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The Impact of Local Governance Institutions on Foreign Market Listings: The Case of Chinese Firms

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Abstract

This paper exploits the substantial variation in market institutions across provinces in China to examine the impact of institutional quality on foreign listing. Firms that list on the U.S. and U.K. exchanges are more likely to come from better regulated provinces and tend to be at the top of a corporate pyramid. However, though the impact on firm performance of market institutions and pyramidal affiliations persists briefly post-listing with firms recording lower EPS and higher raw returns in the first year, it does not help predict whether firms remain listed abroad in 2012. Thus, we conclude that headquarters' market institutions shape a firm through time of listing and have diminished influence over time.

Keywords: China, IPO, foreign listing, institutions, pyramid
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1. Introduction

Economic institutions are generally measured and studied at the country-level, a convention that may be best exemplified by La Porta et al. (1998). Many firms seek foreign equity listings in order to access larger pools of capital and facilitate long-term growth while increasing the firm's reputation (Pagano et al., 2002; Gozzi et al., 2008; Stulz, 1999). Doidge et al. (2011) find that countries with stronger market institutions have more domestic IPO activity and lower levels of foreign IPO activity. China is an anomaly as even while there is domestic variation in the quality of economic institutions, and many firms, particularly from the provinces with stronger institutions, are listed domestically, many firms have nonetheless sought overseas listings, again including many from the provinces with stronger institutions. We therefore investigate whether domestic variation in market institutions affects foreign equity listing patterns, and whether these institutions have a long-term effect on these firms' subsequent behavior.

Firms with better local governance institutions may have better internal governance and thus be more attractive to local investors, thus decreasing the need to seek investors abroad (Doidge et al., 2011). While the Chinese markets are now among the world's largest markets, they are inefficient due to IPO underpricing, restrictions on share issuance, trading, and ownership, and the government's ability to delist listed firms even when they comply with all requirements and remain profitable and actively traded (Chan et al., 2008). Chinese firms might therefore benefit from listing overseas, and an increasingly large number of such firms have done so over the last decade.[1]

[1] The firm's decision to list abroad is considered endogenous as the process of listing on the domestic stock exchanges is well known to be very extended and uncertain. Thus, many firms may consider a foreign listing to be a faster, safer way to gain equity capital and maintain an exchange presence.

Around the world most firms that eventually acquire foreign listings first go public at home, and yet this is not the case with Chinese firms. The most common listing pathway is for firms to list on a home exchange, with a subset of these firms subsequently cross-listing shares on a foreign exchange, and very few of these firms later withdraw from their home market.[2] Thus, the Chinese phenomenon examined in this paper is distinctly different and merits analysis. As is revealed in our dataset, more than 90% of the Chinese firms that are only listed on a foreign exchange, primarily in Hong Kong and Singapore, do not also have a listing domestically in the mainland.[3] Thus, investors have less information to use when evaluating a Chinese firm's foreign IPO.

We examine determinants of Chinese firms' decision to go public in particular countries and their subsequent performance. It is possible that these corporate decisions are affected only by easily observed attributes such as financial performance as are commonly examined in studies of corporate listing decisions, both domestically and in the cross-listing context. However, when looking at Chinese firms there is a second layer of characteristics that may be at least as important and yet not be visible to foreign investors: whether a firm belongs to a pyramid and the quality of local governance institutions. The dataset used herein is restricted to Chinese firms that are only listed abroad as foreign investors may also be less familiar with the variation in domestic institutions even though these institutions shape listing patterns (Doidge et al., 2011).

Firms that have better local governance institutions may find it easier to meet the regulatory requirements for listing on foreign exchanges and thus be more inclined to list

[2] Two-thirds of the firms that issued shares abroad after listing domestically are listed in Hong Kong.
[3] There are persistent differences between the Chinese firms that list on domestic exchanges, cross-list shares abroad, and those that only list shares abroad (Zhang and King, 2010). Firms that list on only one exchange need to comply with just one set of requirements while firms that list on both a domestic Chinese exchange and a foreign one must meet all regulatory and compliance requirements of both exchanges.

shares abroad (Chhaochharia et al., 2012; Shi et al., 2012). On the other hand, firms with good internal governance that are in locations with poor local institutions may wish to list shares abroad in order to signal that the firm itself is of a higher quality (Siegel, 2005) or enjoy governance spillovers from the firms already listed on the foreign exchange (Sun et al., 2012). These hypotheses suggest that local governance institutions could have an impact on the volume and pattern of foreign equity listings in general, while leaving open the question of whether these institutions could affect firms' behavior after listing abroad.

While there is a voluminous literature on cross-listings little has been written about firms that have only foreign listings due to the small number of such firms. Two studies of firms that have only foreign listings are Blass and Yafeh (2001) of Israeli firms listed on U.S. exchanges, and Sun et al. (2012) on Chinese state-owned firms listed in Hong Kong.[4] This study is broader as it considers all firms from one country that are listed on any foreign exchange, yielding a much larger and more diverse dataset, and yet the results of this study complement and extend the traditional approach of studying all publicly-listed firms from a particular country (e.g., Zhang and King, 2010).

Two explanations for why Chinese firms list on particular foreign exchanges are explored in this paper. First, a large literature (e.g., La Porta et al., 1998) has found that firms are more profitable and better governed when they are located or listed in countries with better regulatory and operating environments. China has significant domestic variation in the quality of regulatory and operating environments, both cross-sectional and inter-temporal, which can affect routine corporate behavior such as earnings management and financial disclosure, as confirmed by empirical studies such as that of

[4] These are the only studies we are aware of that examine only firms that list shares on foreign exchanges. However, this phenomenon of firms listing shares only on a foreign exchange is becoming less rare as is shown by the 2011 decision of Samsonite (U.S.) to list shares only in Hong Kong.

Jian and Wong (2010).[5] Home country legal institutions affect cross-listed firms' behavior (Shi et al., 2012), and thus we examine whether intra-national differences in legal institutions might also affect activity abroad of firms from a common home country.

Second, foreign investors may have greater difficulty interpreting a firm's control and management structure if the firm belongs to a pyramid.[6] 60% of Chinese firms are part of corporate pyramids (He et al., 2010). Insiders often amass private benefits from their control of corporate pyramids (Morck et al., 2005) and yet pyramidal affiliations are not always easy for investors to discern. When a firm belongs to a pyramid, conventional firm-level measures of corporate governance are no longer appropriate as the firm's raison d'etre has changed (Morck et al., 2005; Peng et al., 2011).

Using a dataset of 291 Chinese firms that obtained sole listings abroad during 2002-2007 both hypotheses are confirmed: the quality of domestic institutions is directly associated with listing patterns, and markets that cater primarily to investors who are less familiar with corporate pyramids (i.e., non-Asian exchanges) attract fewer such listings. However, parents of pyramids are particularly likely to list on the U.S. and Singapore exchanges. In addition, firms report slightly lower earnings per share (EPS) post-listing and higher raw stock returns after listing abroad when they come from provinces with more market intermediaries, suggesting that they may be more diligently adhering to accounting laws. These results are consistent with the evidence that Chinese firms engage in less earnings management when they are subjected to better corporate governance (Liu

[5] Companies have some latitude with regards to the timing of revenue and expense recognition, particularly when they involve one-time or extraordinary charges, and the practice of manipulating how data are reported to support a firm's financial reputation is generally called earnings management.

[6] The terms pyramid, business group, and holding company are often used somewhat interchangeably in the literature. We use exclusively the term "pyramid" as that is most commonly used in the China context.

and Lu, 2007; Jian and Wong, 2010), and shows that this trend persists among those firms that list abroad.

We find that by 2012 roughly one-third of the firms in the dataset were delisted, with the attrition rate highest among the firms that had listed in the U.K. and Singapore. The final round of empirical analysis reveals that while institutional measures are significantly associated with where a firm lists shares they are less correlated with whether the firm remains listed, which suggests that the home institutions shaped the firm pre-listing and subsequently the foreign institutions have a more pronounced effect. Chinese firms are thus bonding themselves to host market institutions.[7]

This paper begins with a discussion of the institutional environment and corporate ownership in China in Section 2. Section 3 presents an overview of the various foreign stock exchanges that Chinese firms listed shares on. The model and data are described in Section 4. Determinants of exchange choice are discussed in Section 5, while Section 6 presents a parallel examination of determinants of post-listing performance. In Section 7 we examine which firms survived the 2008-2011 scandals and are still listed on foreign stock exchanges in mid-2012. Section 8 concludes.

2. Institutional environment and corporate ownership

The broad law and finance literature pioneered by La Porta et al. (1998) has generally used aggregate country-level data to examine the macro impacts of a country changing a legal structure per se or how the laws are enforced. Due to history and geography, there is tremendous variation in the quality of market institutions within China. Accordingly, it is interesting to explore whether the broad finding that stronger

[7] This complements and extends the prior single country findings using U.S. equity market data reported by Siegel (2005) and Sun et al. (2012).

domestic market institutions decreases the volume of foreign IPOs (Doidge et al., 2011) can be extended to a country where there is measurable variation in the quality of local market institutions. Firm-level data has also been used to examine how home or host country institutions affect firm behavior. For example, Siegel (2005) found that Mexican firms with good internal governance list shares on a foreign exchange in order to signal that the firm itself is of a higher quality.

Firms are more profitable and better governed when they are located or listed in countries with better regulatory and operating environments (La Porta et al., 1998). In a related study of Chinese firms, Lu et al. (2008) find that enterprise productivity is highest in locations with better property rights protection. Inasmuch as there can be labor market and business practice spillovers from co-located firms (e.g., Branstetter, 2006), U.S. multinationals co-locate in the regions of China that have more market-friendly institutions (Du et al., 2008), and firms in such locales engage in less earnings management (Jian and Wong, 2010; Liu and Lu, 2007). This suggests that just as foreign companies are more likely to invest as expected in better-run locales (Hornstein, 2011), firms from these locales may also exhibit similar behavior.

Inter-provincial variation in the operating environment and in the quality of local market and legal institutions may impact the growth and culture of local corporations. Doidge et al. (2004) find a positive relationship between the value of a firm's growth opportunities and whether the firm acquires a foreign listing, and a negative relationship between the value of the firm's growth opportunities and the degree of home country investor protection. Chinese firms, even those from provinces with comparatively stronger market institutions, may realize greater growth opportunities by listing shares

abroad. Firms with foreign listings are able to overcome the negative impact of weak local institutions (Doidge et al., 2011). This is consistent with a sorting process whereby the stronger firms list shares abroad while the remaining firms are constrained by the quality of domestic market institutions, and suggests that the variation in post-listing performance may reflect characteristics of the market in which the firm is listed.

Given that 60% of Chinese firms, and a larger share of successful firms, belong to corporate pyramids or diversified business groups, their ability to carefully leverage internal capital markets to overcome external capital market frictions has proven critical to the success of constituent firms (He et al., 2010). Whether a firm belongs to a pyramid may reflect firm characteristics such as size, industry, product market structure and competition (Johnson et al., 2000; Morck et al., 2005). Tunneling is common within Chinese corporate pyramids (Liu and Lu, 2007; Fan et al., 2010), and is believed to reflect the historical and contemporary state role in business (Cheung et al., 2005). Tunneling is associated with the presence of agency and informational asymmetry problems (e.g., Morck et al., 2005), and is exacerbated when the gap between control and ownership rights grows (Claessens et al., 2002) as may occur at companies that have a dispersed investor base. In corporate pyramids managerial decision-making may be imperfectly correlated with the preferences of external stakeholders, including shareholders (Liu and Lu, 2007). Chinese listed firms often have unlisted parent firms, and they frequently use related party sales to boost earnings (Jian and Wong, 2010). Thus, the Berle and Means (1932) model of diffuse corporate ownership and resultant implications for corporate governance might not apply to Chinese firms.

Many pyramidal families contain multiple publicly-listed firms and these firms may be listed in different countries.[8] This suggests that families may perceive the relative net benefits of each exchange to vary depending on a firm's role within the pyramid.[9] Given the difficulty of identifying whether a firm belongs to a pyramid and how pyramidal firms relate to one another, large empirical studies of tunneling generally identify only whether a firm has such an affiliation (e.g., Friedman et al., 2003). Corporate pyramids often contain private firms for which ownership data is not publicly available, and corporate structures are often difficult for outsiders to understand fully. Thus, most studies often include a pyramidal affiliation dummy.[10] A smaller number of studies also track a firm's role within a pyramid (e.g., Fan et al., 2010).

