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August 2012

Abstract. Using a sample that provides unprecedented detail on foreign listings for 29 exchanges in 24 countries starting from the early 1980s, we show that although firms list in countries with better investor protection, they are less likely to list in countries with *excessively stronger* investor protection. We provide evidence based on ex ante firm and market characteristics and ex post listing outcomes that our findings are due to lack of investor interest in firms from environments with much weaker investor protection. We also argue that our findings, together with a general trend of improvement in investor protection in many firms' countries of origin, can explain why U.S. and U.K. exchanges have attracted an increasing number of foreign listings during our sample period.

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The existing literature maintains that firms predominantly choose countries with the strongest investor protection, such as the U.S. and the U.K., for their foreign listings, because these countries offer bonding through their superior laws and/or a greater ability to monitor their market participants (Coffee, 1999; Stulz, 1999).

In this paper, using a novel dataset that is unprecedented for both international exchanges and time-series coverage, we show that although firms list in countries with better investor protection than their own, they are less likely to list in countries with *excessively stronger* investor protection. In other words, while firms list abroad to subject themselves to additional monitoring and scrutiny, there is a limit to the degree of monitoring and scrutiny they can achieve.

We argue that, consistent with the literature on bonding (Doidge, Karolyi, and Stulz, 2004; Doidge, 2004), firms would want to commit to the highest governance standards to decrease their cost of capital. However, firms from environments with very weak investor protection fail to attract investor interest in the countries with the highest governance standards.[1] The lack of interest makes a foreign listing in exchanges with much stronger investor protection unfeasible (or undesirable). Improvements in corporate governance in the country of origin could therefore allow firms to decrease the gap in investor protection and to list in countries with the strongest investor protection.

This interpretation of the empirical evidence helps explain the increasing popularity of the U.S. and the U.K. as venues for foreign listings: U.S. and U.K. exchanges, which had approximately 40% of all foreign listings at the beginning of the 1980s (and less than 34% in 1990), now account for approximately 60% of foreign listings. We show that, during the early

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[1] Portfolio investors are known to invest more in firms with strong corporate governance (Giannetti and Simonov, 2006; Leuz, Lins, and Warnock, 2009). Furthermore, Kim and Wei (2011) show that investors are more likely to invest in firms with corporate governance standards similar to firms in their origin countries.

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1990s, for over 75% of our sample firms, corporate governance in the country of origin was so weak that their most likely cross-listing destinations were exchanges in countries with corporate governance weaker than the U.S., the country with the strongest investor protection according to most metrics. The adoption of laws and regulations improved corporate governance around the world (De Nicoló, Laeven, and Ueda, 2008), and by 2006, for less than 50% of the sample firms, investor protection in the US was too strong. Firms from an increasing number of countries thus started to list in the U.S.

In the rest of the paper, we develop a number of tests to scrutinize whether investor demand indeed plays a role in driving the non-monotonic effect due to the differences in investor protection on the probability of a foreign listing. First, if the lower probability of a foreign listing in countries with much stronger investor protection is driven by investor demand and is not the outcome of firms' (unconstrained) decisions, we should observe that even firms in which the insiders' incentives to maximize firm value are strongest, for instance, because ownership is highly concentrated, do not list in countries with much stronger investor protection.[2] Consistently, we find that firms with concentrated ownership are even more inclined to list in exchanges with better investor protection. Nevertheless, as the difference in investor protection between the exchange country and the firms' country of origin grows too large, firms are less likely to list in that exchange, independent of the level of ownership concentration, suggesting that these firms are unable to attract investor interest.

Second, to further test our hypothesis that the non-monotonic effect of differences in investor protection on the probability of a foreign listing depends on investor demand, we exploit temporary changes in investor demand in the exchange country. In particular, we use the aggregate valuations of the exchange as a proxy for investor demand driven by investor sentiment. After having shown that this proxy is likely to at least partially capture investor

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[2] Insiders in firms with concentrated ownership have weaker incentives to extract private benefits of control and thus strongest incentives to commit to the highest standards of corporate governance.

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sentiment in the exchange country, we show that firms from countries with much weaker investor protection are more likely to obtain a listing in a strong investor protection country when investor sentiment in that country is strong. In these situations, investors are known to be less attentive to firms' fundamentals, and this appears to include the quality of corporate governance in the origin countries of the firms.

Third, we validate our interpretation of the findings on the determinants of the propensity to list in different foreign exchanges, exploring some ex post outcomes that capture investor interest for cross-listed firms. Even for firms that have obtained a foreign listing, large differences in investor protection between the country of origin and the exchange country should be associated with relatively less investor interest, if investor demand indeed plays a role. Our first indicator of investor interest in the foreign exchange is the proportion of trading that takes place in the foreign country. We find that while more foreign trading occurs in the foreign exchange if this offers better investor protection than the firm's country of origin, the extent to which foreign trading takes place in the foreign exchange decreases as the difference in investor protection between the exchange country and the firm's country of origin grows too large.

As a second indicator of investor interest, we use changes in ownership concentration. Firms list to perform primary or secondary equity issues, and this should decrease ownership concentration in a way that is proportional to the equity that firms are able to issue, and/or to the stakes that large shareholders are able to sell. We find that ownership remains more concentrated after a foreign listing for firms that list in countries with much stronger investor protection, suggesting that these firms are less able to attract investors for their primary or secondary equity issues. Both the extent of foreign trading and the changes in ownership concentration provide clear evidence that firms are less able to attract investor interest in the foreign exchange if they come from environments with much weaker investor protection.

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Finally, we show that firms are more likely to delist from countries with much higher investor protection. To the extent that the costs of a foreign listing are largely borne when the firm lists, this finding suggests that these firms delist because they obtain few benefits due to lack of investor interest.

Our paper belongs to a growing body of literature exploring firms' foreign-listing decisions. The existing literature provides two main explanations for why firms list in foreign exchanges. First, firms may wish to exploit market segmentations to decrease their cost of capital (see Miller (1999) and Hail and Leuz (2009) for empirical tests). Second, by listing in markets with more rigorous corporate governance standards, firms can commit to limiting corporate insiders' extraction of private benefits of control (Coffee, 1999; Stulz, 1999;).[3] In particular, Reese and Weisbach (2002) and Doidge, Karolyi, Lins, Miller, and Stulz (2009) show that firms with initially stronger corporate governance are more willing to commit to U.S. standards of corporate governance. While the existing literature stresses the supply of cross-listings, by considering many exchanges around the world over a longer time-series, we highlight for the first time the importance of investor demand and the constraints firms face.

Our findings also help to put in broader perspective a number of papers analyzing how the Sarbanes–Oxley Act (SOX) has affected the competitiveness of U.S. exchanges. Zingales (2007) argues that direct and indirect costs of compliance can explain why foreign firms have started spurning U.S. exchanges. Doidge, Karolyi, and Stulz (2009) and Piotroski and Srinivasan (2008), however, find that the U.S. loss of new foreign listings can be explained by a change in the characteristics of firms listing abroad. Our finding that exchanges may have excessively strong investor protection suggests that SOX may indeed have harmed the

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[3] Most empirical studies rely on the experience of non-U.S. firms cross-listing on U.S. exchanges (Karolyi, 2006). Three notable exceptions are Pagano, Randl, Röell, and Zechner (2001), Pagano, Röell, and Zechner (2002), and Sarkissian and Schill (2004), who show that firms that are larger than average and have stronger financing needs are more inclined to list in foreign exchanges and that firms are more likely to choose familiar markets in which they are more easily recognized by investors.

competitiveness of U.S. exchanges, although the effect is probably small given the rising standards of corporate governance around the world.

The rest of the paper is organized as follows. Section I describes the data, while Section II presents the main stylized facts. Section III presents the main findings. Section IV concludes the paper.

I Data

A. Foreign listings

We collect data on foreign listings for the period 1980 to 2006, using a variety of data sources. We obtain a list of the countries hosting the major stock exchanges from the World Federation of Exchanges. For all the exchanges in these countries, we proceed to identify any foreign firms that at some point during our sample period had a listing, even though they delisted at some later date (Appendix 1 contains the full list of exchanges included in our analysis). We proceed as follows.

For foreign listings in U.S. exchanges (AMEX, NASDAQ, and NYSE), we use data from the primary depository institutions: Citibank, Bank of New York, JP Morgan, and Deutsche Bank. Each institution has only part of the information, and no individual database includes all U.S. cross-listings. We complement this information with data collected directly from the stock exchanges on non-U.S. listings (including Canadian and Israeli firms that list directly on U.S. exchanges). We have a total of 1416 foreign listings in U.S. exchanges, which include 849 active listings (as of 2006) and 567 foreign listings that are no longer active.

