valuable as they can use their local network to help foreign firms identify and access potential acquisition targets. They can also leverage their local knowledge to provide advice on important issues such as deal structure and negotiation, and post-transaction integration. Therefore, we expect investors to view more favorably those acquisitions announced by affiliated foreign issuers.

Hypothesis 3 Pre-IPO affiliation with host country investors is positively related to post-IPO acquisition performance in the host country.

3 Data and sample

3.1 Sample selection

Sample construction begins with 401 overseas listed Chinese firms between 1999 and 2012. We use WIND and Zero2IPO, two leading financial databases on publicly-traded Chinese firms to identify this sample. As more than 90 % of foreign-listed Chinese firms are concentrated in the U.S., U.K. and Singapore, we exclude 15 firms that are listed in other countries due to limited number of observations. We also exclude 27 dual-listed firms that first list in mainland China or Hong Kong before making a debut in the U.S., U.K. or Singapore because those firms may face a different information environment or are fundamentally different.⁴ Information on pre-IPO shareholders composition and background is obtained from the company's IPO prospectus. IPO prospectuses of U.S-listed Chinese firms are obtained from the SEC EDGAR database. IPO prospectuses of Singapore-listed Chinese firms are obtained from Singapore Stock Exchange website.⁵ IPO prospectuses of U.K.-listed Chinese firms are obtained from the company website.⁶ After excluding firms for which the IPO prospectus cannot be retrieved, the final sample consists of 305 firms.⁷ IPO-related information including the IPO date, offer price, number of shares issued, first-day closing price, choice of auditor and underwriter, as well as company's financial information, are obtained from the WIND database. Information on issue expenses are manually collected from the IPO prospectuses. Company-related information including the founding year, CEO background, composition of board of directors, and geographic scope of operation, are also manually collected from the IPO prospectuses.

3.2 Dependent variables

In our baseline analysis we examine two aspects of foreign IPO performance: issue expenses and underpricing. Issue expenses are direct costs of IPO that include registration, underwriting, attorney and auditing, and other miscellaneous fees. We define issue expenses, *Expense*, as the sum of underwriting and other expenses relating to the offer divided by the offer size. The underpricing of IPO is an indirect cost of going public that is borne by the issuing firm. Higher underpricing represents more money left on the table thus higher indirect costs. Following the IPO literature (e.g., Chemmanur and Paeglis 2005), we measure *Underpricing* as the percentage difference between the first day closing price and the offer price.

⁴ Examples include China Unicom (NYSE Ticker: CHU), Yanzhou Coal Mining Co. Ltd (NYSE Ticker: YZC), Sinopec Shanghai Petrochemical Co. Ltd (NYSE Ticker: SHI).

⁵ Available at <http://www.sgx.com>.

⁶ Pursuant to AIM Rule 26, all companies listed on AIM must disclose admission documents on their website.

⁷ We investigated the reason of missing prospectus for the 54 firms. 23 firms were due to change of listing location (for example, the firm delisted from UK via privatization and subsequently re-listed in HK, so UK stock exchange took the firm's IPO prospectus off). 18 firms were delisted from the stock exchange but have not been re-listed anywhere else as of sample collection year. The remaining 13 firms are missing prospectus for reasons unknown. To alleviate the concern of neglected selection bias that could potentially influence our conclusion, we compared the IPO performance and financial characteristics of these 54 firms to our sample firms. The two groups of firms exhibited similar characteristics in most cases (except firm age where our sample firms are on average older than those 54 firms).

3.3 Independent variables

3.3.1 Local pre-IPO investors

Empirical tests in subsequent sections call for sample classification based on whether a foreign issuer's pre-IPO ownership contains shareholders from the host country. Information on the name, background and equity ownership of the firm's pre-IPO investors are manually collected from the "Principal and Selling Shareholders" section of the IPO prospectus.⁸ Pre-IPO investors can be generally classified into three categories, corporate investors, venture capital investors, and individuals. The first two categories are the dominant groups. Information about the principal location of each pre-IPO investor is typically disclosed in a footnote associated with the investor's name. For corporate and individual investors, if the investor's principal location is in the same country as the firm's IPO destination, it is classified as a local pre-IPO investor. For example, the U.S. publisher McGraw-Hill Companies, Inc. held 6.61 % pre-IPO shares of ChinaEdu Corporation (Ticker: CEDU), a U.S.-listed company in the sample. It is therefore classified as a local pre-IPO investor. Classification of venture capital investors is less straightforward as many of them who invest in Chinese start-up companies register their funds in Cayman Islands or British Virgin Islands to circumvent regulatory restrictions and tax obligations. We therefore use the principal location of fund manager (i.e., location of the venture capital firm) to determine whether it is a local pre-IPO investor. For example, Doll Capital Management (DCM) held 20.7 % pre-IPO shares of VanceInfo Technologies Inc. (NYSE Ticker: VIT) through DCM IV, L.P., a limited partnership incorporated in the Cayman Islands. Since DCM resides in Menlo Park, California, it is classified as a local pre-IPO investor.

It is worth noting that our measurement of local pre-IPO investor is subject to two caveats. First, the "Principal and Selling Shareholders" section of IPO prospectus only discloses information on pre-IPO investors that own a substantial portion of company shares, typically those who own at least 1 or 5 % of shares. It is possible that firms affiliated with local pre-IPO investors who have less than 1 or 5 % of equity stakes are misclassified as unaffiliated firms. However, to the extent that minority local pre-IPO investors may also play an advising or certification role during and after the IPO, such caveat would bias against finding any significant differences in IPO and post-IPO performance between firms with and without local affiliation. Second, location-based classification scheme precludes the possibility that some non-local pre-IPO investors may also possess local knowledge or connections via prior interactions with host country (e.g., by investing in firms in the host country or taking other firms public in the host capital market in the past). But again, if anything, this bias will make it less likely to find any differences between affiliated and unaffiliated firms.

3.3.2 Control variables

We also include a set of firm and board characteristics in regression models that potentially affect IPO issue costs and performance. In particular, we control for firm size, sales growth, profitability, firm age, founder CEO, percentage of independent directors, auditor

⁸ Section heading varies by company. Other headings include "Shareholders", "Substantial Shareholders", "Principal Shareholders" etc.

and underwriter choice, the presence of venture capitalists, and ownership status. Detailed definitions of control variables are provided in Table 1.