The pyramidal status of a firm may have ambiguous implications for a particular firm. While a parent may expropriate some subsidiaries, it could also prop up the same or other subsidiaries, either simultaneously or sequentially. Furthermore, minority shareholders may consider the pyramidal affiliation to be a form of de facto insurance as they could believe that the parent would prop up the firm in bad times (Friedman et al., 2003). Even if the parent firm props up subsidiary firms, the parent firm retains ultimate decision-making authority and is the ultimate recipient of internal cash flows. When examining pyramidal status, we therefore focus on parent status is there is less ambiguity

[8] For example, China Merchants Group has its parent firm headquartered and listed in Hong Kong while its public subsidiaries are listed in Hong Kong, London, New York, Shanghai, Shenzhen and Singapore, and headquartered in different places.

[9] Headquarters locations may be in places that are of historical or current strategic business value to the firm (e.g., city of founding, large transportation hub, tax haven, etc.). In the absence of evidence to suggest otherwise, we assume that firms conduct much of their business in their headquarters' location. This is consistent with the fact that many company names include their location.

[10] It is therefore not possible to explore the span of control to ascertain the importance or role of particular firms within pyramids.

than would be if we examined subsidiary status (i.e., focused on a firm that belonged to the pyramid but was not the parent thereof).

3. Foreign exchanges

Between 1991 and 2005 roughly 30% of all capital raised by firms world-wide was raised outside of their domestic markets (Gozzi et al., 2010). The total amount of global IPOs rose from $8.8 bn in 1990 to $169.4 bn in 2007 (Doidge et al., 2011). Among firms that cross-list shares, there is a significant increase (decrease) in firm value for those firms who have a secondary listing on more (less) prestigious exchanges (Cetorelli and Peristiani, 2010).

Chinese firms may have particularly strong motivations to list shares abroad. First, the domestic Chinese exchanges are inefficient as prices appear disconnected from firm performance (Zhang and King, 2010), IPOs are underpriced by an average of 267% vs. an average of 20% in the U.S. (Ritter, 2011), and markets are highly volatile. Second, the Chinese market is dominated by risk-averse retail investors, limiting the supply of available capital (e.g., Chan et al., 2008). Third, China is the only large market where the size of the stock market is under government control, the average amount of time it takes to obtain a domestic listing is five years, and where the government has retained the authority to delist firms even if they are performing well (He and Yang, 2009).[11]

The Chinese government's regulation of the domestic market therefore can push firms towards foreign equity listings, including cross-listings. If the government were

[11] In most countries any firm that meets an exchange's listing criterion is allowed to list shares, and any firm that meets ongoing listing and disclosure requirements can retain the listing. However, in China, the government maintains a ceiling on the number of listed firms, although admittedly this ceiling has changed over time, and routinely delists firms that have met all ongoing listing and disclosure requirements, including firms that remain actively traded and profitable, in order to create a spot for a new entry.

trying to help domestic firms absorb domestic savings, then there would be fewer constraints on domestic listings. However, since the government restricts domestic listings, the lower quality firms may be forced to list abroad using backdoor methods (He and Yang, 2009). On the other hand, the government encourages high quality firms to list shares abroad to promote China's reputation and to attract foreign capital to support economic growth (He and Yang, 2009; Zhang and King, 2010). Chinese firms that wish to issue shares abroad can list directly with approval from the Chinese government, or they can list indirectly and thereby sidestep the government regulation.[12] Thus, the firms that list shares abroad include both high and low quality ones.

Firms tend to seek out listings on exchanges that are more familiar (e.g., Chinese firms listing in Hong Kong), and firms tend to list only on a foreign exchange if and only if the expected net benefits are positive given the associated costs. There is considerable inter- and intra-country variation in these benefits (e.g., degree of underpricing, reputation) and costs (e.g., listing costs, director fees). Different exchanges within the same country can attract firms with different characteristics (e.g., NASDAQ and NYSE attract newer technology and traditional industrial firms, respectively). While some

[12] He and Yang (2009) present a thorough review of the listing process. A direct listing is a traditional issuance of depository receipts or a foreign IPO. By contrast, to list indirectly, using a backdoor method, Chinese firms use either of two mechanisms. First, a non-listed Chinese company purchases the majority or entirety of an overseas listed company, often but not necessarily dormant, and then completes a reverse merger with the Chinese company. Second, a representative of the non-listed Chinese company (e.g., a dominant shareholder) establishes a foreign shell company (i.e., a firm that is registered as a legal entity and has a listing, often on an over the counter exchange), and then the domestic company is injected into this shell, again engineering a reverse merger. In both of these scenarios, the Chinese company is not vetted by any regulatory authority in the host country or in China and yet it ends up being traded side-by-side with firms that may have gone public via traditional channels. After listing via these methods, the Chinese firm would be expected to meet all regulatory requirements of the listing exchange.

In 2000 the Chinese government attempted to limit the use of backdoor channels for cross-listing by putting in place a law which was subsequently revoked in 2003. The 2003 revocation led to a rapid increase in the number of Chinese firms listed in the United States. In late 2005, the Chinese government increased the supervision of and requirements for indirect listing abroad, but this did not prevent the continued growth of foreign listings by Chinese firms.

analyses of cross-listing firms include measures of these costs and benefits, the work most similar to this study is Doidge et al. (2011) and they also do not include such variables as they are not available systematically for all exchanges. Cetorelli and Peristiani (2010) find that firms listing shares on more prestigious stock markets enjoy greater visibility, stronger governance, and lower capital costs. The analysis presented herein will focus on the relative, not absolute, differences across the exchanges.

Pagano et al. (2002) examine how the effects of cross-listing can vary by listing locale. Doidge et al. (2009) corroborate these results, finding that there is no cross-listing premium in London, while there remains a premium in the United States. As greater distance between a firm and its financiers may contribute to increased informational asymmetry problems (Petersen and Rajan, 2002), the fact that firms listing in the U.S. see permanent benefits that exceed those accruing to firms listing elsewhere suggests that the Chinese firms listing furthest from China may have superior governance and management practices that would allow the firms to overcome these distance barriers.

While Chinese firms are now listed on stock exchanges in many countries, most of these companies had first listed shares on a domestic Chinese exchange. These firms may differ systematically from those firms that only listed shares abroad in one of two ways. First, such firms may have a greater degree of political connections that enabled them to acquire and retain a domestic listing. Foreign investors may believe that a domestic listing is a de facto government guarantee. Accordingly, inclusion of firms that are also listed domestically may introduce an omitted variable bias as the degree of state control or influence over a firm is difficult to measure. Second, the large numbers of cross-listed firms world-wide have demonstrated an ability to survive in their home

market before listing shares abroad. Thus, investors may believe that cross-listed firms are stronger than their home country counterparts that are not also cross-listed abroad. To enable a clear identification of how local institutions affect foreign listings, our dataset thus includes only firms that have just one listing on a non-Chinese exchange.

The firms examined in this study are listed on foreign exchanges in four countries: Hong Kong, Singapore, the U.S. and the U.K. Representative reviews of the relative costs and benefits of listing on these exchanges are presented by Doidge et al. (2009, 2011), Zhang and King (2010), and Cetorelli and Peristiani (2010). These studies all show that the relative rankings of these exchanges are time-invariant, with the costs and benefits of listings higher for the more highly ranked exchanges. These markets differ on numerous dimensions such as the breadth and depth of market activity and listing requirements. A pecking order emerges whereby the U.S. listings can be viewed as generally being the most prestigious and costly followed by, in order, U.K., Singapore and Hong Kong exchanges. The degree to which local market participants are familiar with Chinese firms may be the reverse: Chinese firms make up 6% and 46% of the traded value on the Singapore and Hong Kong exchanges, respectively (Zhang and King, 2010).

4. Model and data

4.1. Model

The multinomial probit model is used in empirical analysis to identify determinants of which types of firms choose to list in particular countries. This model is well-suited for analysis of economic problems whereby individuals may differ in their

preferences for particular outcomes or sensitivities to contributing economic factors.[13] Moreover, the multinomial probit, unlike the multinomial logit, allows for the possibility that the error terms may be correlated across outcomes, and thus does not require the strong assumption of independence of irrelevant alternatives (Judge et al., 1985).[14]

Firm *i*'s decision to list on an exchange in a foreign country in year *t* is modeled as

$$\Pr(Country_i) = \beta_0 + \beta_1 X_{it} + \beta_2 L_{it} + \gamma_t + \delta_{INDUSTRY} + \varepsilon_{it} \qquad [1]$$

where *X* contains firm characteristics, and *L* contains information about the operating environment in the firm's headquarters location. A characteristic of the firm or its home governance institutions that makes the firm more likely to list shares in a particular country should have a positive estimated coefficient. In line with the hypothesis that stronger local governance institutions may have a positive impact on firm growth, the coefficient on local governance institutions is expected to be positive for firms that list in countries with more comprehensive regulatory and disclosure requirements. Year and industry fixed effects are also included. The standard errors are clustered at the province level to account for potential institutional and firm level correlations.[15]

In estimating the multinomial probit it is common to assume that the probability of a base case is 1. This normalization is used to facilitate easier computation of all estimated coefficients, and to simplify the process of evaluating the odds of choosing any one alternative versus any other alternative. Hong Kong is used as the base case in this analysis because Chinese companies account for a higher share of the total Hong Kong

[13] As the number of firms listing on some of exchanges is very small, all analysis is performed at the host country level using a multinomial probit model. Thus, this dataset lends itself to analysis of why firms list shares in a particular country but not why firms list on a specific exchange within that country.
[14] Nonetheless, the results reported herein are robust to the use of the multinomial logit model.
[15] Since only 5 of the 297 firm families in the dataset contain more than one firm that is listed abroad during this period, it is not feasible to cluster the standard errors at the firm family (or pyramid) level. Each of these five families had two firms listing abroad in the same period.

market value or listings (roughly half) than on any other exchange world-wide.[16] Hong Kong is often considered to be the default or presumptive listing location for Chinese firms that list abroad due to geographic and cultural proximity. Thus, the estimated probabilities for all other outcomes are evaluated relative to the Hong Kong outcome. Hence, an estimated coefficient, $\widehat{\beta_{i1}}$ can be interpreted as the marginal effect of variable x_1 on firms' choice to list shares on exchange *i* relative to the likelihood of listing on the Hong Kong exchange. Accordingly, the ratios of any two coefficients such as $\widehat{\beta_{i1}}$ and $\widehat{\beta_{j1}}$ reveals the relative likelihoods of firms listing on exchanges *i* and *j* (Judge et al., 1985).

4.2. Data sample and sources

Data on Chinese companies that list abroad was obtained from the Chinese Overseas Listed Company Research Database compiled by GTA Information Technology Company Ltd. GTA is the primary vendor for data on publicly listed Chinese firms, supplying data to various commonly used sources such as WRDS' CSMAR database.[17] The dataset begins in 2002 to include only those firms that listed shares after China's accession to the World Trade Organization (WTO) in late 2001, and ends in 2007 to include only those firms that listed abroad prior to the outbreak of the first round of accounting scandals concerning overseas listed Chinese firms.[18]

This dataset covers a period during which global equity markets grew markedly in terms of breadth, i.e., the number of stocks listed, and depth, i.e., total market volume and valuation (Doidge et al., 2011). This period was also one of great change in China as the state began marked efforts to extract itself from many areas of the economy, and there

[16] Most of these Chinese companies are first listed domestically, and are thus not part of this dataset.
[17] GTA Data combines data from several sources and standardizes the data so that the categories are reasonably consistent across countries. The range of variables reported varies across exchanges and time.
[18] Details of the scandals are discussed in Section 7.

was considerable domestic institutional and regulatory reform that proceeded at different paces nation-wide (Fan et al., 2008; Fan and Wang, 2003). Finally, this dataset is broad: it contains information on every Chinese firm solely listed on all foreign exchanges.

