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Cross-Listing Waves

Sergei Sarkissian and Michael J. Schill*

Abstract

Using a 57-year global foreign listing sample, we identify cross-listing waves at the host market, home market, and industry levels. Waves in host markets are often due to cross-listing waves in proximate home markets. Consistent with gravity-model implications and economic-synergy arguments of cross-listing decisions, cross-listing waves in a given host country coincide with the outperformance of the host and proximate home countries' economies and financial markets. The valuation gains from listings associated with cross-listing waves are transitory, supporting the market-timing component in these decisions. Our results provide novel evidence of nonmonotonic market development across countries and over time.

I. Introduction

A firm commonly maintains influence on the secondary market for equity claims by choosing a trading venue for its company shares. Firms usually list on a domestic stock exchange but occasionally opt for a foreign exchange as either substitute or supplement; the practice of listing on a nondomestic exchange is referred to variously as *foreign listing*, *overseas listing*, or *cross-listing*,[1] and the decision to do so has emerged as a subject of many studies in recent years. This paper traces links between the time-series characteristics of aggregate foreign listing

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[1]We use the three terms interchangeably even though a foreign listing traded exclusively in that market is not, technically speaking, a cross-listing.

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decisions and a home or host country's financial and economic development. Using a comprehensive, hand-collected global sample of 3,589 exclusively foreign-exchange-traded listings on 33 host markets from 73 home markets from 1950 to 2006, we show that listings cluster in time. Over our 57-year sample period, many foreign listing waves occurred at the host-market, home-market, and industry levels.

Cross-listing waves may coexist with a variety of market characteristics. The literature highlights three reasons a firm may choose to list overseas: i) to generate economic synergies, ii) to improve the pricing efficiency of its securities, and iii) to bond management to investor-friendly behavior. To achieve the first objective, firms cross-list in markets with closer economic ties to the home country (Sarkissian and Schill (2004)). To achieve the second objective, firms cross-list in larger and more developed markets with better information flows and liquidity (e.g., Tinic and West (1974), Domowitz, Glen, and Madhavan (1998), and Foerster and Karolyi (1999)). To achieve the third objective, firms cross-list in markets with superior investor-protection and accounting-disclosure standards (e.g., Biddle and Saudagaran (1992), Coffee (2002), Huddart, Hughes, and Brunnermeier (1999), Reese and Weisbach (2002), Doidge (2004), and Doidge, Karolyi, and Stulz (2004)). In this study, we seek to demonstrate the relative importance of these factors in generating cross-listing waves.

A large literature body links the development of a country's financial sector with that of its overall economy,[2] and Rajan and Zingales (2003) document that financial and economic development across countries is not monotonic. Cross-listing activity relates to at least two markets: one domestic and one or more foreign.[3] The time and space dynamics of foreign listings therefore should reflect not only the level of absolute financial development in the home market but, more important, also the *relative attractiveness* of a foreign exchange to the domestic or other foreign markets. A firm revealing such a preference should benefit more than it would have at home or on a different exchange. Thus, we should be able to relate various aspects of market competitiveness around the world over time to the three motivations for cross-listing.[4]

With a global, long-term view of foreign listing activity, we observe that relative surges and contractions in cross-listing are not new but that home and host markets and industry profiles for overseas listings have changed considerably. In the 1950s, the hosting of foreign equity by stock exchanges was largely a European phenomenon, with the Belgian, British, Dutch, and French exchanges dominant as host markets, primarily for American and South African stocks and

[2]See King and Levine (1993), Jayaratne and Strahan (1996), Demirguc-Kunt and Maksimovic (1998), Rajan and Zingales (1998), Bekaert, Harvey, and Lundblad (2005), and Bekaert, Harvey, Lundblad, and Siegel (2007).

[3]Many firms choose to cross-list in multiple markets. Also, some firms may be listed only on a foreign exchange, but this setting still contains some information about the domestic market.

[4]The research in this field has gained momentum in recent years. Zingales (2008) finds that the competitiveness of the U.S. market dropped significantly during the early 2000s, suggesting that the main drivers of this change were the increased attractiveness of the European and other equity markets. To understand more broadly the changes in the competitiveness level of a specific market, however, it is necessary to look at changes in the real economic and financial sectors of more than one country.

primarily for the mining industry. By the 1980s, Tokyo had become a dominant destination for foreign listings, only to see its status reverse dramatically in the 1990s. By the 2000s, Canadian and Indian firms were the primary source of cross-listings, and the United States was the dominant host market, attracting more than 50% of all new foreign-placed shares, followed by Luxembourg and the United Kingdom. Industry representation was much broader, but the electronics industry was the leading provider of foreign-listed equity.

To us, these ebbs and flows in the dynamics of overseas listings warrant examination to determine both the reasons for listing changes and their effects, if any, on firm valuation. To do so, we employ a gravity-model framework from the international trade literature. In our setting, the model implies that cross-listing activity between each home and host country is a positive function of mass, mass change, and proximity. This motivates two non-mutually exclusive hypotheses regarding the dynamic nature of cross-listing patterns: the first relates an increase in cross-listing activity to host-market outperformance relative to other competing markets, the second to home-market outperformance in close proximity to suitable overseas host markets. We measure the mass of a country by its economic and financial size denoted by gross domestic product (GDP) or market capitalization. The closeness between countries is measured by their bilateral trade flows.

We provide several important findings in the paper. First, we show that listing on foreign exchanges has peaked and troughed for some time in a series of cross-listing waves, with a frequency consistent across home markets and industries. We observe that the waves in a host market often reflect the waves in a home market with which it shares a particular affiliation; the United Kingdom's popularity in the 1950s as a host market, for example, reflected an increase in listings from South Africa, whose firms tended to list in the United Kingdom. Controlling for these effects is important in understanding the time-series and cross-sectional preferences of the host-market choice.

Second, we find evidence on the relevance of gravity-model implications to cross-listing intensity across host markets. That is, cross-listing waves in a given host country coincide with the performance of that country's real GDP growth rates and stock market returns, as well as its size relative to other competing markets. The foreign-trade flow to the host country is also strongly associated with cross-listing activity. This relation of the extent of foreign listings in host markets to economic synergies remains intact after accounting for other macroeconomic and financial control variables. We also support the hypothesis that foreign listings in a given market are motivated by pricing efficiency considerations. Therefore, relative to our three hypotheses, our evidence is consistent with cross-listing activity being motivated by shocks in market pricing efficiency and economic proximity, but not shocks in the stringency of market institutions.

Third, in accordance with the full gravity model, we show that although strong market-wide performance constitutes a necessary condition for a given host market to attract large numbers of overseas firms, the main supply of foreign stocks comes from home countries with more familiar links with that host market that have also experienced recent economic and financial growth. In these tests we find much more limited evidence of the relevance of the market-pricing hypothesis in cross-listing decisions, as neither host-market size nor cross-market

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liquidity is consistently significant in our estimations. Thus, our results imply that cross-listing decisions are largely motivated by economic synergies between countries implemented under the most attractive conditions from the point of view of listing time and location rather than pricing efficiency or institutional differences between markets.

Finally, given the preceding evidence, we examine the time-series effects of the valuation gains associated with cross-listing.[5] We postulate that waves in foreign listings are likely to occur in those periods of time in which the gains to cross-listing are particularly strong. Because there is some debate regarding the nature of these gains in the literature, we argue that within-wave listings are particularly attractive test cases for evaluating the valuation gains. To evaluate the within-wave gains, we define two valuation hypotheses: *efficient timing*, characterized by long-term valuation benefits, and *market timing*, with short-term valuation gains and subsequent underperformance. We search across the periods of most popular listing activity for host markets, home markets, and industries over a 22-year sample period (1985–2006).[6] We find that such periods are generally associated with particularly strong temporary valuation gains, but observe no evidence of durable valuation gains. More specifically, we find that the listing-year gains in valuation observed in every cross-listing study (e.g., Foerster and Karolyi (1999), Errunza and Miller (2000), and Sarkissian and Schill (2009)) are present only among "hot" host markets, regardless of the particular set of control variables. We suspect that the temporary gains associated with listings in highly visible host markets may constitute an important feature, attracting firms to cross-list on their exchanges. Such temporary gains are consistent with temporary product-market gains or sustained pricing-efficiency gains, because subsequent investment would be expected to eliminate the value premium (see Gozzi et al. (2008)). The finding is inconsistent with bonding-based explanations. Our results show that permanent systematic valuation gains to overseas listings are very rare events. Overseas firms listed in the "hot" host markets experience significantly lower long-term valuations not only relative to their domestically listed counterparts, but also relative to those cross-listed firms that are placed on foreign exchanges outside the most attractive time periods. Our valuation tests support the market-timing hypothesis in listing decisions. This outcome is related to our evidence that economic synergies between countries play the main role in location choice of cross-listings and their specific timing.

Our observation that cross-listing waves occur in markets when the market does relatively well is consistent with the recent literature, which observes waves in corporate decision making in the United States alone.[7] In our study,

[5]A large literature body reports valuation gains to cross-listing (e.g., see Miller (1999), Foerster and Karolyi (1999), Errunza and Miller (2000), Lang, Lins, and Miller (2003), and Doidge, Karolyi, and Stulz (2009)). However, Gozzi, Levine, and Schmukler (2008) and Sarkissian and Schill (2009), (2012) question the magnitude of valuation gains.

[6]The sample period is constrained by the availability of market and accounting data in the Worldscope database.

[7]Pastor and Veronesi (2005) argue that increases in the number of initial public offerings occur following high market valuations. Harford (2005) finds that shocks to the economy and technology drive merger waves. Dittmar and Dittmar (2008) show that waves in financing decisions, such as

documenting variations in the foreign listing activity has cross-country economic and financial implications. A country's ability to draw foreign firms to its exchanges highlights its overall financial market activity, so we interpret our finding as providing novel evidence for the uneven development of capital markets across countries and over time, as documented by Rajan and Zingales (2003). In addition, we show that the relative foreign-market outperformance does not provide sufficient conditions for a firm to directly benefit from it by shifting some of its trading away from its domestic market. This result can be viewed as a reflection of the country-level findings reported by Prasad, Rajan, and Subramanian (2007) at the firm level. It appears that, just as countries that rely on capital in more developed countries do not grow faster than those that do not, firms that (potentially) rely on capital in more developed foreign markets do not achieve better valuation than those that do not.[8]

Prior literature links various time-series patterns of cross-listings to changes in market attractiveness. Pagano, Randl, Roell, and Zechner (2001) and Pagano, Roell, and Zechner (2002) examine several snapshots in foreign listings across European and U.S. exchanges from 1986 to 1997. Edison and Warnock (2008) examine time-series patterns in listings on U.S. exchanges of firms from emerging-market countries. A series of recent research papers analyzes the time-series patterns of U.S.-hosted foreign listings (see Litvak (2007), Chaplinsky and Ramchand (2008), Doidge et al. (2009), and Doidge, Karolyi, and Stulz (2010)). Fernandes and Giannetti (2014) observe listing patterns across 24 countries from the 1980s to 2006, but they focus only on corporate governance effects.[9] Karolyi (2004) and Levine and Schmukler (2006) study the impact of cross-listings solely on home-market development. All of these studies employ a short sample period and a focus on one potential explanation for foreign listing decisions, and the cross section of host markets for listings is often small, thus preventing a comprehensive comparative analysis of all the reasons for cross-listing placement decisions, including any relation to variations in the economic and financial attractiveness of markets over time. Across a set of competing markets over a full 57-year sample, we are able to assess the firm managers' propensity to choose a foreign trading venue for their stocks and, for the post-1985 period, estimate the effects of this selection on firm valuation. Unlike other authors, we emphasize that foreign listings are driven largely by economic and financial considerations and that their timing often occurs at peaks of market performance, resulting in only short-term valuation gains.

stock repurchases, equity issuance, and mergers, are correlated with changes in a country's economic conditions.

[8]We describe capital reliance in more developed foreign markets as *potential* because an overseas listing does not necessarily indicate equity issuance in that market.

[9]Due to the absence of country corporate governance data prior to the 1990s, all tests by Fernandes and Giannetti (2014) cover the post-1990 period. Their conclusion confirms that of other papers (Doidge (2004), Doidge et al. (2004), (2010), and Reese and Weisbach (2002)), in that firms prefer listing in countries with better investor protection. We are cautious about their conclusions, as many investor-protection variables are static and thus may be considered poor regressors in explaining large time-series variations in overseas listing activity. Also, the risk of spurious regression bias becomes problematic with highly autocorrelated variables (see Granger, Hyung, and Jeon (2001)).

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The rest of the paper is organized as follows: Section II describes the chronology of overseas listings and documents wave effects at the host-market, home-market, and industry levels. In Section III, with the use of a gravity model, we formulate two non-mutually exclusive hypotheses on the formation of cross-listing waves. Section IV links the relative attractiveness of each of the top eight host markets to its relative economic and financial market performance. Section V examines the cross-market linkages that lead to the formation of waves in the top eight host markets. Section VI shows firm valuation tests around the time of the foreign listing, controlling for the foreign listing intensity in the host market. Section VII concludes.

II. The Chronology of Overseas Listings

A. The Overseas Listing Data

The sample of foreign listings is constructed based on three surveys of world stock exchanges completed by the authors at the end of 1998, 2003, and 2006.[10] Surveys were completed of all country exchanges indicated as having foreign listings by the World Federation of Exchanges, excluding corporate-tax-haven markets such as the Cayman Islands, Bermuda, and Jersey and exchanges outside main boards of country stock exchanges. In each survey we asked the exchange research department for a summary of all foreign companies, excluding investment funds and trusts, listed on that exchange. In the 2003 and 2006 surveys we also asked for a history of all previous foreign companies that had since delisted their shares. For some exchanges (e.g., Tokyo), the requested data were available through the exchange's Web site. Listings of foreign shares were received for all exchanges, although there was variation in the quality of the lists of delisted shares. In some cases, full delisted share histories were received; in other cases, the lists were only partial (e.g., delists over the previous 10 years) or unavailable.[11] For U.S. firms, about one-third of the sample listings had subsequently been delisted prior to 2006. The resulting sample comprises 3,592 listings from 73 home countries in 33 host markets.[12]

Figure 1 shows the total number of new foreign listings in each year of our sample, that is, the gross increase in the number of foreign-listed firms in a given year. The plot illustrates that aggregate cross-listing activity around the world has experienced several ups and downs. Moreover, a casual observation of the distribution of listings over time reveals that periods of increasing cross-listing activity usually precede global economic and financial downturns. For instance, we can see increasing trends in the number of new foreign listings several years prior to

[10]The global foreign listing samples of Sarkissian and Schill (2004), (2009) cover a period until 1998 only.

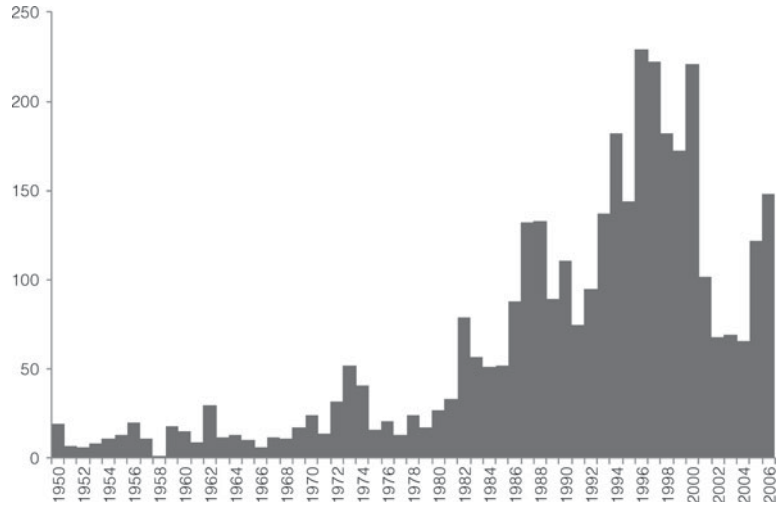
[11]For firms outside the United States, the delisted history is complemented with American depositary receipt (ADR) delist codes from the Center for Research in Security Prices (CRSP), following the procedure of Chaplinsky and Ramchand (2008). The CRSP sample adds a total of 202 listings to the final sample.

[12]We focus on foreign listings traded only on countries' main exchanges, because their trading on other platforms (over the counter) occurs in a limited set of markets, with direct implications for data availability and comparability.

FIGURE 1

The Worldwide Dynamics of New Foreign Listings

Figure 1 shows the aggregate number of new foreign listings around the world each year in the 1950–2006 period.



i) the trade-imbalance recession of the late 1950s, ii) the oil crisis of the mid-1970s, iii) the savings and loan crisis of the early 1980s, iv) the economic recession of the early 1990s, and v) the dot–com bubble collapse/accounting scandals in the early 2000s, all of which had global consequences. The cross-listing activity picked up again in the mid-2000s.

Table 1 shows the distribution of overseas listings by calendar decade from the 1950s through the 2000s for each host market (Panel A), home market (Panel B), and industry group (Panel C). Since the 1950s, the scope of host markets attracting foreign listings has grown dramatically. The 2000s witnessed the largest single-occurrence expansion of the geography of host markets for overseas listings, with many smaller developed and emerging markets joining the club (e.g., Argentina, Finland, Israel, Mexico, Poland, Portugal, Taiwan, and the United Arab Emirates (UAE)). The table reports the total number of listings from each home country, host market, and industry. The eight largest host markets are France (194), Germany (193), Japan (138), Luxembourg (285), the Netherlands (135), Switzerland (166), the United Kingdom (471), and the United States (1,403). The eight largest suppliers of listings are Australia (172), Canada (630), Germany (147), India (164), Israel (149), Japan (234), the United Kingdom (283), and the United States (524). The data are consistent with strong bilateral home–host market pairs (e.g., 88% of Canadian listings are to the United States, 74% of Indian listings are to Luxembourg, and 51% of Australian listings are to New Zealand).