4 Local pre-IPO affiliation and IPO performance

4.1 Summary statistics

Table 2 provides descriptive statistics for the sample. Panel A presents the distribution of sample by year and country of listing. Foreign-listed Chinese firms are unevenly distributed across the sample period with significantly fewer listings prior to 2004. This largely reflects the fact that China's private equity sector did not experience rapid growth until late 1990, and the first wave of massive investments did not reach the exit stage until 2004. Among 305 firms in our sample, 135 or 44.3 % are listed in the U.S., 20 or 6.5 % are listed in the U.K., and 150 or 49.2 % are listed in Singapore. Panel B presents the distribution of sample by industry and country of listing. Industry classification is based on the Global Industry Classification Standard (GICS). Firms in different sectors appear to prefer different foreign capital markets. The U.S. subsample is dominated by firms in the information technology sector, followed by the consumer discretionary sector and the health care sector, respectively. The U.K. subsample is dominated by firms in the information technology, materials and industrials sectors. The Singapore subsample is dominated by firms in traditional sectors, including industrials, consumer discretionary and consumer staples.⁹

Panel C presents summary statistics of the main variables used in this study. Definitions of variables are provided in Table 1. To mitigate the potential effect of outliers, all continuous variables are winsorized at the top and bottom one percent. All financial variables are in USD based on currency exchange rate on the date of IPO. Average direct issue costs as a percentage of offer size is 10.9, 17.7 and 5.4 % for firms listed in the U.S., U.K., and Singapore. Average level of underpricing of U.S.-, U.K.-, and Singapore-listed firms is 17.5, 28.7, and 33.8 %, respectively. Compared to U.K.- and Singapore-listed firms, U.S.-listed firms generally have more local pre-IPO investors, larger offer size, higher growth, lower profitability, higher percentage of founder CEO, higher proportion of SOEs and IT firms, and higher percentage of choosing reputable auditors and underwriters as well as greater venture capital participation. Panel D reports the Pearson correlation among key variables in this study. The key variable of interest *Local* has a significant negative correlation with *Expense* and *Underpricing*.

4.2 Baseline results

Table 3 presents our baseline regressions that examine the relation between pre-IPO local affiliation and foreign IPO issue expenses. The dependent variable is *Expense* in columns (1) and (2), and *Underpricing* in columns (3) and (4). We include country of listing, industry, and year fixed effects across the models. In column (1), the coefficient estimate of *Local* is -0.020 , which is significant at the 1 % level. This result suggests a statistically

⁹ This phenomenon of industry concentration may be explained by different investor preference and risk tolerance level in each IPO market. For example, Nasdaq is dominated by high-tech stocks where investors are more willing to overlook current low or even negative profitability of IT companies and bet in their long-term vitality, and grant them a higher valuation.

Table 1 Definition of variables

	Definition
<i>Dependent variables</i>	
Expense	Issue expenses, measured as the sum of underwriting expenses and other expenses relating to the offer, divided by the offer size
Underpricing	IPO underpricing, measured as the percentage difference between the first day closing price and the offer price
Analyst coverage	Analyst following, measured as the natural logarithm of one plus the number of analysts that issue at least one earnings forecast for the firm during the first post-IPO year
Forecast error	Analyst forecast error, measured as the absolute difference between actual earnings per share and the mean analyst forecast, deflated by the closing stock price on the IPO date
Dispersion	Analyst forecast dispersion, measured as the inter-analyst standard deviation of forecasts deflated by the closing stock price on the IPO date
Board representation	A dummy variable that equals 1 if the pre-IPO investor serves on the board of directors of the firm and 0 otherwise
Founding CEO replaced	A dummy variable that equals 1 if the firm's founding CEO is replaced by the time of IPO and 0 otherwise
<i>Firm and board characteristics</i>	
Local	A dummy variable that equals 1 if the firm has pre-IPO equity investors from the country of listing and 0 otherwise
LocalVC	A dummy variable that equals 1 if the firm has pre-IPO equity investors from the country of listing and at least one of local pre-IPO investors is a venture capitalist, and 0 otherwise
LocalNonVC	A dummy variable that equals 1 if the firm has pre-IPO equity investors from the country of listing and none of the local pre-IPO investors is a venture capitalist, and 0 otherwise
Log(Assets)	Firm size, measured as the natural logarithm of total assets at the year end before IPO
Growth	Growth, measured as the percentage change in sales between one- and two-years before IPO
ROS	Return on sales, measured as net income divided by sales in the year before IPO
Log(Age)	Firm age, measured as the natural logarithm of the number of years between the year of incorporation or start of operations (whichever is earlier), and the time of IPO
FounderCEO	Founder CEO, a dummy variable that equals 1 if the firm's CEO at the time of IPO is one of company founders and 0 otherwise
IndDir	Independent directors, measured as the percentage of independent directors on the board at the time of IPO
Auditor	Auditor reputation, a dummy variable that equals 1 if the firm is audited by a Big-4 international auditor and 0 otherwise
Underwriter	Underwriter reputation, measured by the rank of lead underwriter. For each lead underwriter, underwriter reputation equals 1 if it is a top-10 investment bank and 0 otherwise. If a firm has more than one lead underwriter, underwriter reputation is the average of underwriters' reputation rank. Underwriter reputation ranking for U.S.-listed firms is obtained from Professor Jay Ritter's website at http://bear.cba.ufl.edu/ritter . Underwriter reputation ranking for U.K.- and Singapore-listed firms is provided by Dealogic
VC	Venture capital backing, measured by a dummy variable that equals 1 if the firm has venture capital backing and 0 otherwise
SOE	A dummy variable that equals 1 if the firm is a state-owned-enterprise and 0 otherwise
Domestic	A dummy variable that equals 1 if the firm only has domestic sales by the time of IPO and 0 otherwise

Table 1 continued

	Definition
Loss	A dummy variable that equals 1 if the firm has negative net income in the year prior to IPO and 0 otherwise
Leverage	Leverage, measured as the ratio between total debts and total assets at the year end before IPO
CEO_LocalExp	CEO local experience, a dummy variable that equals 1 if the firm's CEO has prior educational and/professional experience in the country of IPO and 0 otherwise
Log(Dealsize)	Acquisition deal size, measured as the natural logarithm of the deal size

This table provides the definitions of the variables used in this study

and economically meaningful relationship between the presence of local pre-IPO investors and direct costs of subsequent public offering. For a median U.S.-listed (U.K.-listed, Singapore-listed) Chinese firm (with an offer size of US\$61 million, US\$7 million, US\$30 million, respectively), pre-IPO local affiliation would result in a saving of approximately US\$1.2 million (US\$0.14 million, US\$0.6 million) on direct issue expenses. Several control variables are also significant in column (1). Larger firms, firms with higher growth, and firms with longer operating history generally incur lower issue costs as a percentage of offer size.