The empirical analysis reported herein is of the 291 firms that obtained their sole listings during this period on non-Chinese exchanges. 314 firms are listed in GTA Data's Overseas Listed Firms Research Database as having obtained foreign listings in 2002-2007. However, 23 of these firms were already listed on the domestic Chinese stock exchanges as reported by GTA Data and/or adr.com (a website published by J.P.Morgan).[19] None of the firms in this dataset have subsequently listed shares on a second stock exchange, either domestically within China or abroad.

Table 1 reveals that there is considerable geographic variation of headquarters and listing locations of firms in the dataset. Firms are assumed to do most of their operations in the headquarter location, which is consistent with the fact that many company names include a geographic reference.

4.3 Local governance institutions variables

China's economic growth is concentrated along the coast, and 55% of the firms in the dataset come from the coastal provinces and municipalities.[20] It is unclear whether firms from these locales would have common preferences for foreign listings or if foreign investors would prefer such firms. As the focal variable in this analysis is local governance, we begin by reporting how the large degree of inter-provincial variation with

[19] Ritter (2011) reports that a total of 126 Chinese firms listed shares on the U.S. exchanges from 1988-2010, and that 112 of these were American Depositary Receipts (ADRs). This data is different from the data provided by GTA Data and the Chinese regulatory authorities as Ritter's data does not include the backdoor listings (i.e., purchase of an already-listed U.S. shell company) which constitute the majority of Chinese listings on the U.S. exchanges. Similarly, Doidge et al. (2011) report that 464 Chinese firms issued global IPOs from 1990 to 2007, which is more consistent with the GTA Data, but this data again excludes the backdoor listings included in the GTA Data dataset and includes cross-listed firms.

[20] 51% of all firms listed domestically in 2007 were from these coastal areas.

regards to market institutions can be understood using data from China's National Economics Research Institute's annual marketization index based on statistical and survey data. This index combines data from the Chinese statistical yearbooks (e.g., population data) with data from surveys administered annually to a random sample of each province's population (e.g., questions about business environment).[21] The marketization index was designed to capture the degree to which a province has adopted business friendly practices, and thus this aggregate index includes measures that capture aspects of the local regulatory environment that may impact the ability of firms to list successfully on foreign exchanges, and to operate in an expected manner thereafter.[22]

[INSERT TABLE 1 HERE]

Two sub-indexes of this index are used to capture concepts that may be particularly relevant to a firm's appeal to foreign investors and the development of sound business practices, consistent with Du et al. (2008) and Jian and Wong (2010). First, the degree of foreign capital is included to capture either the potential exposure of executives to corporate practices of companies from foreign countries, including those where the firm might eventually issue equity, or possible labor market spillovers from the foreign

[21] The two volumes of this index (Fan and Wang, 2003; Fan, Wang and Zhu, 2008) use the same sources and methodology. The latest available data for a given year is used if the year is included in both volumes. All measures of domestic condition characteristics are based on survey evidence collected by NERI. Scores are strictly bounded by 0 and 10 in the base year and can be outside this range in subsequent years. The reports advise that the index data should be compared relative to one another and not versus a fixed number; that is, while the reports provide both the numerical index and a relative ranking for each province-year observation they advise that only the index be used in empirical analysis. The index value is designed to be interpreted as "the relative position in the progress towards market economy compared to other provinces". The index can take values outside the range of 0-10 in subsequent years, whereby a value greater than 10 (less than 0) could indicate improvement (deterioration) relative to the previous year.

[22] The Ni Pengfei city index is similar in concept to the NERI index but it is estimated for cities, not provinces, and is not available for as many years. Moreover, the fact that the NERI data has now been used extensively in economic research on the impact of local market institutions means that the results reported herein can be more easily interpreted. On a similar note, the World Bank's Doing Business index does not measure domestic variation in market institutions. To the best of our knowledge, there are no other panel databases that measure domestic market institutions within China.

firms that are located nearby (Branstetter, 2006). Alternatively, if foreign investors are attracted to those locales that are already perceived to have more effective legal and informal market institutions, then the presence of foreign investors may signal that local firms could be monitored more easily. Second, the number of law and accounting firms indicates the development and efficiency of market intermediaries. The number of such firms may reveal the likelihood of a firm obtaining regular, reliable and quality legal counsel, and making financial disclosures that conform to relevant standards.

On the other hand, foreign investors might argue that the companies they could understand most easily are those that appear most "foreign" as they are headquartered abroad. Nearly one-fourth of the firms in the dataset are headquartered in one foreign country and listed on a foreign exchange, which is not necessarily in the country where they are headquartered. These firms are excluded from all analysis of the impact of domestic market institutions but are included in supplementary tests that ascertain whether their foreign locations confer institutional advantages due to characteristics of the foreign country. Alternatively, informational asymmetries are likely larger for firms that have greater geographical distance spans such as firms that have operations in China and maintain foreign headquarters (Petersen and Rajan, 2002).

For the firms that are listed abroad it is appropriate to also examine additional factors. First, the binary decision of such firms to maintain foreign headquarters may be a signal to investors. It could be a positive signal that the firm has bonded itself to a presumably higher quality regulatory environment or moved headquarters to be in a strategically important location.[23] Alternatively, it could be a murky signal as intra-firm communication channels may be more complicated due to trans-border arrangements.

[23] This would roughly parallel the finding that many U.S. firms are incorporated in Delaware.

Finally, it could be a negative signal if the firm has a foreign headquarters to enable the firm to evade scrutiny of tax authorities or suggest that the firm has chosen to be headquartered in a location where sub-optimal corporate practices may be more tolerated. Accordingly, it may be appropriate to control for characteristics of the legal and operating environment in the countries where the firms are headquartered. Due to the small number of foreign-headquartered firms in the dataset, it is not practical to control for characteristics of the headquarter country's institutions, and we therefore include only a dummy variable to indicate firms that are headquartered abroad.[24]

The foreign headquarters dummy thus serves two purposes. First, it allows identification of whether the absence of Chinese regulatory characteristics has an effect on the firm's disclosures and performance. In a sense, this is then a reverse indicator, or counter-measure, of the impact of Chinese institutions. Second, it also serves to capture the impact of host country institutions, and may allow understanding of whether "local" companies have an informational advantage as they could be easier for investors to understand (Chhaochharia et al., 2012). However, we cannot distinguish between these outcomes and can thus observe only a net effect.

4.4 Pyramidal affiliation

We use each firm's website and, in some cases, Google Finance to check whether each firm belongs to a pyramid and its role within the pyramid. For example, the Sinotrans Shipping website has lines connecting the various related companies that are

[24] Of the 67 firms in the dataset with foreign headquarters, 50 (or 75%) are listed in the country where they maintain headquarters. All 16 of the firms with foreign headquarters that are listed in Hong Kong are also headquartered there, and 30 of the 38 foreign headquartered firms listed in Singapore are headquartered there. It would be interesting to examine if the effect of a foreign headquarters is different if the firm is also listed in that country but the dummy variable that captures this concept is nearly perfectly correlated with the foreign headquarters variable. As a result, this examination cannot be conducted.

listed. These lines indicate the reporting structure among the allied firms. As many lines lead to Sinotrans Shipping and that box, in turn, is connected via lines to two upper layers, Sinotrans Shipping is recorded in the dataset as being a subsidiary. On the other hand, Great Wall Motors' website has no pictorial representations but states in words that the firm owns more than 30 subsidiaries. As a result, this firm is recorded as being the parent of a pyramid. The distinction between a parent company (the top of the pyramid) or a subsidiary company (not at the top of a pyramid) is motivated by the observation that most of the Chinese firms listed on domestic exchanges belong to pyramids, have unlisted parent firms, and engage in considerable related-party transactions to boost earnings and financial disclosures (Jian and Wong, 2010). Pyramidal firms record substantial sales to affiliated firms and yet these sales are not always paid in full, thus causing a growing gap between sales and earnings (Jian and Wong, 2010). Moreover, there is evidence that when Chinese listed firms are financially healthy, their controlling owners tunnel funds to the parent within the pyramid (Peng et al., 2011).

96% of the firms in the dataset belong to corporate pyramids. Most of these listings are of parent firms, with the percentage that are parent firms generally rising for exchanges that are more distant from China. Only five pyramids contained multiple firms that each acquired foreign listings during the period studied here while many firms in the dataset belong to corporate pyramids that had constituent firms list abroad before or after the time period studied here. The observation that some pyramids choose to list constituent firms on different exchanges strongly suggests that even within corporate pyramids there may be sufficient autonomy for managers to pursue policies that optimize individual firms' success (Peng et al., 2011). Alternatively, this policy may be

coordinated at the family level to decrease transparency to outsiders and to enable higher levels of tunneling within the family (Jian and Wong, 2010; Peng et al., 2011).

4.5 Variable construction and interpretation

GTA reports financial data for these firms.[25] All variables were reported in the listing country's currency and converted to U.S. dollars using the exchange rates reported in the Federal Reserve Economic Data (FRED) by the Federal Reserve Bank of St. Louis.

In each regression we include controls for observable firm characteristics. First, firm size is included as each stock exchange targets different types of firms (e.g., the U.K.'s Alternative Investment Market (AIM) attracts smaller firms). Moreover, larger firms may have already explored a larger fraction of value-added investments and may thus offer less potential for future growth (Jensen, 1986). Firm size is measured as the logarithm of one plus the actual value of total assets. We also use sales as one of the measures of post-listing performance, as is discussed later in this sub-section.

Similarly, it is appropriate to control for profit and sales growth as some investors chase past performance, as proxied by profits, while other investors are attracted to the potential for future profits, as captured by sales growth. Firms with higher profits may have less need to conserve resources for future use (Himmelberg et al., 2002). Profit is measured as the logarithm of 1 plus the actual value. As most firms seek listings in order to finance continued growth, and this motivation is believed to be particularly strong among firms that list shares abroad (Doidge et al., 2004), sales growth is included. Sales growth is measured as the year on year change in reported sales.[26]

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[25] However, GTA does not consistently report the same data for all firms. For example, dividends and net income are not available for all firms. As a result, only the variables available for all firms are used herein.

[26] If investors are more concerned with forward looking sales expectations it would be appropriate instead to control for the firm's disclosed pro forma forecasts for sales growth in the years contemporaneous with

Highly leveraged firms may have less leeway to invest freely as they may face greater financing constraints that prevent management from undertaking value-enhancing investments (Jensen, 1986). Excess leverage may indicate that a firm is under, or is likely to be under, bankruptcy protection (Myers, 1977). However, this dataset does not include any firm-years in which a firm was bankrupt. Leverage, the ratio of total liabilities to total assets, is therefore used as a control variable.

It is possible that firms with a higher quality auditor may have prepared more accurate financial statements at the time of their IPO. As firms often retain the same auditor in subsequent years, the type of accounting firm retained initially may signal whether the firm will make accurate disclosures in the future. The big four accounting firms, along with other foreign accounting firms, operate in China through joint ventures with local affiliates in compliance with Chinese regulation of the industry. Foreign accounting firms, including the big four, routinely sub-contract their work to local accounting firms that are not formally affiliated with the name brand international accounting firm. As a result of these loose relationships with local firms, it is not clear that a Chinese firm would receive better or more regular scrutiny from a big four accounting firm. In fact, many of the accounting scandals that occurred among overseas Chinese listed firms included firms that had retained a big four auditor (e.g., Longtop Financial Technologies, listed on NYSE, had retained Deloitte). Inspectors abroad are not allowed by China to review the work in China of the Chinese audit firms that are

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and subsequent to listing. Such data was not available from GTA data and is thus not used in this analysis. As a significant fraction of the firms in this dataset delisted in the years subsequent to their initial listing abroad, an attempt to collect such data would induce a survivor bias as time of listing data on the non-survivors is not available consistently.

actually carrying out the work. Moreover, the investment banks that help take a firm public are not legally liable for the quality or contents of these accounting statements.

The GTA corporate governance dataset reports the identity of the accounting firm that prepared a firm's initial disclosures only for firms that listed in Hong Kong and Singapore. As that excludes a large fraction of our dataset it is not possible to include this variable in analyses. Nonetheless, we report in Tables 2 and 5 the fraction of firms that retained a big four auditor firm at time of IPO. It is apparent that a higher fraction of the firms in Hong Kong and Singapore that survived the 2008-2011 scandals had retained a big four auditor at the time of their IPO. We do not know, however, if these firms retained the same auditor in subsequent years. Whether a firm retained a big four auditor at time of IPO may signal the firm's intentions to make accurate and meaningful disclosures but does not appear to be a clear indicator that the firm actually did so.

