

Are There Permanent Valuation Gains to Overseas Listing?

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This paper tests whether foreign equity listings are associated with permanent valuation gains and examines how market and firm characteristics influence any valuation effects. Using a global sample of 1,676 listings placed in 25 countries, we find that much of the valuation gains to overseas listings are not permanent. The transitory nature of valuation gains holds for both average US listings and average first-time firm listings. We find little evidence of a permanent effect on returns for firms that list abroad, even for firms' listings in markets that are more liquid, provide better legal protection, or have a larger shareholder base. (*JEL* G14, G15)

In a frictionless world market, firms are indifferent to the trading location of their securities. However, frictions such as cross-border barriers to investments (Black, 1974; Solnik, 1974; Stulz, 1981; and Errunza and Losq, 1985) and information flow (Merton, 1987; and Foerster and Karolyi, 1999), as well as market differences in liquidity (Tinic and West, 1974; Werner and Kleidon, 1996; Domowitz, Glen, and Madhavan, 1998; and Foerster and Karolyi, 1998), disclosure requirements (Biddle and Suadagaran, 1992; Fuerst, 1998; and Huddart, Hughes, and Brunnermeier, 1999), and minority shareholder protection (Coffee, 1999, 2002; Reese and Weisbach, 2002; Lee, 2003; Benos and Weisbach, 2004; and Doidge, Karolyi, and Stulz, 2004), make the selection of trading venue relevant. Most firms choose to have their equity securities traded on their respective domestic market. The literature observes that firms that also choose to list their equity subsequently in foreign markets realize substantive

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valuation gains.¹ Such gains are generally attributed to a reduction of the super risk premium associated with the barriers or disadvantaged characteristics of the particular home equity market.

A growing literature documents substantial long-run abnormal performance before and after major corporate events, including listing changes among domestic equity markets (e.g., Nasdaq to NYSE) and new equity issuance.² These studies detect the presence of abnormal returns several years before and after such major events. Although there is some debate about whether the abnormal performance is consistent with explicit market timing, there is substantial evidence that the valuation effects during the periods surrounding major corporate events are unusual. By extension, we hypothesize that the decision to list firm equity abroad may be associated with valuation effects similar to those observed among firms that list their shares on new domestic exchanges or raise new equity. If returns surrounding an event such as a foreign market listing are abnormal, studies that use return data or market multiples from this period are likely to experience substantial bias in their estimate of equilibrium effects.

Using a comprehensive, hand-collected sample of 1,130 firms from 42 countries with 1,676 overseas listings placed in 25 foreign host markets as of 1998, we add to the above literature in several important ways. Using a wide event window comprised of 120 months prior to the listing and 120 months after the listing, we find that firms experience a substantial prelisting run-up and a profound postlisting decline in their returns over longer periods of time than previously known. The run-up starts several years before the listing, and the decline continues up to several years after the listing. This result is generally consistent with market timing effects to cross-listing. Our documentation of transitory effects in cross-listing is consistent with those reported by Gozzi, Levine, and Schmuckler (2005); and King and Segal (2006). Controlling for the temporary effects, we document an insignificant reduction in firm risk-adjusted returns for the average cross-listed firm during the five-to ten-year period following the listing relative to the equivalent prelisting period.

Our paper is among the first to control explicitly for the sequence chronology of a firm's foreign listing behavior.³ Studies that look only at the valuation effects of listings on one market, such as the US market, are unable to discriminate

¹ For instance, Foerster and Karolyi (1999) find a 28% drop in the local market beta across all foreign firms cross-listed in the United States, while Errunza and Miller (2000) report that foreign firms listed in the United States experience an 11.4% decrease in their cost of capital. Note that the cost of capital in these and other studies, including ours, means only the cost of equity capital.

² Sanger and McConnell (1986); McConnell and Sanger (1987); and Dharan and Ikenberry (1995) report abnormal returns around changes in domestic equity listing, while Asquith and Mullins (1986); Ritter (1991); and Loughran and Ritter (1995) report around new equity offerings. Several studies find abnormal returns around global equity offerings as well (e.g., see Foerster and Karolyi, 2000; and Henderson, Jegadeesh, and Weisbach, 2006).

³ The only paper we are aware of that attempts to disentangle the effects of listing chronology is that of Howe and Kelm (1987). The authors examine listings of US firms on four overseas markets. With a relatively small sample, they fail to find any substantial sequencing effects. More importantly, they find no positive abnormal

the effects of first listings from those of follow-on listings. In such a context, for instance, the two ADR listings on the NYSE of French telecommunication companies Alcatel and France Telecom would be considered equivalent, despite the fact that at that time, Alcatel stock was already listed on six other foreign markets, while France Telecom was concurrently listed only in Paris. We expect that the motives and gains for follow-on foreign listings are very different from those of initial foreign listings. If there are diminishing gains to a foreign listing, then, *ceteris paribus*, one would expect the most profound response to be associated with a firm's first overseas listing. Since more than 25% of our dataset includes firms with more than one overseas listing, we are able to initiate some evidence on the effects of listing sequence on returns. Our tests suggest that the first listing is associated with unique transitory valuation effects, but that unique permanent valuation effects are uncertain.

Existing studies focus on the valuation effects of non-US firms listing in the US market or, to a lesser extent, on US firms listing outside the United States. The widely accepted perception is that the US market provides unique gains to foreign firms listed on its exchanges (e.g., Doidge, Karolyi, and Stulz, 2004). Any study that deals with a single (few) host market(s) for listings is unable to compare the valuation gains from cross-listing in the United States with those that could potentially be present in other markets. Since foreign listings in the United States constitute less than 30% of our sample, we are able to examine the performance of firms originating not only from or listed in the United States, but also from and in other markets. More importantly, our global sample of cross-listings allows us to relate valuation differences across firms listed in different foreign countries to various marketwide and firm-level characteristics.

After controlling for the transitory effects, we observe an insignificant permanent reduction in firm cost of capital not only for the average overseas listing, but also for the average listing in the United States. Our inability to identify permanent gains to cross-listing appears to apply more generally to markets that share many of the characteristics that have been noted in the literature as attractive features of the US equity market. For example, although we find large transitory gains across many market characteristics, we find little evidence of a permanent effect on returns for firms' listings in markets that are more liquid, provide better legal protection, or have a larger shareholder base. We do find some evidence of a permanent return reduction in firms listing in markets that require greater information disclosure. Controlling for other market characteristics, firms that list in markets that require greater information disclosure achieve an average annual risk-adjusted return reduction of 4.0 percentage points. Similarly, at the firm level, we find significant valuation

returns before listings or negative abnormal returns after listings, thus contradicting many earlier and later studies. Chaplinsky and Ramchand (2000) test for sequence effects in the announcement returns associated with global equity offerings. They find a modest and statistically insignificant decline in the announcement returns with subsequent offerings.

differences across firms with such characteristics as size and tradability, but these differences are transitory and are confined primarily to the 10-year period around the listing event.

The rest of the paper is organized as follows. Section 1 reviews the perceived motives for issuing shares in foreign markets and formulates the main research questions. Section 2 describes our sample of overseas listings and return data. Section 3 examines firm performance around listing across different home and host markets for listings and listing sequencing. This section also deals with methodological issues. Section 4 relates firm returns around listing to relative market characteristics between home and host markets for listings. Section 5 reports the valuation effects of cross-listings with respect to firm characteristics. Section 6 concludes.