In column (2) we examine the effect of local pre-IPO investors by investor type (i.e., whether they are VCs or other types of local pre-IPO investors). VCs are different from other types of investors in that they not only provide capital to the investee firms, but are also deeply involved in their strategic decisions and provide important non-financial services. A stream of prior literature has provided evidence on various value added services provided by VCs, including the recruitment of senior management (Hellmann and Puri 2002), shorter time to product market (Hellmann and Puri 2000), innovation and patent generation (Kortum and Lerner 2000), the formation of partnerships and strategic alliances (Stuart et al. 1999). Prior research on the role of VCs in IPOs shows that VCs work as producers of information and can successfully certify the company's quality to the market (Megginson and Weiss 1991; Barry et al. 1990). A related stream of literature examines the role of foreign VCs. Using a sample of European firms, Hursti and Maula (2007) find evidence that foreign VCs can help their portfolio companies list overseas. Humphery-Jenner and Suchard (2013) examine a sample of foreign VCs who invest in Chinese startup companies and document similar findings. They find that foreign VCs increase the likelihood that a portfolio company lists on a foreign exchange and uses a top lawyer, banker, or accountant when doing so. Using a sample of VCs in India, Pruthi et al. (2003) find that foreign VCs are significantly more involved at the strategic level in their portfolio companies than domestic VCs. Chemmanur et al. (2015) study the syndication between foreign and domestic VCs. They find that startup firms backed by syndicates composed of international and local VCs appear to be more successful than those backed by syndicates of purely international or purely local VCs.

Based on these prior studies, we posit that local pre-IPO investors who are VCs may play a more important role in facilitating foreign issuer's IPO and post-IPO activities in the host country than other types of local pre-IPO investors (such as corporations). To test this conjecture, we define two variables to distinguish VC and non-VC local pre-IPO investors: *LocalVC* is a dummy variable that equals 1 if the firm has pre-IPO equity investors from the country of listing and at least one of local pre-IPO investors is a venture capitalist;

Table 2 Sample distribution and descriptive statistics

<i>Panel A: Number of companies by IPO year and country of listing</i>				
	U.S.	U.K.	Singapore	Total
1999	0	0	1	1
2000	2	0	0	2
2001	0	0	4	4
2002	0	0	0	0
2003	2	0	8	10
2004	12	1	29	42
2005	10	2	23	35
2006	10	9	25	44
2007	24	4	33	61
2008	8	0	11	19
2009	12	0	7	19
2010	40	2	8	50
2011	12	1	1	14
2012	3	1	0	4
Total	135	20	150	305

<i>Panel B: Number of companies by industry and country of listing</i>				
	U.S.	U.K.	Singapore	Total
Consumer discretionary	31	0	31	62
Consumer staples	6	2	26	34
Energy	5	2	8	15
Financials	8	1	6	15
Health care	11	2	9	22
Industrials	7	4	34	45

Table 2 continued

Panel B: Number of companies by industry and country of listing

	U.S.	U.K.	Singapore	Total
Information technology	57	5	13	75
Materials	3	4	21	28
Telecommunication services	5	0	2	7
Utilities	2	0	0	2
Total	135	20	150	305

Panel C: Summary statistics of key variables

	U.S.			U.K.			Singapore		
	Mean	SD	Median	Mean	SD	Median	Mean	SD	Median
Expense	0.109	0.040	0.104	0.177	0.142	0.116	0.054	0.025	0.049
Underpricing	0.175	0.431	0.048	0.287	0.295	0.255	0.338	0.561	0.159
Local	0.630	0.485	1.000	0.200	0.410	0.000	0.447	0.499	0.000
Log(Assets)	18.028	1.325	18.100	16.291	1.184	16.549	17.785	1.199	17.705
Growth	1.361	1.723	0.653	1.123	1.764	0.406	1.009	1.364	0.541
Log(Age)	1.928	0.601	1.928	1.830	0.926	2.034	2.294	0.596	2.282
ROS	0.099	0.335	0.127	0.232	0.448	0.232	0.219	0.160	0.202
FounderCEO	0.652	0.478	1.000	0.250	0.444	0.000	0.653	0.478	1.000
IndDir	0.408	0.186	0.400	0.462	0.137	0.437	0.407	0.083	0.400
Auditor	0.867	0.341	1.000	0.250	0.444	0.000	0.540	0.500	1.000
Underwriter	0.657	0.420	1.000	0.150	0.366	0.000	0.093	0.292	0.000
VC	0.696	0.462	1.000	0.100	0.308	0.000	0.453	0.499	0.000
SOE	0.296	0.458	0.000	0.150	0.366	0.000	0.047	0.212	0.000

Table 2 continued

Panel D: Correlation matrix													
Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1.Expense	1.00												
2.Underpricing	0.02	1.00											
3.Local	-0.15***	-0.14**	1.00										
4.Log(Assets)	-0.21***	-0.10*	0.11**	1.00									
5.Growth	-0.06	-0.01	0.01	0.06	1.00								
6.Log(Age)	-0.26***	-0.06	0.07	0.02	-0.32***	1.00							
7.ROS	-0.06	0.06	-0.18***	-0.12**	-0.10*	0.09	1.00						
8.FounderCEO	-0.04	0.07	0.09	-0.12**	-0.01	-0.07	-0.06	1.00					
9.IndDir	0.13**	0.01	-0.18***	0.01	-0.09	-0.05	0.07	-0.06	1.00				
10.Auditor	-0.04	-0.13	0.17***	0.30***	0.20***	-0.14**	-0.12**	0.11**	-0.12**	1.00			
11.Underwriter	0.10*	-0.11**	0.27***	0.33***	0.18***	-0.12**	-0.18***	0.00	-0.13**	0.45***	1.00		
12.VC	-0.06	-0.01	0.11*	0.13**	0.04	-0.04	-0.11*	0.13**	-0.16***	0.19***	0.30***	1.00	
13.SOE	0.18***	-0.06	-0.03	0.27	-0.09	-0.11*	-0.07	-0.13**	0.05	0.11*	0.24***	-0.02	1.00

This table reports distribution of Chinese firms that are listed in the U.S., U.K. and Singapore between 1999 and 2012. Panel A reports sample distribution by IPO year and country of listing. Panel B reports sample distribution by industry and country of listing. Panel C reports summary statistics of key variables by country of listing. Panel D reports the correlation matrix. Definitions of variables are provided in Table 1

Significance levels are reported as * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 3 Local pre-IPO investors and foreign IPO performance: baseline regressions