We were unable to obtain data on firm-level corporate governance measures, and as a result such measures are necessarily excluded from the analysis. This omission may be problematic if there is significant variation across firms with regards to the types and quality of their governance institutions. On the other hand, if firms are consistently adopting governance measures only in response to regulatory requirements, than this omission would be of concern if and only if firms were believed to adopt policies that exceed regulatory requirements. We argue that firms adopt policies that reflect requirements as stated by the listing exchange, expectations for their own needs as proxied by financial characteristics, and in line with societal expectations, as reflected by local governance institutions. In that light, it is probable that most firms would adopt the minimum corporate governance measures required by the listing exchange. Moreover,

Morck et al. (2005) and Peng et al. (2011) argue that conventional measures of corporate governance do not pertain to pyramidal firms. As 96% of the firms in this dataset belong to pyramids, this would mean that the exclusion of corporate governance variables would not induce an omitted variable bias. In related evidence, Hugill and Siegel (2012) find that a vector of corporate financial characteristics explains a significant fraction of the variation in firm-level corporate governance measures, and that this is particularly true of firms from countries with less developed financial markets.

Investor expectations for firm performance may also be contingent upon a firm's industry. For example, investors may want more frequent disclosures from firms in more volatile industries (e.g., high tech firms). Accordingly, industry fixed effects are included in all empirical estimations.

In our second round of analysis, we examine whether the local governance institutions affect the firm's performance post-listing. Two types of performance measures are examined as the suppliers of capital, investors, must be satisfied that their funds are being used effectively by the demanders of capital, corporations, in a market-clearing equilibrium. First, we use measures that reflect corporate performance as the firm may have earlier access to information that could affect subsequent stock performance due to the presence of informational asymmetries vis-à-vis external financiers (Myers and Majluf, 1984). Sales revenue and EPS are used as they correspond roughly to the top and bottom lines of an income statement, with the general consensus being that it is easier for a firm to manipulate revenue than earnings (Ertimur et al., 2003).[27] Nonetheless, there is substantial evidence, particularly from China, that firms

[27] Moreover, GTA Data does not report commonly used measures of post-listing performance, and most of these variables are not reported at all for firms listed in Hong Kong (e.g., net income).Earnings per share

strategically manipulate their earnings releases to guide external valuations of the firm. For example, Liu and Lu (2007) found that earnings management at Chinese firms reflects corporate governance practices, and Jian and Wong (2010) report that earnings management effects are strongest in provinces with weak legal institutions and less market deregulation. A complementary rationale for examining EPS is that EPS estimates are the most common performance measure forecasted by investment analysts. Second, to gauge investor reactions to the firm's post-listing performance, we examine determinants of a firm's return on equity (ROE), the ratio of net income to shareholders equity. We estimate ROE for all firms listed on the Singapore, U.K. and U.S. exchanges, and for firms listed in Hong Kong we use a variable that is defined by GTA Data as ROE, and is available only for firms listed on the Hong Kong exchange.

The summary statistics reported in Table 2 are consistent with the commonly held belief that there are marked differences in the types of firms that list on each exchange. The t-tests of the means, reported in the last columns of Table 2, show that nearly all of these differences are highly statistically significant. The raw data yields an initial view of the Chinese corporate diaspora that is consistent with a matching hypothesis as the firms that list on the U.S. or U.K. exchanges are more likely to be headquartered in the provinces with the best business practices. Moreover, the companies that list on the Hong Kong exchange reported the highest levels of total liabilities, and the companies that listed on the U.K. and Hong Kong exchanges reported the highest leverage ratios. Pyramidal firms generally have higher leverage ratios due to a greater propensity for

(EPS) are defined as net income (NI) divided by shares outstanding. Since GTA Data does not report net income for Hong Kong-listed firms or the number of shares outstanding for most firms, it is not possible to convert EPS into NI. EPS is thus used as the measure most similar to NI that is available within the dataset.

funds being tunneled to affiliated firms (Friedman et al., 2003) or expropriation by owners with excess control rights (Paligorova and Xu, 2012). This result would suggest the more opaque firms would list shares in the U.K. and Hong Kong.

[INSERT TABLE 2 HERE]

5. Empirical Analysis

In this section we report the relationship between the probability a Chinese firm lists shares in a specific country as explained by various firm and institutional characteristics. As discussed in Section 4.1, all estimated coefficients reported in tables represent the estimated change in probability of a firm listing for the first time in a particular country vs. listing in the presumed baseline of Hong Kong.[28]

5.1. Institutional influences

In this round of analysis, reported in Table 3, four measures of the firm's headquarters' location are included separately in order to ascertain the impact of highly visible firm characteristics on the firm's IPO decision. Firms are more likely to obtain listings in Singapore when they are located in a province with more free market economies as measured by the aggregate marketization index or if there is a higher level of foreign capital invested in the province. This suggests that Singaporean investors place a higher value on possible spillovers from firms in the same location. On the other hand, firms are more likely to list on the U.K. or U.S. exchanges if they are from a province with more developed market intermediaries (i.e., lawyers or accountants), which is consistent with the widely held belief that corporate governance and disclosure

[28] None of the results depend upon the choice of which country (or exchange) serves as a baseline. That is, each estimated coefficient represents the ceteris paribus effect of a one unit change in a characteristic on the estimated change in probability of a firm listing in a particular location.

standards in these two countries are high, particularly relative to those of other exchanges, and that compliance can be costly (Doidge et al., 2009), which can mean that only firms with easy access to these market intermediaries can make a proper application for a U.K. or U.S. listing. These results also suggest that British and American investors and market regulators may attach a higher premium to the quality and timeliness of corporate disclosures and to the presence of intangible assets (Gozzi et al., 2008; Doidge et al., 2011). The dummy variable for foreign headquarters is positive and statistically significant for the U.K. and Singaporean listings. If investors believe that firms that are headquartered in these locations adhere to higher governance standards, then this would confirm that investors attach high value to the quality of local governance institutions.

[INSERT TABLE 3 HERE]

The control variables have consistent interpretations across these empirical specifications. First, smaller firms are most likely to list on the U.K. or Singapore exchanges. This is consistent with the goals and reputations of the various exchanges. The fact that there are no significant differences between the U.S. and Hong Kong could mean that some firms are indifferent between listing in the two markets given the trade-off at the margin of a more familiar market, Hong Kong, for that of a potentially more lucrative market, the U.S. Second, profitable firms are more likely to list on the U.K. exchanges and significantly less likely to list shares on the U.S. exchange. Third, firms are more likely to list in the U.K. and U.S. exchanges if they have higher sales growth, which is consistent with the firm being younger as per the lifecycle hypothesis of a firm. Accordingly, investors in these two markets may be more tolerant of risk than investors in the Hong Kong and Singapore markets. Finally, highly levered firms are more likely

to list on the U.K. exchange and less likely to list on the U.S. exchange. These findings are consistent with Gozzi et al. (2008) and complement stylized facts regarding the relative positioning of the exchanges in the U.K., Singapore, Hong Kong and U.S.

None of the industry fixed effects were statistically significant, and thus these listing patterns do not appear to be driven by industry characteristics.

5.2. Pyramidal affiliation

In this round of analysis we also include a measure of the firm's structure, whether it is the parent of a corporate pyramid, as this may not be visible to some investors. As described earlier in Section 4.3, business groups are commonplace in Asia, particularly in China, but yet may not be immediately obvious to investors. The results of the expanded model are reported in Table 4. The parent dummy was positive and statistically significant in all regressions for U.S. and Singapore listings, and in some of the U.K. listings regressions. This strongly suggests that investors in Singapore and the U.S. are well aware of the possibility that such firms might be afflicted by particularly pernicious agency problems and that resources might be reallocated to support the parent firms (e.g., Peng et al., 2011). This result is consistent with two complementary interpretations. First, investors on the Singapore and U.S. exchanges may attach a premium to firms being the parent of a pyramid and thus being able to benefit from any presumed intra-family tunneling activity. Second, a complementary alternative explanation is that Hong Kong investors are more familiar with pyramids, which are common in China and East Asia, and ceteris paribus would be more tolerant of firms that are not the head of pyramids. The inconsistent findings for the U.K. market suggest that either investors there are not fully aware of what it means for a firm to be part of a

business group or that investors there attach a lower weight to the informativeness of this signal, and thus attach limited value to a pyramidal affiliation.[29]

[INSERT TABLE 4 HERE]

The more visible measures of local governance institutions gain greater importance in this round of analysis. First, we find that the aggregate marketization index is now highly predictive of listings on the U.K. and Singapore exchanges, which suggests that foreign investors are cognizant of the wide variation in domestic Chinese market institutions. Second, the concentration of foreign capital remains strongly associated only with Singapore listings. Third, there is now substantially stronger evidence that firms are significantly more likely to list in Singapore, the U.K. or U.S. if there are more market intermediaries in the firm's home location. Finally, foreign headquarters remain associated with listings in Singapore and the U.K.

These results suggest strongly that a firm's ability to list shares on a particular stock exchange is affected by both the firm's pyramidal affiliations and by the governance institutions in the firm's home environment. This suggests that a firm's decision to list on an exchange is thus not driven solely by a wish to access that particular market but also by how the firm has grown and been shaped in its home market.

Meanwhile, all control variables retained their interpretation from the preceding round of analysis.

5.3. Robustness

The analyses discussed above examined those Chinese firms that sought their only stock listing on a foreign exchange. In addition, there were 23 Chinese firms that

[29] In robustness tests not reported herein, subsidiary and pyramidal affiliation dummies were used separately in lieu of the parent dummy. The results are similar to those reported for the parent dummy.

were already listed on the domestic exchanges that listed their shares on either HKEX or NYSE during this period. Including these 23 firms in the empirical analysis does not qualitatively change any results, consistent with Zhang and King (2010).

The above analyses rested upon the assumption that a firm was choosing between countries for listing shares, not between exchanges. If a firm were instead choosing between exchanges, then the dependent variable in equation [1] would instead be Pr($Exchange_i$). The results reported herein are robust to this alternate specification.

Similarly, if the firm were making a sequential decision whereby the firm first selected a country where it would list shares and then the exchange within that country then equation [1] could be estimated as a nested multinomial logit model instead with the dependent variable redefined as Pr($Exchange_i|Country_i$). Again, all results reported in this paper are robust to use of this alternative specification.

5.4. Endogeneity

The variation in firm characteristics and institutional quality within China may not be random, and thus the assumption that the error term is uncorrelated with key regressors might be incorrect. We therefore test for endogeneity using the Wooldridge (2006) technique from Flannery and Hankins (2013) and Wintoki et al. (2012). If the independent variables are endogenous, then future values of these variables should have predictive power. We add *t+1* values of each variable to our models and test for separate and joint statistical significance. As these variables do not hold statistical significance, endogeneity does not appear to be a concern.

6. Post-listing performance

Firms that raise capital abroad should grow afterwards due to selection effects or better access to capital and other production inputs. To the extent that the foreign exchanges vary in quality (e.g., Cetorelli and Peristiani, 2010), then growth should be higher in the countries with higher quality exchanges. We therefore examine whether the exchange sorting mechanism is effective so that the stronger firms also demonstrate higher performance in subsequent years. Post-listing performance is thus modeled as:

$$Performance_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 L_{it} + \beta_3 ListingCountry_i + \delta_{IND} + \gamma_t + \varepsilon_{it} \quad [2]$$

where the vectors *X* and *L* again contain characteristics of the firm and of the operating environment in the headquarters location of the firm (province if headquartered in China, and country if headquartered abroad) and "listing country" is a vector of dummy variables for the three non-Hong Kong listing countries. Year and industry fixed effects are also included, and the error term is clustered at the province level.

Two types of performance measures are used in the analyses reported herein: measures that reflect corporate evaluations of firm performance, sales revenue and earnings per share (EPS), and measures that reflect investors' expectations, return on equity (ROE) and nominal or raw stock returns. Each measure of domestic institutions in the firm's headquarters location is again used in separate empirical analysis, and equation [2] is estimated separately for each of the first two years after the firm lists abroad.