1. Why Market Selection and Sequencing Matter

1.1 The received hypotheses

In a frictionless world market, firms are indifferent to the trading venue of their securities. Yet, in contrast to the notion of market irrelevance, firms overwhelmingly choose to list initially their equity for trading on the respective domestic exchange.⁴ We suppose that cross-border barriers in listing requirements and information flow largely explain such behavior. Many firms choose to list their equity subsequently in one or more foreign markets. The interest in choosing to list in a foreign market can be explained by gains to overcoming capital and informational barriers as well as gains to market characteristics, such as liquidity, tax treatment, disclosure, and containment of shareholder expropriation risk. We discuss these arguments in turn.

1.1.1 Cross-border barriers to investment capital. Based on the international asset pricing models of Black (1974); Solnik (1974); and Stulz (1981), a large number of papers argue that international investment provides large diversification gains.⁵ If investors are restricted from investing overseas, firms can gain from the premium that investors are willing to pay for restricted foreign securities (see Errunza and Losq, 1985). With cross-border trading friction, overseas investors are most interested in capital from markets that will minimize their portfolio risk. Consequently, firms may capture the premium that foreign investors are willing to pay for equity from markets with little correlation to their home market. Other things equal, firms should realize the

⁴ See Blass and Yafeh (2001) for documentation of some exceptions.

⁵ See, for instance, Alexander, Eun, and Janakiramanan (1988); Jayaraman, Shastri, and Tandon (1993); Lau, Diltz, and Apilado (1994); Miller (1999); Foerster and Karolyi (1993, 1999); and Errunza and Miller (2000). See Karolyi (1998) for a review.

greatest cost of capital gain by selecting those host markets whose returns are least correlated with the home market.

1.1.2 Cross-border barriers to information flow. Merton (1987) argues that incomplete information generates a firm-specific risk premium in the cost of capital for lesser known firms. He states that managers of such firms “should expend resources of the firm to induce investors who are not currently shareholders to incur the necessary costs of becoming aware of the firm” (p. 500). Political borders represent an example of a natural barrier to information flow and a source of investor under-diversification. Empirical studies generally support Merton’s assertion (e.g., Foerster and Karolyi, 1999). Yet, it is unclear whether cross-listings actually overcome information barriers or whether they acknowledge an inability to overcome information barriers and simply reflect already existing information flows. Baker, Nofsinger, and Weaver (2002); Lang, Lins, and Miller (2003); and Ahearne, Grier, and Warnock (2004) contend that cross-border listings mitigate the information barriers by stimulating local market media and analyst exposure in the foreign market. Ammer et al. (2005); and Ferreira and Matos (2005) show that investors prefer cross-listed stocks. Yet, Bris, Cantale, and Nishiotis (2005) find no evidence that the valuation effect of the cross-listing is related to better access to foreign markets. Sarkissian and Schill (2004) argue that a foreign listing is not sufficient to overcome cross-border information or familiarity barriers. Rather, they observe that firms tend to list in those foreign markets where the information barriers are already low; for example, countries that share large trade, cultural ties, and similar industrial structure with their home market and are close geographically. In earlier papers, Saudagaran (1988); and Mittoo (1992) show that overseas listing decisions are connected with product market trade. More recently, Pagano, Roell, and Zechner (2002) find that listings of European firms closely follow their export routes.

1.1.3 Market differences in liquidity. Overseas listings may be placed abroad in a search for greater liquidity. Many papers find that foreign firms listed in the United States achieve significantly lower bid-ask spread (e.g., Tinic and West, 1974; Werner and Kleidon, 1996; Domowitz, Glen, and Madhavan, 1998; and Foerster and Karolyi, 1998). Chowdhry and Nanda (1991) document that liquidity plays an important role in the ability of markets to attract trading volume.

1.1.4 Market differences in disclosure. Biddle and Saudagaran (1992) find that more difficult disclosure standards in a given country hinder the access of foreign firms to that market. Fuerst (1998); Huddart, Hughes, and Brunnermeier (1999); Bradshaw, Bushee, and Miller (2004); and Khanna, Palepu, and

Srinivasan (2004), on the other hand, argue that firm managers gain by bonding to greater disclosure by listing in markets with higher accounting standards.

1.1.5 Market differences in legal protection. Firms may seek to list abroad in order to reduce investor expropriation risk; see Coffee (1999, 2002); Fuerst (1998); and Stulz (1999). La Porta et al. (1997, 1998) find that countries with poor investor protection system have low financing activity. Mitton (2002); Reese and Weisbach (2002); Doidge (2004); Doidge, Karolyi, and Stulz (2004); Lins, Strickland, and Zenner (2005); and Leuz, Lins, and Warnock (2006) show that improving shareholder protection may explain why some non-US firms cross-list in the United States. Siegel (2004) provides a skeptical view of protection effectiveness, citing that massive expropriation in US-listed Mexican firms was not successfully prosecuted. Similarly, Pinegar and Ravichandran (2003); Bris, Cantale, and Nishiotis (2005); and Gozzi, Levine, and Schmuckler (2005) observe that the impact of cross-listing on improving investor protection is dubious.

1.1.6 Tax advantages. Firms may prefer listing in countries with low-tax trading environments for both companies and investors. Sarkissian and Schill (2004) show that firms from markets with heavy corporate and personal tax burdens are attracted to issuing their equity in tax-haven countries.

1.2 The research questions at hand

We address three research questions. First, the aforementioned hypotheses motivate an important empirical question: Do firms actually experience a *permanent* valuation gain to listing abroad? Our main concern with the earlier studies on cross-listing valuation benefits is that their estimates of the reduction in firm cost of capital are measured around the listing, such that one is not able to ascertain whether the effect is transitory or permanent.

A large number of papers document substantial long-run abnormal performance before and after major corporate events, such as listing changes among domestic equity markets (e.g., Nasdaq to NYSE) and new equity issuance. In Table 1, we report the stylized summaries of the long-run return studies for these corporate events. Both domestic equity listing and equity issuance induce a significant run-up in stock returns before the event and a significant decline in returns after the event. These studies suggest that abnormal returns are observed for as early as 26 months prior to the event and as late as 60 months following the event. The event window in the previous studies on cross-listing valuation benefits does not exceed 36 months. If firms with foreign listings experience transitory valuation effects similar to those observed in Table 1, then the estimates of the permanent reduction in the cost of capital gains found in those studies may be exaggerated.