For all non-U.S. exchanges, we collect active and inactive listings by combining annual fact books of each individual exchange with other exchange-provided information, and news searches for listing/delisting activity using Factiva, LexisNexis, the Internet, Datastream, and SDC. In addition, since firms regularly change listing type or exchange, we

hand-check all cross-listings in our sample to see whether a firm had a previous cross-listing, using company reports.

In the end, our sample includes 5007 foreign listings of firms from 89 origin countries in 24 exchange countries. Countries with smaller exchanges, such as the Czech Republic and Turkey, have no firms with a foreign listing and are excluded as possible destination exchanges, but are included as origin countries if they have at least one domestic firm with a foreign listing. The same firm can enter the database several times because of multiple listings in different exchanges. Taking into account multiple foreign listings of the same firm, we end up with a total of 3643 firms that have a foreign listing or had one in the past. For each of these firms, we know exactly when each listing was initiated or terminated.

Our foreign listings database is a considerable improvement on the ones used in existing studies. In comparison to Pagano, Röell, and Zechner (2002), we are able to rely on a longer time series and a substantially larger cross section of countries, as their sample is limited to foreign listings in the U.S. and major European Union exchanges of firms incorporated in these countries between 1986 and 1997. Our sample also improves on the database collected by Sarkissian and Schill (2004), which includes active cross-listings as of January 1998 and 44 firms' countries of origin.[4] Not only do the larger cross section and longer time series help us to identify changes in the geography and timing of foreign listings, but we can also eliminate the survivorship bias by collecting data on delistings.[5] As a result, our sample of cross-listings is nearly twice as large as that of any previous study.

Table 1 reports the number of foreign listings across different exchange countries. More than half (2597) of the 5007 foreign listings are no longer active at the end of our

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[4] In a recent paper, Sarkissian and Schill (2009) describe the geography of *active* foreign listings as early as 1950. Our analysis of the stock of foreign listings also includes some firms that cross-listed in the 1950s. However, we focus the analysis on a shorter period, for which we are able to also obtain information on delistings to limit the survivorship bias.

[5] We perform robustness checks using the most recent time period to address any doubts that over-representation of more recent listings may affect our results.

sample period (2006). Not surprisingly, the market with the highest number of foreign listings is the U.S., the second-largest market being the U.K. Over the sample period, close to 1000 firms cross-listed in U.K. exchanges (LSE, and more recently, the AIM). Nevertheless, the world of foreign listings is very diverse, with U.S. and U.K. markets accounting for less than 50% of the total number of foreign listings. In square brackets in Table 1, we report the number of foreign listed firms for which we have financial information from the Worldscope database. All these firms –the only ones we exploit in the empirical analysis– have a domestic listing besides the foreign listings we hand-collect.

B. Investor protection and corporate governance

Having a wide range of exchanges across the world is an opportunity to explore how laws and regulations contribute to the changing geographical profile of foreign listings. It is, however, crucial to identify the changes in laws and regulation. We therefore use several time-varying measures of corporate governance in firms' countries of origin and in exchange countries.

First, we construct a time-varying index of corporate governance (CGQ) using market and accounting data as in De Nicoló, Laeven, and Ueda (2008). This index is a simple average of indicators of accounting standards, earning smoothing, and stock price synchronicity, and captures the actual quality of corporate governance for firms in a country. A higher value of the index indicates better corporate governance as captured by higher transparency, lower earning smoothing, and a more informative stock price (lower stock price synchronicity).

Second, we explore whether our results are robust to more commonly used proxies for investor protection, such the anti-director rights index constructed by La Porta, Lopez-de-Silanes, and Shleifer (1998) as updated by Pagano and Volpin (2005) for the period 1993-2001. We also use the shareholder protection index constructed by the Center for Business Research at the University of Cambridge (see Siems, 2008, for a description). This index

covers the period 1995-2005. It captures investor protection as the power of the general meeting and the shareholders' ability to decide on topics of discussion; shareholders' ability to use proxy voting; the directors' duties to take the shareholders' interests into account; shareholders' ability to file legal actions; and shareholders' legal protections in the event of a change of corporate control.

According to all three metrics, the U.S. and U.K. score very high in terms of investor protection in comparison to other countries. Using these three different metrics, we evaluate how different exchange and origin countries are in terms of investor protection and corporate governance, and explore the effect of these differences on foreign listings.[6]

We conjecture that firms tend to list in countries with stronger corporate governance and also test whether these differences may ever be too large. By listing in a country with stronger investor protection, firms can often adopt foreign laws and, most importantly, subject themselves to the scrutiny of analysts, institutional investors, media, and auditors, who are more effective monitors in stronger investor protection countries (Lang, Lins, and Miller, 2004).[7] In this way, the cost of extracting private benefits of control increases, especially if firms wish to maintain a good reputation for future equity issues. Firms can thus commit to the higher corporate governance standards of the exchange country and lower their cost of capital. Such a commitment, however, may be infeasible when differences in investor protection grow too large, because investors spurn firms from countries with too weak investor protection.

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[6] In Table 2, the mean difference between the proxy of investor protection in the exchange countries and the origin countries is negative because in the control sample there are more firms from countries with strong investor protection.

[7] Foreign firms are compelled to adopt laws and regulations of the host country to different extents (Enriques and Tröger, 2007). Some argue that only U.S. exchanges can provide direct bonding to foreign firms that adopt their laws through a foreign listing (Doidge, Karolyi, and Stulz, 2008). Others have questioned the relevance of the mechanism based on direct bonding even in the case of the U.S., where the SEC has the power to enforce minority shareholder rights in court, but legal enforcement has been ineffective (Siegel, 2005). Thus, bonding mechanisms based on the monitoring of market participants, often referred to as reputational bonding, may be more relevant.

C. Other data

In order to appropriately control for firm characteristics, we merge the information on foreign listings with information on firm stock prices and financial data from Datastream and Worldscope. As we explain in detail in Section III, we use Worldscope firms with total assets of at least $10 million without a foreign listing to construct the control sample when we explore firms' foreign listing decisions. We limit the control sample to relatively large firms, as is common in the literature (see for instance, Doidge, Karolyi, and Stulz, 2009) because we want a sample of firms that are comparable, and because only large firms actually have a foreign listing. Our results are, however, invariant if we use all Worldscope firms as a control sample or only firms with total assets of at least $100 million.

Using Worldscope and Datastream, we construct measures of firm growth opportunities such as Tobin's Q (defined as firm market value plus total assets minus equity divided by total assets), proxies for firm size (such as the logarithm of firm total assets), ownership concentration (as measured by the percentage of closely retained shares), and financial leverage. For each year, we construct Industry Q, Origin Q, and Exchange Q in a given industry, country of origin, and exchange, respectively.

Finally, we complement our main dataset by using stock market valuation, stock turnover, and macroeconomic performance indicators from the World Development Indicators (WDI) and Datastream, and the great-circle distance between the capital city of the country of origin and the capital city of the country of the exchange from infoplease.com. All variables' definitions are summarized together with the descriptive statistics in Table 2.

II Stylized Facts

Figure 1 shows the total number and the proportion of foreign listings in all the stock exchanges at the end of each year. The proportion and the number of firms listed in any

foreign exchange vary widely across countries and over time. Even more importantly, the data show an increasing concentration of foreign listings in the top two world exchange countries: the U.S. and U.K. As Panel B of Figure 1 illustrates, until 1990, U.K. and U.S. exchanges jointly had less than 40% of the total number of foreign listings. By the end of 2006, these major international exchanges had increased their market share to approximately 60%.

Figure 2 documents an increasing number of foreign listings over time.[8] To understand the relative importance of cross-listings in the universe of publicly listed firms, Figure 2 also reports (as bars) the foreign listed firms as a percentage of all domestic companies listed in the exchanges of our sample. The relevance of cross-listings peaks in 1997, when they represent close to 12% of all firms listed in the exchanges in our sample. However, since the early 2000s, this number has decreased, and as of 2006, foreign listed firms represent 8.8% of domestic listed firms. Importantly, the figure also shows that the number of foreign firms increased relative to the number of domestic companies in the U.S. and the U.K. (as opposed to the remaining stock exchanges in our sample). In 1988, foreign listed firms represented 5.6% of the firms listed in the U.K. and the U.S., whereas in 2006 they accounted for more than 17%.

In what follows, we show that the above trends can at least be partially explained by investor demand and the improvements in corporate governance that characterized many countries across the world.

III Results

A. Methodology

We explore the determinants of new listings (and, in some instances, delistings) in different exchanges. Since firms can list in different exchanges at the same time, we consider all possible firm–exchange pairs. That is, any firm in Worldscope is considered to be capable

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[8] The sample in Figure 2 starts from 1988 because the total number of listed companies in each country from the World Development Indicators is only available for that year.

of listing in any of the exchange countries in our sample. To take into account that a given firm's decision regarding whether to list in any of the exchanges can be affected by the same unobservable shocks, in all models we cluster errors at the firm level.[9]

In our specifications, besides our variables of interest capturing differences in investor protection, we include a number of firm characteristics and country level controls capturing economic conditions in the country of origin of the firm and in the country of the exchange.