The number of observations shrinks by 44% from the year of listing, year 0, to year 2, due to a right-hand censoring of the data as the average year of listing was 2005 with a standard deviation of 1.5 years and the GTA data ends in 2007. Just six of the firms that listed shares abroad during this period were not present in 2007 but, as will be discussed in Section 7, nearly one-third of all firms in the dataset were delisted by mid-

2012. Table 5 presents a snapshot of how these firms performed across time, and reaffirms the Darwinian theory of survival of the fittest.

[INSERT TABLE 5 HERE]

Table 6 reports results using corporate performance measures while Table 7 reports analogous results using investor performance measures. First, Panel A of Table 6 explores determinants of a firm's reported level of sales in each of the first two years after listing abroad. Firms that are the parents of corporate pyramids report significantly higher sales in the second year after listing. This suggests that these firms may be successfully tunneling funds from affiliated firms, or reducing the extent to which they prop up their affiliated firms.

The impact of market institutions appears to be largely a U.K. story as firms report slightly lower sales in the first year after listing and then sharply higher sales in the second year when they come from provinces with a more free market economy, higher stocks of foreign capital or more market intermediaries. This suggests that these firms have enjoyed spillovers from co-located firms that have helped the focal firm increase revenue. Firms that list in the U.S. report slightly lower sales in the second year after listing when the home province has stronger market institutions and more foreign capital, suggesting that the firm is reporting results more conservatively due to increased competition and scrutiny. Alternatively, the fact that the institutional measures themselves are consistently statistically insignificant suggests that while home institutions may shape the firm prior to listing share abroad, the firm's subsequent behavior is affected by host market regulations. This complements the single country

findings of Siegel (2005) and Sun et al. (2012) who find evidence for firms bonding themselves to the higher market standards of foreign markets where they list shares.

[INSERT TABLE 6 HERE]

Firms listing shares in the U.K. report significantly lower sales up to two years after listing abroad while firms listed in the U.S. and Singapore sometimes report higher sales in the first years after listing. These results suggest that there are either systematic differences with regards to the types of firms listing in each market or market-based variances in the conventions regarding recording sales. For example, firms listing in the U.S. must follow generally accepted accounting principles (GAAP) while firms listing elsewhere would report their financial statements using other conventions.

The control variables are consistent with expectations: larger firms generate higher sales in all periods while highly levered firms eventually generate higher sales as the liabilities reflect the presence of longer-term assets that eventually generate value.

Next, in Panel B, we explore the analysis of determinants of a firm's earnings per share (EPS). In this round of analysis the impact of a firm being atop a pyramidal structure disappeared entirely while the effect of local governance institutions was felt entirely in the first period after listing and was generally of lower statistical significance. The most striking difference from the results presented in Panel A is that the U.K. firms no longer appear to be very different from the firms listed on other exchanges. Firms that list in the U.S., U.K. and Singapore exchanges report lower EPS for up to one year post-listing when they are from provinces with more market intermediaries, which suggests that having more lawyers and accountants locally leads to financial disclosures being prepared more carefully. That is, a larger quantity of local legal and accounting

professionals may be associated with higher quality work by these individuals. The impact of market intermediaries is reversed for firms in the U.K. in that year, however.

That the institutional measures had the same general lack of significance in affecting earnings releases (Panel A) and income reports (Panel B) is consistent with firms adhering to the regulations and expectations of investors in the host markets after listing. Thus, while home institutions affected firms' behavior pre-listing and where they chose to list, consistent with Liu and Lu (2007) and Jian and Wong (2010), the impact does not persist post-listing. This suggests that the firms listing abroad may be managed differently than their local peers who are not listed abroad. Parent firms do not report higher earnings post-listing, which suggests that their reportedly higher level of sales is not indicative of actual cash inflows (Jian and Wong, 2010; Peng et al., 2011).

The symmetric findings for the impact of home institutions on sales and earnings suggest that after listing shares abroad the firms are either interpreted by local investors as Chinese per se, without regard to domestic locations, or as equivalent to other listed firms irrespective of home country. Either belief would suggest that a firm's identity is fluid and can be shaped by how the firm is regulated and the set of firms that is considered to be its peers.

Complementary evidence regarding the impact of local governance institutions is obtained by analyzing whether the firm meets investor expectations. In Panel A of Table 7 we report analysis of the firm's return on equity (ROE), which is commonly used by investors as a measure of firm performance. Again, we find that local governance institutions appear to have limited ability to explain the firm's post-listing performance. However, once again, it appears that U.K. investors place a greater weight on these

governance institutions as they are associated with strongly higher ROE in the second year after listing.

To examine raw stock returns, the GTA daily stock price file, which contained many holes as coverage was not initiated until 2008 for some of the markets examined herein, was supplemented with data from Compustat Global, and Yahoo Finance. We were able to obtain stock price data for 55-58% of the firms in each year, including 68% of the firms that survived to 2012. The missing data reflect both a survivor bias and the very light, sometimes non-existent, trading volume of the stocks that were listed.[30] Analysis of the raw stock price returns are reported in Panel B of Table 7. We find evidence that firms generate higher returns in their first year of trading when the firms are headquartered in provinces with more free market economies and have more market intermediaries. This effect was strongest in Singapore, which is consistent with local investors having a high familiarity with the Chinese business environment. This effect was reversed in the second year after listing, suggesting that even while firms from these provinces were generating higher ROE, they were failing to meet investor expectations.[31]

A key difference between the firm- and investor- perspectives on post-listing performance is the impact of firm size. Assets are strongly significantly positively associated with the level of firm sales and EPS and only weakly associated with the firm's ROE. This is broadly consistent with a Jensen (1986) view of the firm whereby managerial behavior is not fully consistent with shareholder expectations.

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[30] When the nearest trading date was more than 10 calendar days distant from the date of interest, no return was recorded for a firm.

[31] We are unable to estimate factor-model adjusted returns due to the small sample size by exchange-period and the fact it is unclear what would constitute the appropriate factors. For example, should a Chinese firm listed in Singapore be compared relative to the Singapore market or the universe of overseas listed Chinese firms? Moreover, given that we have price data for only a subset of the firms, a survivor bias would further complicate identification of the appropriate comparison group.

7. Surviving the scandals

The first scandal involving an overseas-listed Chinese firm appears to have occurred at China Printing and Dyeing, a Singapore-listed firm, in 2008. When the firm reported its second fiscal quarter results in August 2008, the company announced both a sharp drop in revenue but indicated that the firm would remain profitable. In October the board announced that the chief executive and deputy chief executive, a husband and wife partnership, had not been in contact in some time despite repeated attempts to contact them. Shortly thereafter the firm announced increased debts, decreased revenue, and, before long, the firm was delisted. As many similar firms began to be engulfed in similar scandals, investors begin to talk of being "stir-fried" by Chinese firms. Within the year, similar scandals began to unfold among Chinese firms listed on other exchanges, and these scandals continued to unfold through at least 2011.

Many scandals followed one of two basic scripts. In the first variant the firm would repeatedly release upbeat statements or put a positive interpretation on negative news and then investors and analysts would find out from their own sleuthing that the firm was hiding even worse news from the public. China Printing and Dyeing's demise fit this first script. In the other variant, the firm would continually release good statements buttressed by seemingly official looking documents (e.g., bank balance statements prepared by local branches of national banks) that were revealed to be false when analysts or foreign accountants sought verification. Longtop Financial, listed on the NYSE in 2007, fit the second script when its longtime accounting firm, Deloitte,

resigned from the account and retracted all of its prior auditing statements.[32] Longtop Financial was delisted shortly thereafter.

In light of the large numbers of these scandals that unfolded in a short time period, we therefore hypothesize that as investors got more cautious everywhere towards Chinese firms, the local institutions might re-emerge in importance as some firms would be better able to meet regulator and investor expectations. The univariate data, presented earlier in Table 5, yielded inconclusive evidence as the institutional variables were similar in the years of listing for the full sample and the sub-sample that remained listed in 2012. However, firms that remained listed in 2012 were more likely to come from locations with greater concentrations of market intermediaries.

As the dataset provided by GTA does not indicate the method by which each Chinese firm acquired its foreign listing, we are unable to test for the impact of how a firm acquired their foreign listing. We thus do not know if firms in the dataset used direct or indirect methods to list shares abroad. On the other hand, it is possible to identify which firms were still actively traded on the foreign stock exchange as of 2012. It is theoretically possible for a firm to remain actively traded and to have been listed via a back-door method. However, the large and rapid swing in market sentiment towards Chinese firms was sufficiently pronounced that firms listed via such methods would likely not still be actively traded in 2012 on the main boards of the various exchanges.

197 of the 291 firms in the dataset are still listed as of 2012, with the attrition varying in frequency by exchange (see Panel B of Table 5). The one-third attrition rate appears to be consistent with what has been widely reported in the popular media despite the fact that this dataset excludes firms that are already listed on Chinese stock exchanges

[32] Both China Printing and Dyeing and Longtop Financial are in the dataset analyzed herein.

and those firms that listed on foreign stock exchanges in 2009-2011 when "China fever" was at full pitch in many markets.[33]

The firms that were still listed in 2012 are consistently larger with higher sales growth, EPS and ROE (Table 5). Most of these differences are highly statistically significant with p-values less than 0.001. Moreover, these differences are obtained both in aggregate and by each exchange.

The probability of a firm still being listed in 2012 is modeled as

$$\Pr(Listed\ in\ 2012) = \beta_0 + \beta_1 X_{it} + \beta_2 L_{it} + \beta_3 ListingCountry_i + \delta_{IND} + \varepsilon_{it}, \quad [3]$$

and the probability of a firm remaining listed on a specific exchange is modeled as

$$\Pr(Listed\ in\ 2012\ on\ Exchange_i) = \beta_0 + \beta_1 X_{it} + \beta_2 L_{it} + \delta_{IND} + \varepsilon_{it}. \quad [4]$$

The vectors *X* and *L* again denote firm and headquarters characteristics. Industry fixed effects are also included, and the error term is clustered at the province-level. Equation [3] is estimated as a probit using all firms simultaneously to obtain aggregate analysis of which firms remained listed in 2012. In addition, equation [4] is estimated as probit with sub-samples of the data to identify inter-exchange variation.

Larger firms were much less likely to remain listed in 2012, and this effect was concentrated among firms that listed in the U.S. (Table 8). Firms that were profitable at the time of listing were slightly more likely to remain listed, and this effect was again limited to firms that listed in the U.S. Meanwhile, highly levered firms were less likely to remain listed in the U.S.

[INSERT TABLE 8 HERE]

[33] For example, the New York Times reported in April 2012 that at least 105 Chinese companies listed in the U.S. have been delisted, are under investigation or have financial problems (Davidoff, 2012).

Parent firms were significantly more likely to remain listed. This result is strongly consistent with the prior findings that corporate pyramids strategically reallocate resources to help the group. The more power was concentrated in the firm, as reflected by its ability to tap resources outside formal firm boundaries, the higher the probability the firm was still listed abroad even after controlling for the length of time the firm was listed and all the other variables used previously. Thus, to the extent that the group benefits from a parent firm retaining a listing on a particular stock exchange, then the parent variable captures the intra-group transfers or tunneling.

The number of years a firm was listed (i.e., 2012 less the year of listing) was included to capture the possibility that there is a greater likelihood of a firm being delisted over time. It appears that there is no aggregate effect of time (Table 8).

Next, we examine the country level determinants of which firms are still listed in 2012 through estimation of Equation 4. It is not possible to include industry fixed effects for the U.K. due to the small number of surviving firms. On the other hand, industry characteristics clearly both partially explain why the firm went public and why the firm listed on a particular exchange. It is therefore not appropriate to omit industry characteristics, and so analysis of why a firm was still listed in 2012 is reported using only data from the other three exchanges. In addition, in this round of analysis it is not appropriate to proxy institutional quality using whether a firm is headquartered abroad due to the low number of such firms among those that survived to 2012. The small numbers of these firms makes it harder to discern meaningful patterns to the impact of foreign headquarters. Thus, in this round of analysis we include only data for firms listed

in three countries – Hong Kong, U.K. and U.S. – and include just the three locational governance measures that pertain to firms headquartered in China.