Using the long-run event studies in Table 1 as guides (since we have no reason not to suspect that these events share similar characteristics to cross-listing events), we note the evidence of abnormal return behavior up to five years

Table 1
Representative studies on valuation effects of new exchange listing and new equity issuing

Reference	Market/Equity		Time period	Number of events	Event window	Performance (CAR, %)	
	New	Old				Prelisting	Postlisting
New exchange listing							
Sanger-McConnell, 1986	NYSE	Pre-Nasdaq OTC	1966–1970	153	+/- 12 months	23.2	-2.7
	NYSE	Post-Nasdaq OTC	1971–1977	166	+/- 12 months	19.8	-3.3
McConnell-Sanger, 1987	NYSE	ORA	1926–1982	2482	+12 months	N/A	-3.6
Dharan-Ikenberry, 1995	NYSE, ASE	ASE, Nasdaq	1962–1990	2889	+36 months	N/A	-4.0
New equity issuing							
Asquith-Mullins, 1986	SEO	US: Public	1963–1981	531	+22 months/-26 months	14.2	-4.2
Ritter, 1991	IPO	US: Private	1975–1984	1526	+36 months	N/A	-8.9
Loughran-Ritter, 1995	IPO	US: Private	1970–1990	4753	+60 months	N/A	-6.7
	SEO	US: Public	1970–1990	3702	+60 months	N/A	-8.3

The table summarizes the results of representative studies on firm performance around new listing and equity issuance dates in chronological order. The first column indicates the published study. The next two columns correspond to the new and old market/exchange or equity type, respectively. The fourth, fifth, and sixth columns indicate the time period considered in a given study, the number of listings or equity issuance observations, and the event window, respectively. The last two columns show the market-adjusted performance of firms before and after the listing or equity issuance date, respectively. The performance is given in terms of cumulative abnormal returns (CAR) and is annualized for all the data in the original studies that are shorter or longer than one year. ORA denotes OTC, regional exchanges, and ASE. Note that Asquith and Mullins (1986) compute share price reaction relative to the announcement date of the equity issuance. It is assumed that on average, the listing date follows the announcement date in two months.

around the event. To be conservative and consistent, we choose to examine return behavior across four periods with respect to the foreign listing date:

Period	Relative months	Characterization
1	$t - 120, t - 61$	Prelisting steady state period
2	$t - 60, t - 1$	Prelisting transitory period
3	$t, t + 59$	Postlisting transitory period
4	$t + 60, t + 120$	Postlisting steady state period

Since Periods 2 and 3 represent months of possible transitory effects, the focus of our attention is not on these returns. The transitory nature of returns over these periods motivates us to control for the unique return behavior in these periods. In our tests, we focus on comparing the “steady state” returns behavior in Period 4 relative to that of Period 1. We propose that the change in returns over this period provides an unbiased estimate of the long-term valuation gain. As a further attempt to isolate the effect of cross-listings from that of other contemporaneous corporate events, we examine differences in returns of firms that also issue equity about the same time as they cross list.

Second, many firms are known to be listed in multiple foreign markets. For example, the German pharmaceutical company Bayer was listed in 11 foreign markets by the end of 1998. Existing studies commonly look at the valuation effects of listings in one market, such as the US market, and therefore are unable to discriminate the effects of first listings from those of follow-on listings. The assumption that the behavior of stock returns around consecutive listings can be different is very intuitive due to the following two reasons. First, on the firm side, the motives for the first overseas listing may be systematically different from those that lead managers to seek subsequent listings of their stock in foreign markets. For example, a firm’s first listing may be more likely to be motivated by capital constraints caused by the characteristics of the domestic market, whereas the subsequent listings may be more likely to be motivated by acquisition currency (see Tolmunen and Torstila, 2005). Such systematic differences in motives can lead to different stock reactions around multiple listings dates. Second, on the investor side, portfolio managers may also react differently to subsequent listings. Clearly, the choice of the listing destination can potentially make an adjustment to investors’ response to a firm’s listing. Since a foreign listing is often viewed as a vehicle that helps integrate a domestic firm into the world capital market, then, *ceteris paribus*, there should be diminishing gains to foreign listing. Therefore, one would expect the most profound valuation response to be associated with a firm’s first overseas listing.

Finally, most of the existing studies focus on valuation effects of non-US firms that list in the US market. Some work is also done on US firms listing outside the United States. The conclusion of many papers (e.g., Doidge, Karolyi, and Stulz, 2004; and Doidge et al., 2006) is that the US market, due to a range of properties, such as large shareholder base, high disclosure standards, and

good minority shareholder protection laws, provides unique benefits to foreign firms. However, a limited set of countries in prior studies makes it impossible to understand whether the valuation benefits of overseas listing result from placing a share in a particular foreign market or from specific marketwide characteristics across both home and host countries for listings. We address this issue using a global sample of overseas listings. It also allows us to relate valuation differences across firms listed in different foreign countries to certain firm-level characteristics, such as firm size and its “tradability” (i.e., the ability to produce internationally traded goods).

2. A Global Sample of Foreign Listings

We construct a dataset of foreign equity listings by soliciting from every stock exchange in the world a list of company names and listing dates for all foreign shares listed on their exchange as of December 1998. Contact with the exchanges was completed in the following manner in order of contact: assessing the list via their website, through e-mail contact with the research department, through fax contact with the research department, and through telephone contact. We obtained a small portion of data directly from individual companies or checked the data with their historical records. In constructing our sample, we excluded investment funds or trusts, as well as firms from countries with unreliable or limited financial data at the time (e.g., Colombia, China). We also exclude countries that provide no role other than that of corporate tax havens, such as Bermuda, the Cayman Islands, Jersey, or the Netherlands Antilles. This results in a sample of 2,277 listings. We then further restrict our sample to those firms for which we also have return data from CRSP or Datastream within 120 months of the listing date up to December 2005. This selection procedure gives us 1,676 foreign listings from 1,130 firms. The sample is broad and balanced, with no country contributing more than 25% of the listings.⁶

Panel A of Table 2 gives the information on the country-to-country distribution of overseas listings. There are 42 countries that place shares overseas and 25 countries that host shares from overseas. The largest numbers of foreign listings come from the United States, Canada, and Japan—367, 207, and 188, respectively, although the vast majority of Canadian listings are in the United States. Some countries, such as Luxembourg and Switzerland, have very few firms traded overseas, yet they host a substantial number of listings from other countries. Overall, foreign listings are concentrated in large developed markets. There are very few emerging markets, e.g., Brazil, Malaysia, Peru, that also host one or two foreign firms.

Our sample of cross-listings contains firms with both only one overseas listing and multiple (two and more) listings on foreign exchanges. The occurrence of single and multiple listings varies widely across calendar periods, as well

⁶ The dataset of overseas listings is available for download.

Table 2
Distributional characteristics of overseas listing

Panel A: Country-to-country distribution of listings

Home country	Host country																									Total
	Australia	Austria	Belgium	Brazil	Canada	Denmark	France	Germany	Hong Kong	Ireland	Italy	Japan	Luxembourg	Malaysia	Netherlands	New Zealand	Norway	Peru	Singapore	South Africa	Spain	Sweden	Switzerland	UK	US	
Argentina				1									2									1	1	12	17	
Australia					3			2				4	1		43				2			2	7	21	85	
Austria							1	4																	5	
Belgium							1	1					2		6							1			11	
Brazil													3											15	18	
Canada	3		3				4	2				1				1			1	1		6	7	178	207	
Chile																								13	13	
Czech Republic																								4	4	
Denmark																						1	3	2	6	
Finland							1	2													3	2	4	12		
France			7		1			7				1			1							3	5	19	44	
Germany		12	5				9			2	9	4		7					1		2	1	16	7	8	83
Greece						1							1										2		3	
Hong Kong												1					1		8				1	3	14	
Hungary			2										4										4		10	
India													44										13		57	
Indonesia																						1		2	3	
Ireland																							43	10	53	
Israel			1																			4	17	22		
Italy			2				3	4													1			6	16	
Japan		1	5		1		30	48					21	17					6			10	23	25	188	
Korea (South)													12										10	3	25	
Luxembourg							1	1															2	1	5	
Malaysia														1					1						2	
Mexico																								14	14	
Netherlands			4	9			3	14				1	3									1	8	7	17	67
New Zealand	12																							6	18	
Norway						1		2							1				1		2	1	5	6	19	
Peru																								2	2	
Philippines													5						1					1	7	
Poland													1										7		8	
Portugal																								2	2	
Singapore	1												2												3	
South Africa			7				3	4					4									4	10	9	41	
Spain							3	2				3										1	2	4	15	
Sweden			1			4	1	3				2							2			4	8	9	34	
Switzerland		2	1				1	9				3			1								1	6	24	
Taiwan													14										8	2	24	
Thailand													1												1	
Turkey													1										6		7	
UK	3		7		4	1	6	7	1	9		7	1	1	9	2	1		4			1		56	120	
US	7	1	32	1	18		32	38				23	1		61		1	1				5	61	85	367	

as home and host countries. It is important to note that the listing sequencing that we present below may not necessarily coincide with the actual listing chronology. Like most other studies of cross-listings, our sample suffers from some survivorship bias. Some firms may have placed their shares in foreign markets but then delisted them before 1998. These listings are not represented in our sample. The sequencing documented in our study presents the effects of