Dependent variable	Expense		Underpricing	
	(1)	(2)	(3)	(4)
Local	-0.020*** (0.006)		-0.221*** (0.081)	
LocalVC		-0.021*** (0.008)		-0.222*** (0.085)
LocalNonVC		-0.019** (0.010)		-0.219*** (0.081)
Log(Assets)	-0.007*** (0.002)	-0.007*** (0.002)	-0.023 (0.021)	-0.023 (0.021)
Growth	-0.005** (0.002)	-0.005** (0.002)	-0.007 (0.018)	-0.007 (0.018)
ROS	-0.007 (0.014)	-0.007 (0.014)	0.062 (0.101)	0.063 (0.101)
Log(Age)	-0.010* (0.006)	-0.011* (0.006)	-0.093** (0.047)	-0.093** (0.047)
FounderCEO	0.003 (0.005)	0.003 (0.005)	0.051 (0.064)	0.051 (0.064)
IndDir	0.022 (0.018)	0.022 (0.019)	0.048 (0.145)	0.048 (0.145)
Auditor	-0.005 (0.007)	-0.005 (0.007)	-0.119 (0.092)	-0.119 (0.092)
Underwriter	-0.007 (0.007)	-0.007 (0.007)	0.070 (0.080)	0.070 (0.080)
VC	0.006 (0.007)	0.006 (0.007)	0.158* (0.090)	0.158* (0.090)
SOE	0.009 (0.011)	0.009 (0.011)	-0.013 (0.071)	-0.013 (0.071)
Constant	0.252*** (0.045)	0.252*** (0.045)	0.668* (0.371)	0.668* (0.371)
Country/industry/year FE	Included	Included	Included	Included
R ²	0.46	0.46	0.18	0.18
Observations	305	305	305	305
Test: LocalVC=LocalNonVC		0.01		0.00
F-statistic (p value)		(0.92)		(0.76)

This table reports regression estimates of foreign IPO performance on pre-IPO affiliation with local investors. Dependent variable is issue expense in models (1)–(2) and underpricing in models (3)–(4), respectively. Definitions of variables are provided in Table 1. Country, industry and year fixed effects are included in regressions but the coefficients are not reported. Robust standard errors are displayed in parentheses

***, **, * Significance at the 1, 5, and 10 % levels, respectively

LocalNonVC is a dummy variable that equals 1 if the firm has pre-IPO equity investors from the country of listing and none of the local pre-IPO investors is a venture capitalist. In column (2) of Table 3, we replace *Local* by these two variables. A comparison of coefficient estimates on *LocalVC* and *LocalNonVC* enables us to shed some light on the

potentially different impact of VC vs. Non-VC local investors. As shown in column (2), the coefficient estimate on *LocalVC* is significantly negative at the 1 % level whereas the coefficient estimate on *LocalNonVC* is also negative, although only significant at the 5 % level. However, the *F*-statistic fails to reject the null hypothesis that the coefficient estimates on *LocalVC* and *LocalNonVC* are equal. One possible explanation is that local pre-IPO investors' certification is more important than local networking ability in influencing the amount of underwriting fees and other issue expenses, and both VCs and non-VC local pre-IPO investors possess similar certification ability.

In column (3) of Table 3, we examine the impact of local pre-IPO investors on IPO underpricing. The coefficient estimate on the main variable of interest *Local* is also negative and highly significant (-0.221 , p value < 0.01). For a median U.S.-listed (U.K.-listed, Singapore-listed) Chinese firm, these declines in underpricing translate into a reduction of US\$ 13.48 million (US\$ 1.55 million, US\$ 6.63 million) in the “money left on the table” by the firm. Among control variables, firms with longer operating history incur lower underpricing whereas firms backed by venture capitalists tend to incur higher underpricing. In column (4), we again examine separately the effect of local pre-IPO investors by type. We document similar findings as in column (2) and do not find significant difference between VCs and non-VC local investors in reducing the level of foreign IPO underpricing.

As a robustness test, we partition issue expenses into underwriting expenses and other offering expenses, and examine the impact of local pre-IPO affiliation on underwriting expenses only. We include the same set of control variables as in Table 3 column (1). Untabulated results show that coefficient estimate on *Local* is -0.012 (p value = 0.023). For a median U.S.-listed (U.K.-listed, Singapore-listed) Chinese firm, this translates into a saving of approximately US\$0.73 million (US\$0.08 million, US\$0.36 million) on underwriting fees.

Taken together, Table 3 provides supporting evidence for *Hypothesis 1a* and *1b*, suggesting that foreign issuers appear to benefit from pre-IPO affiliation with host country investors in subsequent IPO activity as manifested in significantly lower issue costs and underpricing.

4.3 Cross-sectional analysis: ex ante uncertainty

In this section we examine what types of foreign issuers benefit more from pre-IPO affiliation with host country investors. In particular, we focus on firm-level *ex ante* information asymmetry and uncertainty. Table 4 presents the empirical results. Dependent variable in columns (1) and (3) is *Expense* whereas the dependent variable in columns (2) and (4) is *Underpricing*. The key variable of interest of this analysis is the interaction term *Local* × *Info_Asym*. *Info_Asym* is proxied by *Domestic* in columns (1) and (2), an indicator variable that takes the value one for firms without international sales at the time of IPO. Consistent with our baseline results, coefficient estimate of *Local* remains significantly negative in columns (1) and (2). More importantly, the interaction term *Local* × *Domestic* is also significantly negative in column (1). In column (2), the sign of interaction term is in the expected direction, although insignificant. These results provide some support for *Hypothesis 2a* that foreign firms without prior international activities benefit more from pre-IPO affiliation with local investors. In column (3) and (4) of Table 4, *Info_Asym* is proxied by *Loss*, an indicator variable that takes the value one if the company was operating at a loss in the year prior to IPO. Again, consistent with the baseline results, the coefficient estimate of *Local* is significantly negative in both columns. More importantly,

Table 4 Local pre-IPO investors and foreign IPO performance: cross-sectional analyses