When we analyze the new listings, our dependent variable is a dummy that equals one if a company cross-lists in that exchange in that year. We recognize that we do not observe new listings after the end of our sample period. Thus, we explore the effects of origin country, exchange country, and firm characteristics on the probability of a foreign listing using a Cox proportional hazard model to take into account the effects of this right censoring. Unless otherwise noted, we include country of origin fixed effects to capture systematic shocks to the decision to cross-list that may affect all firms from a country. Similarly, we include exchange country fixed effects to eliminate the effects of time-invariant characteristics in the exchange country. Finally, to control for any time effects (for instance, in Figure 2 we report an upward trend in the number of cross-listings), we stratify data by year to allow the baseline probability of a new listing to differ over time.

Similarly, when we explore delistings, we restrict the sample to firms that are listed in a given foreign exchange at $t-1$ and analyze the determinants of the decision to delist from that foreign exchange during the sample period, using a Cox proportional hazard model.

B. Foreign listings and corporate governance

Panel A of Table 3 shows that firms tend to list in countries with better corporate governance. The hazard ratio estimates in column 1 suggest that if the difference in the CGQ indexes between the exchange country and the country of origin of the firm, *Govdiff*, increases

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[9] The empirical framework we use is similar to the one in Doidge, Karolyi, and Stulz (2009).

by one unit, the probability that the firm chooses to list in that exchange increases by nearly 2%.[10] This is a large effect as new listings are less than 1% in our sample, and the standard deviation of *Govdiff* is over 13.

This result suggests that, also when non-U.S. exchanges are considered, differences in corporate governance are important to explain the cross-sectional patterns of foreign listings, in a way that appears to be consistent with the bonding theory. Ceteris paribus, firms appear more inclined to list in the exchange with the highest investor protection possible. However, this makes hard to understand why many countries with weaker governance standards than the U.S. remain active venues for international listings. We thus investigate whether corporate governance in an exchange can ever be too strong with respect to the governance standards in the firm's country of origin by including a quadratic term for the differences in corporate governance.

Columns 2 and 3 show that even though firms are inclined to list in countries with better corporate governance, differences in corporate governance may be *too large*, as indicated by the hazard ratio of the quadratic term, which is significantly less than 1. Furthermore, the interaction term with the indicator variable, which is equal to 1 when the exchange has stronger corporate governance than the firm's country of origin, indicates that companies become less likely to list in foreign countries with *excessively stronger* corporate governance. This non-monotonicity of the difference in investor protection is not driven by the particular metric we use. In columns 4 and 5, when we use different metrics to capture differences in investor protection, we continue to find that the hazard ratio of a listing increases with a positive difference in investor protection between the country of the exchange

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[10] The hazard ratio of variable x with coefficient estimate $\hat{\beta}$ is $e^{\hat{\beta}}$. The economic relevance of the coefficients can be computed as the effect of a one-unit change of the independent variable on the percentage change of the hazard ratio of the probability of a foreign listing, which is $(e^{\hat{\beta}} - 1) * 100$. As a result, in any table using this model, a hazard ratio of less than 1 corresponds to a negative coefficient estimate.

and the country of origin of the firm, but decreases with the quadratic term of this difference.[11]

The effects are not only statistically significant, but also sizable from an economic point of view. The effect of *Govdiff* on the hazard ratio can be written as: $e^{govdiff\beta_1 + govdiff^2\beta_2}$. This implies that the odds of a new listing are maximized when the difference between the corporate governance of the exchange and the corporate governance in the country of origin of the firm is $-\frac{\beta_1}{2\beta_2}$, which is close to 12 (given the parameter estimates in column 2).

This finding has noteworthy implications for the distribution of new listings. In 1997, for over 75% of the firms in our sample, corporate governance in the country of origin was so weak that the preferred venue for these firms was an exchange with corporate governance weaker than the U.S. Thus, the U.S. was seen as having excessively strong investor protection by most companies around the world. By 2006, thanks to the improvement of corporate governance around the world, less than 50% of the sample firms would consider corporate governance in the U.S. to be excessively strong.[12]

The following example vividly illustrates this point. The gap in corporate governance between South Korea and the U.S. was nearly 30 in 1992; thus, in the early 1990s, South Korean companies were more likely to list in Japan, with which the difference in corporate governance standards (CGQ) was about 11, and therefore closer to our estimate of the optimal corporate governance gap. By 2006, Korea had not only closed the gap with Japan, but overtaken it in terms of governance (the gap was about -13). With a corporate governance gap of 14, the U.S. was by far a better destination in terms of governance for Korean firms. Using

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[11] When we use the measure of investor protection constructed by Siems (2008), which has somewhat less time-series variation, we do not include country of exchange and country of origin fixed effects.

[12] The implications are qualitatively and quantitatively similar when we use the other metrics to measure corporate governance.

hazard ratios, ceteris paribus, the probability of a Korean firm listing in Japan had decreased by nearly 60 percentage points, while the probability of a U.S. listing had increased by nearly 40 percentage points.

The generalized improvement in corporate governance in countries starting from weaker positions during our sample period can explain why stronger investor protection countries, such as the U.S. and the U.K., gained foreign listings. Other exchanges, such as Zurich and Paris, in countries with weaker corporate governance than the U.S. and the U.K., lost ground and almost disappeared as international venues for cross-listings. Put differently, at the end of our sample, Paris and Zurich became average exchanges in terms of corporate governance and investor protection. Since they no longer offered stronger investor protection for firms from most countries, they lost their relative advantage, and thus, their ability to attract new listings.

In summary, so far we have shown that the effect of differences in investor protection on the probability of a new listing is non-monotonic. In principle, this non-monotonicity may depend both on supply and demand effects. Firms may find it too costly to commit to significantly larger improvements in corporate governance, for instance, because this implies a drastic improvement in transparency. Alternatively, since investors tend to invest in foreign firms with similar corporate governance standards to the ones prevailing in their home country (Kim, Sung, and Wei, 2011), there may be low demand for firms from weak corporate governance environments in exchanges with much better investor protection. Being unable to fully reap the benefit of a listing, these companies would thus choose exchanges with relatively lower governance standards, but where they are able to attract more investor interest.

In what follows, we develop hypotheses to test whether investor demand indeed puts a constraint on the improvements in corporate governance that firms can achieve through a foreign listing.

C. Do listings in exchanges with excessively higher investor protection imply a fixed cost?

Firms may not be willing to list in exchanges with excessively higher investor protection because the costs of improving corporate governance and transparency are so large that they would rather forgo the benefits of investor protection. In this case, investor demand would not play a role.

Presumably, the costs of changing investor protection and transparency are sunk. Thus, we should observe that firms that obtained a listing remain listed in that exchange regardless of how much more stringent investor protection is in the foreign exchange. On the other hand, if firms discover ex post that they cannot attract or maintain investor interest in exchanges with much better investor protection, they may be more inclined to abandon these exchanges. In other words, the investor demand hypothesis would imply a non-monotonicity also for the effect of investor protection on the probability of a delisting.

Consistently with the investor demand hypothesis, in Panel B of Table 3, it appears that the same forces that help exchanges to gain new listings explain delistings. In particular, firms are less likely to delist from exchanges that offer stronger investor protection than their country of origin; however, with the exception of column 2, where we use the indicator of shareholder rights constructed by Pagano and Volpin (2005), the hazard ratio of the quadratic term significantly larger than 1 indicates that firms are more inclined to delist if corporate governance in the exchange country is too strong. In column 1, firms are more likely to delist if the difference in corporate governance standards is above 9, an order of magnitude that is comparable to the one we find for new listings.

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Overall, we find that firms are inclined to stay listed in better investor protection countries, but delist if investor protection becomes too strong. Importantly, this result implies that the higher cost of listing in exchanges with much better investor protection are unlikely to drive the non-monotonicity, because these costs are largely borne by the firm before the listing and are sunk afterward. Rather, the failure to attract investor interest is more likely to explain firms' propensity to delist from countries with excessively strong investor protection. We explore these ex-post effects in subsection III.F.

D. Differences in the propensity to list in strong investor protection countries

Firms in which the insiders' interests are more closely aligned with those of minority shareholders should have stronger incentives to maximize shareholder value and, ultimately, to obtain a listing in the exchanges with the strongest investor protection, in order to decrease their cost of capital. In firms with low free floats, blockholders have incentives to closely monitor the management; moreover, managers' and shareholders' incentives are more closely aligned because managers own large equity stakes in their firms. Thus, we expect that firms with more concentrated ownership should be more inclined to commit to strong corporate governance and transparency and to list in exchanges with much stronger investor protection in order to decrease their cost of capital.[13] Furthermore, if investor demand does not matter, we would expect that the negative effect of excessively higher investor protection in the foreign exchange is less pronounced or even absent for firms with concentrated ownership.