Table 2
(Continued)

Panel B: Calendar period frequency distribution of foreign listings

	Listing number						Total
	1	2	3	4	5	6+	
Pre-1970	71	38	16	5	3	1	134
1970—1979	99	35	29	18	8	9	198
1980—1989	215	99	47	33	20	14	428
1990—1998	683	101	48	34	17	33	916
Total	1068	273	140	90	48	57	1676

Panel C: Home country frequency distribution of foreign listings

	Listing number						Total
	1	2	3	4	5	6+	
Argentina	15	2					17
Australia	58	15	8	2	1	1	85
Austria	5						5
Belgium	3	6	1	1			11
Brazil	18						18
Canada	182	13	6	3	2	1	207
Chile	13						13
Czech Rep.	4						4
Denmark	4	1	1				6
Finland	7	2	1	1	1		12
France	27	10	4	3			44
Germany	29	12	8	8	8	18	83
Greece	2	1					3
Hong Kong	12	2					14
Hungary	10						10
India	55	2					57
Indonesia	3						3
Ireland	47	6					53
Israel	22						22
Italy	9	4	2	1			16
Japan	91	45	24	15	8	5	188
Korea (South)	18	6	1				25
Luxembourg	1	2	1	1			5
Malaysia	2						2
Mexico	14						14
Netherlands	28	13	11	5	3	8	67
New Zealand	17	1					18
Norway	9	5	1	1	1	2	19
Peru	2						2
Philippines	7						7
Poland	8						8
Portugal	2						2
Singapore	3						3
South Africa	17	8	7	5	2	2	41
Spain	6	3	3	3			15
Sweden	15	6	5	4	2	2	34
Switzerland	15	4	1	1	1	2	24
Taiwan	24						24
Thailand	1						1
Turkey	7						7
UK	88	20	5	4	2	1	120
US	168	86	49	32	17	15	367

Table 2
(Continued)

Panel D: Host country frequency distribution of foreign listings

	Listing number						Total
	1	2	3	4	5	6+	
Australia	21	5				1	27
Austria	8	6				2	22
Belgium	27	27	17	5	2	2	80
Brazil	1	1					2
Canada	21	1	2	1		2	27
Denmark	6	1					7
France	37	26	16	13	2	2	98
Germany	49	31	25	14	12	19	150
Hong Kong		1					1
Ireland	8	1					9
Italy						2	2
Japan	15	16	5	6	7	7	56
Luxembourg	113	7			3	3	126
Malaysia	1						1
Netherlands	57	20	5	12	2	7	103
New Zealand	36	5	4	1			46
Norway	2	1					3
Peru			1				1
Singapore	18	4	1	2	1	1	27
South Africa		1					1
Spain	1					2	3
Sweden	7	2			1	2	12
Switzerland	39	40	22	14	4	1	120
UK	194	47	17	11	8	2	279
US	407	31	21	7	5	2	473

Panel E: Lag length in months between consecutive listings

	All listings		Listings from the US		Listings in the US		Non-US listings	
	Obs	Median	Obs	Median	Obs	Median	Obs	Median
1 to 2	273	54.0	86	110.0	31	82.0	156	44.5
2 to 3	140	36.0	49	54.0	21	33.0	70	32.0
3 to 4	90	40.0	32	48.5	7	73.0	51	32.0
4 to 5	48	82.0	17	79.0	5	124.0	26	71.0
5 to 6+	57	52.0	15	43.5	2	51.0	40	63.8

The table provides the distributional characteristics of overseas listings as of 1998 that have return data available between 120 months before and 120 months after the listing. The total sample is comprised of 1,045 firms with 1,636 overseas listings. Panel A provides the country-to-country frequency distribution of multiple cross-listings as of 1998. The other panels present distribution of overseas listings based on the listing number. Panels B–D show frequency of listings across different calendar periods and home and host countries. Firms with six or more overseas listings are combined into one group (6+). Panel E shows the median duration between subsequent listings.

a *relative* sequence of overseas listings, not an absolute sequence.⁷ Moreover, we do not require that the first foreign listing is preceded by a domestic listing.

⁷ The primary challenge in building a survivorship bias-free sample was in obtaining from the exchanges a complete history of foreign firms that have previously listed and delisted. The Tokyo Stock Exchange provides such a history on its website. To conduct a descriptive test of the effects of delisted firms, we ran our basic tests using a subset of our standard sample and compared those results to an augmented sample that also includes foreign listings that were subsequently delisted from the TSE prior to 1998. Based on this subsample test, the results were

Some firms in our sample list on foreign exchanges before listing in their home market. This phenomenon is particularly strong among Canadian and Israeli firms.

Panel B of Table 2 shows the distribution of overseas listings based on the listing number across four calendar periods: before 1970, 1970–1979, 1980–1989, and 1990–1998. We provide the frequency of the first, second, third, fourth, fifth, and sixth and higher number listings. The listing number is determined based on the actual available listing dates as of 1998. For instance, if the return data for some firm with multiple listings is available only starting with the second listing, the second listing is considered as a second listing in our dataset and no first listing appears in the sample.

Since the latest period in our sample coincides with a high cross-listing activity throughout the world, and due to survivorship bias, it is not unexpected to find that the largest number of listings (916 out of 1,676) are placed on foreign exchanges in the 1990s. Our sample has 134 listings with the listing dates before 1970. More important is the break-up of the listings by listing number. There are 1,068 first listings and 608 second and higher number listings. The sample contains 57 listings that are the sixth or higher listing numbers for their respective firms.

Panels C and D of Table 2 show the distribution of listings across home and host markets for different listing numbers. Panel C presents the distribution of listings across 42 domicile countries. Most of the developed markets tend to be dominated by firms that maintain multiple listings. The only emerging market with a significant number of multiple listings is South Africa. There are 11 countries with firms that have placed their shares in six or more foreign markets. The firm with the largest number of overseas listings is the German firm Bayer, with 11 listings. Both the German firm Volkswagen and Philip Morris (Altria) from the United States have 10 listings.

Panel D of Table 2 shows the frequency distribution of foreign listings across 25 host markets. Some host countries appear to be particularly attractive to firms making higher-order listings. For instance, Italy maintains only two foreign listings in our sample—the 11th listing of Bayer and the 10th listing of Volkswagen. Other countries that host a large proportion of multiple listings relative to the number of first listings are Austria, Belgium, France, Germany, Japan, Spain, and Switzerland. Luxembourg, on the other hand, with more listings than, say, France, has very few second or higher listings relative to the large base of first listings. This is not unexpected, since many smaller firms and firms from emerging countries often list in Luxembourg before they become eligible for trading at larger world exchanges.