It is also apparent from Panel A of Table 1 that the popularity of various host markets has waxed and waned over the sample period. Belgium, France, the Netherlands, and the United Kingdom were the dominant host markets in the 1950s, France in the 1960s, and the United Kingdom in the 1970s. By the 1980s,

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TABLE 1

Distribution of Foreign Listings across Markets, Industries, and Decades (1950s–2000s)

Table 1 shows the number of foreign listings by host market (Panel A), home market (Panel B), and industry (Panel C) for each decade between 1950 and 2006. The top eight host and home markets as well as industries are shown in bold.

	1950s	1960s	1970s	1980s	1990s	2000s	Total
Panel A. Number of Listings by Host Market							
Argentina						1	1
Australia			1	13	34	12	60
Austria	3	3	10	3	9	5	33
Belgium	24	19	24	18	26	11	122
Brazil					2	1	3
Canada	1	1	5	10	23	58	98
Denmark					7	3	10
Finland						2	2
France	**22**	**28**	**24**	**64**	**38**	**18**	**194**
Germany			**10**	**41**	**129**	**13**	**193**
Hong Kong					2		2
Ireland				2	12	3	17
Israel						5	5
Italy					4	19	23
Japan			**12**	**110**	**13**	**3**	**138**
Luxembourg	**3**	**5**	**18**	**8**	**133**	**118**	**285**
Malaysia			3				3
Mexico						1	1
Netherlands	**21**	**11**	**13**	**31**	**47**	**12**	**135**
New Zealand				5	78	8	91
Norway					11	10	21
Peru					1		1
Poland						5	5
Portugal						2	2
Singapore			2	7	28	7	44
South Africa					8	11	19
Spain					3	2	5
Sweden				6	18	9	33
Switzerland	**13**	**19**	**28**	**55**	**37**	**14**	**166**
Taiwan						3	3
UAE						3	3
United Kingdom	**22**	**26**	**63**	**105**	**184**	**71**	**471**
United States	**5**	**23**	**42**	**262**	**703**	**365**	**1,400**
Total	114	135	255	740	1,550	795	3,589
Panel B. Number of Listings by Home Market							
Argentina					20	7	27
Australia	**1**	**3**	**2**	**33**	**102**	**31**	**172**
Austria				3	6	3	12
Belgium	2	5	2	1	14	4	28
Bolivia				1			1
Brazil				1	25	14	40
Canada	**16**	**19**	**16**	**176**	**258**	**142**	**627**
Chile					23	3	26
China					16	21	37
Columbia					4	1	5
Croatia					1		1
Cyprus					1		1
Czech Republic					4	1	5
Denmark		1	1	4	5	2	13
Egypt					3	4	7
Estonia					1		1
Finland				6	8	5	19
France	1	2	4	26	47	27	107
Germany	**10**	**11**	**26**	**24**	**52**	**24**	**147**
Ghana					2		2
Greece					13	12	25
Guyana					1		1
Hong Kong				2	29	7	38
Hungary					13	1	14
Iceland						2	2
India			**2**	**1**	**67**	**94**	**164**
Indonesia					8	1	9
Ireland	1	1	12	10	45	6	75
Israel	**1**		**1**	**20**	**90**	**37**	**149**
Italy		1		8	21	7	37

(continued on next page)

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TABLE 1 (continued)

Distribution of Foreign Listings across Markets, Industries, and Decades (1950s–2000s)

	1950s	1960s	1970s	1980s	1990s	2000s	Total
Panel B. Number of Listings by Home Market (continued)							
Ivory Coast		1					1
Japan		**7**	**55**	**83**	**71**	**18**	**234**
Jordan					1		1
Kazakhstan					1	1	2
Kenya	1						1
Korea					35	21	56
Lebanon					2		2
Liechtenstein						1	1
Lithuania						1	1
Luxembourg	1		3	7	11	14	36
Malaysia	2		2	1	2		7
Malta					1		1
Mexico		1		1	33	5	40
Morocco					1	1	2
Netherlands	6	9	8	19	69	35	146
New Zealand				5	21	7	33
Nigeria						1	1
Norway			3	6	14	3	26
Oman						1	1
Panama					1	1	2
Peru				1	3		4
Philippines		3			6	2	11
Poland					10	2	12
Portugal					6	1	7
Qatar					1		1
Romania					1		1
Russia					6	10	16
Singapore				2	6	6	14
Slovakia					2	1	3
South Africa	18	8	9	10	29	7	81
Spain			1	14	14	11	40
Sri Lanka						1	1
Sweden	2	2	5	17	20	13	59
Switzerland			1	10	21	17	49
Taiwan				1	35	33	69
Thailand				1	3	2	6
Tunisia					1		1
Turkey					7	5	12
United Kingdom	**2**	**11**	**22**	**65**	**130**	**53**	**283**
United States	**49**	**50**	**80**	**181**	**101**	**63**	**524**
Venezuela					4	1	5
Zimbabwe	1				2		3
Total	114	135	255	740	1,550	795	3,589
Panel C. Number of Listings by Industry							
Chemicals	16	17	14	27	52	18	144
Construction	0	0	5	13	52	21	90
Consumer Goods & Food	**9**	**20**	**20**	**64**	**126**	**43**	**282**
Electronics	**6**	**12**	**40**	**74**	**178**	**117**	**427**
Financials	**3**	**9**	**38**	**95**	**190**	**89**	**424**
Healthcare	4	6	16	35	97	80	238
Industrials	**25**	**25**	**39**	**95**	**145**	**47**	**376**
Leisure	0	0	5	17	23	14	59
Mining	**23**	**13**	**16**	**100**	**124**	**89**	**365**
Oil & Gas	**10**	**12**	**21**	**65**	**100**	**50**	**258**
Paper	3	2	6	12	35	4	62
Retail & Distributors	2	4	16	21	47	15	105
Support Services	**1**	**3**	**8**	**27**	**138**	**82**	**259**
Telecom & Media	**5**	**8**	**7**	**56**	**157**	**80**	**313**
Transport	3	2	2	20	44	26	97
Utilities	4	2	2	19	42	20	89
Total	114	135	255	740	1,550	795	3,589

overseas-listing frequency began to broaden across host markets, with the United States and Japan hosting a surge of listings. The United States also dominated foreign listings in the 1990s and 2000s while listing waves materialized in Germany

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and Luxembourg. Similar patterns can be observed in the other panels for cross-listings organized by home market and industry group. Prominent home-market waves include the Japanese wave in the 1980s and the South African wave in the 1940s and 1950s, which also corresponds with the mining wave of the same time frame. Note that during our entire sample period, the number of countries supplying foreign listings (home markets) is always larger than the number of countries absorbing the overseas supply of shares (host markets).

B. Dominant Home and Host Markets by Decade

Although we observe waves across the three specified dimensions (host market, home market, and industry), we are left to determine how such waves interact across the various dimensions. Table 2 reports the listing share of each home- and host-market pair for the largest six host and home markets in each decade from the 1950s to the first half of the 2000s.

TABLE 2

The Largest Home and Host Markets for Foreign Listings over Time

Table 2 shows the proportion of overseas listings (in percentages) between pairs of the largest six home and host markets for foreign listings over calendar decades. The top market (either home or host) is ranked as 1.

Panel A. 1950s

	Host						
	Belgium	France	United Kingdom	Netherlands	Switzerland	United States	
Home	1	2	3	4	5	6	Other
1 United States	14.9	3.5	0.0	15.8	7.9	—	0.9
2 South Africa	0.9	5.3	9.6	0.9	0.0	0.0	0.0
3 Canada	2.6	3.5	2.6	2.6	0.9	1.8	0.0
4 Germany	0.0	4.4	0.0	0.0	1.8	0.0	2.6
5 Netherlands	0.0	1.8	0.0	—	0.9	0.0	1.8
6 United Kingdom	0.6	0.0	—	0.0	0.0	0.9	0.0
Other	1.8	0.8	7.1	0.0	0.0	0.8	1.0

Panel B. 1960s

	Host						
	France	United Kingdom	United States	Belgium	Switzerland	Netherlands	
Home	1	2	3	4	5	6	Other
1 United States	9.6	8.1	—	5.2	7.4	5.9	0.8
2 Canada	0.7	1.5	11.9	0.0	0.0	0.0	0.0
3 Germany	0.7	2.2	0.0	1.5	3.0	0.0	0.7
4 United Kingdom	2.2	—	0.7	3.0	1.5	0.7	0.0
5 Netherlands	0.0	0.0	0.7	3.7	0.0	—	2.3
6 South Africa	2.2	3.0	0.0	0.0	0.7	0.0	0.0
Other	6.3	4.5	3.7	0.7	1.5	1.5	1.9

Panel C. 1970s

	Host						
	United Kingdom	United States	Switzerland	Belgium	France	Luxembourg	
Home	1	2	3	4	5	6	Other
1 United States	11.8	—	7.8	2.0	2.7	0.0	7.1
2 Japan	0.4	6.7	0.0	1.6	2.0	4.7	6.2
3 Germany	0.8	0.0	1.2	2.0	1.2	2.0	3.0
4 United Kingdom	—	2.4	0.4	1.2	1.6	0.0	3.0
5 Canada	0.8	4.7	0.8	0.0	0.0	0.0	0.0
6 Ireland	4.7	0.0	0.0	0.0	0.0	0.0	0.0
Other	6.2	2.7	0.8	2.6	1.9	0.4	2.6

(continued on next page)

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TABLE 2 (continued)

The Largest Home and Host Markets for Foreign Listings over Time

Panel D. 1980s

	Host						
	United States	Japan	United Kingdom	France	Switzerland	Germany	
Home	1	2	3	4	5	6	Other
1 United States	—	8.9	6.2	1.9	2.7	0.5	4.2
2 Canada	20.8	0.8	0.5	0.5	0.5	0.0	0.6
3 Japan	0.9	—	2.0	3.1	1.2	2.4	1.6
4 United Kingdom	3.6	2.2	—	1.2	0.0	0.1	1.7
5 Australia	1.6	0.8	0.7	0.1	0.3	0.1	0.9
6 France	0.3	0.3	0.4	—	0.3	0.7	1.5
Other	8.2	1.8	4.4	1.8	2.4	1.7	3.6

Panel E. 1990s

	Host						
	United States	United Kingdom	Luxembourg	Germany	New Zealand	Netherlands	
Home	1	2	3	4	5	6	Other
1 Canada	15.8	0.1	0.0	0.2	0.1	0.0	0.4
2 United Kingdom	4.9	—	0.1	0.5	0.1	0.5	2.3
3 Australia	1.1	0.2	0.1	0.1	4.8	0.0	0.3
4 United States	—	0.7	0.1	2.4	0.1	0.3	2.9
5 Israel	4.8	0.5	0.0	0.1	0.0	0.0	0.4
6 Japan	0.5	0.8	0.0	1.8	0.0	0.7	0.8
Other	18.3	9.6	8.3	3.2	0.0	1.5	10.6

Panel F. 2000s

	Host						
	United States	Luxembourg	United Kingdom	Canada	Italy	France	
Home	1	2	3	4	5	6	Other
1 Canada	15.7	0.0	0.2	—	0.0	0.0	2.0
2 India	0.7	4.7	0.5	0.0	0.0	0.0	5.6
3 United States	—	0.1	0.3	2.4	0.0	0.1	5.0
4 United Kingdom	2.0	2.0	—	0.2	0.0	0.2	2.1
5 Israel	1.7	0.1	0.3	0.0	0.0	0.0	2.5
6 Netherlands	0.6	0.1	0.3	0.0	0.1	0.4	2.9
Other	22.3	7.8	7.3	4.7	2.3	1.6	1.2

We can see a number of characteristics of overseas-listing behavior. First, there is wide variation in the ranking of the top host and home markets. This observation suggests that cross-listing waves exist. Second, the cross-listing market tends to be concentrated across markets. For the most part, although the composition of the top host markets changes, these markets attract between 78% and 94% of all overseas listings placed during each of the five decades. Among the home markets, concentration drops from nearly 90% early in the sample period to about 50% later in the sample period.

Third, listing activity is concentrated in the intersection of the six home and host markets that comprise between 89% and 99% of all cross-listings (i.e., the "Other Host Market" and "Other Home Market" cell in the bottom right corner of each panel of Table 2 maintains a small proportion of listings). The waves of activity originate and are hosted in a select few markets.

Fourth, host market popularity is rarely universal but more often uniquely bilateral. In the 1950s, Belgium was the most popular host market for foreign listings, but most of its foreign listings originated from the United States and Canada; without those, Belgium's share would have dropped from 21.1% to 3.6%. The strong demand for foreign listings on the Brussels Stock Exchange can be

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explained by four factors. First, the Belgian government was quick to reverse wartime barriers to cross-border capital markets in the 1940s and 1950s. Belgium, like the United Kingdom, the Netherlands, and Switzerland, was open to foreign-stock ownership and trading, unlike most European markets, which continued to impose strong regulation and taxation on cross-border ownership and trading. Second, Belgium emerged from World War II as an important economic and political location in Europe. In the 1940s and 1950s, Belgium became the seat of important European institutions such as the North Atlantic Treaty Organization and the European Economic Community. These institutions built on a labor environment that was conducive to international business and trade. Third, during the 1950s there was a great scarcity of domestic initial public offerings (IPOs) (and, in general, listings of Belgian firms on the Brussels Stock Exchange, as documented by Rajan and Zingales (2003)) that might have induced high appreciation for foreign listings. Fourth, the importance of Brussels is explained by its relatively quick economic and political recovery from the war compared with other European countries, the strategic importance of the port of Antwerp in Europe, and its general friendliness to multinational operations. The popular press in the 1950s suggested that foreign firms saw Brussels as one of the few locations to both diversify their ownership base and build European business credibility.[13] Indeed, there seems to be sufficient evidence that U.S. companies were cross-listing in Belgium en masse in the first two decades after World War II because many of them were planning to establish subsidiaries there, if they had not already. Antwerp was particularly active, with chemical, industrial, and petroleum multinationals opening European sites.[14]

For the United Kingdom, most of its listings originated from South Africa. Without the 11 South African listings in London, the U.K. share would have dropped from 19.3% to 9.7%. Despite Belgium's popularity among U.S. firms in the 1950s, not a single U.S. firm listed in the United Kingdom in that period. U.S. firms were also attracted to the Netherlands and Switzerland, neither of which would have been among the top six host markets without the U.S. listings. Only France appears to have had broad appeal, attracting large overseas listings of firms from South Africa, Germany, the United States, Canada, and the Netherlands. For the most part, the popularity of a host market is determined by firms from unique sets of home markets that tend to bilaterally prefer that particular host market. To some extent, host markets frequently become popular not because of any general characteristic of that market, but rather because firms from a particular home market decide to cross-list, and the paired host market is their preferred bilateral choice.

We observe similar bilateral effects in other decades. In the 1960s, France's popularity becomes more restricted to U.S. and Belgian firms, U.K. popularity

[13] See "More U.S. Stocks May Be Listed on More Exchanges in Europe" (1955) and Linge (1962).

[14] The list of U.S. firms with cross-listings on the Brussels Stock Exchange in the 1950s and 1960s includes 23 companies, many of which also had subsidiaries in Belgium. They are (current names used) AT&T, Bethlehem Steel, Boeing, Caterpillar, Chevron, Dow Chemical, Dupont de Nemours, Eastman Kodak, ExxonMobil, Ford Motor, General Electric, General Motors, Goodyear Tire & Rubber, IBM, Marathon Oil, Occidental Petroleum, Pfizer, Texaco, Union Carbide, United Technologies, Viacom, and Westinghouse Electric.

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is linked to U.S. and South African firms, and U.S. popularity is tied to Canadian firms. In the 1970s, U.K. popularity is linked to listings by U.S. and Irish firms, U.S. popularity is linked to listings by Japanese and Canadian firms, and Switzerland's popularity is linked to U.S. listings. In the 1980s, U.S. popularity is linked to listings by Canadian, British, and Israeli firms, and Japanese popularity is linked to listings by U.S. and U.K. firms.[15] In the 1990s, the popularity of the United States is tied to Canadian firms and broad listings from many emerging-market countries; the popularity of the U.K. and Luxembourg markets was also linked to firms from emerging markets, whereas Germany was linked to U.S. firms, and New Zealand was linked to Australian firms. Similar patterns exist in the 2000s. Many of the bilateral pairs appear to fit with the proximity patterns observed by Sarkissian and Schill (2004) among firms sharing common geography, history, industrial structure, or language. It may be that the popularity of the host market sometimes has much less to do with time-varying changes in the host market and much more to do with time-varying changes in the home markets.

We see drastic changes in the ranking of the top listing markets, both home and host, in different historical periods. Over the course of more than 50 years, the United States has changed its position in global equity markets from the biggest provider to the biggest recipient of foreign shares. Canada has been the major supplier of foreign listings in the 1990s and 2000s, but most of them were only in the United States. Table 2 shows that the emergence of a particular host market as a preferred place for foreign listing placement is often related to time-series cross-listing effects in a very limited set of home markets. We investigate bilateral effects on cross-listing waves in host markets in a more rigorous setting in Section V.