The estimates in column 6 of Panel A of Table 3 indicate that firms with concentrated ownership are more inclined to list in exchanges with better investor protection, confirming that our proxy captures the insiders' incentives to maximize the firm's value. Most importantly, consistent with the hypothesis that investor demand limits firms' ability to list in

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[13] Here we are implicitly assuming that the ownership concentration and the bonding provided by a foreign listing are complementary. The more pronounced tendency of firms with high ownership concentration to list in countries with strong investor protection supports this notion.

exchanges with much better investor protection than their country of origin, we find that the negative effect of the quadratic term is not reduced by higher ownership concentration.

E. Investor sentiment and listings in exchanges with higher investor protection

If investor demand indeed hampers listings from countries with much poorer investor protection, we would expect that the constraint imposed by differences in investor protection is weaker when investor demand in the foreign exchange is stronger and investors pay less attention to firms' fundamentals. In particular, investors are known to have high demand for equity, irrespective of firms' fundamentals, during periods of strong investor sentiment. Our hypothesis that investor demand constrains firms' ability to obtain a foreign listing in countries with much stronger investor protection implies that large differences in investor protection should matter less during periods of strong investor sentiment (i.e., high demand).

To test this implication of our hypothesis, we follow the three steps. First, we identify periods of strong investor sentiment. Second, we show that, during periods of strong investor sentiment, low quality firms obtain a listing, suggesting that investors in the exchange country pay less attention to firms' fundamentals. Finally, we test whether firms from countries with much lower investor protection are more likely to obtain a listing during periods of strong investor sentiment.

First, to identify periods of strong investor sentiment, we follow a strategy suggested by Lamont and Stein (2006), who assume that aggregate stock prices reflect the demand for equity to a larger extent than the same-sized movement in firm-level stock prices, which are more likely to capture growth opportunities. As a consequence, they interpret a larger response of firm (domestic) equity issuance activity to (domestic) aggregate price movements than to firm-specific price movements as evidence of market timing in response to strong investor sentiment.

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This strategy can be adapted and fine-tuned in the context of foreign listings. Not only can we control for fundamentals-driven changes in prices using the Tobin's Q of the firm, but we can also control for global growth opportunities in the firm's industry, using the Tobin's Q of the industry, and for the growth opportunities of the firm's origin country, using the Tobin's Q of the origin country. We then interpret a positive effect of the exchange Q on the probability that a foreign firm lists in that exchange as evidence that foreign listings respond to investor sentiment.[14]

Table 4 shows that firms do list in countries with the highest valuations. The effects of stock valuations on the probability of a new listing are large: in column 1, a one-unit increase in the exchange's Q increases the hazard ratio of a listing by over 170%. The corresponding increase for any of the variables capturing firm growth opportunities is lower: a one-unit increase in firm valuation increases the probability of a foreign listing by only 5%. Analogous increments in the industry's and the origin country's valuations lead to an increase in the foreign listings probability of 97% and 45%, respectively. Thus, the variable capturing higher stock prices in the exchange has greater impact on the probability of a new foreign listing in that exchange than the variables potentially related to growth opportunities. This provides strong evidence that firms' listing decisions respond to investor demand.

Second, to provide some evidence that during period of strong investor sentiment investors pay less attention to firms' fundamentals, we follow the logic of market timing tests (e.g., Ritter, 1991) and conjecture that if investors are less attentive to fundamentals, companies are more likely to experience negative returns ex post if they have chosen to list in exchanges with high valuations. We define a dummy variable that equals one if the firm's stock returns over the following three years are negative. In column 2 of Table 4, we allow

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[14] Note that in this context it is also harder to argue that the exchange market valuation, as opposed to the origin country, industry, or the firm's valuations, should predict the clustering of foreign listings leading to pseudo market timing, as pointed out by Schultz (2003) in the context of (domestic) IPOs and SEOs.

this variable to interact with exchange Q.[15] Firms that will experience negative returns in the following three years have a 68 percentage point higher hazard ratios following a one-unit increase in the exchange Q than other firms.

Overall, these results indicate that the exchange Q captures periods in which investors are less attentive to firms' fundamentals. We can thus proceed to test the implication of our hypothesis that during periods of strong investor sentiment, firms from countries with much weaker corporate governance should be more likely to obtain a listing. In column 3 of Table 4, we show that higher valuations in the exchange country reduce the impact of differences in investor protection on the probability of a listing. Firms are less likely to list in countries with stronger investor protection when valuations are high, perhaps because during these periods less attentive investors monitor to a lower extent, thus reducing the benefits of bonding. More importantly, firms from countries with much lower investor protection become more likely to obtain a listing when investors have high demand for equity and are presumably less choosy, thanks to strong investor sentiment. This confirms the importance of investor demand in explaining why firms do not list in countries with much stronger investor protection.

F. Ex post effects

So far we have provided evidence that the non-monotonicity of the effect of the differences in investor protection on the probability of a new listing depends on investor demand from an ex ante point of view. If investor demand indeed matters, we should find also ex post differences in investor interest for the firms that actually cross-list, depending on differences in investor protection. We explore whether this is indeed the case, considering two alternative indicators of investor interest.

First, we consider the turnover of the firm's stocks occurring in the foreign exchange relative to the firm's stock turnover in the country of origin. The trading occurring in the

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[15] Note that here too we are not calculating a cross-derivative, but the marginal effect of the exchange Q conditionally on the dummy variable being equal to 1.

foreign country is a clear indicator of investor interest after the listing. Clearly, we observe foreign trading only for firms that choose to have a foreign listing. For this reason, we use a Heckman selection model and estimate jointly the probability that the firm has a foreign listing and the effect of corporate governance differences on the extent of foreign trading.[16]

The results in column 1 of Table 5 mirror our earlier findings. More trading occurs in the foreign exchange if it has better investor protection than the firm's country of origin, but the effect is non-monotonic. That is, the extent of trading in the foreign exchange decreases as the differences in investor protection grow larger than 12, a level that is remarkably similar to our earlier estimates. This finding fully supports our conjecture that the foreign listings of firms in countries with much stronger corporate governance are hindered by lack of investor interest. The finding is also consistent with Fernandes and Ferreira (2008), who show that a U.S. listing improves price informativeness for firms from advanced countries, but not for firms from emerging markets, which presumably come from a much weaker corporate governance environment and fail to attract trading.

Second, another indicator of the success of a foreign listing is whether firms can sell equity in the primary or secondary market. These sales should lead to less concentrated ownership after the listing. In column 2 of Table 5, we control for firm heterogeneity by including firm fixed effects and indeed find that firms' ownership becomes less concentrated after a foreign listing, especially if the firm lists in a country with stronger investor protection, but here too the effect is non-monotonic, suggesting that firms find it more difficult to attract investor interest when the difference in investor protection with the exchange country grows too large. Overall, these results consistently indicate that lack of investor interest in countries

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[16] To achieve identification, besides the functional form, we exploit the fact that GDP Growth and GDP Growth–Exchange are unlikely to have a direct impact on the amount of trading in the foreign exchange, after controlling for turnover in the exchange country and in the firm's country of origin. Ultimately, it is comforting that in column 2 when we perform a similar test using ownership concentration and are able to address selection problems using firm fixed effects, we obtain results that are fully consistent, indicating that selection problems are unlikely to bias our estimates.

with much stronger investor protection limits the extent to which firms can improve their corporate governance by cross-listing.

G. Robustness

So far, we have shown that the effect of differences in investor protection on the probability of a foreign listing is non-monotonic. In this section, we show that our main finding is robust to the inclusion of different sets of controls and different subsamples.

First, a concern is that our findings may be driven by the fact that firms' foreign listing decisions are influenced by the prior decisions of other firms; also, firms may choose markets that are specialized in evaluating their industry or firms from their own country.[17] The large number of controls we include should mitigate concerns about omitted factors. Nevertheless, we include the following additional control variables: the number of new listings from the firm's origin country in a given exchange, the number of new listings from the firm's industry in that exchange, and the total number of new listings in that exchange during the previous year.[18] We further control for the fact that an exchange may be specialized in evaluating firms in a given industry by including the total number of foreign firms in that industry listed in the exchange during the previous year. In column 1 of Table 6, we do find that firms are more likely to list in a given exchange in years that follow a large number of new listings in that exchange of firms from the same origin country. However, all our previous results remain unchanged.

In columns 2 and 3, we explore to what extent our results may be driven by the U.S. First, we exclude U.S. firms, which constitute a large fraction of the sample and have low inclinations to seek foreign listings. Second, we exclude listing (and potential listings) in U.S. exchanges. This test allows us to explore more directly the relevance of reputational

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[17] Chemmanur and Fulghieri (2006) show theoretically that the presence of investors specialized in evaluating certain types of companies affects the geography of cross-listings.