Dependent variable	Info_Asym = <i>Domestic</i>		Info_Asym = <i>Loss</i>	
	Expense (1)	Underpricing (2)	Expense (3)	Underpricing (4)
Local	-0.027** (0.011)	-0.232*** (0.089)	-0.022*** (0.006)	-0.200** (0.082)
Local×Info_Asym	-0.015* (0.009)	-0.019 (0.102)	-0.034** (0.016)	-0.277* (0.169)
Info_Asym	0.009 (0.012)	0.064 (0.080)	0.016 (0.017)	0.136 (0.154)
Log(Assets)	-0.007*** (0.003)	-0.018 (0.021)	-0.006** (0.002)	-0.027 (0.021)
Growth	-0.005** (0.002)	-0.006 (0.019)	-0.004** (0.002)	-0.005 (0.019)
ROS	-0.005 (0.011)	0.049 (0.103)	-0.021 (0.017)	0.001 (0.145)
Log(Age)	-0.011** (0.005)	-0.082* (0.046)	-0.012 (0.007)	-0.085* (0.048)
FounderCEO	0.004 (0.006)	0.050 (0.065)	0.003 (0.005)	0.057 (0.064)
IndDir	0.021 (0.021)	0.044 (0.145)	0.019 (0.018)	0.063 (0.144)
Auditor	-0.005 (0.008)	-0.122 (0.092)	-0.004 (0.007)	-0.119 (0.093)
Underwriter	-0.007 (0.009)	0.071 (0.081)	-0.007 (0.007)	0.066 (0.080)
VC	0.008 (0.007)	0.150* (0.090)	0.006 (0.007)	0.161* (0.090)
SOE	0.008 (0.009)	-0.006 (0.070)	0.011 (0.012)	-0.019 (0.070)
Constant	0.276*** (0.048)	0.597 (0.379)	0.244*** (0.045)	0.792** (0.368)
Country FE	Included	Included	Included	Included
Industry FE	Included	Included	Included	Included
Year FE	Included	Included	Included	Included
R ²	0.47	0.18	0.47	0.18
Observations	305	305	305	305

This table reports regression estimates of foreign IPO performance on pre-IPO affiliation with local investors and the moderating effects of firm's information asymmetry. Dependent variables in models (1,3) and (2,4) are issue expense and underpricing, respectively. In models (1)–(2), *Info_Asym* is measured by *Domestic* that equals 1 if the firm has no international sale prior to IPO and 0 otherwise. In models (3)–(4), *Info_Asym* is measured by *Loss* that equals 1 if the firm operates at a loss prior to IPO and 0 otherwise. Definitions of other variables are provided in Table 1. Country, industry and year fixed effects are included in regressions but the coefficients are not reported. Robust standard errors are displayed in parentheses

***, **, * Significance at the 1, 5, and 10 % levels, respectively

the interaction term $Local \times Loss$ is also significantly negative in both columns. These findings support *Hypothesis 2b* that foreign issuers operating at a loss prior to IPO benefit more from pre-IPO affiliation with investors from the host country.

5 Additional tests

5.1 Selection bias and endogeneity

There are several econometric issues that need to be considered. First, it is possible that the presence of local pre-IPO investors is non-random and that affiliated firms are systematically different from their unaffiliated counterparts. Hence there could be a sample *selection bias*. Second, our results might be driven by unobservable firm characteristics. For example, it is possible that affiliated foreign issuers are of higher quality and better performance, and thus experience lower valuation uncertainty and issue costs. Hence there could be an *endogeneity bias*. Although the cross-sectional analyses in Sect. 4.3 alleviate these concerns to some extent, we conduct three additional analyses in this section to further ensure the robustness of our findings.

5.1.1 Heckman two-stage approach

Our first attempt to control for selection bias is to employ the Heckman (1979) two-stage approach. In the first stage, we estimate a probit model that explains the presence of local pre-IPO investors. We include firm characteristics that may affect this choice, including founder CEO, firm age, size, profitability, leverage, international presence and ownership status. In addition, we include $CEO_LocalExp$, an indicator variable that takes the value of one if company CEO had prior educational and/or professional experience in the country of listing. It is plausible that CEO who had prior experience in the host country have better access to the local network and resources. It is also likely that foreign pre-IPO investors prefer firms led by a CEO who shares similar background as them. Table 5 (Panel A) reports the results of the probit model. CEO prior local experience and firm age positively affect the presence of host country investors while return on sales and state ownership each has a negative impact. The inverse Mills ratios calculated using the estimated probabilities, IMR , are included in the second-stage regressions. The results are reported in Table 5 (Panel B). We suppress coefficients on the control variable for brevity. The dependent variable is $Expense$ in column (1) and $Underpricing$ in column (2), respectively. Consistent with the findings in Sect. 4, coefficient estimates on the key variable of interest $Local$ remains significantly negative in both columns. The coefficient estimate on IMR is also significant in column (2). These results suggest that our findings are robust.

5.1.2 Propensity score matching

As an alternative way to address the selection bias and endogeneity, we use propensity score matching method that endogenizes the presence of local pre-IPO investors. Our matching procedure relies on a nearest neighbor matching of propensity scores, originally developed by Rosenbaum and Rubin (1983).¹⁰ This method requires the estimation of a

¹⁰ See, Rosenbaum and Rubin (1983) and Lemmon and Roberts (2010), for a more detailed discussion of the matching method and cautionary notes.

Table 5 Local pre-IPO investors and foreign IPO performance: Heckman two-stage approach*Panel A: Probit model for pre-IPO affiliation with local investors*

Dependent variable	Local
CEO_LocalExp	0.711*** (0.212)
FounderCEO	0.197 (0.161)
Log(Age)	0.276** (0.123)
Log(Assets)	0.067 (0.065)
ROS	-0.570* (0.323)
Leverage	-0.042 (0.311)
Domestic	0.012 (0.166)
SOE	-0.414* (0.227)
Constant	-1.478 (1.196)
Country and industry FE	Included
Likelihood ratio	47.60 (<0.01)
Number of obs.	305

Panel B: Second-stage regression analyses

Dependent variable	Expense (1)	Underpricing (2)
Local	-0.019*** (0.007)	-0.234*** (0.079)
IMR	0.014 (0.021)	-0.216** (0.107)
Constant	0.226*** (0.053)	1.011** (0.473)
Control variables	Included	Included
Country, industry and year FE	Included	Included
R ²	0.46	0.19
Observations	305	305

This table reports results of Heckman (1979) two-stage analyses on the relationship between issue expenses, underpricing, and local pre-IPO investors. Panel A reports results of first-stage regression of a probit model for pre-IPO affiliation with local investors. Panel B reports the results of second-stage regressions. Definitions of variables are provided in Table 1. Robust standard errors are displayed in parentheses

***, **, * Significance at the 1, 5, and 10 % levels, respectively

Table 6 Local pre-IPO investors and foreign IPO performance: propensity score matching

Dependent variable	Expense (treatment-control) (1)	Underpricing (treatment-control) (2)
COUNTRY/IND/SIZE-matched	-0.013* (0.008)	-0.250*** (0.083)
COUNTRY/IND/SIZE/AGE-matched	-0.019** (0.008)	-0.189** (0.090)
ALL-matched	-0.035*** (0.013)	-0.227** (0.104)

This table reports the results of a matched pair design where each firm affiliated with local pre-IPO investors (i.e., treatment firm) is matched with an unaffiliated firm (i.e., control firm) using alternative matching criteria. Average difference in issue expense and underpricing between the treatment and control group are reported. Standard errors for two-sample *t* tests with unequal variance are given below in parenthesis

***, **, * Significance at the 1, 5, and 10 % levels, respectively

probit model for the endogenous choice variable (i.e., =1 if *Local* and 0 otherwise). We then use the predicted probabilities, or propensity scores, from this probit estimation and perform a nearest-neighbor match with replacement. That is, for each treatment firm (i.e., firm with local pre-IPO investor), we match it with a control firm (i.e., firm without local pre-IPO investor) with the closest propensity score. Since we allow for replacement, a control firm may be matched to more than one treatment firm.