Last, we must note that our 6×6 matrix of the top six host and top six home countries for foreign listings shows a declining importance over time. In the 1950s, the 6×6 matrix captures more than 80% of the worldwide cross-listing activity, but in the 2000s, it only reflects about 30% of all cross-listing placements. The decline is effectively monotonic over time, reflecting the increased openness of the international financial markets, but also perhaps suggesting that some motivations for cross-listing may have changed over time.

C. The Time-Series Trends in the Top Eight Markets

To further explore the evidence of cross-listing waves, we examine the time series of foreign listing decisions across the top eight host markets, top eight home markets, and top eight industries over the 1950–2006 period. The cutoff at eight is motivated by the trade-off of covering as many markets or industries as possible while avoiding instances of excessively thin listing activity. Note that in the group of the top six host markets in Table 2, only two countries (Italy and New Zealand) are excluded from consideration during at least one of the calendar decades over our sample period. We also consider the eight largest home markets:

[15] In the 1980s, the United States and Israel introduced a common clearing system and institutional setting. This move reflected very close ties between the two countries and gave a strong impetus to Israeli cross-listings in the United States.

Australia, Canada, Germany, India, Israel, Japan, the United Kingdom, and the United States. Finally, the most represented eight industries in the cross-listing market are consumer goods, electrical and electronics equipment, financials, diversified industrials, mining, oil and gas, business support, and telecommunication and media.

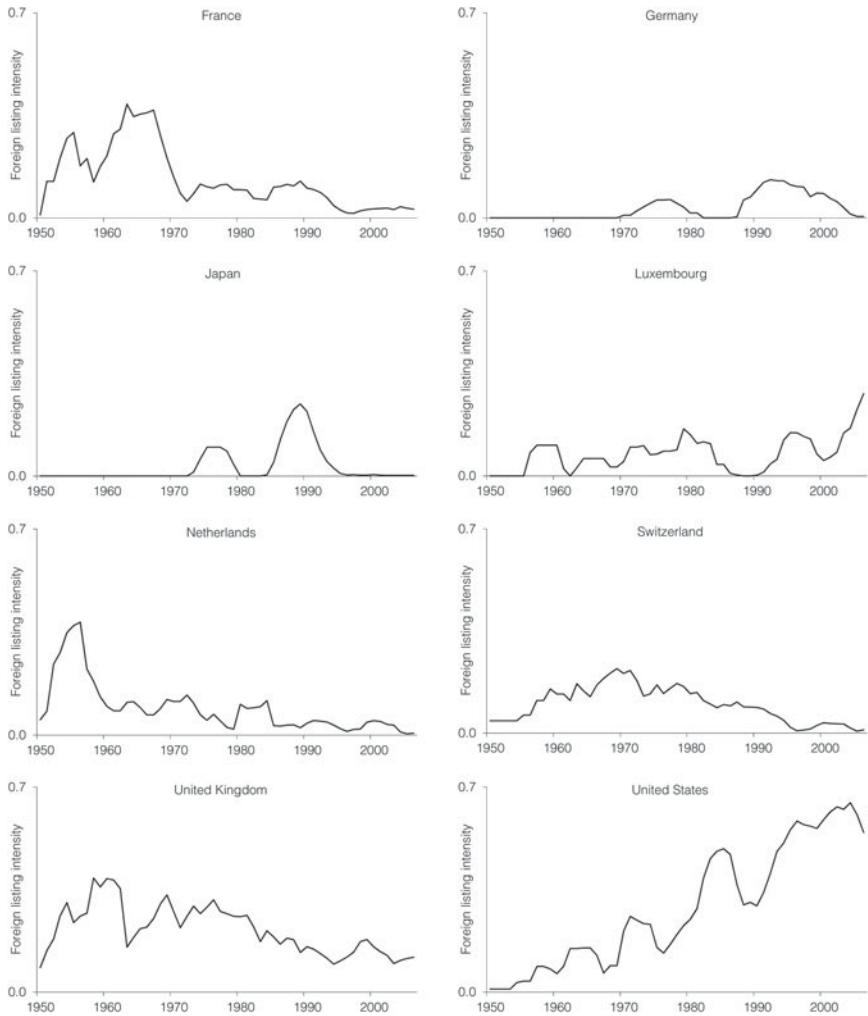
Figure 2 depicts the annual 5-year moving-year proportion of new foreign listing placements across the top eight host markets (Graph A), home markets (Graph B), and industries (Graph C) in each year from 1950 to 2006. The figures

FIGURE 2

The Dynamics of Foreign Listing Placement across Major Markets

Figure 2 shows changes in the proportion of overseas listings (foreign listing intensity) in eight major host markets (Graph A), home markets (Graph B) for foreign listings, and industries (Graph C) in 1950–2006. The foreign listing intensity is averaged over the previous 5 years, including the current year.

Graph A. Top Eight Host Markets



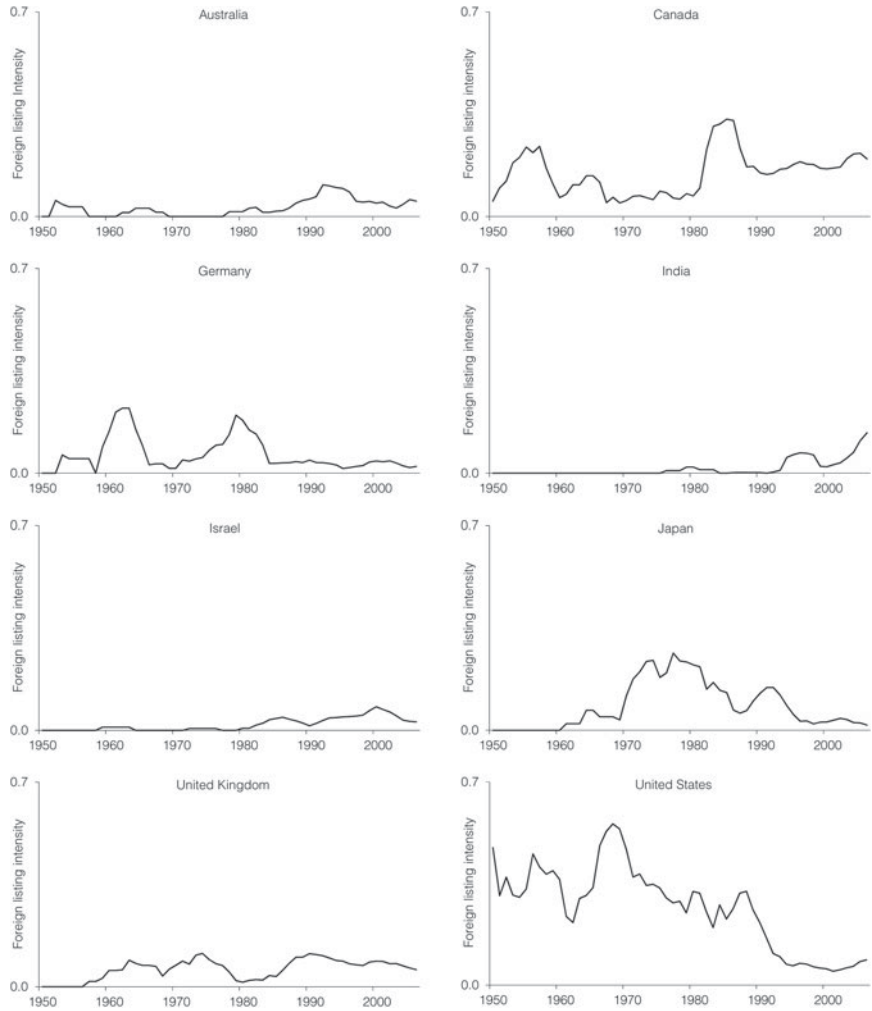
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FIGURE 2 (continued)

The Dynamics of Foreign Listing Placement across Major Markets

Graph B. Top Eight Home Markets

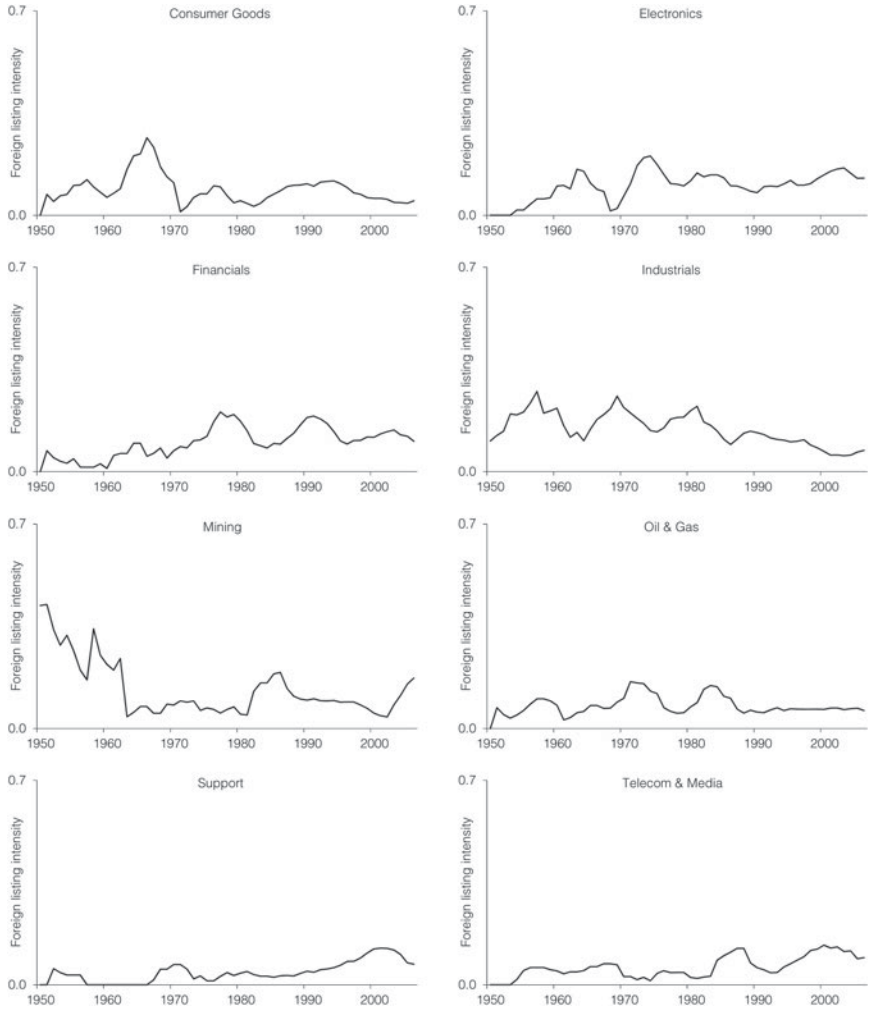


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FIGURE 2 (continued)
The Dynamics of Foreign Listing Placement across Major Markets

Graph C. Top Eight Industries



illustrate our observations from Tables 1 and 2 regarding the existence of overseas-listing waves across host and home markets and industries. We can see that although Japan was the second most attractive host market in the 1980s, its peak attractiveness was during the very late 1980s, coinciding with the highest valuation of its equity market in 1989. Yet the peak in the Japanese firms' listings overseas had occurred about a decade earlier, at the end of the 1970s and early 1980s. The United States as a host market experienced a number of waves in its attractiveness for foreign stocks, including a period in the early 1970s, then again during the mid-1980s, and the wave in the late 1990s and early 2000s.

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For home countries, the listing abroad of Canadian firms is concentrated in the 1950s and 1980s; German firms in the 1960s, late 1970s, and early 1980s; Indian firms in the late 1990s and 2000s; Japanese firms in the 1970s; and U.S. firms in the 1950s and 1970s. Interesting patterns exist in industries as well. For instance, electronics experienced the first run-up in the share of the total number of foreign listings in the late 1950s to mid-1960s. This period coincided with the beginning of the wide commercial use of transistors and the first computers. It is also not surprising to see that the telecom industry achieved its largest proportion in foreign listing placements in the late 1990s. Mining firms were the largest providers of foreign listings in the 1950s, and they reached the highest absolute proportion of any single industry share in overseas-listing markets during the entire sample period. Clearly, there is large cross-country and cross-industry variation in when firms choose to list abroad.

D. Clustering Analysis

In Table 3, we present statistical evidence for the existence of foreign-share placement clusters in various host markets, home markets, and industries. Panel A shows the clustering intensity in each of the eight host markets. The intensity is the proportion of foreign listings in a given host market per year relative to the total number of foreign listings in that year. The clusters are defined based

TABLE 3

Tests of Foreign Listing Clustering for the Top Eight Host and Home Markets and Industries

Table 3 shows tests for the existence of clusters of foreign listings in the eight largest host and home markets for overseas listings, as well as for the eight most represented industries between 1950 and 2006. Panel A reports the clustering intensity for each of the eight host markets, Panel B for home markets, and Panel C for industries. The intensity is the proportion of foreign listings per year in a given host market relative to the total number of foreign listings in that year. The clusters are defined based on the average Euclidean distance using the cutoff value of 0.075. Panel B reports the cross-correlations and their statistical significance (with the Dunn–Sidak adjustment) between the clusters of cross-listing intensity and the uniformly distributed random variable. The correlation coefficients with the random variable are based on the average from 5,000 Monte Carlo Simulations. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Clustering Intensity and Correlation Tests for the Top Eight Host Markets

	Host							
Group	France	Germany	Japan	Luxembourg	Netherlands	Switzerland	United Kingdom	United States
1 (lowest)	31	55	48	34	38	4	4	18
2	16	2	4	17	13	37	12	8
3	4		4	6	2	16	20	5
4	4		1		1		20	9
5	2				1		1	12
6					2			4
7 (highest)								1

Host Country	France	Germany	Japan	Luxembourg	Netherlands	Switzerland	United Kingdom	Random
France	1							−0.043
Germany	−0.048	1						0.040
Japan	−0.014	0.211	1					0.089
Luxembourg	−0.321	−0.002	−0.258	1				0.155
Netherlands	−0.302	0.119	0.202	0.176	1			−0.205
Switzerland	0.168	−0.072	0.088	0.088	0.320	1		0.307
United Kingdom	−0.333	0.192	0.040	0.243	0.406*	0.052	1	0.309
United States	−0.500***	0.043	−0.121	0.262	0.340	−0.035	0.331	0.278

(continued on next page)

TABLE 3 (continued)

Tests of Foreign Listing Clustering for the Top Eight Host and Home Markets and Industries

Panel B. Clustering Intensity and Correlation Tests for the Top Eight Home Markets

	Home							
Group	Australia	Canada	Germany	India	Israel	Japan	United Kingdom	United States
1 (lowest)	55	15	41	50	57	39	46	5
2	1	33	11	4		13	11	4
3	1	4	5	3		2		11
4		2				3		5
5		2						14
6		1						16
7								1
8 (highest)								1

Home Country	Australia	Canada	Germany	India	Israel	Japan	United Kingdom	Random
Australia	1							−0.017
Canada	−0.009	1						0.103
Germany	−0.066	−0.093						0.046
India	−0.063	0.050	1					0.074
Israel	—	—	—	1				—
Japan	−0.103	−0.178	0.251	—	1			0.130
United Kingdom	0.216	−0.283	−0.131	—	0.110	0.172	1	0.086
United States	−0.000	0.999	−0.026	—	−0.047	−0.139	−0.198	0.288

Panel C. Clustering Intensity and Correlation Tests for the Top Eight Industries

	Industry							
Group	Consumer Goods	Electronics	Financials	Industrials	Mining	Oil & Gas	Support	Telecom
1 (lowest)	13	13	13	24	4	47	53	34
2	40	36	37	2	31	6	4	21
3	2	6	7	24	16	4		2
4	1	2		3	5			
5 (highest)	1			4	1			

Industry	Consumer Goods	Electronics	Financials	Industrials	Mining	Oil & Gas	Support	Random
Consumer Goods	1							0.175
Electronics	0.135	1						0.274
Financials	0.016	0.117	1					0.289
Industrials	−0.042	−0.224	−0.169	1				0.065
Mining	0.112	0.041	0.023	0.035	1			0.310
Oil & Gas	−0.200	0.122	−0.186	0.282	−0.080	1		0.028
Support	−0.156	0.021	−0.068	−0.068	0.104	−0.118	1	−0.008
Telecom	0.028	−0.031	−0.019	−0.269	−0.189	−0.280	0.030	0.152

on the average Euclidean distance using the cutoff value of 0.075 (i.e., in 7.5% increments of cross-listing intensity). This implies that the first cluster (lowest ranking) corresponds to instances of complete absence of foreign listing activity in a given host market or activity of less than 7.5% of the market in that year. Consistent with Table 1, some markets, such as the Netherlands, the United Kingdom, and the United States, have gone through various levels of relative attractiveness over time (between five and seven clusters), whereas others, such as Germany, Luxembourg, and Switzerland, have only two or three cluster groups.

To determine whether the waves in foreign listing activity are statistically significant and occur at different times from one another, we use correlation analysis. More specifically, we compare the foreign listing intensity in each of the eight markets with the uniform distribution. The lower section in each panel of Table 3 reports cross-correlations and their statistical significance for the clusters

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of foreign listing intensity among the top eight host markets, home markets, and industries, as well as a uniformly distributed random variable. The correlation coefficients with the random variable are based on the average from 5,000 Monte Carlo simulations. We use the Dunn–Sidak adjustment to correct for standard errors. The panel suggests two important observations. First, the correlation between foreign listing intensity in each of top eight host markets and the random variable is insignificant, implying that the waves of cross-listings are indeed statistically different from a uniform distribution. Second, the only highly significant correlation of listing intensity among our eight host markets is between France and the United States, but it is negative, implying that waves of listings occur in different countries at different times. This is very much consistent with Rajan and Zingales (2003). The only positive correlation, albeit significant only at the 10% level, is found between the Netherlands and the United Kingdom. This reflects the fact that these two European countries had somewhat similar time-series dynamics in their relative attractiveness as markets for overseas-listing destinations (also see Graph A of Figure 1).