Three results stand out when examining the 2012 survivors through the country by country analysis. First, the attrition rate is non-constant across countries: the majority of Chinese firms listed in the U.K. are not still listed there in 2012. Second, the majority of firms with U.S. and Hong Kong listings were still listed on these exchanges in mid-2012 whereas the reverse holds for firms with U.K. listings. The raw data suggest that either the U.K. exchange attracted weaker firms or that the U.K. investors were less receptive to the post-listing performance of the firms listed there. As Table 2 showed earlier that the firms that listed on the U.K. exchange were insignificantly different from those firms that listed on the U.S. exchange, and the firms listed in the U.S. had a higher survival rate, we can conclude that the firms followed different post-listing trajectories.

Third, there is considerable variation as to determinants of a firm still being listed in 2012 (Table 9). Each country's investors appear to respond differently to the impact of Chinese institutions upon the firm's performance. Firms were generally much less likely to remain listed on the Singapore and U.K. exchanges, with the impact being greatest in the models that looked at how the focal firms interacted with foreign firms through the presence of foreign funded enterprises (Model 2), and foreign headquarters (Model 4), as shown earlier in Table 8. Firms do not experience a higher likelihood of survival if they are from a province with better market based institutions. Moreover, firms that are listed in Hong Kong are less likely to remain listed if they are from a province with higher levels of foreign investment. This suggests that these firms may not have realized long-term knowledge spillovers from their foreign neighbors.

[INSERT TABLE 9 HERE]

Headquarter market institutions appear to have an inconsistent effect on the probability a firm remains listed abroad in 2012. This suggests that firms have bonded themselves to the standards of the listing exchange and are no longer as heavily influenced by local institutions. On the other hand, firms are much less likely to remain listed in Hong Kong if they are from a province with lots of foreign investment but the reverse is true for firms listed on the U.S. or Singapore exchanges. This result is consistent with two interpretations. First, operating costs are often higher in locations with higher levels of foreign investment, and this may decrease the profitability of local firms, and lead to their de-listing. Alternatively, the local firms may be weaker than the foreign firms located nearby, and this may be more widely known when the local concentration of foreign firms is higher. This is a surprising set of findings as it implies that domestic institutions may have diminished influence on a firm after it lists abroad. This complements and greatly extends the single country evidence from Siegel (2005) regarding Mexican firms cross-listing in the U.S. and the broader results of Shi et al. (2012) regarding firms from many countries that cross-listed in the U.S.

This round of analysis reveals that firms were slightly more likely to remain listed on the Singapore exchanges if they had higher profits at time of listing, and slightly less likely to remain listed on the U.S. exchanges if they had more assets or higher leverage at time of listing. These results suggest that over the long term, investors in these exchanges shifted funds towards those firms that signal greater continued growth prospects, and adopted an appropriate capital structure.

8. Conclusion

As Chinese firms continue to need external capital at a pace that exceeds what can be supplied by the domestic Chinese stock exchanges given current ceilings on domestic listings, a rising number of firms are likely to continue listing shares abroad. Given the recent sustained increase in the numbers of Chinese firms listing their shares on foreign stock exchanges, and the large number of scandals involving these firms, it is important to understand why these firms choose to list their shares in particular countries and how characteristics of these firms are associated with their post-listing performance. This empirical analysis finds that corporate listing patterns are strongly affected by the local governance institutions that exist in the firms' headquarters location while subsequent firm performance is shaped by host market institutions. This suggests that as firms list overseas they begin a process of changing from being a purely Chinese firm to being a Chinese firm with foreign characteristics.

We identify two specific results regarding how local governance institutions and corporate pyramid affiliation affect where Chinese firms list shares. First, characteristics of the prevailing operating and regulatory standards in the headquarters locale, especially legal institutions, shape corporate behavior, and influence listing patterns and post-listing performance. Firms from stronger environments are most likely to list on the U.S. or U.K. exchanges. Among the firms that list on the U.S. exchanges, those firms from provinces with stronger legal and accounting intermediaries are most likely to remain listed abroad in 2012. This institutional impact was not linked to survival in other markets, suggesting that U.S. investors attach a greater premium to legal disclosures. Second, firms are more likely to list on the Hong Kong exchange when there is greater

perceived potential for the firm to present informational asymmetries and subvert shareholder wealth maximization by diverting funds to allied firms within a pyramid.

These results confirm that there can be contemporaneous and long-lasting corporate governance spillovers from the local environment. The growing number of accounting scandals have involved firms reporting financial information that outsiders have been unable to verify. To the extent that this problem may persist or re-emerge, it would be helpful to identify the types of firms that may be less likely to cause such problems. This research paves a way by highlighting the role of domestic market institutions, particularly the presence of lawyers and accountants, in shaping firm's equity raising decisions and ongoing operational practices. Thus it becomes clear that the institutional heritage of a firm cannot be fully shed even while the firm may change other external characteristics via listing overseas.

Finally, we analyzed a large sample of firms that have defied conventional wisdom that they should first gain market credibility by listing shares at home and then acquiring secondary listings abroad. It is unclear whether this represents a strategic response to the tricky and unpredictable process of gaining a domestic listing in China, or a true preference for foreign listings. Either way, the numbers of firms directly acquiring listings abroad has risen markedly in recent years and it is important to understand these firms' motivations and decisions.

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Table 1: Listing locations. This table reports where firms listed on each exchange are headquartered. The last column indicates the fraction of publicly listed firms in a province that are listed abroad given the number of firms from that province listed domestically on the Shanghai or Shenzhen exchanges in 2007.

Headquarters location

	U.K.	U.S.	Hong Kong	Singapore	*Sub-total*	Domestic listings	Foreign/ Total listings
Foreign Headquarters							
Bermuda				1	*1*		
Hong Kong	5	2	15	6	*28*		
Malaysia	1				*1*		
Singapore	1			30	*31*		
Taiwan	1				*1*		
U.K.	4				*4*		
Sub-total	*12*	*2*	*15*	*37*	*66*		
Domestic Headquarters							
Anhui			1		*1*	367	0.27%
Beijing	2	22	13	5	*42*	740	5.37%
Chongqing			1		*1*	203	0.49%
Fujian	1	1	1	7	*10*	391	2.49%
Guangdong	6	10	11	14	*41*	1,333	2.98%
Hainan		1	1		*2*	147	1.34%
Hebei		1	1	1	*3*	256	1.16%
Heilongjiang		2		2	*4*	191	2.05%
Henan		1	4	3	*9*	268	3.25%
Hubei		1	1	1	*2*	428	0.47%
Hunan	1		2		*3*	336	0.88%
Jiangsu	2	4	3	10	*19*	817	2.27%
Jiangxi		1		1	*2*	189	1.05%
Jilin			3		*3*	224	1.32%
Liaoning		1	1	1	*3*	359	0.83%
Shaanxi	2		3	2	*7*	178	3.78%
Shandong	1	1	7	8	*17*	613	2.70%
Shanghai	4	11	9	6	*30*	996	2.92%
Shanxi			1		*1*	186	0.53%
Sichuan	1		1	2	*4*	489	0.81%
Tianjin		1	4	1	*6*	196	2.97%
Xinjiang	1		1		*2*	224	0.88%
Zhejiang	1	1	7	4	*13*	830	1.54%
Sub-total	*22*	*59*	*76*	*68*	*225*	*9,961*	2.21%
Total	*34*	*61*	*91*	*105*	*291*		

Table 2: Descriptive statistics. This table reports the mean, standard deviation, minimum and maximum for all variables in the year of listing.

	All countries		(1) U.K.		(2) U.S.		(3) Hong Kong		(4) Singapore		t-test of the means					
Variable	**N**	**Mean (S.D.)**	**N**	**Mean (S.D.)**	**N**	**Mean (S.D.)**	**N**	**Mean (S.D.)**	**N**	**Mean (S.D.)**	**(1) vs. (2)**	**(1) vs. (3)**	**(1) vs. (4)**	**(2) vs. (3)**	**(2) vs. (4)**	**(3) vs. (4)**
Sales	276	17.685 (2.909)	29	14.510 (6.795)	54	18.037 (1.542)	90	18.707 (2.136)	103	17.502 (1.020)	-0.00***	-0.00***	-0.00***	-0.05**	0.01**	0.00***
Sales growth	246	83.301 (222.040)	21	152.121 (322.235)	52	199.160 (394.401)	78	36.483 (51.313)	95	43.110 (88.988)	-0.63	0.00***	0.00***	0.00***	-0.00***	0.56
Total assets	272	18.528 (1.829)	31	17.784 (2.679)	52	18.951 (1.546)	90	19.332 (1.963)	99	17.808 (0.961)	-0.01***	-0.00***	0.94	-0.23	0.00***	0.00***
Total liabilities	249	17.314 (2.165)	31	16.579 (3.119)	52	17.308 (1.818)	68	18.798 (2.189)	98	16.519 (1.253)	-0.18	-0.00***	0.88	-0.00***	0.00***	0.00***
Leverage	250	0.383 (0.508)	31	0.611 (1.337)	52	0.247 (0.166)	68	0.451 (0.189)	99	0.336 (0.196)	0.06*	0.33	0.05**	-0.00***	-0.00***	0.00***
Profit	276	21.043 (0.072)	29	21.040 (0.066)	54	21.054 (0.127)	90	21.057 (0.063)	103	21.025 (0.016)	0.60	0.22	0.03**	-0.83	0.03**	0.00***
EPS	270	1.105 (2.336)	28	0.279 (0.882)	50	0.451 (1.351)	90	2.945 (3.169)	102	0.030 (0.022)	-0.55	-0.00***	0.00***	-0.00***	0.00***	0.00***
ROE	256	11.603 (55.882)	29	-25.347 (152.546)	52	7.259 (33.925)	77	11.761 (10.984)	98	24.717 (14.160)	0.14	0.04**	-0.00***	0.28	-0.00***	-0.00***
Big 4 auditor at time of listing	291	0.416 (0.494)					91	0.703 (0.459)	105	0.543 (0.501)						0.02**
Parent	289	0.661 (0.474)	34	0.706 (0.462)	61	0.705 (0.460)	90	0.533 (0.502)	104	0.731 (0.446)	0.99	0.08*	-0.78	0.03**	-0.72	-0.00***
Subsidiary	289	0.301 (0.460)	34	0.235 (0.431)	61	0.279 (0.452)	90	0.389 (0.490)	104	0.260 (0.441)	0.65	-0.11	-0.78	-0.16	0.79	0.05*
Pyramid	289	0.962 (0.192)	34	0.941 (0.239)	61	0.984 (0.128)	90	0.922 (0.269)	104	0.990 (0.098)	0.26	0.72	-0.09*	0.10*	-0.70	-0.02**
Marketization index	225	8.739 (1.684)	22	9.262 (1.888)	59	9.217 (1.524)	76	8.077 (1.651)	68	8.894 (1.579)	0.91	0.01***	0.37	0.00***	0.24	-0.00***
Foreign capital	225	4.396 (1.896)	22	4.202 (2.013)	59	4.883 (1.583)	76	4.212 (2.109)	68	4.241 (1.820)	0.11	-0.99	0.93	0.04**	0.04**	-0.93
Market intermediaries	225	6.200 (2.696)	22	7.042 (1.710)	59	7.566 (2.105)	76	5.461 (3.035)	68	5.569 (2.519)	0.30	0.02**	0.01**	0.00***	0.000***	-0.82
Foreign headquarters	291	0.227 (0.419)	34	0.353 (0.485)	61	0.033 (0.180)	91	0.165 (0.373)	105	0.353 (0.480)	0.00***	0.02**	0.99	-0.01***	-0.00***	-0.00***

Table 3: Impact of headquarters' locations. An intercept, industry and year fixed effects were also included in all models. Standard errors are reported in parentheses. Coefficients represent the estimated change in probability of a firm listing in a particular country given the baseline case, which is a listing on the Hong Kong exchange. The dependent variable is a listing on the U.K., U.S., or Singapore stock exchanges. * denotes coefficients that are significant at the 10% level; **, 5% level; and ***, 1% level.