Finally, Panel E of Table 2 shows the median lag length in calendar months between two consecutive listings. We provide summary statistics across the

similar and there does not appear to be any particular systematic difference in the cross-listing effect between those firms that remain listed and those that were delisted prior to 1998.

whole sample of listings, as well as the three subsamples: US listings abroad, overseas listings in the United States, and overseas listings issued outside the United States. Across all firms, the median lag between first and second, second and third, and third and fourth listings are 54, 36, and 40 months, respectively. The pattern suggests that firms with multiple foreign listings list in additional foreign markets, in general, every three to four years. It also appears that across all the three subsamples, firms are faster in placing their third foreign listing following the second than the second following the first, but then become slower again.

Table 3 presents the distribution of sample monthly return observations by respective home countries. Individual security returns of US firms are from CRSP; non-US firms are from Datastream. All non-US firm returns are converted to US dollars using the corresponding monthly exchange rates from Datastream. The excess returns are constructed by subtracting the return on the 30-day US Treasury bill. For each country, the table shows the mean and standard deviation of returns, the number of monthly observations available, the number of firm-listing months, as well as the respective number for a sample that excludes the overlapping returns for firms that list in multiple markets. The final column of the table reports the first observation date. The last return date is December 2005 for all countries. The average returns are positive in all countries except Thailand, and the standard deviation, as expected, is particularly high among emerging countries. There are many countries, mainly from emerging markets, for which the return series are not available for the entire 241-relative-month window. The smallest window is for Portuguese firms, with only 88 calendar months of observations. There is only one firm generating the monthly return series for Thailand. Since the Datastream firm return data are not available prior to 1973, returns for only US firms are available through CRSP between 1926 and 1972.

3. Firm Return Performance Around Listing

3.1 Aggregate performance

To estimate the impact of foreign listings on the cost of capital, we use the common assumption that the distribution of *ex post* return realizations is an unbiased estimate of the *ex ante* expectations. Hail and Leuz (2004) provide an alternative approach by estimating the cost of capital based on the discount rate implied by analyst forecasts. Both approaches have their strengths and weaknesses. We use return data, since good analyst forecast data are not available for our global sample.

Figure 1 shows the annualized moving-average of gross returns over the ± 120 -month window around the listing date for all the listings in our

Table 3
Distribution of return data across markets

	Mean	St. Dev.	Number of months	Number of firm-listing months	Number of firm-months	First month
Argentina	5.1670	29.7946	147	1831	1669	9/1993
Australia	1.0338	15.6978	393	15163	10465	3/1973
Austria	0.9326	10.3116	231	676	676	7/1985
Belgium	0.9066	6.9731	367	1759	1279	3/1973
Brazil	2.3350	22.547	128	1325	1325	12/1994
Canada	1.2484	17.7737	393	29650	27225	3/1973
Chile	1.2326	15.0638	195	1811	1811	8/1989
Czech Rep.	1.5964	15.4454	137	437	437	12/1994
Denmark	1.2969	9.4858	373	978	635	3/1973
Finland	1.3484	11.6246	211	1491	885	4/1988
France	0.9248	12.0043	393	6722	5343	3/1973
Germany	0.7407	8.7795	393	13961	7159	3/1973
Greece	2.8948	17.0424	190	467	279	11/1990
Hong Kong	1.1708	14.1334	311	2626	2255	2/1980
Hungary	1.7522	15.387	167	1201	1201	5/1992
India	1.6319	18.377	190	9398	9222	11/1990
Indonesia	0.5615	18.7457	122	281	281	12/1994
Ireland	1.0031	14.8635	393	7607	7239	3/1973
Israel	1.0324	16.8918	153	1615	1615	9/1993
Italy	0.5738	11.1145	371	2515	1827	3/1973
Japan	0.7178	10.7477	393	36126	22583	3/1973
Korea (South)	0.6397	16.9146	218	4588	3311	1/1987
Luxembourg	0.1561	8.2182	134	490	332	5/1992
Malaysia	1.7265	13.3302	236	423	423	10/1986
Mexico	1.3115	18.5935	198	1850	1850	7/1989
Netherlands	1.0015	10.0011	393	10996	6681	3/1973
New Zealand	0.8457	17.4196	214	2039	1920	4/1988
Norway	1.1177	12.9348	310	2844	1738	2/1980
Peru	1.3853	21.8081	142	284	284	12/1994
Philippines	1.1178	14.4956	190	887	887	4/1988
Poland	1.2231	16.0374	137	586	586	12/1994
Portugal	0.6278	8.932	88	170	170	1/1998
Singapore	1.6877	17.0799	222	474	474	1/1987
South Africa	0.9398	14.4879	393	6601	4608	3/1973
Spain	1.0858	8.2387	223	1961	978	1/1987
Sweden	1.0930	11.839	285	4920	2664	8/1982
Switzerland	0.9539	8.6588	393	4597	3061	3/1973
Taiwan	1.3777	15.8679	210	3682	3682	4/1988
Thailand	-0.2280	25.623	112	112	112	12/1994
Turkey	4.4614	26.2059	188	1047	1047	11/1990
UK	1.1094	12.3809	393	21508	17509	3/1973
US	0.9464	9.613	960	77558	51342	4/1926

The table shows the distribution of sample return data within the period of ± 120 months around listing months by respective home countries. The first two columns show the monthly mean and standard deviation of returns (in percent) denominated in US dollars. Number of months refers to the total number of unique calendar months in the sample of returns. Number of firm-listing months is the total number of return observations used in the study. Number of firm-months excludes the overlapping returns for firms that list in multiple markets. The first month is the first calendar month in the series of unique months. The last calendar month is December 2005.

sample.⁸ To annualize the monthly return series, we average the monthly returns across firms in event time and then cumulate the aggregate returns over

⁸ Due to difficulties with obtaining the announcement dates, we analyze performance of stock returns only around listing dates. Most of the announcement dates occur close to listing dates. In this respect, Forester and Karolyi (1999) report that the median difference between the announcement and listing dates of foreign firms in the United States is 44 days, while the proportion of these firms that had announcement dates 100 or more days before listing is negligibly small. Since our analysis covers an extended period before and after the listing date,

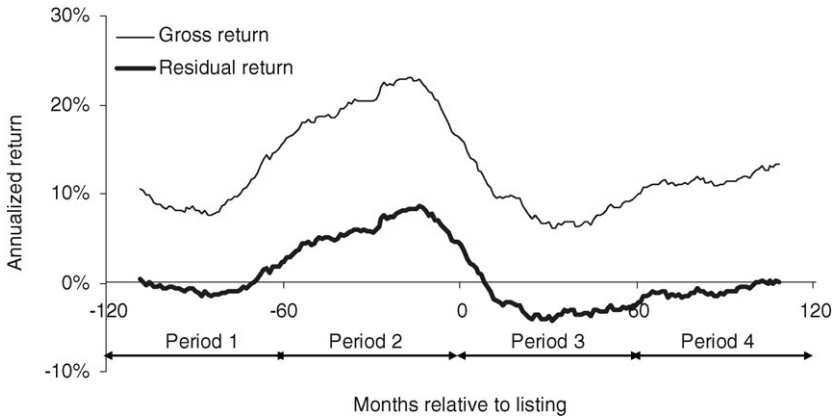


Figure 1
Annualized moving-average returns for overseas listings

Monthly gross and residual dollar-denominated returns are averaged across firms and then annualized by cumulating the returns over months $t - 12$ to $t + 11$ and dividing by two. The residual returns are computed for each firm based on Model 1 for returns before January 1973 and Model 3 for returns after that date. The plot also shows the four distinct periods in the dynamics of firm returns around the listing.

months $t - 12$ to $t + 11$, where t is the listing month, and divide by two. The plot provides a striking return profile. We see that foreign listings are systematically associated with an extreme change in the time series of returns across the four periods. In the first period, ending about five years before the listing date, the gross returns fluctuate around 10%. In the second period, within five years before the listing, there is a profound increase in gross returns. On average, the annualized gross return rises from about 10% to over 23%. This effect is consistent with the documented increase in returns in other long-run performance studies (see Table 1). The third period covers the interval from the time of listing to five years after the listing. During this period, we notice a profound and steep decline in returns. At its minimum, the annualized gross return is about 6%. However, after the initial large decline, returns generally increase and level off during the last period between five and ten years after the listing.