[18] These variables also allow us to control for the fact that firms may list in a market to make acquisitions.

mechanisms, as opposed to legal enforcement, in guaranteeing better investor protection after the foreign listing for the following reason. U.S. exchanges are considered the most likely to provide legal enforcement for foreign listed firms (Doidge, Karolyi, and Stulz, 2009; Enriques and Tröger, 2007). The fact that our results are invariant when we exclude U.S. exchanges suggests that reputational mechanisms of bonding can better explain why firms list in countries with better investor protection than their country of origin. We obtain similar results also if we exclude U.K. exchanges (estimates unreported for brevity).

In column 4, we consider as cross-listed also the 1781 firms in our sample that are (or were) listed over the counter in the U.S. (144A and Level 1 ADRs). Since firms listed over the counter do not have to comply with the SEC or present financial statements using U.S. GAAP, this supports our previous finding that the scrutiny and monitoring to which firms are subject in high investor protection countries is the major determinant of their listing decisions.

Finally, in column 5, we exclude the exchanges that in a given year have fewer than 30 listings. Our estimates are again qualitatively unchanged. This confirms that even excluding the smallest exchanges or the two largest exchange countries, as we did before, investor protection has a non-monotonic effect.

IV Conclusions

This paper documents that while firms are more likely to list in countries with stronger investor protection, the gap in corporate governance standards may eventually be too large and discourage listings in countries with excessively higher standards. We show that the non-monotonic effect of differences in investor protection on the probability of a listing depends on investor demand. In particular, we argue that investors spurn firms from countries with much weaker investor protection.

Not only is our finding novel to the literature and sheds light on the mechanisms that prevent firms from exploiting the bonding of foreign laws, but it can also help explain the

time-varying fortunes of stock exchanges. In particular, we argue that improvements in corporate governance around the world have strengthened the competitive advantage of U.S. and U.K. exchanges, where regulations and market forces guarantee particularly strong protection of investor rights. Conversely, exchanges in countries with intermediate levels of investor protection have become less likely venues for foreign listings.

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Table 1
The distribution of foreign listings

The first column presents the total number of foreign listings by country. The next two columns show the number of active and inactive foreign listings (as of 2006 end) in each country. In square brackets, we report the number of foreign listings in each category that we are able to match with Worldscope.

	(1)		(2)		(3)	
			Status of Foreign Listings in 2006			
Country of Exchange	Total Sample		Inactive		Active	
Australia	131	[91]	76	[49]	55	[42]
Austria	56	[47]	45	[37]	11	[10]
Belgium	166	[144]	111	[92]	55	[52]
Canada	253	[159]	201	[128]	52	[31]
Denmark	13	[11]	8	[7]	5	[4]
France	312	[274]	244	[211]	68	[63]
Germany	225	[200]	134	[125]	91	[75]
Greece	1	[0]	0	[0]	1	[0]
Hong Kong	173	[143]	36	[29]	137	[114]
Ireland	35	[34]	29	[28]	6	[6]
Italy	32	[32]	6	[6]	26	[26]
Japan	151	[130]	126	[106]	25	[24]
Luxembourg	237	[202]	114	[96]	123	[106]
Malaysia	2	[1]	0	[0]	2	[1]
Netherlands	215	[193]	179	[161]	36	[32]
New Zealand	87	[78]	65	[59]	22	[19]
Norway	45	[24]	23	[12]	22	[12]
Singapore	65	[50]	33	[29]	32	[21]
South Africa	39	[30]	12	[6]	27	[24]
Spain	45	[45]	8	[8]	37	[37]
Sweden	42	[37]	22	[21]	20	[16]
Switzerland	277	[265]	158	[147]	119	[118]
United Kingdom	989	[635]	400	[278]	589	[357]
United States	1416	[1204]	567	[506]	849	[698]
Total	5007	[4029]	2597	[2141]	2410	[1888]

Table 2
Descriptive statistics

This table presents the source and the descriptive statistics of the main variables used in the empirical analysis. Newly Listed Dummy is a dummy that equals one if the firm has obtained a foreign listing at time *t* in exchange *e* and equals zero otherwise. Observations relative to firms that have been cross-listed in a given exchange for more than one year have been excluded. Delisted Dummy is a dummy that equals one if the firm delists at time *t* from exchange *e* and equals zero otherwise. Only observations relative to firms with a foreign listing in a given exchange are included. The sample period of the foreign listings database is from 1980 to 2006. Govdiff is defined as the difference between the CGQ index in the exchange and the origin country. The CGQ index is a yearly average of indicators of accounting standards, earning smoothing, and stock price synchronicity estimated as in De Nicoló et al. (2008), and captures the actual quality of corporate governance for firms in a country. ISP is the index of shareholder protection from Pagano and Volpin 2005. ISP2 is the index of shareholder protection from Siems (2008). In all case we present the differences between the proxy for shareholder protection in the exchange and the origin country and the square of the difference. Distance is the physical distance in kilometers between the stock exchange and the capital city of the country where the firm is domiciled. Origin Q is the median Tobin's Q in the country of origin. GDP Growth is the per capita GDP growth in the country in USD. Market Capitalization is the stock market capitalization of the country divided by the GDP. Turnover is the value traded in the country stock market divided by GDP. The corresponding variables for the country of the exchange are defined similarly. Leverage is the ratio of total debt to total assets. Log Assets is the log of total assets in USD. No. of Listings is the total number of listings from that firm in all the foreign exchanges in that year. Industry Q is the median Q of all world firms in the industry in that year. Q is Tobin's Q, defined as firm market value plus total assets minus equity divided by total assets. Concentrated Ownership is the firm's percentage of closely held shares. Firm Home Turnover is the firm's share turnover in the home market. Foreign Turnover is the ratio of the firm's stock turnover in the foreign market with Firm Home Turnover. d(Negative future returns) is a dummy variable that equals one if the firm experiences negative returns in U.S. dollars over the following three years, and equals zero otherwise.

Variable	Source	Mean	St. Dev.	25%	50%	75%	Obs.
Dependent Variables							
Newly Listed Dummy	Hand-collected	0.006	0.078	0	0	0	585,397
Delisted Dummy	Hand-collected	0.03	0.18	0	0	0	36,095
Independent Variables							
Govdiff	Worldscope	-5.457	13.015	-14.428	-6.403	2.558	622,591
$(\text{Govdiff})^2$	Worldscope	199.177	252.048	23.631	96.816	283.519	622,591
ISP Exchange-ISP Origin	Pagano-Volpin (2005)	-0.814	1.549	-2.000	-1.000	0.000	280,656
$(\text{ISP Exchange-ISP Origin})^2$	Pagano-Volpin (2005)	3.060	3.592	1.000	1.000	4.000	280,656
ISP2 Exchange-ISP2 Origin	Siems (2008)	-0.620	1.960	-1.750	-0.625	0.500	277,616
$(\text{ISP2 Exchange-ISP2 Origin})^2$	Siems (2008)	4.224	6.354	0.250	1.777	5.063	277,616
Distance	infoplease.com	6996.122	4791.906	1971.2	6221.288	9723.008	622,591
Country of Exchange							
Exchange Q	Worldscope	1.187	0.168	1.065	1.157	1.277	621,188
GDP Growth	WDI	2.939	2.339	1.632	2.735	3.981	622,591
Market Capitalization	WDI and Datastream	95.271	81.169	38.768	78.147	128.787	615,140
Turnover	WDI and Datastream	67.779	47.598	33.189	57.443	93.656	549,496

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Variable	Source	Mean	St. Dev.	25%	50%	75%	Obs.
Country of Origin							
Exchange Q	Worldscope	1.259	0.188	1.118	1.226	1.358	622,513
GDP Growth	WDI	2.919	1.984	1.858	2.977	4.081	620,080
Market Capitalization	WDI and Datastream	93.758	60.233	49.331	91.699	132.517	619,762
Turnover	WDI and Datastream	86.695	52.446	51.400	72.391	122.810	582,227
Firm Level							
Leverage	Worldscope	24.318	20.127	8.000	21.000	36.000	622,356
Log Assets	Worldscope	15.159	2.681	13.532	15.951	16.982	622,501
No. of Listings	Hand-collected	0.740	1.225	0.000	0.000	1.000	622,591
Industry Q	Worldscope	1.336	0.419	1.044	1.183	1.462	622,031
Q	Worldscope	1.635	1.324	1.020	1.177	1.659	557,174
Concentrated Ownership	Worldscope	32.940	53.955	4.450	26.250	54.150	426,227
Firm Home Turnover	Worldscope	1494.189	22219.070	24.718	185.107	778.150	35,524
Foreign Turnover	Worldscope	26.6	41.4	0.1	1.5	36.5	16,909
d(Negative future returns)	Worldscope	0.227	0.419	0.000	0.000	0.000	622,591