	U.K.	U.S.	Singapore	U.K.	U.S.	Singapore	U.K.	U.S.	Singapore	U.K.	U.S.	Singapore
Total assets	-1.271***	0.266	-0.645***	-1.264***	0.209	-0.662***	-1.272***	0.0668	-0.729***	-0.674***	0.391	-0.609***
	(0.295)	(0.224)	(0.170)	(0.321)	(0.211)	(0.173)	(0.290)	(0.204)	(0.169)	(0.222)	(0.262)	(0.180)
Profit	27.19**	-27.19**	-1.872	22.80**	-26.32**	-2.878	22.48**	-24.04**	-3.232	12.39**	-25.88**	-3.176
	(11.19)	(13.24)	(6.262)	(11.14)	(12.82)	(6.404)	(10.41)	(11.37)	(6.419)	(5.830)	(11.60)	(6.971)
Leverage	3.650**	-2.208**	-0.0441	3.438**	-2.276**	-0.0130	4.530***	-1.312	0.322	2.785**	-2.645**	0.071
	(1.605)	(0.864)	(0.802)	(1.524)	(0.991)	(0.911)	(1.592)	(0.855)	(0.976)	(1.239)	(1.137)	(0.945)
Sales growth	0.009***	0.009***	-0.0005	0.009**	0.009***	-0.0008	0.007***	0.008***	-0.0002	0.008***	0.008***	-0.0003
	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.003)	(0.002)
Marketization index	0.484	0.195	0.253**									
	(0.312)	(0.185)	(0.116)									
Foreign capital				0.178	0.177	0.181*						
				(0.210)	(0.136)	(0.102)						
Market intermediaries							0.430***	0.265**	0.060			
							(0.132)	(0.126)	(0.065)			
Foreign headquarters										2.070***		1.051**
										(0.630)		(0.449)
N	168			168			168			214		
Log-likelihood	-98.28			-98.94			-97.59			-133.1		

Table 4: Impact of being at the top of a pyramid. An intercept, industry and year fixed effects were also included in all models. Standard errors are reported in parentheses. Coefficients represent the estimated change in probability of a firm listing in a particular country given the baseline case, which is a listing on the Hong Kong exchange. The dependent variable is a listing on the U.K., U.S., or Singapore stock exchanges. * denotes coefficients that are significant at the 10% level; **, 5% level; and ***, 1% level.

	U.K.	U.S.	Singapore	U.K.	U.S.	Singapore	U.K.	U.S.	Singapore	U.K.	U.S.	Singapore
Total assets	-1.308***	0.408	-0.592***	-1.257***	0.332	-0.594***	-1.367***	0.148	-0.712***	-0.704***	0.479*	-0.627***
	(0.259)	(0.248)	(0.199)	(0.304)	(0.222)	(0.200)	(0.225)	(0.212)	(0.177)	(0.232)	(0.282)	(0.185)
Profit	29.58***	-31.23**	-3.216	22.04**	-29.19**	-4.370	23.44**	-29.30**	-6.620	14.33**	-27.53**	-2.945
	(11.32)	(15.77)	(9.477)	(10.72)	(14.78)	(9.488)	(10.58)	(14.18)	(10.02)	(6.239)	(12.55)	(8.083)
Leverage	3.620*	-3.048**	-0.658	3.145*	-3.169**	-0.703	4.962**	-2.047*	-0.271	2.910**	-3.043**	0.042
	(1.865)	(1.253)	(1.047)	(1.721)	(1.360)	(1.160)	(2.227)	(1.182)	(1.040)	(1.381)	(1.247)	(0.970)
Sales growth	0.009**	0.009***	-0.001	0.009**	0.010**	-0.0007	0.009**	0.009**	0.001	0.009***	0.009***	0.0006
	(0.004)	(0.004)	(0.005)	(0.005)	(0.004)	(0.005)	(0.004)	(0.004)	(0.005)	(0.003)	(0.003)	(0.002)
Parent	0.731	2.052***	1.796***	0.937	1.990***	1.775***	0.990	2.398***	2.083***	1.217**	1.834***	1.275***
	(0.619)	(0.504)	(0.394)	(0.591)	(0.520)	(0.393)	(0.838)	(0.575)	(0.510)	(0.574)	(0.515)	(0.450)
Marketization index	0.588*	0.158	0.247**									
	(0.353)	(0.177)	(0.114)									
Foreign capital				0.197	0.181	0.189**						
				(0.213)	(0.131)	(0.087)						
Market intermediaries							0.643***	0.372**	0.136*			
							(0.232)	(0.148)	(0.078)			
Foreign headquarters										2.178***		1.205**
										(0.680)		(0.496)
N	167			167			167			213		
Log-likelihood	-89.42			-90.39			-87.37			-125.2		

Table 5: Post-listing descriptive statistics.

Panel A: This table reports the mean, standard deviation, minimum and maximum for all variables for all firms at time of listing, and in years 1 and 2 after listing. The last columns report the year of listing data for the subset of firms that were still listed on the foreign stock exchange in 2012.

	Year of listing data for all firms			Year 1			Year 2			Year of listing data for firms that are still listed in 2012		
Variable	**Obs**	**Mean**	**S.D.**	**Obs.**	**Mean**	**S.D.**	**Obs.**	**Mean**	**S.D.**	**Obs.**	**Mean**	**S.D.**
Sales	276	17.685	2.909	223	17.664	3.321	151	18.059	2.486	190	18.108	2.048
Sales growth	246	83.301	222.040	213	281.492	3186.94	147	29.739	48.664	171	87.762	240.243
Total assets	272	18.528	1.829	226	18.637	1.794	153	18.743	1.842	187	18.752	1.849
Total liabilities	249	17.314	2.165	212	17.511	2.174	141	17.718	2.137	171	17.569	2.139
Leverage	250	0.383	0.508	212	0.396	0.267	141	0.431	0.430	171	0.356	0.201
Profit	276	21.043	0.072	223	21.048	0.123	151	21.059	0.164	190	21.048	0.082
EPS	270	1.105	2.336	218	0.892	2.892	151	1.334	3.825	186	1.435	2.648
ROE	256	11.603	55.882	206	-24.665	346.445	141	10.120	31.283	173	14.660	24.561
Raw returns	169	7.635	57.592	132	20.093	81.283	95	42.392	141.259	134	8.791	61.144
Big 4 auditor at time of listing	291	0.416	0.494	164	0.634	0.483	121	0.653	0.478	139	0.662	0.475
Parent	289	0.661	0.474	237	0.671	0.471	161	0.702	0.459	197	0.665	0.473
Subsidiary	289	0.301	0.460	237	0.287	0.453	161	0.242	0.430	197	0.289	0.455
Pyramid	289	0.962	0.192	237	0.958	0.201	161	0.944	0.230	197	0.954	0.209
Marketization index	225	8.739	1.684	168	8.992	1.695	114	9.319	1.615	158	8.687	1.638
Foreign capital	225	4.396	1.896	168	4.327	1.902	114	4.415	1.856	158	4.381	1.890
Market intermediaries	225	6.200	2.696	168	6.475	2.398	114	6.844	1.961	158	6.303	2.768
Foreign headquarters	291	0.227	0.419	239	0.259	0.439	163	0.288	0.454	197	0.198	0.399

Panel B: This table reports the count of firms that are present in the dataset at time of listing, year 1 after listing, year 2 after listing, and still listed on the foreign exchange in 2012.

	Entire dataset at time of listing	Year 1 after listing	Year 2 after listing	Still listed in 2012	2012 attrition rate
U.K.	34	33	15	8	76.5%
U.S.	61	40	25	48	21.3%
Hong Kong	91	79	60	75	17.6%
Singapore	105	87	63	66	37.1%
Total	291	239	163	197	32.3%

Table 6: Post-listing corporate performance. This table reports the determinants of post-listing corporate performance in years 1-2 after listing measured as sales (Panel A) and earnings per share (EPS) (Panel B). An intercept, industry and year fixed effects were also included in all models. Standard errors are reported in parentheses.

Panel A: Sales performance	**Year 1 after listing**				**Year 2 after listing**			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Institutional measure used in this regression estimation:	*Marketization score*	*Foreign capital*	*Market intermediaries*	*Foreign headquarters*	*Marketization score*	*Foreign capital*	*Market intermediaries*	*Foreign headquarters*
$Assets_{t-1}$	0.951***	0.958***	0.974***	0.943***	1.009***	0.997***	0.984***	0.923***
	(0.059)	(0.053)	(0.046)	(0.056)	(0.103)	(0.111)	(0.103)	(0.060)
$Profit_{t-1}$	0.056	0.012	0.747	-0.040	-0.548	-0.447	0.216	-0.279
	(0.646)	(0.585)	(0.687)	(1.127)	(0.613)	(0.647)	(0.494)	(0.536)
$Leverage_{t-1}$	0.608	0.535	0.564	0.700	0.989**	0.945**	0.942**	0.328
	(0.355)	(0.379)	(0.354)	(0.452)	(0.438)	(0.366)	(0.379)	(0.383)
Sales $growth_{t-1}$	0.0007	0.0006	0.0006	0.0005	0.002	0.002	0.002	0.0000001
	(0.0005)	(0.0005)	(0.0004)	(0.0004)	(0.001)	(0.001)	(0.001)	(0.00001)
Parent	0.087	0.068	0.108	0.151	0.389**	0.359**	0.390**	0.211
	(0.153)	(0.153)	(0.152)	(0.162)	(0.175)	(0.132)	(0.144)	(0.206)
U.S.	0.683	0.142	1.245*	0.371*	2.504**	1.038**	0.557	0.157
	(0.825)	(0.571)	(0.623)	(0.206)	(0.992)	(0.479)	(0.669)	(0.227)
U.K.	2.274*	0.841	0.022	0.136	-44.81***	-14.91***	-7.075***	0.292
	(1.084)	(0.568)	(1.583)	(0.413)	(7.658)	(2.358)	(1.138)	(0.803)
Singapore	0.921	0.389	0.684	0.340*	0.720	0.303	-0.806	0.224
	(0.882)	(0.478)	(0.498)	(0.196)	(0.989)	(0.473)	(1.019)	(0.249)
Institutional measure	0.063	0.011	-0.0054	0.055	-0.0009	-0.012	-0.064	0.259
	(0.067)	(0.067)	(0.035)	(0.345)	(0.120)	(0.092)	(0.055)	(0.442)
Institutional measure * U.S.	-0.042	0.035	-0.120	0	-0.268**	-0.221*	-0.068	0.710
	(0.081)	(0.100)	(0.073)	(0)	(0.111)	(0.124)	(0.081)	(0.532)
Institutional measure * U.K.	-0.219**	-0.139*	0.022	-0.573	3.943***	2.819***	0.865***	-0.900
	(0.095)	(0.077)	(0.183)	(0.643)	(0.688)	(0.443)	(0.148)	(0.964)
Institutional measure * Singapore	-0.059	0.005	-0.041	0.037	-0.032	0.019	0.164	-0.064
	(0.081)	(0.099)	(0.060)	(0.415)	(0.091)	(0.092)	(0.160)	(0.565)
N	120	120	120	164	82	82	82	121
R^2	0.783	0.781	0.783	0.774	0.759	0.757	0.758	0.764

Panel B: Earnings per share (EPS)	**Year 1 after listing**				**Year 2 after listing**			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Institutional measure used in this regression estimation:	*Marketization score*	*Foreign capital*	*Market intermediaries*	*Foreign headquarters*	*Marketization score*	*Foreign capital*	*Market intermediaries*	*Foreign headquarters*
$Profit_{-1}$	29.39***	29.70***	29.91***	34.27	20.42	22.80	29.58	30.85
	(6.485)	(6.868)	(8.100)	(22.46)	(37.50)	(37.42)	(35.71)	(49.78)
$Assets_{t-1}$	1.268	1.342	1.758	0.917	6.125	6.181	6.403	3.725
	(1.612)	(1.578)	(1.409)	(1.365)	(3.705)	(3.611)	(3.852)	(2.848)
Sales growth $_{t-1}$	0.002	0.002	0.002	-0.0004	0.017	0.014	0.018	0.0005
	(0.005)	(0.004)	(0.004)	(0.003)	(0.017)	(0.015)	(0.019)	(0.0005)
Parent	2.378	2.555	0.805	1.806	6.247	5.767	6.785*	6.015
	(2.370)	(2.398)	(3.017)	(2.673)	(4.787)	(4.605)	(3.831)	(4.307)
U.S.	-21.12	-15.24*	-21.96**	-15.93***	1.904	-20.72	-27.00	-23.71**
	(15.07)	(7.828)	(8.414)	(4.150)	(21.29)	(14.24)	(17.00)	(9.615)
U.K.	-28.44	-24.30**	-43.87**	-15.51***	115.3	31.95	-22.37	-16.67*
	(23.42)	(10.99)	(16.06)	(4.395)	(149.3)	(55.21)	(23.36)	(9.738)
Singapore	-24.54	-13.82**	-32.46***	-15.89***	17.46	-0.062	-22.79*	-18.10***
	(14.13)	(6.314)	(7.621)	(3.112)	(20.36)	(10.50)	(10.71)	(6.598)
Institutional measure	-0.702	-0.056	-2.429**	-13.25	1.761	2.372	-3.876	-1.095
	(1.662)	(1.538)	(1.036)	(11.70)	(1.744)	(1.999)	(2.339)	(14.99)
Institutional measure * U.S.	0.367	-0.569	1.014	0	-3.113	-1.489	0.456	2.683
	(1.638)	(1.849)	(1.035)	(0)	(2.201)	(3.080)	(2.854)	(16.42)
Institutional measure * U.K.	1.139	1.346	3.993*	4.399	-11.71	-8.904	1.918	-15.08
	(2.359)	(2.027)	(2.076)	(11.85)	(13.09)	(10.25)	(2.413)	(18.58)
Institutional measure * Singapore	1.010	-0.386	2.877**	13.22	-3.628	-3.938	0.851	3.786
	(1.579)	(1.559)	(1.280)	(11.71)	(2.293)	(2.458)	(1.940)	(15.34)
N	132	132	132	176	102	102	102	142
R^2	0.408	0.408	0.457	0.375	0.310	0.313	0.347	0.303

Table 7: Post-listing stock performance. This table reports the determinants of post-listing investment performance in years 1-2 after listing measured as return on equity. An intercept, industry and year fixed effects were also included in all models. Standard errors are reported in parentheses.