Table 6 shows average selection-bias adjusted differences in issue expenses and underpricing between affiliated and unaffiliated firms using the propensity score method. Bootstrapped standard errors appear in parentheses. We start with a parsimonious model that only includes firm size as well as country and industry dummies to capture any country- or industry-specific differences. The one-to-one propensity score matching shows that the average difference in *Expense* and *Underpricing* between firms with and without local pre-IPO investors is -0.013 and -0.250, respectively. The differences are all statistically significant. As an alternative specification, we add firm age as an additional instrumental variable. The propensity score method shows that the average difference in *Expense* and *Underpricing* between affiliated and unaffiliated firms is -0.019 and -0.189, which are statistically significant. We next use the full set of instrumental variables as in Table 5(Panel A). The average difference in *Expense* and *Underpricing* between the two groups is -0.035 and -0.227. Taken together, these findings suggest that our main findings are robust after controlling for potential selection bias.

5.1.3 Are firms affiliated with local pre-IPO investors of higher quality?

In this section we attempt to account for the possibility that foreign issuers affiliated with local pre-IPO investors may be of higher quality either because local pre-IPO investors possess superior selection ability when making investments or because they may choose to take high quality foreign firms public in their home markets, so those foreign firms would have lower *ex ante* valuation uncertainty and hence experience lower issue costs.¹¹ We

¹¹ Eng and Lin (2012) compare the accounting quality of Chinese firms that are cross-listed in the U.S., Hong Kong with those that are listed domestically. They find that firms from China do not have better reporting quality when they cross-list in the United States.

examine three measures of firm quality. The first two measures, *ex ante* in nature, are firm profitability ROS (return on sales) and growth potential GROWTH in the year prior to the IPO. Untabulated statistics show that average ROS of affiliated firms is 0.120 which is lower than the average ROS of unaffiliated firms, 0.215. The difference is significant at the 1 % level (p value is 0.002), which is consistent with the result in Table 6. Average GROWTH of affiliated firms is 1.182 and 1.151 for unaffiliated firms, but the difference is statistically insignificant (p value is 0.861), suggesting that affiliated firms are not of higher growth potential than unaffiliated firms.

The third measure we examine, which is *ex post* in nature, is the post-IPO long-term capital market performance. The stock performance measures are the four-year post-IPO cumulative abnormal market-adjusted stock returns (CARs), calculated on the basis of monthly stock returns starting from the first month after the IPO date.¹² For U.S.-listed Chinese firms, we use the CRSP value-weighted index to adjust for the holding period returns.¹³ We use the FTSE world index as the benchmark for U.K.-listed firms and Straight Straits Times index as the benchmark for Singapore-listed firms. The latter two indices are obtained from the Compustat Global database.¹⁴ Untabulated results show that the average CAR of firms affiliated with local pre-IPO investors is -38.6% whereas the average CAR of unaffiliated firms is -32.0% . Both groups of firms apparently exhibit poor stock market performance in the 4 years following the IPO, which is consistent with the U.S. evidence of Ritter (1991) and Loughran and Ritter (1995). But the performance difference between affiliated and unaffiliated firms is statistically insignificant (p value is 0.724).

Taken together, these results indicate that firms backed by host country pre-IPO investors have lower profitability than their peers, and they do not appear to exhibit stronger growth potential or better long-term performance. These evidence do not support the alternative explanation that affiliated firms are fundamentally better than unaffiliated firms that result in lower valuation uncertainty and thus lower issue expenses.

5.2 Analyst coverage and forecast performance

In this section we examine whether the benefits of pre-IPO local affiliation persist into the post-IPO period and manifest in analyst coverage and forecast performance. Both anecdotal and academic evidence indicates that research coverage has become an essential element of the security issuance process in recent years (Cliff and Denis 2004). Greater analyst coverage leads to greater investor recognition and a higher company value (Merton 1987). Chen and Ritter (2000) note that analyst coverage can be especially important for insiders wishing to sell their shares in the open market after the expiration of the lock-up period. Prior literature has provided strong evidence of a negative association between information asymmetry and analyst coverage as well as forecast performance (e.g., Lang

¹² In untabulated tests, we also calculate cumulative abnormal returns on the basis of monthly stock returns starting from the second and third month after the IPO date, respectively. Results remain qualitatively the same.

¹³ In untabulated tests, we also use the CSRP equally-weighted index as the benchmark to adjust the three-year holding period returns. Results remain qualitatively the same.

¹⁴ Compustat Global Index Prices (Straight Straits Times index—GVKEY 150067; FTSE World Index—GVKEY 150016).

and Lundholm 1996). To the extent that foreign issuers affiliated with local pre-IPO investors may enjoy a lower cross-border information asymmetry or better access to financial analysts in the host country, we expect those firms to have greater analyst coverage, and analysts following those firms to experience a lower forecast error and dispersion.

We measure *Analyst Coverage* as the natural logarithm of number of analysts that issue at least one earnings forecast for the firm in the first post-IPO year. To avoid losing observations with zero analyst coverage, we add one to the actual values when calculating the natural logarithm. Analyst forecast error *Forecast Error* is measured by the absolute difference between actual earnings per share and the mean analyst forecast, deflated by the closing stock price on the IPO date. A higher forecast error implies lower forecast accuracy. Analyst forecast dispersion *Dispersion* is measured by inter-analyst standard deviation of forecasts deflated by the closing stock price on the IPO date.¹⁵ Data on analyst following and earnings forecasts are obtained from IBES database.

Table 7 presents the empirical results. The dependent variable is *Analyst Coverage* in columns (1) and (2), *Forecast Error* in columns (3) and (4), and *Dispersion* in columns (5) and (6). In column (1), the coefficient estimate of *Local* is positive and significant at the 5 % level. This finding suggests that foreign issuers affiliated with local pre-IPO investors attract more analysts than their unaffiliated counterparts in the first year after the IPO. Among control variables, firm size is significantly positive, consistent with prior findings (see, e.g., Bhushan 1989) that analyst following generally increases with firm size. Analyst coverage also positively relates to founder CEO, underwriter reputation, and negatively relates to firm age where information asymmetry of younger firms is likely to be higher. In column (3), coefficient estimate of *Local* is negative and significant at 1 % level, suggesting that affiliated firms experience significantly lower analyst forecast error. Similarly, in column (5), the coefficient on *Local* is also significantly negative, indicating lower forecast dispersion for affiliated issuers.