Table 3
Foreign Listings and Investor Protection

Panel A. New Listings

The dependent variables are dummies that equal one if the firm has obtained a foreign listing in a given exchange at time *t*, and equal zero otherwise (Newly Listed Dummy). Observations relative to firms that have been cross-listed in a given exchange for more than one year have been excluded. I(Govdiff>0) is an indicator variable that takes value 1 if the difference between Govdiff is positive and takes value zero otherwise. All the other variables are defined in Table 2. We present hazard ratio estimates from a Cox proportional hazard model (i.e., $e^{\hat{\beta}}$ not $\hat{\beta}$). The t-statistics test the null hypothesis that the hazard ratio is equal to one. Robust standard errors corrected for heteroskedasticity and clustered at the firm level are presented in parentheses. ***, **, * denote that a coefficient is significant at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Govdiff	1.018***	1.024***	1.040***			1.013**
	(0.00387)	(0.00435)	(0.00665)			(0.00496)
(Govdiff)^2		0.999***	1.000			0.999***
		(0.000141)	(0.000312)			(0.000231)
I(Govdiff>0) *(Govdiff)^2			0.998***			1.0003***
			(0.000464)			(9.69e-05)
Govdiff* Concentrated Ownership						1.000
						(5.21e-06)
(Govdiff)^2* Concentrated Ownership						1.013**
						(0.00496)
SPI Exchange- SPI origin				1.141*		
				(0.0834)		
(SPI Exchange- SPI origin)^2				0.943***		
				(0.0112)		
SPI2 Exchange- SPI2 origin					1.335***	
					(0.0290)	
(SPI2 Exchange- SPI2 origin)^2					0.971***	
					(0.00722)	
Market Capitalization	1.000	1.000	1.000	1.001	0.993***	0.997***
	(0.00108)	(0.00110)	(0.00110)	(0.00150)	(0.000953)	(0.000604)
Market Capitalization–Exchange	1.000	1.000	1.000	1.002	1.008***	0.999
	(0.000613)	(0.000624)	(0.000627)	(0.00193)	(0.000462)	(0.000741)
Turnover	0.997***	0.997***	0.997***	0.997**	0.990***	0.998**
	(0.000752)	(0.000755)	(0.000755)	(0.00117)	(0.00109)	(0.000748)
Turnover–Exchange	1.005***	1.005***	1.005***	1.003***	1.015***	1.005***
	(0.000679)	(0.000691)	(0.000692)	(0.000900)	(0.000772)	(0.000865)
GDP Growth	1.008	1.008	1.007	1.040**	1.026	1.104***
	(0.0125)	(0.0126)	(0.0126)	(0.0160)	(0.0205)	(0.0132)
GDP Growth–Exchange	1.105***	1.112***	1.110***	1.004	1.217***	1.142***
	(0.0192)	(0.0195)	(0.0195)	(0.0311)	(0.0249)	(0.0227)
Distance	1.000***	1.000***	1.000***	1.000***	1.000***	1.000***
	(8.80e-06)	(8.90e-06)	(8.96e-06)	(1.07e-05)	(1.11e-05)	(8.47e-06)
Log Assets	0.922***	0.922***	0.922***	0.900***	0.865***	0.900***
	(0.0107)	(0.0107)	(0.0107)	(0.0140)	(0.0124)	(0.0114)
Leverage	0.994***	0.994***	0.994***	0.995***	0.992***	0.994***
	(0.00112)	(0.00112)	(0.00112)	(0.00151)	(0.00169)	(0.00137)
Q	1.093***	1.093***	1.094***	1.072***	1.047***	1.077***
	(0.0118)	(0.0119)	(0.0119)	(0.0154)	(0.0175)	(0.0160)
Year Stratification	Yes	Yes	Yes	Yes	Yes	Yes
Country of Origin and Country of Exchange FE	Yes	Yes	Yes	Yes	No	Yes
Observations	443315	443315	443315	231013	151336	343926

Panel A. New Listings

Panel B. Delistings.

The dependent variable is a dummy that equals one if the firm delists at time *t* from exchange *e*, and equals zero otherwise (Delisted Dummy). Only observations relative to firms with a foreign listing in a given exchange are included. All variables are defined in Table 2. We present hazard ratio estimates from a Cox proportional hazard model (i.e., $e^{\hat{\beta}}$ not $\hat{\beta}$). The t-statistics test the null hypothesis that the hazard ratio is equal to one. Robust standard errors corrected for heteroskedasticity and clustered at the firm level are presented in parentheses. ***, **, * denote that a coefficient is significant at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)
Govdiff	0.991**		
	(0.00436)		
$(\text{Govdiff})^2$	1.001***		
	(0.000179)		
SPI Exchange- SPI origin		0.838***	
		(0.0441)	
(SPI Exchange- SPI origin)^2		0.989	
		(0.0172)	
SPI2 Exchange- SPI2 origin			0.902***
			(0.0176)
(SPI2 Exchange- SPI2 origin)^2			1.017***
			(0.00545)
Market Capitalization	1.001	1.001	1.004***
	(0.000519)	(0.000891)	(0.000922)
Market Capitalization–Exchange	0.993***	0.992***	0.994***
	(0.00135)	(0.00179)	(0.000764)
Turnover	0.998*	0.998*	1.002
	(0.000867)	(0.00100)	(0.00100)
Turnover–Exchange	0.999	1.002**	0.995***
	(0.000902)	(0.00102)	(0.00102)
GDP Growth	0.932***	0.964	0.961*
	(0.0143)	(0.0227)	(0.0209)
GDP Growth–Exchange	1.056*	1.064*	0.894***
	(0.0300)	(0.0398)	(0.0312)
Distance	1.000	1.000	1.000
	(8.98e-06)	(1.43e-05)	(1.18e-05)
Log Assets	0.992	0.973	0.994
	(0.0136)	(0.0191)	(0.0175)
Leverage	1.008***	1.008***	1.009***
	(0.00192)	(0.00262)	(0.00241)
Q	0.903***	0.913***	0.909**
	(0.0265)	(0.0316)	(0.0349)
Observations	30568	15941	13455

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Table 4
New Listings, Investor Protection, and Investor Sentiment

The dependent variables are dummies that equal one if the firm has obtained a foreign listing in a given exchange at time *t*, and equal zero otherwise (Newly Listed Dummy). Observations relative to firms that have been cross-listed in a given exchange for more than one year have been excluded. All variables are defined in Table 2. We present hazard ratio estimates from a Cox proportional hazard model (i.e., $e^{\hat{\beta}}$ not $\hat{\beta}$). The t-statistics test the null hypothesis that the hazard ratio is equal to one. Robust standard errors corrected for heteroskedasticity and clustered at the firm level are presented in parentheses. ***, **, * denote that a coefficient is significant at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)
Govdiff	1.024***	1.024***	1.069***
	(0.00448)	(0.00448)	(0.0180)
$(Govdiff)^2$	0.999***	0.999***	0.998***
	(0.000138)	(0.000139)	(0.000722)
Exchange Q	2.709***	2.294***	2.465***
	(0.604)	(0.554)	(0.590)
Exchange Q*d(Mispricing-prone)			
Exchange Q*d(Negative future returns)		1.682*	
		(0.483)	
(Govdiff)*Exchange Q			0.969**
			(0.0130)
$(Govdiff)^2$*Exchange Q			1.001*
			(0.000570)
Origin Q	1.979***	1.856***	0.996***
	(0.320)	(0.299)	(0.000576)
Industry Q	1.454***	1.447***	0.999
	(0.0673)	(0.0668)	(0.000680)
Market Capitalization	0.999	0.999	0.997***
	(0.00116)	(0.00117)	(0.000657)
Market Capitalization–Exchange	1.000	1.000	1.005***
	(0.000652)	(0.000654)	(0.000695)
Turnover	0.998***	0.998***	1.105***
	(0.000781)	(0.000766)	(0.0120)
Turnover–Exchange	1.006***	1.006***	1.095***
	(0.000693)	(0.000693)	(0.0202)
GDP Growth	0.995	0.996	1.000***
	(0.0120)	(0.0121)	(7.22e-06)
GDP Growth–Exchange	1.084***	1.082***	0.920***
	(0.0197)	(0.0197)	(0.00975)
Distance	1.000***	1.000***	0.995***
	(8.90e-06)	(8.91e-06)	(0.00112)
Log Assets	0.934***	0.937***	1.033***
	(0.0113)	(0.0115)	(0.0126)
Leverage	0.995***	0.995***	0.996***
	(0.00114)	(0.00114)	(0.000576)
Q	1.051***	1.048***	0.999
	(0.0122)	(0.0121)	(0.000680)
Year Stratification	Yes	Yes	Yes
Country of Origin and Country of Exchange FE	Yes	Yes	Yes
Observations	443315	443315	443315