Panel A: Return on equity	**Year 1 after listing**				**Year 2 after listing**			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Institutional measure used in this regression estimation:	*Marketization score*	*Foreign capital*	*Market intermediaries*	*Foreign headquarters*	*Marketization score*	*Foreign capital*	*Market intermediaries*	*Foreign headquarters*
$Assets_{t-1}$	-76.14	-76.31	-67.99	-57.82	4.954**	4.425**	2.773	1.351
	(48.58)	(47.80)	(40.75)	(45.50)	(2.281)	(2.072)	(2.391)	(2.358)
$Profit_{t-1}$	1205.2*	1167.8	1157.7	1114.0	-4.492	-0.238	2.508	30.34
	(662.0)	(669.6)	(709.3)	(970.8)	(11.01)	(8.989)	(10.32)	(27.08)
Sales growth $_{t-1}$	0.056	0.015	0.023	0.039	0.032*	0.031*	0.018	-0.0004
	(0.048)	(0.026)	(0.037)	(0.057)	(0.017)	(0.018)	(0.013)	(0.0004)
Parent	-29.12	-40.00	-45.16	-14.56	0.759	1.758	1.969	14.21
	(33.13)	(29.23)	(38.62)	(21.89)	(3.897)	(3.651)	(4.560)	(11.05)
U.S.	-851.8	-46.59	177.2	92.24	70.04**	25.47	-51.75***	1.077
	(630.9)	(113.1)	(308.4)	(74.21)	(28.35)	(15.27)	(15.39)	(6.688)
U.K.	-151.6	232.7	252.4*	26.15	-693.4***	-255.8***	-140.2***	-18.80
	(387.7)	(173.0)	(129.7)	(56.04)	(182.1)	(68.12)	(22.75)	(16.58)
Singapore	-556.2	60.42	-204.4	94.73	29.46	13.08	-5.151	10.48
	(467.3)	(128.5)	(208.0)	(73.27)	(17.71)	(11.44)	(13.43)	(7.474)
Institutional measure	-63.32	-14.38	-11.87	38.57	3.254*	1.258	-2.144**	-8.848
	(53.49)	(29.61)	(17.13)	(83.27)	(1.765)	(1.643)	(0.971)	(10.99)
Institutional measure * U.S.	105.0	36.63	-3.051	0	-7.803**	-5.903	7.112***	-5.999
	(72.48)	(33.49)	(32.57)	(0)	(3.485)	(4.262)	(2.003)	(14.72)
Institutional measure * U.K.	27.47	-33.91	-20.61	-17.02	58.06***	43.08***	14.37***	40.34
	(41.02)	(33.54)	(14.34)	(101.9)	(15.61)	(12.35)	(2.409)	(24.71)
Institutional measure * Singapore	75.13	13.25	54.55	-116.8	-2.118	-0.409	2.519	-2.872
	(53.86)	(29.18)	(42.87)	(109.4)	(1.702)	(1.949)	(2.108)	(15.97)
N	121	121	121	163	95	95	95	133
R^2	0.350	0.325	0.343	0.300	0.436	0.427	0.475	0.168

Panel B: Raw stock returns	**Year 1 after listing**				**Year 2 after listing**			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Institutional measure used in this regression estimation:	*Marketization score*	*Foreign capital*	*Market intermediaries*	*Foreign headquarters*	*Marketization score*	*Foreign capital*	*Market intermediaries*	*Foreign headquarters*
$Assets_{t-1}$	-7.018	-6.998	-8.553	-2.350	-3.586	-2.146	-1.292	4.451
	(5.645)	(6.450)	(5.743)	(6.654)	(5.023)	(5.625)	(6.727)	(10.24)
$Profit_{t-1}$	174.9***	167.0***	140.5**	168.2*	99.09	80.53	96.56	54.82
	(39.22)	(31.47)	(61.45)	(86.04)	(148.4)	(132.8)	(135.5)	(87.33)
Sales $growth_{t-1}$	0.150	0.163	0.190	0.133	0.0588	0.0794	0.0772	0.0740
	(0.124)	(0.117)	(0.120)	(0.0944)	(0.0573)	(0.0692)	(0.0728)	(0.0754)
Parent	8.796	0.00470	8.011	1.756	-31.00	-26.27	-16.95	-4.603
	(30.53)	(33.32)	(29.82)	(22.63)	(37.34)	(38.87)	(40.73)	(40.68)
U.S.	86.71	8.540	-50.03	-6.308	-65.21	4.091	-33.39	-38.86
	(124.5)	(54.52)	(97.92)	(28.92)	(174.9)	(124.3)	(83.91)	(56.57)
U.K.	0	0	0	0	0	0	0	-162.3
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(162.1)
Singapore	-5608.0***	-481.4***	-369.8***	-22.96	610.6	-203.1	-45.50	-124.9*
	(671.2)	(132.4)	(77.34)	(58.72)	(441.0)	(366.4)	(50.95)	(72.40)
Institutional measure	12.84**	9.492	2.903	-15.51	13.53	6.653	-6.232	49.59
	(5.873)	(6.056)	(4.836)	(42.25)	(11.26)	(13.52)	(8.759)	(126.5)
Institutional measure * U.S.	-8.338	-2.161	5.174	0	3.283	-7.957	0.559	-117.5
	(13.94)	(11.62)	(12.85)	(0)	(12.41)	(17.46)	(9.065)	(151.5)
Institutional measure * Singapore	529.7***	77.24***	37.90***	-95.06	-85.61	22.32	-17.28	40.06
	(64.64)	(25.23)	(9.602)	(98.87)	(64.88)	(67.32)	(18.79)	(143.3)
N	76	76	76	89	71	71	71	81
R^2	0.532	0.492	0.480	0.413	0.243	0.225	0.231	0.218

Table 8. Probability a stock is still listed in 2012. This table reports results for the coefficients of interest from probit estimation of Equation [3]. Industry fixed effects were included in all models; standard errors are reported in parentheses. * denotes coefficients that are significant at the 10% level; **, 5% level; and ***, 1% level.

	(1)	(2)	(3)	(4)
Institutional measure used in this regression estimation:	*Marketization score*	*Foreign capital*	*Market intermediaries*	*Foreign headquarters*
Total assets	-0.131*	-0.148**	-0.188**	-0.027
	(0.073)	(0.071)	(0.083)	(0.088)
Profit	8.185	7.654	10.08*	3.268
	(5.850)	(5.523)	(5.527)	(2.780)
Leverage	-0.666	-0.704	-0.593	-0.247
	(0.488)	(0.528)	(0.549)	(0.367)
Sales growth	0.001*	0.0009	0.001*	0.0005
	(0.0006)	(0.0006)	(0.0006)	(0.0006)
Parent	0.443*	0.460	0.551*	0.493**
	(0.267)	(0.285)	(0.298)	(0.240)
Years listed	-0.042	-0.072	-0.055	-0.043
	(0.105)	(0.098)	(0.096)	(0.084)
U.S.	-2.019	-2.485***	-1.375	-0.355
	(2.196)	(0.958)	(0.884)	(0.416)
U.K.	-1.519	-3.291**	0.502	-1.850***
	(2.206)	(1.298)	(2.534)	(0.508)
Singapore	-2.925	-3.500***	-1.055*	-1.030***
	(2.121)	(1.145)	(0.638)	(0.339)
Institutional measure	-0.072	-0.394**	0.077	6.465***
	(0.224)	(0.158)	(0.118)	(0.737)
Institutional measure * U.S.	0.158	0.385***	0.085	
	(0.244)	(0.130)	(0.133)	
Institutional measure * U.K.	-0.074	0.191	-0.441	-6.973
	(0.217)	(0.172)	(0.399)	(0)
Institutional measure * Singapore	0.181	0.458**	-0.072	-6.277***
	(0.232)	(0.219)	(0.124)	(0.797)
N	163	163	163	213
Pseudo R^2	0.198	0.212	0.213	0.228

Table 9. Probability a stock is still listed in the same market in 2012. This table reports results for the coefficients of interest from probit estimation of Equation [4] by country. No results are reported for the U.K. as the vast majority of our observations are dropped due to collinearity; the resultant estimation has a pseudo-R^2 of 1 for a sample of 11 observations. Industry fixed effects were included in all models; standard errors are reported in parentheses. Coefficients represent the estimated change in probability of a firm being listed on a country's exchanges in 2012 given that they were once listed on that country's exchange. * denotes coefficients that are significant at the 10% level; **, 5% level; and ***, 1% level.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	U.S.	Hong Kong	Singapore	U.S.	Hong Kong	Singapore	U.S.	Hong Kong	Singapore
Total assets	-0.908**	0.069	-0.291	-0.566***	-0.051	-0.296	-0.841**	-0.009	-0.297
	(0.400)	(0.376)	(0.285)	(0.180)	(0.501)	(0.270)	(0.376)	(0.412)	(0.279)
Profit	42.80	17.45	73.89	27.53*	28.69	64.89	39.77	18.28	68.04
	(29.48)	(21.12)	(59.27)	(14.47)	(28.16)	(51.51)	(24.55)	(20.47)	(56.34)
Leverage	-3.863***	-1.210	0.164	-4.055***	-1.392	0.481	-3.490***	-1.162	0.489
	(1.173)	(1.996)	(0.692)	(1.149)	(3.206)	(0.689)	(1.034)	(1.710)	(0.666)
Sales growth	0.012**	-0.003	-0.0004	0.010**	-0.015	-0.0005	0.010*	0.009	-0.0007
	(0.005)	(0.020)	(0.002)	(0.005)	(0.017)	(0.002)	(0.006)	(0.019)	(0.0019)
Parent	2.095***	1.129	0.480	2.344**	1.859***	0.440	2.281***	1.114	0.418
	(0.667)	(0.792)	(0.429)	(0.927)	(0.685)	(0.392)	(0.718)	(0.777)	(0.422)
Years listed	-0.452**	-0.433	0.071	-0.460**	-0.371	-0.003	-0.379*	-0.172	0.041
	(0.205)	(0.379)	(0.263)	(0.219)	(0.288)	(0.229)	(0.225)	(0.275)	(0.218)
Marketization index	0.144	-0.217	0.184						
	(0.164)	(0.404)	(0.171)						
Foreign capital				-0.180	-0.656**	0.013			
				(0.142)	(0.275)	(0.117)			
Market intermediaries							0.202	0.084	0.048
							(0.155)	(0.139)	(0.056)
N	46	26	56	46	26	56	46	26	56
Pseudo R^2	0.383	0.260	0.206	0.393	0.376	0.189	0.405	0.257	0.192