Panels B and C of Table 3 show clustering intensity and correlation tests in each of the eight most represented home markets and industries that contribute overseas listings. Among the top home markets, the United States has seen the widest range of overseas-listing placement intensity (eight clusters). Note that Israel, although having numerous listings in the 1990s and 2000s, did not contribute any substantial volume to the total number of foreign listings during those two decades. Across industries, the overall range of listing intensity is lower than that for the home or host markets. Panel C shows that consumer goods, industrials, and mining all had periods of very significant contribution to the overall count of foreign listings, with five clusters, whereas support industry had only two. The correlation tests again confirm that the dynamics of changes in the proportion of overseas listings across individual home markets and industries is different from the uniform distribution.

E. Correlation Analysis

To provide a more rigorous analysis of the time-series dimensions of the listing decisions and the aggregate series, we perform the following analysis. We construct a variable $N(i, j, k, t)$ that measures the number of new foreign listings from home market i and industry k in host market j in year t. We use this variable for the top eight home markets, host markets, and industries over the 1950–2006 period. We run the following regression:

$$(1) \qquad \begin{aligned} N(i,j,k,t) \;=\; & b_1 N(i,t) + b_2 N(j,t) + b_3 N(k,t) + b_4 N(i,j) \\ & + b_5 N(j,k) + b_6 N(i,k) + e(i,j,k,t), \end{aligned}$$

where the independent variables are the aggregate number of listings across the specified dimensions. $N(i,t)$, $N(j,t)$, and $N(k,t)$ represent the total number of new listings from the respective home market, host market, or industry, respectively, in year t. $N(i,j)$, $N(i,k)$, and $N(j,k)$ represent the aggregate number of listings across the sample period for the respective bilateral pair of specified characteristics. $N(i,j)$ captures the global home–host tendency. $N(i,k)$ captures the

global home–industry tendency. $N(j,k)$ captures the global industry–host tendency. To facilitate comparison of the regression coefficients across markets, the variables are transformed by subtracting the sample mean and dividing by the sample standard deviation for the variable. The results are reported in Table 4. The first specification contains only the bilaterally paired variables $N(i,j)$, $N(i,k)$, and $N(j,k)$. These variables control for the overall tendency for listings to follow a particular bilateral profile, such as that observed in Sarkissian and Schill (2004). The coefficient on $N(i,j)$ maintains the largest value at 0.269, suggesting that a unit-standard-deviation increase in the tendency of firms to list across a bilateral pair of markets is associated with a 0.269-standard-deviation increase in listing across the home–host market pair.

In the regression model used for column 1 in Panel A of Table 4, the components of the distribution of listings are regressed on various dimensions of

TABLE 4

Regression Coefficients for Correlation of Foreign Listings across Markets

Table 4 reports the regression of market *i* and industry *j* into host market *k* across the top eight home markets, industries, and host markets. The independent variables are the aggregate number of listings across the specified dimensions. *N*(HOME, *t*), *N*(HOST, *t*), and *N*(INDS, *t*) represent the total number of listings from the respective home market, host market or industry, respectively, in the respective year. *N*(HOME, HOST), *N*(HOME, INDS), and *N*(HOST, INDS) represent the aggregate number of listings across the sample period for the respective bilateral pair of specified characteristics. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Full Sample

	1	2	3
N(HOME, *t*)		0.153***	0.101***
N(HOST, *t*)		0.206***	0.155***
N(INDS, *t*)		0.044***	0.074***
N(HOME, HOST)	0.269***		0.238***
N(HOME, INDS)	0.107***		0.086***
N(HOST, INDS)	0.082***		0.011

Panel B. The Top Eight Host Markets

	France	Germany	Japan	Luxembourg	Netherlands	Switzerland	United Kingdom	United States
N(HOME, *t*)	0.0015**	−0.0005	0.0062***	0.0101***	0.0007	0.0011*	0.0051***	0.0730***
N(HOST, *t*)	0.0141***	0.0154***	0.0168***	0.0142***	0.0142***	0.0141***	0.0117***	−0.0056***
N(INDS, *t*)	0.0029***	0.0059***	−0.0009	−0.0022	0.0023***	0.0023***	0.0048***	0.0654***
N(HOME, HOST)	0.0021***	0.0023***	0.0021***	0.0026***	0.0023***	0.0022***	0.0021***	−0.0003***
N(HOME, INDS)	0.0006***	0.0007***	−0.0001	−0.0002	0.0003**	0.0004***	0.0005***	0.0123***
N(HOST, INDS)	0.0021***	0.0022***	0.0027***	0.0025***	0.0021***	0.0020***	0.0026***	0.0010***

Panel C. The Top Eight Home Markets

	Australia	Canada	Germany	India	Israel	Japan	United Kingdom	United States
N(HOME, *t*)	0.0125***	−0.0028*	0.0126***	0.0140***	0.0042***	0.0146***	0.0028***	0.0076***
N(HOST, *t*)	0.0020***	0.0560***	0.0026***	0.0060***	0.0150***	0.0029***	0.0119***	0.0393***
N(INDS, *t*)	0.0011*	0.0235***	0.0028***	0.0011	0.0066***	0.0084***	0.0069***	0.0054***
N(HOME, HOST)	0.0012***	−0.0012***	0.0019***	0.0024***	−0.0011***	0.0020***	0.0003	0.0018***
N(HOME, INDS)	0.0024***	0.0021***	0.0027***	0.0024***	0.0019***	0.0026***	0.0034***	0.0022***
N(HOST, INDS)	0.0001	0.0117***	−0.0001	−0.0004**	0.0024***	−0.0001	0.0002	0.0018*

Panel D. The Top Eight Industries

	Consumer Goods	Electronics	Financials	Industrials	Mining	Oil & Gas	Support	Telecom
N(HOME, *t*)	0.0067***	−0.0071***	0.0076***	0.0082***	0.0144***	0.0108***	0.0042***	0.0041***
N(HOST, *t*)	0.0074***	0.0237***	0.0072***	0.0082***	0.0173***	0.0114***	0.0232***	0.0135***
N(INDS, *t*)	0.0063***	0.0037**	0.0099***	0.0073***	0.0067***	0.0023	0.0053***	0.0056***
N(HOME, HOST)	0.0007***	0.0020***	0.0006***	0.0006***	0.0060***	0.0033***	0.0023***	0.0011***
N(HOME, INDS)	0.0018***	0.0015***	0.0019***	0.0021***	0.0004	−0.0005*	0.0005	0.0008*
N(HOST, INDS)	−0.0018**	−0.0012***	0.0006	−0.0008	−0.0017***	−0.0022	−0.0011***	−0.0016***

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aggregations, and the distribution of the residuals is not independent of the regressors. This correlation biases the standard errors, so we report the approximate statistical significance of the coefficients in Table 4 for reference only; the focus of the test is not the statistical significance but the coefficients, as their magnitude provides a fair estimate of the correlation structure of the panel of listings. The variables have been standardized, so we can compare the coefficients across variables.

In the specifications for columns 2 and 3 in Panel A of Table 4, we add the time-series aggregates, $N(\text{HOME}, t)$, $N(\text{HOST}, t)$, and $N(\text{INDS}, t)$. We observe that all aggregation dimensions are correlated with the distribution of listings. Listings tend to cluster by home market, host market, and industry group, but the global host-market effect, with coefficients of 0.27 and 0.24, seems to dominate, and the global industry effect, with coefficients of 0.08 and 0.01, seems least important. Despite the global tendency for particular market pairs to attract listings, there is strong evidence of time-series waves in listings. A host-market wave effect is particularly pronounced, with coefficients of 0.21 and 0.16, but there is also evidence of home-market and industry wave effects in the data.

In Panels B, C, and D of Table 4 we report regression coefficient values by various subsamples of host market, home market, and industry. In 17 of the 24 regressions, the host market time-series volume dominates. Exceptions include the regressions with the subsamples of only U.S. host-market listings; listings from Australian, German, Indian, and Japanese markets; and listings by financial firms. For listings from Australia, India, and Japan, the home-market wave appears to matter more; for Germany, the industry wave is important. For listings in the United States, the waves appear to correlate most with home-market and industry waves. Financial firms tend to cross-list with other financial firms in addition to showing home- and host-market effects. Mining firms tend to cluster by home market.

Thus, the time-series and cross-sectional patterns of overseas listings shown in Tables 1–4 and Figure 1 provide evidence that overseas listings tend to cluster in home-market and industry waves, but particularly with host-market waves. We now turn to investigating some primary reasons for the prominence of certain host markets during certain time periods. In the following sections, we explore these reasons.

III. Two Hypotheses about Cross-Listing Waves

The frequency of overseas listing must be related to the reasons for such listings as well as the changes in specific market characteristics over time. Recall that we can effectively classify these reasons into those of economic synergies, pricing efficiency, and bonding. Our analysis in the previous section of the frequency distribution of cross-listings gives us sufficient grounds to examine the economic-synergy forces in more detail.

First, Sarkissian and Schill (2004) find that the relative size and proximity of home and host markets are important determinants of cross-listing preferences. Second, numerous studies show that liberalization that spurs a country's economic and financial growth makes it possible for firms to place their shares on

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foreign exchanges (see Levine and Zervos (1998), Bekaert et al. (2005)). Third, large economies do not always attract foreign listings, but often do after their own strong performance. Japan experienced a large expansion in economic and financial performance in the 1970s and 1980s, periods of heavy foreign listing activity on the Tokyo Stock Exchange. Then, in the 1990s, Japan's growth stagnated even though it remained the second largest economy in the world with the second largest stock market capitalization; it witnessed not only a substantial decrease in new cross-listings on its exchanges, but also delistings of many dozens of foreign firms from the country.

These observations motivate us to build our hypotheses of cross-listing intensity patterns across countries and over time using a gravity-model setting, which has been used extensively in international trade (see Tinbergen (1962), Anderson (1979), and Anderson and van Wincoop (2003)). The intuition of the gravity model is based on the laws of Newtonian physics that gravity depends on mass and distance. In a gravity-model setup, the flow between two countries depends on the relative mass of any pair of countries and some measure of impedance between them. We adapt this model to describe the bilateral flow, F_{ij}, of foreign-listing activity between home country i to country j as follows:

$$F_{ij} = cM_iM_jP_{ij}, \tag{2}$$

where c is a constant, M_i and M_j are the sizes of countries i and j, and P_{ij} is the proximity of countries i and j. According to equation (2), the flow between any two countries increases with the size of their economies and their relative proximity.

To test the underlying driver of cross-listing waves, we propose that cross-listing waves are dependent on time-series changes in the relative mass of the two countries over time. We represent the current sizes of the host and home market economies through their respective past levels and growth. That is, $M_{i,t} = m_{it}M_{j,t-1}$, whereas $M_{j,t} = m_{jt}M_{j,t-1}$, where $m_{i,t}$, and $m_{j,t}$ denote growth in the host market and home market, respectively. Then equation (2) can be rewritten in the host- and home-market growth terms in a dynamic setting as follows:

$$F_{ij,t} = cm_{i,t}m_{j,t}M_{i,t-1}M_{j,t-1}P_{ij,t}. \tag{3}$$

Equation (3) implies that foreign listing intensity is positively related to host-market growth, home-market growth, host- and home-market size, and host- and home-market proximity. This observation leads to two foreign listing placement hypotheses, which can be viewed as reflecting the economic-synergy explanation of cross-listing decisions:

Hypothesis L1. The Host-Market Pull Hypothesis. Cross-listing activity flows are explained by changes in the masses of host markets.

Hypothesis L2. The Home-Market Push Hypothesis. Cross-listing activity flows are explained by changes in the masses of home markets with proximate links to host markets.

With respect to Hypothesis L2, we note that cross-listing waves at the home-market and industry levels (e.g., the telecom wave of the 1990s) can be easily

explained by respective home-market events, such as equity market liberalization, financial development, and increased demand for specific industry stocks. Therefore, given strong evidence of proximity preference in cross-listing decisions (Sarkissian and Schill (2004)), it is indeed possible that increased foreign-listing activity for a host market can occur during periods of increased activity in those home markets within a certain proximity to that host market. For example, as Australia experiences expansion, New Zealand equity markets experience a wave in cross-listings simply due to New Zealand's proximity to Australia.

To facilitate the empirical testing, we transform equation (3) as follows:

$$\begin{aligned}(4)\qquad \ln(\mathrm{FLI}_{ij,t}) &= \alpha + b_1 \ln(m_{i,t-1}) + b_2 \ln(M_{i,t-2}) + b_3 \ln(m_{j,t-1}) \\ &\quad + b_4 \ln(M_{j,t-2}) + b_5 \ln(P_{ij,t-1}) + \delta \boldsymbol{X}_{ij,t} + e_{ij,t}.\end{aligned}$$

We define flow at time t as the foreign listing intensity from country i (home market) to country j (host market), $\mathrm{FLI}_{ij,t}$. The vector of control variables $\boldsymbol{X}$ may include other market or cross-market variables and fixed effects. Note that in equation (4), all main independent variables are lagged relative to the foreign-listing intensity because growth measures are calculated at the end of the year even though listings can occur throughout the year. The same reasoning can be applied to the end-of-year measured controls.

Our two hypotheses are not mutually exclusive, but their empirical predictions are different. Empirically, Hypothesis L1 implies finding a positive b_1 coefficient, whereas Hypothesis L2 implies positive b_3 and b_5 coefficients. Our follow-up tests allow us to examine whether both hypotheses are applicable to the current distribution of cross-listing decisions. We test Hypothesis L1 in Section IV, focusing only on the eight largest host markets, whereas in testing Hypothesis L2 in Section V, we move to a cross-market framework. In our empirical tests, we examine the effects on cross-listing placements around the world of both real growth, proxied by changes in the gross domestic product (GDP), and financial growth, proxied by stock market returns.

IV. Foreign Listings and Host-Country Performance

Having observed the clustering of foreign listings across the top eight host markets both in economic and statistical terms, we seek to relate this evidence to their country-level performance over time. Indeed, based even on casual observation from Figure 1, it appears that many countries become major markets for overseas-listed securities during good economic times and strong market performance. We specifically focus on evaluating the drivers of waves at the host-market level rather than the home-market level because we are primarily interested in *relative competitiveness* across markets, not factors affecting the absolute level of either country's financial development. The latter issue is widely studied in many papers, including, but not limited to, King and Levine (1993), Jayaratne and Strahan (1996), Rajan and Zingales (1998), Bekaert et al. (2005), and Bekaert et al. (2007).

We consider two main economic and financial market indicators over our 1950–2006 sample period: real GDP growth and real equity market return in

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U.S. dollars. We also use three other macroeconomic and financial variables that are available over our long sample period for our main host markets: broad inflation, short-term bill return in U.S. dollars, and bond maturity premium (yield-curve term spread), which is the difference in yields between long-term bonds and short-term bills.

Table 5 shows the summary of these variables across the top eight host markets. The real GDP values come from the historical statistics for the world

TABLE 5

Average Economic and Financial Market Characteristics per Decade for the Top Eight Host Markets

Table 5 shows the average annual economic and financial characteristics over various decades for the top eight host markets for foreign listings. All numbers are in percentages per year. The GDP data come from the historical statistics for the world economy by Angus Maddison. The other four variables are provided by the Morningstar Dimson-Marsh-Staunton global returns database.

	1950s	1960s	1970s	1980s	1990s	2000s
Panel A. GDP Growth (in U.S. dollars)						
France	4.31	5.55	3.44	2.33	1.77	1.69
Germany	7.70	4.17	2.94	1.85	1.99	0.96
Japan	8.38	10.44	4.68	3.88	1.09	1.45
Luxembourg	1.88	3.80	2.66	5.93	5.38	4.86
Netherlands	4.23	5.02	3.12	1.99	3.09	1.52
Switzerland	4.40	4.55	0.94	1.88	0.79	1.60
United Kingdom	2.35	2.90	2.40	2.90	2.29	2.38
United States	3.62	4.64	3.60	3.40	3.27	2.42
Panel B. Stock (in U.S. dollars)						
France	61.5	3.1	20.3	46.2	28.6	9.8
Germany	256.2	5.0	25.0	43.5	19.5	11.9
Japan	148.9	16.3	47.1	76.3	4.2	2.7
Luxembourg	—	—	42.6	26.7	46.0	29.3
Netherlands	45.1	9.1	22.6	48.3	47.6	7.3
Switzerland	21.3	9.9	28.1	19.8	35.0	7.5
United Kingdom	44.6	13.7	17.8	31.5	27.8	8.3
United States	31.2	11.9	9.0	24.9	43.9	3.6
Panel C. Inflation						
France	6.0	4.3	12.1	7.1	1.6	1.4
Germany	1.6	2.7	5.8	2.5	2.3	1.3
Japan	4.1	6.4	11.8	1.7	0.7	−0.1
Luxembourg	2.0	3.2	9.3	4.8	1.9	1.6
Netherlands	2.8	4.5	9.0	2.2	2.4	1.6
Switzerland	1.3	3.5	5.4	3.3	1.7	0.7
United Kingdom	4.6	4.1	21.7	7.0	−2.9	2.2
United States	1.7	2.6	9.3	4.6	2.6	2.1
Panel D. Short-Term Bill Return (in U.S. dollars)						
France	−1.2	−1.0	2.9	0.4	0.7	6.0
Germany	5.0	1.9	7.0	3.6	0.0	6.0
Japan	6.3	3.4	2.3	4.9	2.9	−1.5
Luxembourg	4.2	3.1	9.0	4.6	0.1	6.0
Netherlands	1.2	1.3	5.4	4.0	−0.1	6.0
Switzerland	1.0	0.7	7.8	1.6	−1.1	2.9
United Kingdom	2.6	1.2	0.9	2.3	2.4	5.1
United States	0.1	1.3	−1.0	4.4	1.9	0.1
Panel E. Term Spread						
France	5.9	2.2	6.6	5.9	5.5	4.6
Germany	2.1	2.3	1.6	0.5	4.0	3.6
Japan	−0.2	8.4	1.2	3.2	7.1	2.8
Luxembourg	−1.8	−1.4	−1.8	2.1	4.4	3.5
Netherlands	−0.5	−2.5	0.3	1.6	4.4	3.7
Switzerland	1.4	−0.3	3.7	−0.8	4.0	3.5
United Kingdom	−2.1	−2.5	1.1	1.9	6.6	0.5
United States	−0.6	−2.7	−2.4	5.5	5.9	4.1

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economy by Angus Maddison.[16] The other four variables are provided by the Morningstar Dimson-Marsh-Staunton global returns database. All variables are reported in percentages per year. We can see that high GDP growth rates and/or stock market returns often coincide with periods of strong foreign hosting activity. For example, in the 2000s, the GDP growth rate was highest in Luxembourg, the United Kingdom, and the United States, the main destinations for foreign shares in that time period. Alternatively, GDP growth rate and market return were very high in Japan in 1970s and 1980s, during which time Japan was a major market for foreign firms. But in scanning the numbers across calendar decades for the other three variables, we are unable to detect any consistent patterns. In the 1990s, for example, U.S. exchanges were the most prominent place for overseas firms, yet its inflation, short-term bill return, and bond maturity premium were neither the smallest nor the largest during that time.