Table 5
Ex Post Effects

In column 1, the dependent variable is the ratio of stock turnover in a given foreign exchange in year t divided by the firm turnover in the home market (Firm Home Turnover) during year t. Only firms with a foreign listing are considered, and estimates are obtained by maximum likelihood using an Heckman selection model, in which the selection equation is specified as column 1 of Table 4 and yields qualitatively similar estimates. In column 2, the dependent variable is the firm's ownership concentration and parameters estimates are obtained by ordinary least squares. All variables are defined in Table 2. All equations include a constant term, but estimates are omitted. Robust standard errors corrected for heteroskedasticity and clustered at the firm level are presented in parentheses. ***, **, * denote that a coefficient is significant at the 1%, 5%, and 10% levels, respectively.

|	(1) Foreign Turnover	(2) Ownership Concentration
Govdiff	0.190***	
	(0.0224)	
$(\text{Govdiff})^2$	-0.00793***	
	(0.000966)	
(Govdiff)*Exchange Q		
$(\text{Govdiff})^2$*Exchange Q		
Dummy listed* (Govdiff)		-0.0163***
		(0.00364)
Dummy listed *$(\text{Govdiff})^2$		0.000219*
		(0.000131)
Firm Home Turnover	-0.0160***	
	(0.000233)	
Turnover-Exchange	0.0284***	
	(0.00644)	
Dummy listed		-2.154***
		(0.0903)
Log Assets		-2.352***
		(0.0382)
Leverage		0.0443***
		(0.00251)
Firm Fixed Effects	No	Yes
Observations	16545	403016
R-squared		0.805

Table 6
Robustness

The dependent variables are dummies that equal one if the firm has obtained a foreign listing in a given exchange at time t, and equal zero otherwise (Newly Listed Dummy). Observations relative to firms that have been cross-listed in a given exchange for more than one year have been excluded. No. of New Listings $t - 1$ is the total number of new listings in the exchange country during the previous year; No. of New Listings–Origin $t - 1$ is the number of new listings from the firm's country of origin to that exchange during the previous year; No. of New Listings–Industry $t - 1$ is the number of new listings in the same industry of the firm in that exchange during the previous year; and No. of Listings in the Same Industry is the stock of foreign listed firms in the same industry of the firm during the previous year. All remaining variables are defined in Table 2. We present hazard ratio estimates from a Cox proportional hazard model (i.e., $e^{\hat{\beta}}$ not $\hat{\beta}$). The t-statistics test the null hypothesis that the hazard ratio is equal to one. Robust standard errors corrected for heteroskedasticity and clustered at the firm level are presented in parentheses. ***, **, * denote that a coefficient is significant at the 1%, 5%, and 10% levels, respectively.

	(1) Firm Herding	(2) Excluding US Firms	(3) Excluding US Exchanges	(4) Including US OTC Listings	(5) Exchange-Years with more than 30 listings
Govdiff	1.024***	1.032***	1.016***	1.023***	1.015***
	(0.00485)	(0.00534)	(0.00496)	(0.00436)	(0.00494)
(Govdiff)^2	0.999***	0.999***	1.000***	0.999***	0.999***
	(0.000143)	(0.000167)	(0.000179)	(0.000127)	(0.000154)
Exchange Q	3.359***	2.464***	3.071***	3.403***	3.774***
	(0.847)	(0.602)	(0.897)	(0.713)	(0.973)
No. of New Listings $t - 1$	1.002				
	(0.00116)				
No. of New Listings–Origin $t - 1$	1.029***				
	(0.00583)				
No. of Listings in the Same Industry	0.970				
	(0.0425)				
No. of New Listings–Industry $t - 1$	1.062				
	(0.0480)				
Origin Q	1.433**	2.858***	2.403***	1.896***	2.547***
	(0.263)	(0.483)	(0.441)	(0.287)	(0.454)
Industry Q	1.373***	1.435***	1.235***	1.393***	1.506***
	(0.0722)	(0.0703)	(0.0810)	(0.0666)	(0.0725)
Market Capitalization	0.999	0.998**	0.995***	0.998	0.998
	(0.00104)	(0.000860)	(0.00115)	(0.000995)	(0.00121)
Market Capitalization–Exchange	0.999	1.001	0.999*	0.999	0.999*
	(0.000844)	(0.000695)	(0.000636)	(0.000667)	(0.000749)
Turnover	0.998***	0.999	0.996***	0.998***	0.998***
	(0.000806)	(0.000808)	(0.000839)	(0.000714)	(0.000808)
Turnover–Exchange	1.004***	1.006***	1.005***	1.004***	1.005***
	(0.000755)	(0.000738)	(0.000916)	(0.000650)	(0.000764)
GDP Growth	1.019	1.006	1.004	1.006	0.993
	(0.0121)	(0.0114)	(0.0153)	(0.0111)	(0.0119)
GDP Growth–Exchange	1.067***	1.050**	1.058***	1.087***	1.074***
	(0.0192)	(0.0202)	(0.0188)	(0.0200)	(0.0203)
Distance	1.000***	1.000***	1.000***	1.000***	1.000***
	(9.42e-06)	(9.39e-06)	(1.10e-05)	(8.13e-06)	(9.32e-06)
Log Assets	0.918***	0.957***	0.905***	0.955***	0.937***
	(0.0122)	(0.0127)	(0.0141)	(0.0114)	(0.0119)
Leverage	0.997**	0.994***	0.994***	0.997***	0.995***
	(0.00124)	(0.00122)	(0.00143)	(0.00109)	(0.00119)

	(1) Firm Herding	(2) Excluding US Firms	(3) Excluding US Exchanges	(4) Including US OTC Listings	(5) Exchange-Years with more than 30 listings
Q	1.050***	1.049***	1.019	1.053***	1.052***
	(0.0134)	(0.0129)	(0.0178)	(0.0125)	(0.0127)
Year Stratification	Yes	Yes	Yes	Yes	Yes
Country of Origin and Country of Exchange FE	Yes	Yes	Yes	Yes	Yes
Observations	369112	270804	423584	439085	288016