In columns (2), (4) and (6) of Table 7, we examine the effect of local pre-IPO investors on analyst coverage and forecast performance by investor type. In column (2) where the dependent variable is analyst coverage, the coefficient estimate on *LocalVC* is significantly positive at the 1 % level whereas the coefficient estimate on *LocalNonVC* is positive but only significant at the 10 % level. The *F*-statistic from the test of equal coefficients is 2.98, which rejects the null hypothesis of equal coefficients between *LocalVC* and *LocalNonVC*. In columns (4) and (6) where the dependent variable is analyst forecast error and dispersion, respectively, we find that only local VC investors are effective in helping foreign issuers attract more analyst coverage and that these analyst forecasts are more accurate and less dispersed. These findings suggest that local VCs are more capable than other types of local pre-IPO investors in helping foreign issuers accessing more analysts and communicating with them to mitigate information asymmetry during the post-IPO period.

Taken together, empirical evidence presented in Table 7 suggests that foreign issuers affiliated with local pre-IPO investors, especially local VCs, enjoy greater analyst following, higher forecast accuracy, and lower forecast dispersion.

¹⁵ In untabulated tests, we conduct two additional robustness tests: (1) measure analyst forecast error using median earnings forecast instead of mean earnings forecast, and (2) deflate forecast error and dispersion by actual earnings instead of stock price. Empirical results remain qualitatively unchanged.

Table 7 Local pre-IPO investors, analyst coverage and performance

Dependent variable	Analyst Coverage		Forecast Error		Dispersion	
	(1)	(2)	(3)	(4)	(5)	(6)
Local	0.200** (0.095)		-0.323*** (0.121)		-1.132** (0.067)	
LocalVC		0.347*** (0.085)		-0.598*** (0.217)		-2.733*** (1.006)
LocalNonVC		0.124* (0.074)		0.016 (0.108)		-0.551 (0.580)
Log(Assets)	0.144*** (0.034)	0.146*** (0.034)	-0.025 (0.039)	-0.027 (0.036)	0.004 (0.021)	0.006 (0.020)
Growth	0.018 (0.024)	0.018 (0.024)	0.023 (0.026)	0.024 (0.026)	0.015** (0.007)	0.016** (0.008)
ROS	0.075 (0.146)	0.075 (0.146)	0.184 (0.147)	0.184 (0.147)	0.186 (0.140)	0.185 (0.140)
Log(Age)	-0.106* (0.061)	-0.108* (0.060)	0.098 (0.089)	0.099 (0.092)	0.058 (0.052)	0.058 (0.052)
FounderCEO	0.180** (0.075)	0.174** (0.076)	0.006 (0.107)	0.005 (0.108)	-0.026 (0.044)	-0.027 (0.045)
IndDir	0.112 (0.247)	0.112 (0.248)	0.026 (0.219)	0.026 (0.219)	0.051 (0.126)	0.051 (0.126)
Auditor	0.099 (0.094)	0.099 (0.094)	0.115 (0.140)	0.115 (0.141)	0.099 (0.086)	0.101 (0.088)
Underwriter	0.300*** (0.113)	0.302*** (0.115)	-0.138** (0.065)	-0.136** (0.064)	-0.064* (0.040)	-0.066* (0.040)
VC	0.110 (0.097)	0.110 (0.097)	-0.243* (0.131)	-0.243* (0.131)	0.129* (0.079)	0.129* (0.078)
SOE	0.052 (0.092)	0.052 (0.092)	0.098 (0.116)	0.099 (0.115)	0.031 (0.074)	0.031 (0.074)
Constant	-1.645*** (0.593)	-1.745*** (0.620)	0.290 (0.708)	0.263 (0.699)	-0.250 (0.431)	-0.284 (0.528)
Country/Industry/Year FE	Included	Included	Included	Included	Included	Included
R ²	0.50	0.50	0.45	0.45	0.55	0.55
Observations	305	305	218	218	192	192
Test: LocalVC=LocalNonVC F-statistic (<i>p</i> value)		2.98 (0.08)		3.19 (0.07)		2.96 (0.08)

This table reports regression estimates of analyst coverage and performance on pre-IPO affiliation with local investors. Dependent variable is analyst coverage in models (1)–(2), forecast error in models (3)–(4) and dispersion in models (5)–(6), respectively. Definitions of variables are provided in Table 1. Country, industry and year fixed effects are included in regressions but the coefficients are not reported. Robust standard errors are displayed in parentheses

***, **, * Significance at the 1, 5, and 10 % levels, respectively

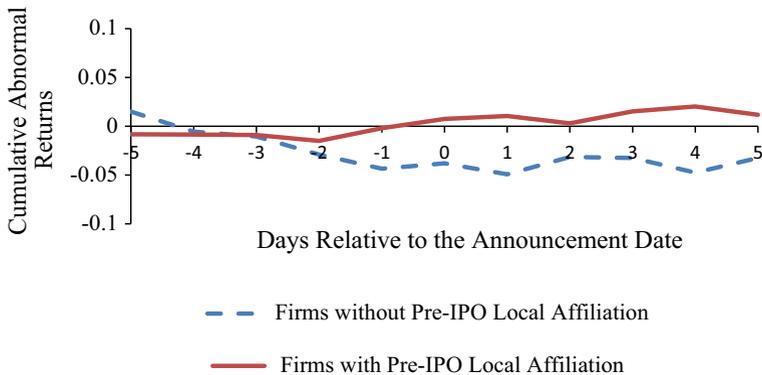


Fig. 1 Stock market reaction to acquisition announcement

5.3 Post-IPO acquisition performance in the host country

In this section, we probe whether benefits of pre-IPO affiliation with host country investors persist long into the post-IPO period and manifest in other corporate events in the host country. Pre-IPO investors are subject to lockup agreements that prohibit them from selling their shares for a set period of time. Typical length of lockups is 180 days for U.S. IPO firms and 365 days for U.K. and Singapore IPO firms (Hoque and Lasfer 2009; Chong and Ho 2008). For VC investors, for example, the exit process usually takes 2–3 years to complete. Therefore, we expect the impact of pre-IPO investors to persist for an extended period of time after the IPO. Acquisition is considered to be an important motive for IPO (Brau and Fawcett 2006; Celikyurt et al. 2010), we therefore explore whether pre-IPO local affiliation has an impact on post-IPO acquisition activities in the host country. Data on post-IPO acquisition transactions, including the announcement date and deal size are obtained from Zero2IPO database, combined with a search of acquisition announcements on the Internet. We track all acquisition activities, including both public and private targets, for our sample firms for up to 3 years including the IPO year. We obtained 27 acquisition deals, among which 16 were made by firms with pre-IPO affiliation with host country investors.¹⁶