The plot of gross returns does not allow for differences in risk across firms in the sample. To risk-adjust the return series, we compute residual returns based on three common market risk models:

Model 1 (local market model):

$$r_{it} = a_i + b_{iL}r_{Lt} + e_{it}, \quad (1)$$

any effect from the listing announcement will be reflected in the stock return pattern immediately before the listing.

Model 2 (local-foreign markets model):

$$r_{it} = a_i + b_{iL}r_{Lt} + b_{iF}r_{Ft} + e_{it}, \quad (2)$$

Model 3 (local-world markets model):

$$r_{it} = a_i + b_{iL}r_{Lt} + b_{iW}r_{Wt} + e_{it}, \quad (3)$$

where r_{it} , r_{Lt} , r_{Ft} , and r_{Wt} are the excess returns on firm i , on the home market index, on the host market index, and on the world market index in US dollars at time t , respectively. The market index return for the US is the CRSP value-weighted market return; the returns for the world market portfolio and individual countries are the returns on the corresponding market indexes from Datastream.⁹ Our objective is to calculate residual returns, not abnormal returns as in a typical event study. Consequently, we restrict the coefficients in these regressions to be constant around the listing event. We impose this restriction because we specifically want to embed any cost of capital changes into the residual term that we use in the second-stage estimation. If we were to allow the coefficients to absorb the cost of capital changes, our second-stage tests would have no power. We recognize that this restriction assumes that the only systematic changes in cost of capital over the extended event window are due to the foreign listing.

To accommodate some time-series variation in risk factors during the prelisting period or the postlisting period, we adjust the residuals for the overall change in risk sensitivity between Periods 1 and 2 and between Periods 3 and 4. We adjust for overall changes in risk (rather than firm-level changes in risk) in order to not lose observations for which we do not have adequate return representation over the entire event window. To estimate the changes in risk over the event window, we estimate the following pooled regression for our panel of returns:

$$r_{it} = a + b_1r_{Lt}D(t - 120, t - 61) + b_2r_{Lt}D(t - 60, t - 1) \\ + b_3r_{Lt}D(t, t + 59) + b_4r_{Lt}D(t + 60, t + 120) + \xi_{it}. \quad (4)$$

The regression in Equation (4) is expressed for return Model 1. The alternative models are estimated in the same way but with four additional terms for the second factor. We report the coefficient estimates for the three return models in Panel A of Table 4. The point estimates for the local factors suggest that index sensitivity declines between Periods 1 and 2 and increases between Periods 3 and 4. The pattern is the opposite for the foreign and world index sensitivity. We use the coefficient estimates presented in Panel A to adjust the residuals for

⁹ Note that any model-based computation of residual returns is likely to be misspecified around listing dates. It is unclear if domestic market betas represent the entire risk of firms that are about to be cross-listed in a foreign market. Errunza and Miller (2000) point out, for example, that when firms start listing abroad, some marketwide liberalization processes can also be simultaneously taking place. This concern may be especially relevant for firms with multiple listings since they are among the largest and most well-known companies in their respective countries.

Table 4
Risk factors and residual returns for overseas listings across event time periods

Coefficient	(1) Model 1	(2) Model 2	(3) Model 3			
Panel A: Risk factor behavior						
Intercept	0.5890 (26.39)	0.5658 (22.53)	0.5600 (22.90)			
$r_L^*D(t - 120, t - 61)$	0.8920 (103.0)	0.8597 (75.14)	0.8257 (69.98)			
$r_L^*D(t - 60, t - 1)$	0.8051 (118.7)	0.7903 (95.31)	0.7548 (91.87)			
$r_L^*D(t, t + 59)$	0.4866 (89.55)	0.4062 (62.39)	0.3853 (54.48)			
$r_L^*D(t + 60, t + 120)$	0.6419 (99.06)	0.5836 (70.72)	0.5634 (61.81)			
$r_F^*D(t - 120, t - 61)$		0.0571 (4.97)				
$r_F^*D(t - 60, t - 1)$		0.0599 (5.99)				
$r_F^*D(t, t + 59)$		0.1629 (19.14)				
$r_F^*D(t + 60, t + 120)$		0.0709 (7.47)				
$r_W^*D(t - 120, t - 61)$			0.1078 (5.84)			
$r_W^*D(t - 60, t - 1)$			0.1393 (9.74)			
$r_W^*D(t, t + 59)$			0.2410 (20.19)			
$r_W^*D(t + 60, t + 120)$			0.1440 (10.44)			
Panel B: Residual returns						
	Intercept	Period 1 Prelisting steady state $D(t - 120, t - 61)$	Period 2 Prelisting transitory $D(t - 60, t - 1)$	Period 3 Postlisting transitory $D(t, t + 59)$	Period 4 Postlisting steady state $D(t + 60, t + 120)$	Adj R^2
(1) Model 1	0.4502 (0.69)		0.5378 ^a (7.33)	-0.1342 ^a (-1.84)	-0.1314 ^c (-1.72)	0.0277
(2) Model 1	0.9879 (1.52)	-0.5378 ^a (-7.33)		-0.6720 ^a (-10.71)	-0.6692 ^a (-9.94)	0.0277
(3) Model 2	0.8376 (1.16)		0.6324 ^a (6.96)	-0.0625 (-0.70)	-0.0199 (-0.21)	0.0286
(4) Model 3	0.2641 (0.43)		0.6006 ^a (6.91)	-0.0550 (-0.64)	-0.0173 (-0.19)	0.0289
(5) Combination	0.4960 (0.73)		0.5480 ^a (7.16)	-0.0966 (-1.27)	-0.0514 (-0.64)	0.0272

This table shows the behavior of risk factors in three global asset pricing models and the residual returns for firms listing in a foreign market. Panel A presents the overall risk factor estimates for the panel of returns in each of the four periods around an overseas listing for three models of returns: local market model (Model 1), a two-factor local and foreign market model (Model 2), and a two-factor local and world market model (Model 3). The coefficient estimates from Panel A are used to adjust the individual firm residual returns. Panel B shows the variation in adjusted return residuals over the periods before and after overseas listing. Each regression has the following form:

$$\hat{\varepsilon} = \{\alpha_1 + \phi_1 D(t - 60, t - 1) + \theta_1 D(t, t + 59) + \delta_1 D(t + 60, t + 120)\} + \sum \eta_\tau D(\tau) + u,$$

where the dependent variable is formed based on one of the three models of returns. The combination model (Combination) is based on Model 1 for returns before January 1973 and Model 3 for returns after that date, where all returns are in US dollars less the return on the 30-day Treasury bill. The market index for the United States is the CRSP value-weighted market return; the market returns for other countries are the returns on the corresponding market indexes from Datastream. D^* refers to a corresponding dummy variable, such that $D(t - 120, t - 61)$ is equal to 1 for observations 120 to 61 months prior to the month of the overseas listing date and equal to 0 otherwise. For each regression, an array of monthly calendar time dummy variables, $D(\tau)$, from February 1926 to December 2005 is also included, but the coefficient estimates are not reported. Since Models 2 and 3 do not have index data over the full sample, the fixed-effects dummies are estimated for only the months for which the data are available. T -statistics are reported in parentheses. Superscripts a, b, and c denote statistical significance at the 1%, 5%, and 10% levels, respectively.