Figure 1

Panel A

Number of Foreign Listings

Panel B

Share of Foreign Listings

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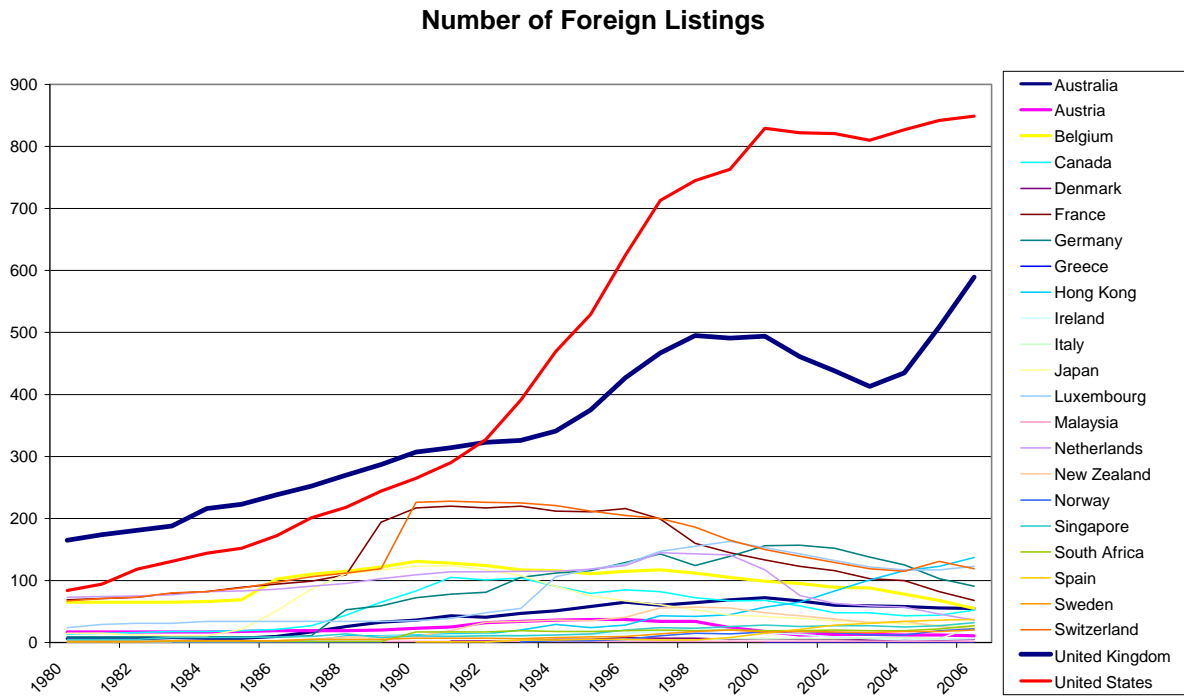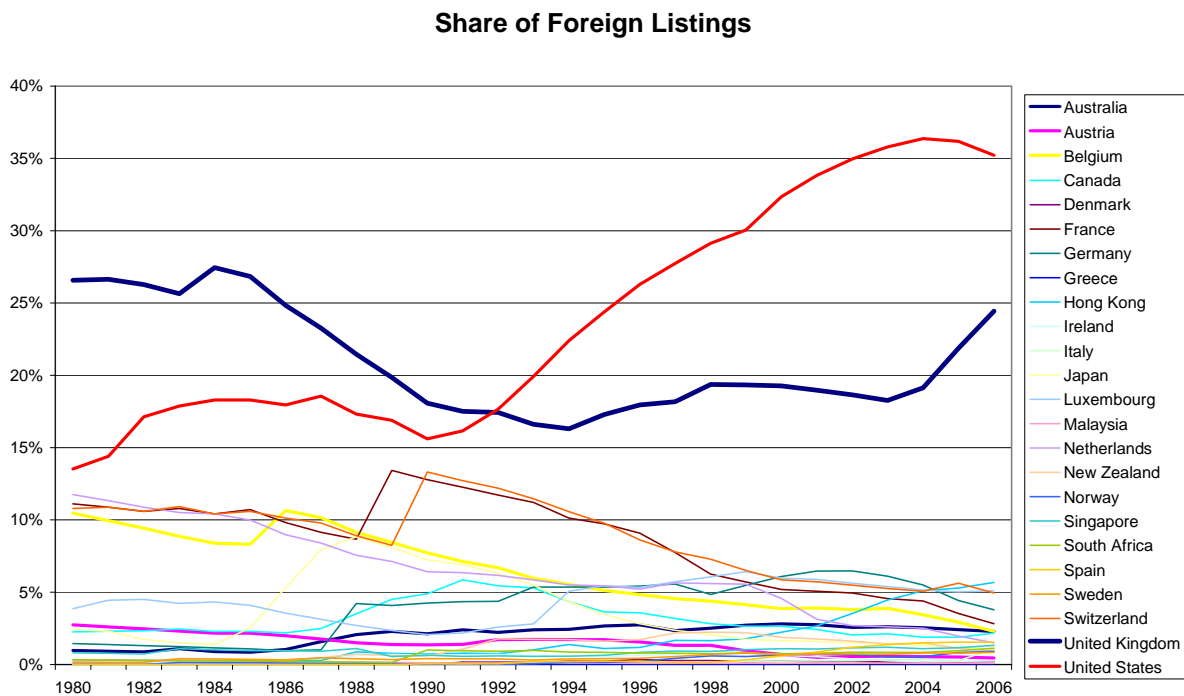
Figure 2 – The Role of Foreign Listings over Time

This figure reports the number of foreign listed firms in absolute terms, and also as a percentage of all domestic companies listed in the exchanges of our sample. The total number of listed companies in each country, which we use to compute the percentage of foreign listed firms, is from the World Development Indicators and starts in 1988. The bars report the foreign listed firms as a percentage (left axis) of all domestic companies listed in the exchanges of our sample (and separately for the U.S. and the U.K.). The line represents the total number of active cross-listings in all the exchanges at the end of each year.
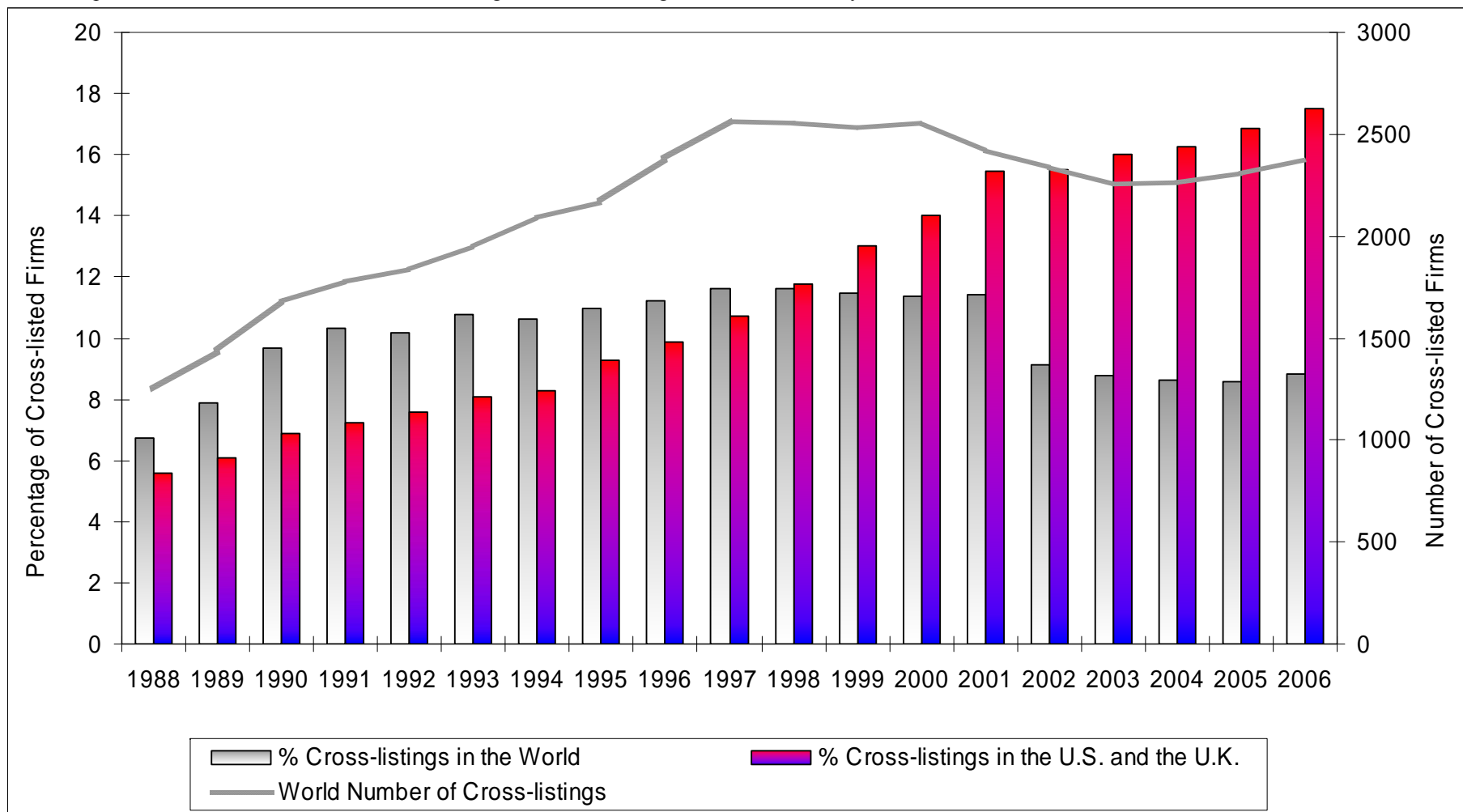
Appendix 1
Stock Exchanges

This table lists the stock exchanges that are venue of foreign listings and that we consider in the empirical analysis.

Exchange Name	Country	Region
Johannesburg Stock Exchange	South Africa	Africa
Australian Stock Exchanges	Australia	Asia
Stock Exchange of Hong Kong	Hong Kong	Asia
Tokyo Stock Exchange	Japan	Asia
Korea Stock Exchange	Korea	Asia
Kuala Lumpur Stock Exchange	Malaysia	Asia
New Zealand Stock Exchange	New Zealand	Asia
Stock Exchange of Singapore (SES)	Singapore	Asia
Vienna Stock Exchange	Austria	Europe
Copenhagen Stock Exchange	Denmark	Europe
Paris Stock Exchange	France	Europe
Frankfurt Stock Exchange	Germany	Europe
Athens Stock Exchange	Greece	Europe
Irish Stock Exchange	Ireland	Europe
Borsa Italiana	Italy	Europe
Bourse de Luxembourg	Luxembourg	Europe
Oslo Stock Exchange	Norway	Europe
Madrid Stock Exchange	Spain	Europe
Stockholm Stock Exchange	Sweden	Europe
Swiss Exchange	Switzerland	Europe
Amsterdam Stock Exchange	The Netherlands	Europe
Alternative Investment Market	United Kingdom	Europe
London Stock Exchange	United Kingdom	Europe
Montreal Stock Exchange	Canada	America
Toronto Stock Exchange	Canada	America
TSX Venture Exchange	Canada	America
AMEX	United States	America
New York Stock Exchange (NYSE)	United States	America
NASDAQ	United States	America

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