Figure 1 plots the capital market reaction to acquisition announcements, as measured by cumulative abnormal returns (CARs) for affiliated and unaffiliated foreign issuers, separately. The CARs are cumulated over the 11-day event window $[-5, +5]$ where date 0 is the announcement date. Consistent with the event study methodology, we use the market model to estimate the expected stock market return. The estimation period is $[-210, -20]$ trading days prior to the announcement date. The plot shows that to some extent the market has anticipated the forthcoming acquisition events given reaction prior to the announcement. More importantly, the market appears to react positively to acquisition announcements made by affiliated foreign issuers. In contrast, unaffiliated foreign issuers elicit a negative market response. These findings suggest that on average, investors view cross-

¹⁶ In an untabulated test, we examine whether firms affiliated with local pre-IPO investors are more likely to initiate post-IPO acquisitions in the host country using a Logit model. The coefficient on the key variable of interest *Local* is 0.185 but insignificant (p value = 0.799).

Table 8 Local pre-IPO investors and post-IPO acquisition performance in the host country

Dependent variable	CAR[-2,+2]	
	(1)	(2)
Local	0.088** (0.044)	
LocalVC		0.088** (0.044)
LocalNonVC		0.085** (0.043)
Log(Dealsize)	-0.006 (0.106)	-0.006 (0.106)
Log(Assets)	0.038 (0.021)	0.038 (0.021)
ROS	-0.195** (0.099)	-0.195** (0.099)
Indir	-0.026 (0.061)	-0.026 (0.061)
Underwriter	0.009 (0.007)	0.009 (0.007)
VC	0.013 (0.016)	0.013 (0.016)
SOE	-0.016 (0.031)	-0.016 (0.031)
Constant	-0.499 (0.383)	-0.499 (0.383)
R ²	0.53	0.53
Number of obs.	27	27
Test: LocalVC = LocalNonVC		0.00
F-statistic (<i>p</i> value)		(0.98)

This table presents stock market reaction to acquisition announcement and regression estimates of acquirer performance on pre-IPO affiliation with local investors. The dependent variable is cumulative abnormal return over the [-2,+2] event window. Definitions of variables are provided in Table 1

***, **, * Significance at the 1, 5, and 10 % levels, respectively

border acquisitions made by affiliated foreign firms in the host country as value enhancing, whereas those made by unaffiliated foreign firms as value destroying.

To further assess the gravity of differences in acquirer's performance, in Table 8 we estimate an OLS regression of acquirer CARs where we control for acquirer financial and governance characteristics and deal characteristics. Following Eckbo and Thorburn (2000) and Masulis et al. (2012), we use CARs over the 5-day window [-2, +2] surrounding the announcement date. In column (1), we examine the effect of local pre-IPO investors as a whole without distinguishing their types. Consistent with the plot in Panel A, the coefficient estimate on key variable of interest *Local* is positive and significant at 5 % level, consistent with the conjecture that local pre-IPO investors provide various benefits (e.g., knowledge, connections, reputation) that help foreign firms make better acquisitions in the

host country. These findings support the graphical evidence in Fig. 1 and provide empirical evidence for *Hypothesis 3*. In column (2), we again examine the effect of VC and non-VC pre-IPO investors separately. However, we do not find significant difference between them. A possible reason is that non-VC pre-IPO investors (for example, local corporations) may also possess large business network in the host country and therefore are equally helpful in advising their investee company's post-IPO acquisition activities.¹⁷

6 Discussion and conclusion

In this paper we focus on the diversification of pre-IPO ownership of foreign-listed firms, and examine the role of one particular class of pre-IPO investors—those from the country of listing—on firm's subsequent IPO and post-IPO activities. Drawing on a sample of 305 foreign-listed Chinese firms, we find that the presence of local pre-IPO investors is associated with a statistically and economically significant reduction in foreign IPO expenses and underpricing. Cross-sectional analyses suggest that the benefits of affiliation are greater for foreign issuers with higher *ex ante* information asymmetry and uncertainty, i.e., firms without international sales or were operating at a loss at the time of IPO. We also find that the benefits of pre-IPO local affiliation appear to persist into the post-IPO period as well as into other corporate development activities in the host country. Foreign issuers affiliated with local pre-IPO investors, especially local VCs, experience greater analyst coverage, lower forecast error and dispersion. They also experience significantly better post-IPO acquisition performance in the host country than their unaffiliated peers.

Empirical findings of this study, although based on a sample of foreign-listed Chinese firms, have practical implications for all firms around the globe who wish to acquire financial resources from foreign capital markets. Given the explosive growth of cross-border private equity investments in recent years, entrepreneurial companies now have access to a much wider range of pre-IPO investors from around the world. Our study sheds new light on the optimal pre-IPO shareholder structure for firms who may wish to conduct a public offering and M&A transactions in a foreign country. Empirical evidence of our paper suggests that the presence of pre-IPO shareholders from the host country is beneficial to foreign issuer's future IPO and corporate development activities in that country.

We recognize a number of limitations to this study. First, our findings may suffer from potential endogeneity and self-selection issues. We have attempted to address those issues using Heckman (1979) two-stage approach, propensity score matching method, and a comparison of firm performance, but our findings may still be prone to these issues. Second, we recognize that although diversifying pre-IPO ownership and establishing affiliations with investors from the host country early on bring benefits to the firm, in equilibrium not all foreign-listed firms have such pre-IPO ownership arrangement as the choice of pre-IPO shareholders may be determined by many factors (such as investment price, control rights, and whether the firm has access to foreign investors). Lastly, our sample is based on firms originated from the same country. Bell et al. (2012) have shown that country of origin and institutional factors affect foreign IPO performance. They find that firms from countries with governmental policies and institutional practices that protect the economic freedom of its citizens are significantly less underpriced than IPOs of firms originating from countries experiencing lower levels of economic freedom. Future research

¹⁷ Another possible reason is that our sample of acquisitions is too small, which lacks the power to detect significant differences between VC and Non-VC investors.

can explore whether the benefits of pre-IPO local affiliation vary by foreign issuers' home country institutional environment.

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