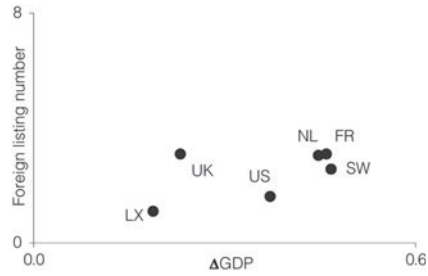
To visualize the aforementioned patterns more generally, in Figures 3 and 4 we present scatterplots showing a cross-sectional relation between foreign shares listed in a given host market in a given decade and changes in the host market's main economic and financial indicators, GDP, and stock market performance. We select two extreme decades with data for all 10 years being available, the 1950s

FIGURE 3

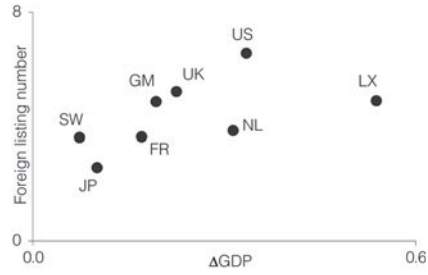
Relation between GDP Growth and Foreign Listings in the Top Eight Host Markets

Figure 3 shows the scatterplots of GDP growth and the logarithm of the number of foreign listings for the top eight host markets for foreign listings over two calendar decades: 1950s (Graph A) and 1990s (Graph B). FR = France, LX = Luxembourg, NL = Netherlands, SW = Switzerland, UK = United Kingdom, and US = United States.

Graph A. 1950s



Graph B. 1990s



[16] All GDP numbers are in 1990 International Geary–Khamis dollars.

FIGURE 4

Relation between Market Performance and Foreign Listings in the Top Eight Host Markets

Figure 4 shows the scatterplots of aggregate equity market returns and the logarithm of the number of foreign listings for the top eight host markets for foreign listings over two decades: 1950s (Graph A) and 1990s (Graph B). FR = France, LX = Luxembourg, NL = Netherlands, SW = Switzerland, UK = United Kingdom, and US = United States.

Graph A. 1950s



Graph B. 1990s



and 1990s. For each decade we logarithmically transform the number of foreign-listed firms.[17] We observe in both figures an upward trend in the scatterplots. As expected from previous results, there is also a big change in the leading host markets for foreign listings from the 1950s to the end of the 20th century.

Our next step is to relate foreign listing activity to changes in the economic and financial conditions of a country in statistical terms in line with the prediction of the gravity model in equation (4) applied at the host-country level only. A positive relation between a country's ability to host foreign listings and its attractiveness as proxied by changes in its GDP growth and equity market performance is interesting, but may not be robust after considering other potential variables. Therefore, we proceed to tests where the dependent variable is the foreign listing intensity and the independent variables include our two performance metrics, the annual GDP growth (ΔGDP_HS$_{-1}$) or stock market returns (MRET_HS$_{-1}$), the corresponding market-size proxies (GDP level, GDP_HS$_{-2}$, or stock market capitalization, MCAP_HS$_{-2}$), and country proximity, as well as various controls. Because a host country is a recipient of foreign listings,

[17] Here GDP growth and stock market performance are computed for each calendar decade rather than per annum.

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our dynamic proximity measure is the amount of import activity that it receives from abroad, IMPORTS_HS, as determined by the log ratio of the dollar amount of country's imports to its GDP. The historical bilateral trade flows are from Head, Mayer, and Ries (2010).

We consider two sets of control variables. One of them consists of the three additional macroeconomic and financial variables from Table 5: inflation, bill return, and maturity premium.[18] The second set includes variables that reflect the other two hypotheses for cross-listing decisions: market efficiency and bonding. We proxy a host market's efficiency with its stock market liquidity, LIQUIDITY_HS. Market liquidity is defined as 1 minus the equal-weighted average ratio of 0 daily returns (ZEROS) each month across all firms in a given country from Goyenko and Sarkissian (2014), averaged for a given calendar year.[19] We must note that the size variables that we use within the context of our gravity model may also be considered as proxies for host-market efficiency. The two proxies for the bonding hypothesis are the rule-of-law and disclosure standards of the host market, LAW_HS and DISCLOSURE_HS, respectively. The rule-of-law data are from the World Bank World Governance Indicators.[20] Disclosure data before 1992 are from Doupnik and Salter (1993); data after 1992 are from the Center for International Financial Analysis and Research (CIFAR) and International Financial Reporting Standards (IFRS).[21]

Table 6 shows the Tobit panel regression results of the logarithm of the number of foreign listings in the top eight host markets on the set of variables implied by equation (4) for host markets as well as the controls for the two sets.[22] We report the number of observations, the slope coefficients, and their corresponding z-statistics. In all regressions, we include host-market fixed effects and cluster standard errors by host market. In unreported tests, we alternatively cluster the standard errors by year; the inferences reported here are unaffected by this specification choice. Columns 1–4 show test results for the whole sample, and columns 5–8 show test results for the 1975–2006 subperiod. The regressions in columns 1 and 5 include variables implied by equation (4) at the host-country level using the

[18]These regression tests are similar in spirit to those of Dittmar and Dittmar (2008), although, due to a multiple-country setting, we use a different methodology.

[19]These are proprietary data, but ZEROS have been used in other papers that deal with international measures of stock market liquidity. Our stock market liquidity data go back in time to 1977 for developed countries and 1987 for emerging countries. For the few countries for which data are not available (e.g., Slovakia, Venezuela), we keep the static Elkins/McSherry liquidity measure from Domowitz, Glen, and Madhavan (2001). The first liquidity observation for each country is then extended backward to 1950.

[20]These data start in 1996 and were updated biennially until 2002, then annually. Therefore, we assume that data for each missing year are the same as in the respective preceding year; that is, 1997 data are the same as in 1996, 1999 data are the same as in 1998, and so forth. We then extend the 1996 values backward to 1950.

[21]Each country is assigned the value of 1 (strict disclosure) or 0 (weak disclosure) from 1950 to 1991 based on the Doupnik and Salter (1993) classification. From 1992 on we use CIFAR's classification, and a country's disclosure is assigned 1 if it is above the median CIFAR score, and 0 if it is below the median. Then, any country that adopts IFRS is assigned 1 in the year of IFRS adoption until the end of our sample period. For example, based on this procedure, Luxembourg is assigned 1 from 1950 to 1991, 0 from 1992 to 2004, then 1 again for 2005 and 2006.

[22]To make the log function work when the number of foreign listings in a given market and year is 0, here and later in Table 7 we increase by 1 the listing numbers across all markets and years.

TABLE 6

Tobit Regression Tests for the Top Eight Host Markets

Table 6 shows Tobit test results from regressing the logarithm of the number of foreign listings in the top eight host markets on various financial and economic characteristics. All independent variables are as defined in Table 5. GDP_HS and MCAP_HS are market sizes based on GDP and stock market capitalization, respectively. ΔGDP_HS and MRET_HS are the annual host market GDP growth and stock market return, respectively. INFLATION_HS, BILLRET_HS, and TERM_HS are the host market inflation, short-term bill return, and term spread, respectively. IMPORTS_HS is the log ratio of the dollar amount of imports to a given host market over its GDP. Imports data are from Head et al.'s (2010) data set of cross-country trade flows. LIQUIDITY_HS, LAW_HS, and DISCLOSURE_HS are the host-market liquidity, rule-of-law, and disclosure standards, respectively. Market liquidity is 1 minus the equal-weighted average ratio of 0 daily returns each month across all firms in a given country from Goyenko and Sarkissian (2014), averaged for a given calendar year. Rule-of-law data are from the World Bank World Governance Indicators. Disclosure data for years prior to 1992 are from Doupnik and Salter (1993); for years after 1992, data are from CIFAR. The −1 and −2 subscripts on the variables denote the first and the second lags of variables, respectively. Data for Germany, Japan, and Luxembourg start in 1970. The *z*-statistics are in parentheses. Standard errors are clustered at the host-country level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	1950–2006				1975–2006			
	1	2	3	4	5	6	7	8
No. of obs.	371	371	371	371	247	247	247	247
ΔGDP_HS_−1	6.124		3.861		7.481*		4.565	
	(1.33)		(1.03)		(1.78)		(1.59)	
GDP_HS_−2	0.534***		0.663***		0.260***		0.407***	
	(11.67)		(7.52)		(3.24)		(3.57)	
MRET_HS_−1		0.800**		0.855***		0.818**		0.906***
		(2.16)		(2.64)		(2.21)		(3.03)
MCAP_HS_−2		0.161***		0.215***		0.051**		0.104***
		(10.64)		(3.62)		(2.24)		(3.25)
IMPORTS_HS_−1	0.221***	0.318***	0.198***	0.370**	0.097	0.129*	0.117*	0.154
	(3.35)	(2.66)	(2.39)	(1.99)	(1.50)	(1.65)	(1.71)	(1.59)
INFLATION_HS_−1	−0.002	0.006	−0.004	0.001	−0.053***	0.064***	−0.054*	0.062**
	(−0.14)	(0.26)	(−0.25)	(0.04)	(−2.45)	(−3.07)	(−1.66)	(−2.30)
BILLRET_HS_−1	0.609	0.377	0.274	0.078	0.273	−0.135	0.396	−0.405
	(1.02)	(0.75)	(0.56)	(0.17)	(0.45)	(−0.30)	(0.08)	(−1.06)
TERM_HS_−1	0.467	−0.187	0.458	−0.106	0.294	−0.564	0.381	−0.389
	(0.86)	(−0.25)	(0.93)	(−0.13)	(0.47)	(−0.74)	(0.58)	(−0.53)
LIQUIDITY_HS			1.831**	1.043			1.249	1.207
			(2.10)	(0.77)			(1.01)	(0.97)
LAW_HS			−2.346	−3.839*			−1.472	−1.574*
			(−2.15)	(−1.82)			(−1.29)	(−1.65)
DISCLOSURE_HS			−1.154***	−1.256***			−1.083***	−1.112***
			(−6.19)	(−6.68)			(−5.69)	(−5.39)
Intercept	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Host effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Host clustering	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

country's GDP and GDP growth as the corresponding measures of its size and performance, as well as the three additional macroeconomic variables. GDP growth and size are positive and significant in both specifications. The coefficient on imports is positive over the full sample but not in the post-1975 period. Among the three controls, inflation is significantly negative after 1975, indicating that what matters in a host market's attractiveness for foreign listings is the country's real economic growth. The regressions in columns 3 and 7 additionally include market liquidity, rule-of-law, and disclosure standards. In these estimations, we lose the significance of the GDP growth term. Liquidity is consistently positive and significant in both estimations, whereas disclosure is negative. It appears that more liquid markets with less stringent accounting standards have an edge in attracting foreign listings over their competitors.

The regressions in columns 2 and 6 of Table 6 include the host country's market capitalization and market return as the corresponding measures of its size

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and performance, respectively, and the three macro variables. The coefficients on both the market return and the size proxy are positive and significant in both estimations, as is the coefficient on imports. In addition, inflation again comes up significantly negative in the post-1975 sample. The regressions in columns 4 and 8 also include the three financial market characteristics. The results of these tests are similar to those with the GDP series: better liquidity appears to have a positive effect on the number of cross-listings, whereas more stringent disclosure rules appear to have a negative effect. It is important to note that the addition of these variables does not reduce the magnitude or statistical significance of the host-market performance. In economic terms, for the whole data sample, a 1% average return in any of the top eight host stock markets in the previous year attracts, on average, 2.35 additional cross-listings to that market (0.85 increase in the natural log of the number of listings resulting from the first lag of host-market returns). This confirms the notion that the domestic stock market outperformance in a country that is in the pool of potential host markets for foreign listings significantly increases that market's chances of attracting more foreign shares.

Thus, Table 6 provides evidence of the relevance of gravity-model implications for cross-listing intensity across host markets. A country's performance metrics and economic and financial size serve as indicators of its likelihood of receiving a significant share of foreign listing placements. It also appears that a country's openness to foreign trade provides another stimulus to its attractiveness as a hub of cross-listing activity. Furthermore, there is support for the hypothesis that the foreign listing presence in a given market may be motivated by that market's efficiency. This observation is highlighted by positive and significant coefficients on such proxies of market efficiency as market size and liquidity.

To account for the changing competitiveness of the main markets for foreign stocks over time, we next construct two measures of relative market performance for each of the top eight home and host countries:

$$R\left(\mathrm{GDP}_{i,t}\right) = \left(\frac{\mathrm{GDP}_{i,t}}{\mathrm{GDP}_{i,t-5}}\right) - \frac{1}{8}\sum_{i=1}^{8}\left(\frac{\mathrm{GDP}_{i,t}}{\mathrm{GDP}_{i,t-5}}\right) \tag{5}$$

and

$$R\left(\mathrm{SMI}_{i,t}\right) = \left(\frac{\mathrm{SMI}_{i,t}}{\mathrm{SMI}_{i,t-5}}\right) - \frac{1}{8}\sum_{i=1}^{8}\left(\frac{\mathrm{SMI}_{i,t}}{\mathrm{SMI}_{i,t-5}}\right), \tag{6}$$

where $\mathrm{GDP}_{i,t}$ and $\mathrm{SMI}_{i,t}$ are the GDP and stock market index of country i in year t, respectively, and $R(\mathrm{GDP}_{i,t})$ and $R(\mathrm{SMI}_{i,t})$ denote the relative valuation of a country's real economy and financial market, respectively, vis-à-vis other countries. We standardize the market index to unity in 1946 and compute subsequent values using available market return index data.[23]

We highlight the important linkage between listing activity in a given host market and country performance in the top eight host markets over the 1950–2006

[23]To avoid the post-WWII impact on the economies of Germany and Japan, their relative country performance measures start in 1965.

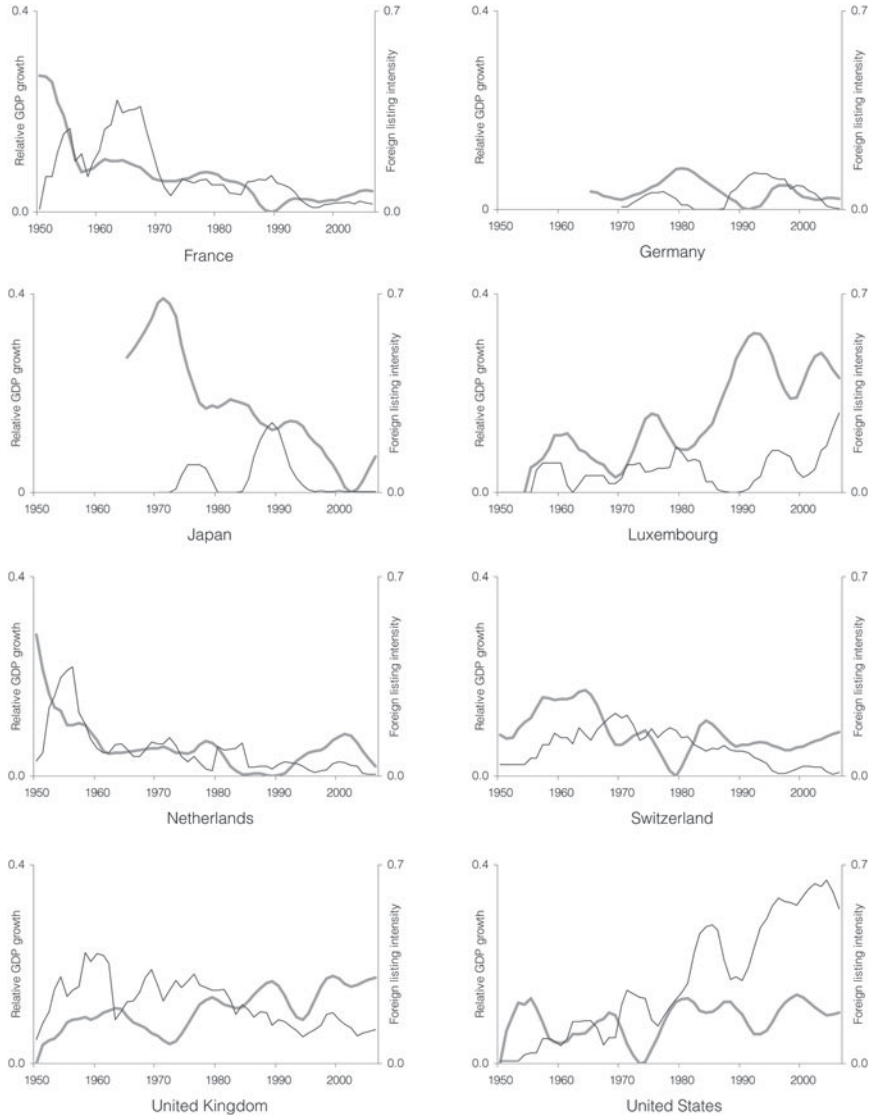
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period in Figures 5 and 6. In Figure 5, we plot the dynamics of foreign listing placement (foreign listing intensity, FLI, defined as the annual share in global foreign listings) together with relative host-country GDP growth using equation (5). In Figure 6, we plot foreign listing intensity together with relative host-market performance using equation (6). To facilitate the comparability between listing

FIGURE 5

The Dynamics of Foreign Listings and Relative Host-Country GDP Growth

Figure 5 shows changes in the foreign listing intensity (thin curve) and relative GDP growth (thick curve) in eight major host markets for foreign listings over the 1950–2006 period. The relative GDP growth is computed using equation (2). Both series are averaged over the preceding 5 years, including the current year. The relative GDP growth for Germany and Japan starts in 1965–2006, for Luxembourg in 1955.