systematic time-series variation in risk factors in the following way:

$$\begin{aligned}\hat{e}_{it} = & e_{it} + 0.5(b_2 - b_1)r_{Lt}D(t - 120, t - 61) \\ & - 0.5(b_2 - b_1)r_{Lt}D(t - 60, t - 1) + 0.5(b_4 - b_3)r_{Lt}D(t, t + 59) \\ & - 0.5(b_4 - b_3)r_{Lt}D(t + 60, t + 120).\end{aligned}\quad (5)$$

The adjusted residuals are calculated by taking the original residuals from Equations (1) through (3) and adjusting them for half of the change in the overall change in the risk estimates between Periods 1 and 2 and separately between Periods 3 and 4. In this manner, we allow for time variation in risk factors between the first periods and the last two periods, but not between the prelisting periods and the postlisting periods. We restrict the risk factors to be the same pre- and postlisting to force any changes in cost of capital into the adjusted residual series.¹⁰

To examine the above patterns in statistical terms, we regress the monthly adjusted residual returns $\hat{e}_{it}$ from the three market models in turn on dummy variables associated with the four relative periods. Omitting the time and firm subscripts, the regression model we use is as follows:

$$\begin{aligned}\hat{e} = & \{\alpha_1 + \phi_1 D(t - 60, t - 1) + \theta_1 D(t, t + 59) + \delta_1 D(t + 60, t + 120)\} \\ & + \eta_1 D(\tau = Feb1926) + \dots + \eta_{960} D(\tau = Dec2005) + u,\end{aligned}\quad (6)$$

where $D(t - J, t - K)$ is a dummy variable that is equal to 1 if the return occurs between event time months J and K, while $D(\tau = Z)$ indicates whether the return occurs in calendar month Z. We include the 960 monthly calendar time dummy coefficients, η , because of possible collinearity across observations in any common calendar month.

We report our results in Panel B of Table 4.¹¹ Regression 1 in Panel B compares the difference between the average residual return of Periods 2, 3,

¹⁰ Alternatively, we could follow Foerster and Karolyi (1999) and others and first-estimate market betas in Models 1 to 3 over the earliest prelisting period and then use these estimates in computing residual returns in the next periods. We do not take this path, because it substantially reduces the number of observations. To check for the effect of this alternative specification, we estimate each firm's local market beta over Period 1 ($t - 120, t - 61$) and then use that beta to estimate the residuals, excluding the intercept term. To ensure reasonable beta estimates, we require that each firm has at least 24 returns in Period 1. This requirement has a dramatic effect on the sample—reducing it by over half to 779 firms. Another concern with our approach is that, as in other event studies, firms are required to survive to the event date, but then after the listing, they are allowed to fail. This may induce a negative bias in the postlisting returns relative to the prelisting returns. To test for the importance of this assumption, we examine return performance for only those firms that survive to period +120. Specifically, we require that firms generate returns over the entire 240-month window. In this way, we know whether the failure of some firms subsequent to the listing is the cause of the decline in postlisting returns we document. If survivorship bias is the cause of our result, this test should show no decline in returns. Despite the fact that the sample is reduced by 69% to only 521 listings, the inferences are qualitatively similar. We conclude that the behavior of postlisting returns is not driven by firm failure.

¹¹ For the sake of presentation convenience, we do not report the coefficients on the calendar time dummies. Calendar dummies are largely insignificant and do not show distinct patterns. While point estimates are much larger in the 1920s and 1930s, they are mostly insignificant. The proportion of significant coefficients is about 8% for the whole sample, but it increases to 18% after 1973. Much of the increase in significance is due to the increase in number of observations in the later part of the sample period.

and 4 to that of the first period ($t - 120$ to $t - 60$). The regression coefficient indicates that in Period 2, the average monthly return is 0.54% per month (6.5% a year) higher than in the preceding period. This increase in returns is followed by a strong decline during the first 60 months after the listing. The average monthly residual return in Period 3 is lower by 0.13% per month (1.5% a year) than during Period 1, and it is marginally significant. In the last period (starting 60 months after the listing), the average return is similar in magnitude and significance to that in Period 3. The Period 4 dummy is again -0.13% per month or about -1.5% per year with only a 10% significance level. We interpret this estimate as the average permanent cost of capital reduction for a cross-listed firm in our sample.

In Regression 2 of Panel B of Table 4, we shift the reference period from Period 1 to Period 2. Our interest is to replicate the tests of other studies that measure the effect of overseas listing on the cost of capital using a smaller event window. The results indicate that the prelisting increase in residual returns is a distinct phenomenon. The residual returns during this period are statistically higher than during all other valuation periods. If we presume that the difference in returns between Period 2 and Period 3 measures listing-induced change in cost of capital, the magnitude of the change is much greater, as indicated by the coefficient on the Period 3 dummy variable of -0.67% , or about -8.0% annually. Note that at least some of the prelisting run-up in prices is fully in line with the notion that in the anticipation for a firm to become less segmented from the world market, the firm's higher prices reflect lower expected returns and the decrease in the future cost of capital. However, a substantial and sustained underperformance of cross-listed stocks after the listing that lasts three to five years is also consistent with a "window of opportunity" explanation of the returns in Periods 2 and 3. The returns within three to five years of an overseas listing may reflect both timing effects, as well as reductions in the cost of capital. The inability to disentangle these two effects provides another motivation for our cost of capital tests that use an extended transitory period.

In Regressions 3 and 4 of Panel B of Table 4, we repeat the Regression 1 specification with the other residual return models. The overall estimation patterns are similar with the different models. The only systematic difference we note is a marginal decrease in the magnitude and significance of Period 3 and Period 4 coefficients due to the addition of the second (nondomestic) risk factor to the original local-market model. This suggests that the actual average cost of capital gain resulting from the overseas listing may be even less than the annual decline of 1.5%. Since the market indices are not uniformly available prior to 1973, the difference in results is also due to variation in the number of observations. Given some differences in the estimation of the cost of capital gains across the three models, in Regression 5, we present the estimation results from a model, which represents a combination of Model 1 for returns prior to January 1973 and Model 3 for returns after that date. We denote this model the "combination model" and use this specification in all our subsequent tests.

Based on this model, the average cost of capital gains from cross-listing are statistically zero. We note that an average absence of long-term benefits does not mean that no firms benefit from overseas listing.

Recall from Panel E of Table 2 that many firms place subsequent listings within a relatively short time period (about three years) of earlier listings. This means, to a certain degree, an overlap in returns with the earlier listings. Our concern is that the *t*-statistics presented are upwardly biased because we are assuming observation independence when, in fact, the same firm returns may be highly overlapping. To decouple the listing sequencing effect from other effects, we exclude all sample listings that occur within five years of an earlier listing. This procedure reduces the overall sample by 330 listings. In unreported results using this nonoverlapping sample, we find that the results are similar.