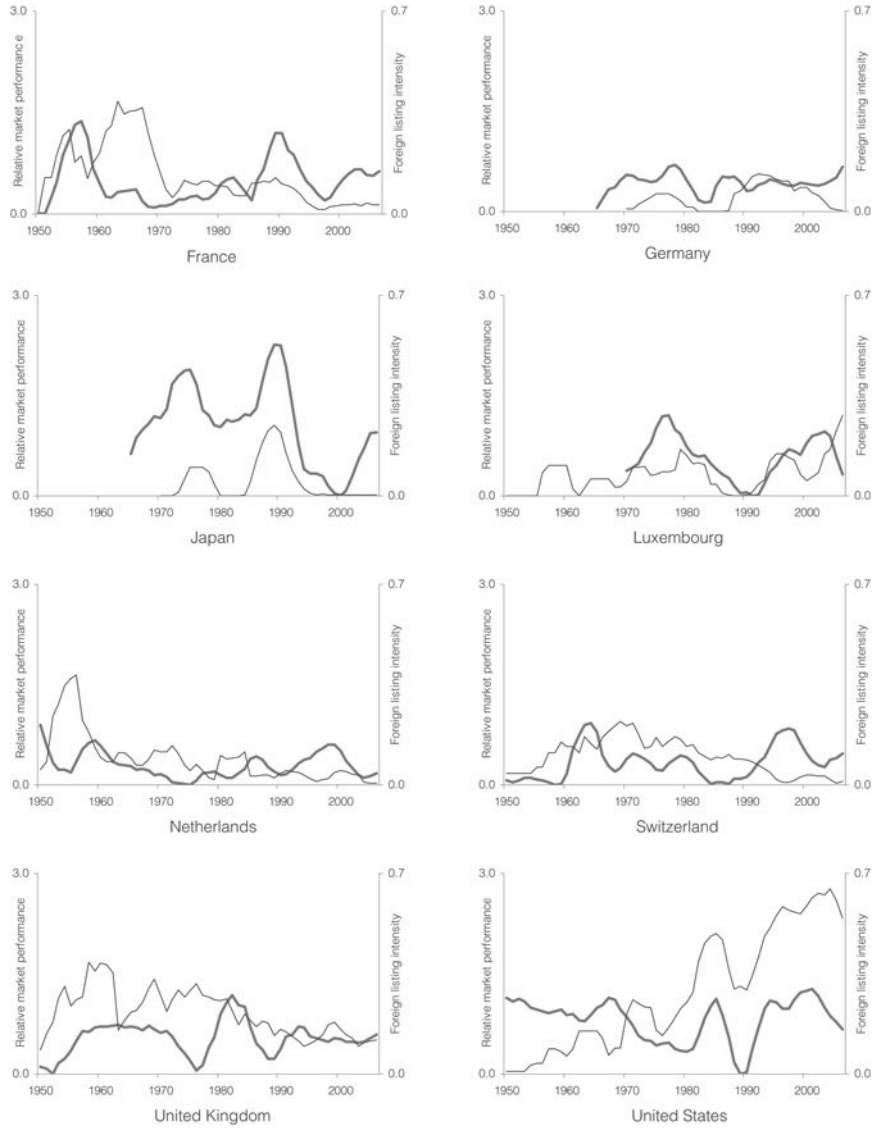


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FIGURE 6

The Dynamics of Foreign Listings and Relative Host-Country Equity Market Performance

Figure 6 shows changes in the foreign listing intensity (thin curve) and relative equity market performance (thick curve) in eight major host markets for foreign listings over the 1950–2006 period. The relative market performance is computed using equation (3). Both series are averaged over the preceding 5 years, including the current year. The relative market performance for Germany and Japan starts in 1965, for Luxembourg in 1970.



intensity and relative market performance measures, all three variables are averaged over the preceding 5 years, including the current year.[24]

[24]We also shift the two relative market performance series to nonnegative values by adding a constant that corresponds to the largest negative observation for the respective series in each country.

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We observe many synchronous waves in the proportion of listings across host markets and their relative GDPs and especially their relative market performances. France attracts many foreign listings in the 1950s and 1960s, and its relative equity market performance is the highest during this time period. Germany exhibits a coherency in foreign listing intensity and relative GDP growth, both of which have their troughs in the mid-1980s and first peaks in the 1970s. Japan shows a striking synchronicity between foreign listing hosting and the country's relative equity market performance; the peaks in both of these time-series occur in the 1970s and 1980s. Luxembourg has a sizable upward trend in hosting of foreign listings and relative GDP growth over the whole 57-year sample period; its relative market performance closely matches peaks in the listing activity toward the late 1970s and after the 1990s.

Markets such as the Netherlands and Switzerland seem to display a bit lower visible correlation between their foreign listing attractiveness potential and their relative country-wide performance measures over the whole sample period. Yet over significant subperiods, the relation between those series is again quite substantial (e.g., a period between the 1950s and the late 1980s for Switzerland). For the United Kingdom, we can observe that both performance measures generally match the inverse U-shaped pattern of foreign listing activity in the 1950s, 1970s, and 1980s, and the country's relative GDP growth shows synchronous movements with listings from the 1980s to the end of the sample period. One can also easily notice a strong relation between the changes in foreign listing intensity and market performance in the United States. The correlation is observed from 1970 to the end of the sample in 2006. Thus, Figures 5 and 6 confirm the link between a country's financial and economic development and its increased probability of becoming an attractive place for foreign listings.

In the Appendix, we list major economic and financial market events in the seven primary host markets for foreign listings outside the United States that can be linked to the changes in the relative foreign listing attractiveness and relative market performance over time for these countries. For instance, the relative outperformance of France in the 1960s both in economic terms and as a host market for foreign firms coincides with wide-scale liberalization in 1965–1967. Another example is Japan: the first wave of foreign listings in that market in the mid-1970s occurred right after it opened its Foreign Stock Section on the Tokyo Stock Exchange in 1973, and the second wave of the 1980s followed large-scale privatization that began in 1984.

In sum, we find strong evidence that foreign listing activity tends to cluster in certain countries during certain time periods.[25] Consistent with the *host-market pull hypothesis* for foreign listing activity, cross-listing waves occur in a given host market when it does relatively well (based on various performance measures) with respect to other competing host markets for overseas listings. The ability of a country to attract foreign shares can be viewed as some measure of the country's

[25]There is some evidence that this statement is also correct for foreign delisting activity. A broad, multiple-country panel of delistings is practically impossible to assemble, but we were able to collect delisting data from 1950 to 2006 for Japan and the United States. These data suggest that delistings accelerate during weaker economic and market conditions in both countries.

overall financial market activity, so our findings are consistent with Rajan and Zingales (2003), who document that the development of the financial sector is not a monotonic process across countries and the time dimension.[26]

V. Foreign Listings and Links between Home and Host Markets

In Section II, we observed that some intense foreign listing placement during cross-listing waves occurs between countries with special ties to one another. We now move toward a full testing of the gravity model (equation (3)) and its econometric formulation (equation (4)), that is, toward formal cross-country tests that should reveal whether foreign listing waves in the top eight host markets are driven, at least in part, by the increase in supply of listings from countries with more extensive links to those host markets. Many home markets experience surges in foreign listing placement at the onset of financial liberalization or during other times of strong domestic economic and financial performance (e.g., foreign listings from Japan in the 1970s). Thus, we want to examine whether economic and financial characteristics of home markets are also responsible for the cross-listing waves in the eight most important host markets.

First, we collect GDP and equity return data for all home markets with at least three foreign listings. The real GDP data for this extended set of countries again come from the database of Angus Maddison. Stock market returns are from the Morningstar Dimson-Marsh-Staunton database and Datastream and are in U.S. dollars. Based on these data, we construct lagged changes in GDP growth and equity market returns for all home markets in our sample, with a country's listing in a top eight host market as a proxy for its economic and financial performance. We denote these variables as ΔGDP_HM$_{-1}$ and MRET_HM$_{-1}$, respectively. The home-market-size proxies are the second lags of GDP and market capitalization, GDP_HM$_{-2}$ and MCAP_HM$_{-2}$, respectively. Our proximity variable is the total number of exports going from a given home country to a given host country scaled by the home country's GDP, HH_EXPORTS$_{-1}$. This also reflects the economic synergies between countries.

Next, we create dynamic cross-market controls, which proxy for pricing efficiency and bonding. Pricing efficiency, aside from being related to the sizes of the home and host markets, is represented by cross-market liquidity, HH_LIQUIDITY, which is the difference in market liquidity between the host and home markets in a given year. The two time-series proxies for the bonding reasons of cross-listings are the differences in the rule-of-law, HH_LAW, and disclosure standards, HH_DISCLOSURE, between the host and the home markets. HH_LAW is the difference in the rule-of-law index between the host and home markets in a given year. HH_DISCLOSURE is the difference in disclosure between the host and

[26] In a related study, Zingales (2008) analyzes the competitiveness of the U.S. equity market using global IPO shares and finds a significant drop in the U.S. market share over a short time period between 2000 and 2005. He attributes this effect to a possible improvement in the competitiveness of other markets, primarily those in Europe.

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home markets in a given year. The liquidity, rule-of-law, and disclosure variables for each market are the same as in Section IV.

Table 7 shows the Tobit panel regression results of the logarithm of the number of foreign listings for each pair of home and host markets on a set of dynamic market and cross-market variables. For each regression, the table reports the number of observations and slope coefficients with their corresponding z-statistics. In all regressions we double-cluster standard errors by home market and year, as suggested by Petersen (2009). It is important to note that each 0 of the dependent variable (the number of overseas listing in a given year between the two markets) reflects the lack of interest among firms from a given home market in listing in a

TABLE 7

Cross-Country Tobit Regression Tests for the Top Eight Host Markets

Table 7 shows Tobit test results from regressing the logarithm of the number of foreign listings for each pair of home and host markets on a set of market and cross-market variables. GDP_HS and MCAP_HS are the size of the host market based on GDP and stock market capitalization, respectively. ΔGDP_HM and MRET_HM are the changes in the GDP and stock market returns in the home markets, respectively. ΔGDP_HS and MRET_HS are the changes in the GDP and stock market returns in the host markets, respectively. HH_EXPORTS represents exports from a given home market to given host market, computed as the log ratio of the corresponding dollar amount of exports to the home-market GDP. Export data are from Head et al.'s (2010) data set of cross-country trade flows. HH_LIQUIDITY is the difference in market liquidity between the host and home markets in a given year. Market liquidity is 1 minus the equal-weighted average percentage of 0 daily returns each month across all firms in a given country from Goyenko and Sarkissian (2014), averaged for a given calendar year. HH_LAW is the difference in the rule-of-law index between the host and home markets in a given year. The rule-of-law data are from the World Bank World Governance Indicators. HH_DISCLOSURE is the difference in disclosure between the host and home markets in a given year. Disclosure data for years prior to 1992 are from Doupnik and Salter (1993); data for years after 1992 are from CIFAR. The −1 and −2 subscripts on the variables denote the first and the second lags of variables, respectively. The z-statistics are in parentheses. Standard errors are clustered by home market and year. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	1950–2006				1975–2006			
	1	2	3	4	5	6	7	8
No. of obs.	9,721	7,912	9,250	7,548	7,785	7,001	7,379	6,637
ΔGDP_HS$_{-1}$	9.768***		9.178***		20.724***		20.869***	
	(2.96)		(2.71)		(3.25)		(3.25)	
GDP_HS$_{-2}$	0.005		0.012		0.134		0.139	
	(0.07)		(0.15)		(1.64)		(1.61)	
ΔGDP_HM$_{-1}$	2.970		3.292		1.292		1.383	
	(1.53)		(1.62)		(0.69)		(0.73)	
GDP_HM$_{-2}$	0.244**		0.250**		0.296***		0.298***	
	(2.44)		(2.55)		(3.29)		(3.33)	
MRET_HS$_{-1}$		0.592		0.573		0.864**		0.853**
		(1.62)		(1.54)		(2.02)		(1.96)
MCAP_HS$_{-2}$		−0.038		−0.034		0.068		0.071
		(−0.56)		(−0.48)		(0.89)		(0.88)
MRET_HM$_{-1}$		0.265***		0.276***		0.218**		0.220**
		(2.81)		(2.94)		(2.11)		(2.10)
MCAP_HM$_{-2}$		0.230***		0.224***		0.196***		0.190***
		(4.01)		(3.68)		(3.19)		(2.88)
HH_EXPORTS$_{-1}$	0.325***	0.298***	0.313***	0.290***	0.310***	0.357***	0.296***	0.346***
	(3.44)	(3.61)	(3.43)	(3.59)	(3.30)	(3.54)	(3.24)	(3.44)
HH_LIQUIDITY			−0.017	−0.030			0.076	0.056
			(−0.11)	(−0.16)			(0.45)	(0.31)
HH_LAW			−0.116	−0.175			−0.155	−0.203
			(−0.58)	(−0.86)			(−0.78)	(−1.01)
HH_DISCLOSURE			−0.214	−0.048			−0.167	−0.019
			(−1.41)	(−0.31)			(−1.00)	(−0.11)
Intercept	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Home clustering	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year clustering	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

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specific host market. In the earlier period of our sample and for the majority of countries (e.g., financially nonliberalized markets), the option of foreign listing placement did not exist at all. Therefore, in our estimations we count only those cross-listing zeros for each home market that occurred after the first listing overseas.[27] Columns 1–4 of Table 7 report the results of cross-country tests for the whole sample period, and columns 5–8 report the results for the 1975–2006 subperiod.

The regressions in columns 1 and 5 of Table 7 include only the gravity-model terms using the host- and home-market GDPs as the basis for country size and growth representation. In these specifications, the lagged host-market GDP growth is positive and consistently significant at the 1% level, but the size of the host market is not. We observe the opposite pattern with the home market: the home-market economic growth rate does not seem to be as important as its size. Thus, in effect, larger home markets seem to supply foreign listings to countries whose economies have expanded in the recent past. It is important to note that our cross-country proximity measure, the home country exports, is positive and significant. This supports the second hypothesis for cross-listing decisions, that is, that cross-listing activity is more common among proximate markets. Our results are not affected at all by the addition of cross-market liquidity, rule-of-law, and disclosure terms in the regressions in columns 3 and 7. Moreover, the additional variables show no signs of significance.

The regressions in columns 2 and 6 of Table 7 include only the gravity-model terms using the stock market capitalizations and returns of the host and home markets as the corresponding measures of country size and performance. In these specifications, the lagged host-market return is positive but significant at the 5% level only in the post-1975 period. The host-market size again appears unimportant. In both specifications, however, both the home-market returns and size are positive and significant. The coefficient on exports is positive and significant, as before. All of these relations again point to the vital role of home markets in contributing to the high foreign listing intensity of corresponding proximate host markets. For example, for the full sample estimation, a 1% increase in the performance of home stock markets in the previous year yields 1.32 additional listings shipped to the top eight host markets (a 0.28 increase in the natural log of the number of listings). In the regressions in columns 4 and 8 we add the three cross-market pricing efficiency and bonding variables but observe no qualitative differences in estimations relative to the previous setting.

Thus, our results illustrate that among the three sets of reasons for a firm to list its shares overseas (generating economic synergies, improving pricing efficiency, and bonding), the dominant role seems to be in the firm's desire to improve linkages with familiar target host markets. Host-market size, liquidity, and institutional features such as stringency of law and accounting practices play a distant secondary role, if any, in this process. More important and consistent with the *home-market push hypothesis* for foreign listing activity, cross-listing waves are

[27]The first cross-listing from a home country often coincides with the start of liberalization, so there is no need to control for liberalization separately (see Bekaert, Harvey, and Lumsdaine (2002), Sarkissian and Schill (2004)).

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also driven by the share placements of firms from proximate home markets that have, as have host markets, recently exhibited exceptional real and financial performance. In summary, our findings provide unique and interesting support for both of the proposed hypotheses for cross-listing waves.

VI. Two Hypotheses on Valuation in Periods of High Foreign Listing Activity

Given the strong evidence of cross-listing waves at the host-market, home-market, and industry levels, we have designed our valuation tests to look at the magnitude of gains associated with listing in the United States and elsewhere during specific periods of intense listing activity. Given substantial time-series variations in foreign listings, we should expect that periods of intense listing activity are particularly associated with short- and long-term valuation benefits. For example, the evidence of a surge of listings in Tokyo in the 1980s suggests, by revealed preference, that the gains to listings in Tokyo in the 1980s must have been relatively strong. In a similar manner, we postulate that waves in listings from a particular home market or industry suggest periods of particular gains to be realized to foreign listing for firms from that market or industry. Alternatively, firms may choose to cross-list in the periods of high host, home, or industry listing activity to lock into certain short-term benefits of the particular overheated market. In this case, one cannot expect any lasting gains from such decision timing. On the contrary, a large set of studies finds long-term underperformance among firms involved in other corporate actions with well-established wave patterns, such as IPOs and seasoned equity offerings (SEOs) (e.g., see Ritter (1991), Loughran and Ritter (1995)). Therefore, it is also likely to observe an undervaluation of foreign-listed firms several years after they are listed in/delisted from the overheated market. Thus, we can now state our valuation hypotheses:

Hypothesis V1. Efficient-Timing Hypothesis. Valuation gains of foreign firms listed during a period of intense listing activity are positive in the long term.

Hypothesis V2. Market-Timing Hypothesis. Valuation gains of foreign firms listed during a period of intense listing activity are positive in the short term and negative in the long term.

Our valuation measure for testing these hypotheses is the Tobin's Q ratio. All firm valuation ratios and characteristic controls are from Compustat for U.S. firms and Worldscope for non-U.S. firms. Our initial data set contains the full panel of world firms (whether cross-listed or not). To establish the appropriate control firms, we omit firms from those countries that do not show any foreign stock listings based on our cross-listing sample (e.g., Pakistan). We also allocate firms into 15 industry groups based on the detailed industry definitions in Compustat (Standard Industrial Classification (SIC) codes) and Worldscope (industry descriptions). These industry groups are Chemicals, Construction, Consumer Goods (automobiles, personal goods, and food), Financials, Healthcare (pharmaceuticals, biotechnology, and medical equipment), Leisure, Industrial Goods, Oil & Gas, Resources (industrial metals, mining, and forestry and paper), Distributors

(retail and wholesale), Support Services (including all business, engineering, legal, and medical services), Technology (electronic and computer equipment, software), Telecommunications (including media), Transportation, and Utilities.[28] To construct Tobin's Q for each firm, we follow the established practice in the literature. Specifically, we define Q as follows:

$$(7) \quad Q = \frac{\textit{Total asset value} - \textit{Book value of equity} + \textit{Market value of equity}}{\textit{Total asset value}}.$$

The full sample is a panel of 228,060 firm-year observations across 55 countries and the 22-year sample period. This is the same sample used by Sarkissian and Schill (2012). Following Doidge et al. (2009), we control for a firm's sales growth, defined as the inflation-adjusted 2-year geometric average net sales growth, and a firm's size, defined as the natural logarithm of a firm's net sales.

Table 8 shows the mean and standard deviation of Tobin's Q, net sales, and sales growth. Panel A reports these statistics separately for firms with foreign listings and those without foreign listings for the whole sample period as well as

TABLE 8

Summary Statistics of Firm Valuation Data

Table 8 reports the summary statistics of three firm characteristics for a panel firms with and without foreign listings. A firm's Tobin's Q (FIRM_Q) is defined as a ratio in which the numerator is total asset value minus book value of equity plus market value of equity, and the denominator is the total asset value. SALES is a firm's net sales in millions of U.S. dollars. SALES_GROWTH is defined as the inflation-adjusted 2-year geometric average net sales growth. For each country, inflation is computed from local changes in the Consumer Price Index (CPI) using data from the International Monetary Fund. SALES_GROWTH is winsorized at the 1% level on both tails. Panel A shows the results for both listed and nonlisted firms in foreign markets. Panel B shows the results across time around the listing year for firms with foreign listings.

	Whole Sample Period		1985–1995		1996–2006	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Panel A. All Firms						
Firms with Foreign Listings						
No. of obs.	15,957		5,871		10,086	
FIRM_Q	1.673	1.347	1.512	0.981	1.767	1.513
SALES	10,919	21,214	10,693	18,357	11,050	22,711
SALES_GROWTH	0.235	0.334	0.256	0.333	0.222	0.344
Firms with No Foreign Listings						
No. of obs.	212,103		69,220		142,883	
FIRM_Q	1.709	1.587	1.622	1.287	1.751	1.751
SALES	1,488	7,153	1,803	7,297	1,336	7,077
SALES_GROWTH	0.274	0.422	0.266	0.392	0.278	0.436
	Prelisting Years		Listing Year		Postlisting Years	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Panel B. Firms with Foreign Listings						
No. of obs.	4,400		910		10,647	
FIRM_Q	1.689	1.468	1.891	1.689	1.648	1.258
SALES	9,680	18,254	9,247	18,815	11,573	22,478
SALES_GROWTH	0.311	0.385	0.331	0.469	0.195	0.287

[28] Because U.S.-based SIC codes and Worldscope industries do not coincide, it is imperative in our study to have a uniform industry classification for both constructing proper industry controls and conducting industry-level tests.

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two equal 11-year subperiods, 1985–1995 and 1996–2006. The listing subsample has 15,957 observations, and the nonlisting subsample has 212,103. The average firm's Q for both listed and nonlisted firms in foreign markets is higher in the second period. This pattern is not observed for the other two firm characteristics. Also, we see that, on average, the Tobin's Q of listed companies is no higher than that of companies with only domestic presence, but this could be the result of an impact of highly valued U.S. firms with no presence on foreign exchanges. In addition, any valuation differences could be related to differences in firm size that this panel does not control for.

Panel B of Table 8 shows firm characteristics over three periods around the foreign listing event: prelisting years, listing year, and postlisting years. Consistent with previous studies, we see that firms are valued more in the year of listing than before or after the event. The average Q of firms in the listing year is almost 1.9, versus close to 1.7 before or after the listing. In testing these valuation measures relative to other firms that do not list abroad, it is important to remember that firms with high Qs may systematically tend to cross-list (e.g., see Gozzi, Levine, and Schmukler (2008), Sarkissian and Schill (2012)). It is interesting to note that foreign listings do not seem to enhance company's growth opportunities in a univariate time-series comparison; sales growth is smaller on average after a listing.

Our proxy for the foreign listing intensity (FLI) in a given host market, home market, or industry is the proportion of global overseas listings in a particular year for that host market, home market, or industry. To test our two valuation hypotheses, we extend the tests of Doidge et al. (2009) and Sarkissian and Schill (2012) by adding interaction terms that link the series of dummy variables for foreign listing with the level of listing intensity:

$$
\begin{aligned}
(8)\quad Q_{j,t} \;=\;& \alpha_i + \delta_{-1}\mathrm{FL}\left(<0\right)_j + \delta_\tau \sum_{\tau=0}^{+4} \mathrm{FL}\left(\tau\right)_j \\
&+ \delta_{\mathrm{FLI},\tau} \sum_{\tau=0}^{+4} \mathrm{FL}\left(\tau\right)_j \times \mathrm{FLI}\left(\mathrm{MARKET}, 0\right) \\
&+ \gamma_1 \mathrm{SALES_GROWTH}_{j,t} + \gamma_2 \log(\mathrm{SALES})_{j,t} + \gamma_3 \mathrm{HOME_Q}_{i,t} \\
&+ \gamma_4 \mathrm{FIRM_Q}_k + \gamma_5 \mathrm{INDUSTRY_EFFECTS}_k \\
&+ \gamma_6 \mathrm{YEAR_EFFECTS}_t + \varepsilon_{j,t}.
\end{aligned}
$$

In this regression model, $Q_{j,t}$ is the Tobin's Q of firm j in year t of the listing firm. $\mathrm{FL}(\tau)_j$ denotes an indicator variable that is equal to 1 in year τ before or after the foreign listing year for firm j, and τ is between -4 and +4. To conserve space and improve the tractability of results, we aggregate all prelisting dummies into a single dummy variable, FL(<0). Year +4 denotes all years on or beyond the fourth year after the listing.[29] $\mathrm{FLI}(\mathrm{MARKET}, 0)$ is the foreign listing intensity of the host market, home market, or industry in the listing year of firm j. Because we are interested in the after-listing performance, we interact $\mathrm{FLI}(\mathrm{MARKET}, 0)$ only

[29] Our event window is similar to that in Doidge et al. (2009).

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with postlisting indicators. Furthermore, given a home-market performance's impact on the valuation of cross-listed firms, we also account for the annual home market Q (HOME_Q), firm prelisting period median Q (FIRM_Q (prelisting)), and fixed industry and calendar-year effects.[30] The primary coefficient of interest, $\delta_{\mathrm{FLI},\tau}$, reflects the extent to which cross-listing intensity at a given market or industry level affects firm valuation when listing on a foreign exchange. A positive and significant δ_{FLI}, especially for $\tau > 3$, would indicate clear benefits of an overseas-listing placement during conditions of high cross-listing intensity in a given market. Alternatively, if δ_{FLI} is positive in the short run but negative in the long run, then it will indicate market timing.

Note that the inclusion of FIRM_Q as an additional control is not equivalent to using a lagged dependent variable, which has raised moderate concerns in the econometrics literature (e.g., see Maddala and Rao (1973), Grubb and Symons (1987)). Our motivation to have this control in the regression is based on recent findings (Sarkissian and Schill (2012)) that the valuation premium associated with foreign listings, especially among firms cross-listed in the United States (e.g., Doidge et al. (2004), (2009)), is driven largely by the high prelisting valuation ratios of those firms rather than any institutional features of the host market. Nevertheless, we estimate the model in equation (8) with and without the FIRM_Q control. In all regressions, standard errors are clustered by firm.

Table 9 shows the estimation results of the model in equation (8) using various specifications across two panels. For each regression we report the number of observations and point estimates and their respective t-statistics. Panel A deals only with foreign listings on U.S. exchanges. We first focus on this market due to the size of its cross-listing activity and its preeminent importance in many cross-listing studies. The first four columns in Panel A do not control for FIRM_Q, whereas the last two do. We observe in column 1 that without the interaction with listing-intensity terms, the valuation is a significant increase in the Q premium among cross-listed firms in the listing year, as shown in many studies. The magnitude of the valuation premium diminishes in economic and statistical terms over the years after the listing, and the statistical significance disappears after the third year. This is our base-case estimation for the cases without the FIRM_Q control.

In columns 2, 3, and 4 of Table 9, we interact the event time dummy variables with three measures of the foreign listing intensity: host market, home market, and industry, respectively. We observe that the well-known listing-year premium shown in the base case is exclusively a host-market wave phenomenon, as shown in the regression in column 2, and that the coefficient on $\mathrm{FL}(0)$ is insignificantly different from 0, but that the coefficient on the interaction with the variable of U.S. host-market foreign listing intensity is high at 1.21 (t-statistic $= 2.06$). It is curious to note that the decline of the value premium in event time is also isolated to U.S. host-market waves. We observe a similar pattern for industry waves with abnormal valuation gains to on-wave listings and a rapid decline in gain afterward. These results support our second valuation hypothesis. Foreign firms,

[30] Unlike Doidge et al. (2009) and Sarkissian and Schill (2012), who use global industry Q and country fixed effects, we use home-country Q and industry fixed effects instead because this substitution leads to a higher R^2 and smaller root mean squared error in regression estimations. The subsequent test results are quite immune to this change, both qualitatively and statistically.

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by market-timing their cross-listing decisions with U.S. and industry foreign-listing waves, experience valuation gains in the listing year but incur significant value losses in the long run. For home-market waves, there are no immediate abnormal valuation gains to firms, but again, they experience substantial valuation decline over time, and after the third year from listing, the valuation discount becomes significantly negative, similar to that for those companies that cross-list

TABLE 9

Valuation Changes around Foreign Listing with Host-Market, Home-Market, and Industry Listing Intensity

Table 9 reports the regression test results of valuation changes around foreign listings for three data samples while controlling for the host-market performance. The dependent variable is the firm's Tobin's *Q* (FIRM_Q), which is a ratio in which the numerator is total asset value minus book value of equity plus market value of equity, and the denominator is the total asset value. The listing indicator, FL, is a dummy that takes the value of 1 in the listing year and all following years. SALES is a firm's net sales in millions of U.S. dollars. SALES_GROWTH is the inflation-adjusted 2-year sales growth (winsorized at 1% and 99%), where inflation is computed using local CPI indices. HOME_Q is the median Tobin's *Q* in the home country in the given year. FIRM_Q (prelisting) is the time-series median Tobin's *Q* for each firm prior to the listing. FLI(X, 0) is the foreign listing intensity of the home or host markets, as well as industry, in a given listing year. It is defined as the ratio of the number of foreign listings either from a given home market, or to a given host market, or in a given industry in a given year over the total number of foreign listings in that year. The table also shows the *t*-statistics in parentheses. The industry and year fixed effects are included in each regression, but the coefficients are not shown. Standard errors are clustered by firm. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Foreign Listings on U.S. Exchanges

	Without FIRM_Q Control				With FIRM_Q Control			
	None	Host	Home	Industry	None	Host	Home	Industry
No. of obs.	141,178	141,178	141,178	141,178	138,466	138,466	138,466	138,466
FL(<0)	0.259***	0.259***	0.259***	0.259***	0.006	0.006	0.006	0.005
	(3.85)	(3.85)	(3.85)	(3.88)	(0.16)	(0.18)	(0.16)	(0.16)
FL(0)	0.447***	0.092	0.447**	0.096	0.015	−0.290**	0.001	−0.216*
	(3.80)	(0.47)	(2.48)	(0.50)	(1.12)	(−2.40)	(0.01)	(−1.72)
FL(+1)	0.218***	0.116	0.218*	0.300*	−0.209**	0.088	−0.102	0.145
	(2.88)	(0.70)	(1.67)	(1.91)	(−1.96)	(0.50)	(−0.81)	(0.78)
FL(+2)	0.288***	0.261**	0.288**	0.264**	−0.237**	0.407*	−0.222	0.334
	(2.76)	(2.01)	(2.35)	(2.11)	(−2.00)	(1.70)	(−1.01)	(1.02)
FL(+3)	0.349***	0.363**	0.349***	0.404***	−0.312***	−0.013	−0.279	−0.014
	(3.15)	(2.40)	(2.84)	(2.94)	(−2.59)	(−0.05)	(−1.61)	(−0.06)
FL(≥+4)	0.172	0.253**	0.172**	0.176**	−0.123***	0.289*	−0.108	−0.216
	(1.48)	(2.43)	(2.20)	(2.09)	(−3.12)	(1.88)	(−0.96)	(−1.63)
FL(0) × FLI(X, 0)		1.207**	0.043	4.484*		1.047***	1.072	3.221**
		(2.06)	(0.03)	(1.92)		(2.72)	(1.03)	(1.96)
FL(+1) × FLI(X, 0)		0.473	0.539	−0.665		−0.693	−0.936	−3.320
		(1.15)	(0.40)	(−0.49)		(−1.44)	(−0.58)	(−1.61)
FL(+2) × FLI(X, 0)		−0.052	−0.771	−0.281		−1.886***	−1.094	−6.898
		(−0.15)	(−0.75)	(−0.17)		(−2.37)	(−0.60)	(−1.57)
FL(+3) × FLI(X, 0)		−0.374	−1.399	−2.128*		−0.784	−0.422	−3.067
		(−0.96)	(−1.55)	(−1.76)		(−1.05)	(−0.29)	(−1.30)
FL(≥+4) × FLI(X, 0)		−0.569***	−1.426**	−1.300*		−1.591***	−1.786	−0.428
		(−2.57)	(−2.25)	(−1.74)		(−3.76)	(−1.49)	(−0.33)
ln(SALES)	−0.042***	−0.042***	−0.041***	−0.041***	−0.023***	−0.025***	−0.025***	−0.025***
	(−11.61)	(−11.62)	(−11.57)	(−11.60)	(−10.86)	(−11.30)	(−10.89)	(−10.85)
SALES_GROWTH	0.417***	0.417***	0.418***	0.417***	0.131***	0.129***	0.130***	0.130***
	(22.50)	(22.50)	(22.50)	(22.49)	(9.57)	(9.56)	(9.56)	(9.59)
HOME_Q	1.195***	1.195***	1.196***	1.194***	0.583***	0.583***	0.585***	0.584***
	(29.90)	(29.89)	(29.92)	(29.93)	(23.98)	(23.97)	(23.94)	(23.98)
FIRM_Q (prelisting)					0.936***	0.936***	0.935***	0.936***
					(50.55)	(51.13)	(50.63)	(51.04)
Intercept	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

(continued on next page)

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TABLE 9 (continued)

Valuation Changes around Foreign Listing with Host-Market, Home-Market, and Industry Listing Intensity

Panel B. Foreign Listings in Global Markets

	All Firms				No U.S. Firms			
	None	Host	Home	Industry	None	Host	Home	Industry
No. of obs.	225,130	225,130	225,130	225,130	138,466	138,466	138,466	138,466
FL(<0)	−0.007 (−0.37)	−0.007 (−0.37)	−0.007 (−0.37)	−0.007 (−0.38)	−0.011 (−0.53)	−0.010 (−0.50)	−0.011 (−0.54)	−0.011 (−0.54)
FL(0)	−0.059* (−1.66)	−0.163*** (−3.09)	−0.061 (−1.20)	−0.055 (−1.13)	−0.015 (−0.39)	−0.126** (−2.02)	−0.044 (−0.80)	−0.040 (−0.87)
FL(+1)	−0.236*** (−5.84)	−0.241*** (−3.74)	−0.284*** (−5.31)	−0.094 (−1.41)	−0.209*** (−4.73)	−0.180*** (−2.73)	−0.241*** (−4.05)	−0.086 (−1.06)
FL(+2)	−0.246*** (−4.53)	−0.142* (−1.81)	−0.298*** (−4.05)	−0.144* (−1.76)	−0.237*** (−3.89)	−0.050 (−0.60)	−0.213** (−2.52)	−0.063 (−0.58)
FL(+3)	−0.362*** (−6.48)	−0.354*** (−3.81)	−0.418*** (−5.64)	−0.132 (−1.19)	−0.312*** (−5.27)	−0.256*** (−2.78)	−0.331*** (−4.33)	−0.125 (−1.08)
FL(≥+4)	−0.135*** (−3.16)	−0.038 (−0.58)	−0.153** (−2.46)	−0.168*** (−3.08)	−0.123*** (−2.71)	0.037 (0.59)	−0.102 (−1.30)	−0.174*** (−2.81)
FL(0) × FLI(*X*, 0)		0.497** (2.42)	0.011 (0.05)	−0.038 (−0.10)		0.490* (1.93)	0.316 (0.97)	0.233 (0.56)
FL(+1) × FLI(*X*, 0)		0.024 (0.10)	0.469 (1.59)	−1.388** (−2.33)		−0.124 (−0.48)	0.391 (0.68)	−1.219 (−1.56)
FL(+2) × FLI(*X*, 0)		−0.478 (−1.05)	0.462 (1.45)	−0.946 (−1.19)		−0.830* (−1.77)	−0.282 (−0.41)	−1.674 (−1.43)
FL(+3) × FLI(*X*, 0)		−0.038 (−0.08)	0.523* (1.74)	−2.193** (−2.00)		−0.235 (−0.52)	0.223 (0.44)	−1.794 (−1.55)
FL(≥+4) × FLI(*X*, 0)		−0.504** (−2.24)	0.131 (0.49)	0.295 (0.79)		−0.801*** (−3.32)	−0.232 (−0.48)	0.464 (0.89)
log(SALES)	−0.007*** (−7.79)	−0.007*** (−7.79)	−0.007*** (−7.91)	−0.007*** (−7.81)	−0.023*** (−11.29)	−0.023*** (−11.60)	−0.023*** (−11.21)	−0.023*** (−11.35)
SALES_GROWTH	0.184*** (15.83)	0.184*** (15.82)	0.184*** (15.86)	0.184*** (15.84)	0.131*** (9.65)	0.131*** (9.65)	0.131*** (9.64)	0.131*** (9.66)
HOME_Q	0.558*** (24.26)	0.558*** (24.28)	0.558*** (24.23)	0.558*** (24.26)	0.583*** (24.08)	0.583*** (24.08)	0.583*** (24.06)	0.583*** (24.09)
FIRM_Q (prelisting)	0.963*** (84.20)	0.963*** (84.55)	0.963*** (84.15)	0.963*** (84.25)	0.936*** (51.54)	0.936*** (51.76)	0.936*** (51.53)	0.936*** (51.54)
Intercept	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

during U.S. or industry cross-listing waves. Therefore, cross-listing at the home-market cross-listing wave provides additional support for the market-timing hypothesis of foreign listing decisions.

It is important to note that the coefficients on the prelisting valuation ratios of foreign firms listed in the United States, FL(<0), are positive and significant even prior to listing. It is possible, then, that our findings are driven by not properly accounting for the prelisting valuation levels of foreign-listed firms. Therefore, in columns 5 through 8 of Panel A in Table 9, following Sarkissian and Schill (2012), we add the median prelisting period firm Q to the right-hand side of the regression to control for the valuation characteristics of firms that tend to list abroad. We see that the inclusion of this variable dramatically affects the results, but largely only for the individual (noninteractive) coefficients on foreign listing dummies, FL(τ). In our new base specification shown in column 5, the coefficient on the listing-year 0 dummy is no longer significant, and long-term valuation

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gains are now significantly negative, as reflected by the coefficient on FL(≥+4). It appears that firms with high valuation ratios tend to list abroad and that those high ratios tend to decline following such listing, consistent with evidence noted by Sarkissian and Schill (2012).

However, when the listing wave interaction is included (columns 6–8 of Table 9), we again find that those firms that cross-list during U.S. or industry cross-listing wave periods do experience significant valuation gains in the initial year of listing. Subsequent years show that once the prevaluation Q is accounted for, foreign listings are actually associated in most of the cases with valuation discounts. The only marginally positive long-term valuation benefits are observed in placement periods of relatively low foreign listing activity in the U.S. market, with the coefficient on FL(≥+4) equal 0.29 (t-statistic = 1.89). In its turn, the most severe firm value drop is associated with overseas-listing placements during cross-listing waves in the United States. The point estimate on the interactive term FL(≥+4) × FLI(HOST, 0) is –1.59 at the 1% significance level. Thus, our results cast new doubts on the long-term valuation gains to U.S. listings, particularly during cross-listing waves.

We next examine the valuation gains using the full panel of host markets. Panel B of Table 9 presents the estimation results for all firms and listings (columns 1–4) and with the exclusion of foreign listings of U.S. firms (columns 5–8). All regression specifications in this panel include the prelisting firm Q as one of the controls. In the base-case estimation shown in column 1, we see big valuation discounts, not premiums, for firms that list abroad. The next three columns add the interactive coefficients between listing-year dummies and the three foreign listing intensity variables: host, home, and industry. Note that column 2 shows that firms that list their shares in host markets that attract a high proportion of the overall count of foreign listings are associated with high abnormal valuations in the year of the listing but very poor valuations in the long run: the coefficient on FL(0) × FLI(HOST, 0) is 0.49 (t-statistic = 2.42), but on the extended interaction term FL(≥+4) × FLI(HOST, 0) is −0.50 (t-statistic = −2.24). In columns 3 and 4, we observe negative and significant long-term valuation effects for foreign listings (see point estimates and t-statistics for FL(≥+4)), but find some positive moderation coming from active home and industry cross-listing markets. Columns 5 to 8 of Panel B repeat the earlier estimation but without U.S. firms. Because U.S. firms constitute a large part of our firm and listing samples, their relative valuation may impact the overall results. We find that the results are fairly comparable to those with the full sample.

Thus, our results in Table 9 highlight the particular importance of host-market listing intensity on the long-term valuation dynamics of cross-listed firms. Consistent with Gozzi et al. (2008) and Sarkissian and Schill (2009), (2012), we show that even when one looks at the periods of the most intense foreign listing activity in the host market, home market, or industry, there is no evidence of long-term valuation benefits to cross-listing. Yet temporary gains in the valuation of cross-listed companies, which are widely documented in the literature, tend to occur specifically in times when firms place their shares in host markets that exhibit an extraordinarily high attractiveness for overseas listings. Therefore, our findings provide ample support for the market-timing hypothesis in

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overseas-listing decisions, especially with respect to riding the host-market cross-listing waves, as there is very little evidence that these decisions are efficiently implemented across time and space.

VII. Conclusions

In this study, we document large variations in foreign listing activity across countries and over time and trace them using extant explanations of cross-listing decisions (economic synergy, pricing efficiency, and bonding) and the gravity model. Our analysis allows us to make three contributions to the literature on overseas listings and cross-country development. First, we show the extent of cross-listing waves at the host-market, home-market, and industry levels over a more than 50-year period and find that a substantial portion of host-market waves is due to underlying waves in proximate home markets. Second, we find that the relative performances of the equity market and real economy across major host markets for listings provide explanatory power for time-series variations of listing activity on their exchanges, a relation immune to the inclusion of other macroeconomic and financial controls as well as institutional characteristics. We also observe that foreign listing waves across host markets are driven by not only their own economic and financial performance, but also that of proximate home markets. These results are consistent with the predictions of the gravity model applied to the cross-listing setting and economic-synergy arguments of cross-listing preferences. There are some signs of the relevance of the pricing efficiency hypothesis in cross-listing decisions, but there is no support for the importance of the bonding hypothesis. Finally, we find that foreign listing waves are associated with systematic but transitory value gains to those firms that list abroad. The long-term valuation of firms with overseas listings placed in the most popular host markets is lower than that of firms that are placed on foreign exchanges outside their most attractive time periods. Therefore, we conclude that overseas-listing decisions most often attempt to time the host-market outperformance and attractiveness for cross-listings.

Our findings are consistent with those of Rajan and Zingales (2003), in that we provide new evidence that market development changes across countries and over time, because the changing ability of a country to attract foreign shares can be viewed as a measure of the country's overall financial market activity. We also show the general irrelevance of access to more developed (highly valued) foreign capital markets at the firm level, similar to the country-level results of Rajan et al. (2007).

Appendix. Chronology of Major Economic and Financial Events

In this Appendix we report significant economic and financial events in major host markets for overseas listings outside the United States during the second half of the 20th century.

France
1956: Suez Canal crisis.
1958: Liberalization of payments related to current account transactions

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1965–1967: Liberalization of the French financial markets
1982: Nationalization of 36 deposit banks, increasing influence of the government
1983: Opening of the Second Marché for small and medium-sized enterprises
1983: Introduction of venture capital mutual investment funds
1984–1986: Gradual liberalization of trade-related operations
1986: Beginning of large-scale privatizations with the privatization of Saint-Gobain
1986: Total liberalization of currency hedging for foreign-currency-denominated imports
1986: French residents allowed to freely buy shares listed on foreign markets
1986: Creation of French futures market, MATIF (Marché à Terme International de France)
1987: Creation of Paris options market, MONEP (le Marché d'Options Négociables de Paris)
1988: Elimination of lending restrictions and currency controls and removal of many of the administrative barriers that had compartmentalized credit institutions' business in Europe
1989: French residents allowed to freely open and keep foreign-currency-denominated accounts in France and foreign-currency-denominated and franc-denominated accounts abroad
1989: Abolition of all remaining foreign-exchange controls
1996: Creation of the Nouveau Marché
1997: Creation of the Banque du développement des PME for small and medium-sized firms
1998: Law of 1998 creates the new standard-setting body for accounting, the Comité de la Réglementation Comptable (CRC).
1999: Creation of Paris Bourse
2000: Creation of Euronext

Germany
1959: Minor reform of Stock Corporation Law to stimulate stock demand among working-class people, including restructuring of income statements and allowing a company to purchase its own stocks in order to allocate shares to its employees
1965: Major reform of Stock Corporation Law (law regarding the capital increase through a company's own resources), including increase in incentives to strengthen stock holders' rights within a business, provision of better and faster information for shareholders, limitation of membership in supervisory boards of public limited companies
1969: Company Disclosure Law on the extension of company information requirements
1970: Introduction of forward and futures trading
1975: Amendment of the Stock Exchange Act, which included improvement of self-administration of exchanges, strengthening of exchange brokers' status, obligation to establish official broker chambers, reorganization of penal provisions
1976: Abolition of double taxation of stocks
1989: Amendment of the Stock Exchange Act makes legal prerequisites for electronic platform for exchange trading, forward and futures trading, and notation of securities in foreign currencies and units of account
1990: Reunification of Germany
1990: First Financial Markets Advancement Law, which includes the abolition of tax charges, broader business opportunities for investment companies, and the admission of restricted funds and fixed-income funds
1994: Second Financial Markets Advancement Law, which includes the implementation of the European Investment Services Directive and the Foundation of the Federal Securities Supervisory Office
1998: Third Financial Markets Advancement Law on the adjustment of investment company law, including the facilitation of admission to the exchange for new issuers

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Japan
1956: Bond market reopens
1966: Japan becomes a member of the Organisation for Economic Co-Operation and Development (OECD) and agrees to liberalize its capital markets
1970: Tokyo Stock Exchange (TSE) joins the International Federation of Stock Exchanges (FIBV)
1973: Foreign Stock Section opens
1980: The new Foreign Exchange and Foreign Control Law, which decontrols international capital flows, takes effect
1981: Banking Law is passed with the objective of fixing healthy and appropriate operations in the banking business and thus promoting the healthy development of the national economy
1982: Removal of constitutional restrictions on the membership of foreign securities companies
1984: Beginning of large-scale privatizations
1986: Tokyo exchange permits non-Japanese brokerage firms to become members
1989: Tokyo International Financial Futures Exchange (TIFFE) established
1996: Beginning of the Financial System Reform, the "Japanese Big Bang," under the three principles of "free, fair, and global," aiming to rebuild the Japanese financial market into an international market comparable to the New York and London markets
1998: Abolition of restrictions on off-exchange trading for listed securities
2000: National Association of Securities Dealers Automated Quotations (NASDAQ) Japan Market of the Osaka Securities Exchange (OSE) established

Luxembourg
1959: Creation of Luxembourg's first "Fonds Commun de Placement" (FCP) (mutual funds)
1963: Issuance of the first Eurobond, denominated in Eurodollars, in Luxembourg because of low costs involved and the favorable tax regime
1969: The world's first international foreign-currency bond quoted in Luxembourg
1970: Luxembourg becomes member of the International Center for the Settlement of Investment Disputes (ICSID)
1983: Creation of the Luxembourg Monetary Institute (IML), which is responsible, in particular, for the supervision of the financial sector and for issuing currency
1984: Adoption of the European Union's Fourth Directive, which introduced special financial reporting regulations in Luxembourg
1990: Grand-Ducal regulation establishes issuance and listing procedures
1993: Law on the Financial Sector provides a solid foundation for the fight against money laundering and financing of terrorism
1998: Creation of the Banque Centrale du Luxembourg (BCL)
2001: Law on the circulation of securities and other financial instruments

The Netherlands
1961: Following the deutsche mark, devaluation of the guilder
1985: Securities Trading Act regulates the fight against undesirable developments that arise in the securities trade
1990: The Acts on the Supervision of Collective Investment Schemes and Investment Institutes are passed for the promotion of adequate functioning of the financial and securities markets and protection of (potential) investors in these markets
1996: Disclosure of Major Holdings in Listed Companies Act
1997: Merger of the Amsterdam Stock Exchange and the European Option Exchange
1998: Passage of the Bank Act, aimed at the implementation of monetary policy within the European Community (EC), and the supervision of banks, investment institutions, and exchange offices

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Switzerland

1951: Treaty between Switzerland and the United States stipulates that no information will be exchanged that would disclose any trade, business, industrial, or professional secret

1953: National Bank Law that designates the Swiss National Bank to carry out the tasks that the Confederation has assigned to it in the fields of payment transactions, coinage, administration of moneys and securities, investment of public funds, administration of the national debt, and issue of bonds, and stipulates that it must advise the federal authorities in monetary matters

1959: Switzerland becomes a member of the European Free Trade Association

1979: Foreigners permitted to acquire Swiss franc-denominated assets

1993: Reformation of the settlement process to offer additional services, such as value date monitoring and cash-planning; speeds the settlement process and makes the market more liquid

1995: Merger of Switzerland's three stock exchanges in Geneva, Basel, and Zurich to form the SWX

1996: Inauguration of SegaInterSettle AG (SIS), a fully automated trading, clearing, and settlement system, which becomes the hub of Swiss securities trading, the central depository for all Swiss stocks and debt securities, and the central clearing organization for all transactions in Swiss securities; also settles international transactions in Swiss securities through its SECOM system

1998: Merger of the Swiss and German derivatives markets (SOFFEX and DTB) to form Eurex as the first transnational derivatives exchange

1999: Inauguration of SWX Repo, the world's first fully integrated, electronic repo trading platform; admission of participants from France, Germany, and the United Kingdom; start of the SWX New Market segment for growth companies

2000: SWX Repo is integrated into Eurex; launch of SNMI, the SWX New Market Index

United Kingdom

1951: Bank rate restored to control the monetary system in Britain

1956: Suez Canal crisis

1967: Pound is devalued against the dollar, from $2.80 to $2.40

1971: Competition and Credit Control Act ends interest rate cartel

1973: Eleven British and Irish regional exchanges amalgamate with the London Stock Exchange

1973–1974: Secondary banking crisis

1979: Abolishment of all foreign-exchange controls

1979: Beginning of large-scale privatizations with British Petroleum

1982: Establishment of the London International Financial Futures and Options Exchange

1986: London Stock Exchange's "Big Bang" changes, which allow ownership of member firms by outside corporations, abolish minimum scales of commission, strip individual members from having voting rights, allow all firms to operate in a dual capacity as broker/dealers, move trading from being conducted face to face on a market floor to being performed via computer and telephone from separate dealing rooms, and make the Exchange a private limited company

1990: Britain joins the European Exchange Rate Mechanism, a decision motivated, at least in part, by Britain's repeated failure to meet its money-supply targets

1992: Britain leaves the European Exchange Rate Mechanism after massive international speculation

1995: Establishment of the Alternative Investment Market (AIM) on the London Stock Exchange

1997: Chancellor of the Exchequer announces the reform of financial services regulation in the United Kingdom and the creation of a new regulator, the Financial Services Authority (FSA)

1998: The first stage of reforms of financial services regulation, including the transfer of responsibility for banking supervision from the FSA to the Bank of England

2000: The FSA becomes an independent nongovernmental body and is given statutory powers by the Financial Services and Markets Act; FSA takes over the role of U.K. Listing Authority from the London Stock Exchange

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