We conclude this section with an additional illustration that firm returns within ± 60 months of the listing date are much more consistent with market timing effects than with the equilibrium performance. Many market timing studies on domestic equity offerings show that equity offerings cluster around periods of strong marketwide performance (see Lowry and Schwert, 2002). Therefore, we also examine the performance of all home and host market indices around the listing dates of the respective firms. The listing dates for each home-host market pair must coincide with the actual listing date of each firm from the given home market to a given host market. This approach allows us to have as many return observations at the market level as at the firm level.

Figure 2 shows the results. It depicts the annualized moving-average excess returns on home and host market indices. Excess returns are computed around the respective listing dates of all firms originating from the given home market and being placed to a specific host market. Monthly excess returns are averaged across all home and host markets and then annualized by cumulating the returns over months $t - 12$ to $t + 11$ and dividing by two. The plots show a striking pattern: both home and host market indices sizably appreciate within 60 months prior to the listing event (by 5–7% relative to the earlier period). After the listing, there is a substantial drop in index performance. These patterns, which are very similar to those at the firm level shown in Figure 1, imply that an average firm from a given country decides to place its share overseas when its domestic market is doing abnormally well. Moreover, among different candidate host markets, firms seem to prefer those that have also experienced recent marketwide price appreciations. Such preferences are consistent with the trading venue effects documented in Froot and Dabora (1999).

3.2 Performance across listing sequence, markets, and equity offerings

In this section, we examine the differences in return patterns around the listing date by listing order sequence, home and host markets, as well as the choice to simultaneously issue equity. We begin by analyzing the impact of the listing sequence. Studies that look only at the cost of capital effects of listings on one market, such as the US market, consider all such listings the same. However,

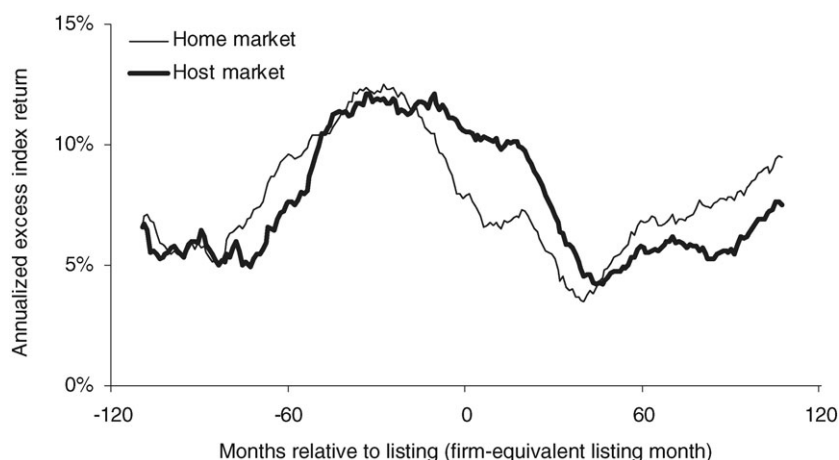


Figure 2
Annualized moving-average excess returns on home and host market portfolios

Excess returns are computed for home and host market portfolios around the respective listings dates of all firms originating from the given home market and being placed to a specific host market. The market index return for the United States is the CRSP value-weighted market return; the market returns for other countries are the returns on the corresponding market indexes from Datastream, all in US dollars. The excess return is constructed as the difference between the monthly local market return and the corresponding monthly return on the 30-day US Treasury bill. Monthly excess returns are averaged across all home and host markets and then annualized by cumulating the returns over months $t - 12$ to $t + 11$ and dividing by two.

as stated earlier, diminishing gains to foreign listing imply that a firm's first overseas listing should be associated with the most profound price response. Since the motives and gains for subsequent foreign listings may be very different from initial listings, we expect that it is important to control for a firm's listing sequence.

We emphasize again that the sequencing documented in our study presents the effects of a relative sequence of overseas listings, not an absolute sequence. Figure 3 shows the annualized residual returns of cross-listed firms sorted by listing sequencing, namely, for the first-, second-, third-, and fourth-plus listing group, which incorporates all listings of order four and above. We also plot the corresponding observation frequencies (see the lower part of the figure). The most interesting feature of the return plot is the profound difference in the valuation effects between the first listing and the subsequent listings. The first listing is associated with the largest run-up in residual returns, reaching almost 14% annually prior to the listing. The postlisting decline is equally profound: the residual returns approach -6% per year in the two to three years following the listing. The second and third listings are associated with a much smaller run-up in the stock prices prior to the listing and decrease after the listing date. The returns associated with higher-order firm listings (fourth+) show hardly any pattern at all.

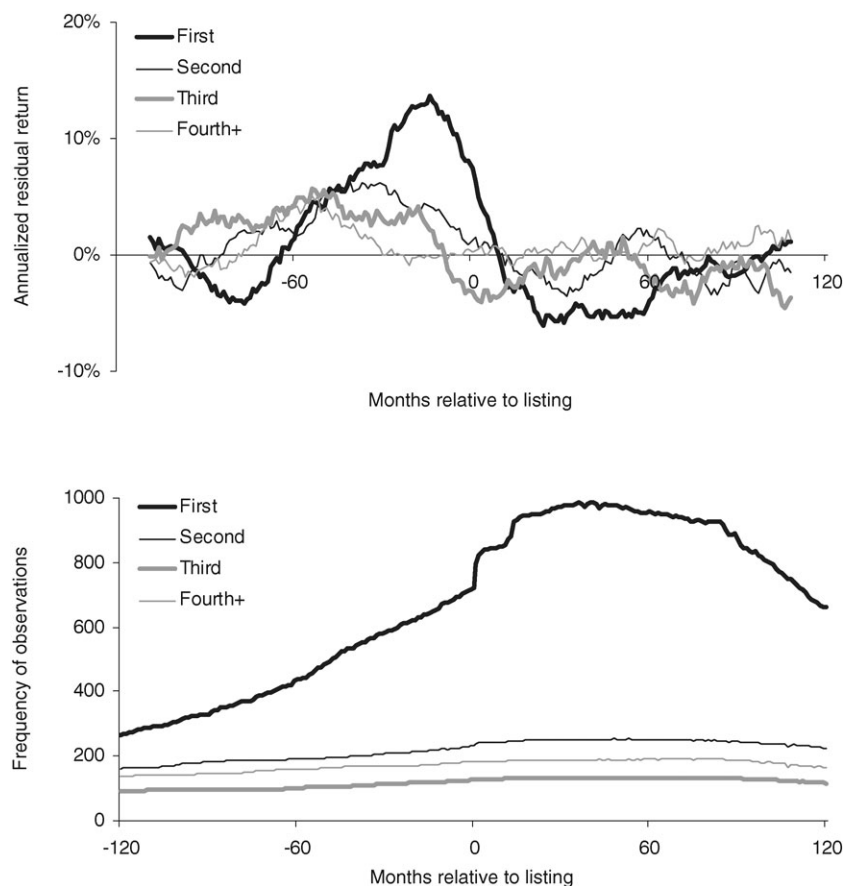


Figure 3

Annualized moving-average returns for overseas listings by listing sequence

Monthly residual dollar-denominated returns are averaged across firms and then annualized by cumulating the returns over months $t - 12$ to $t + 11$ and dividing by two. The residual returns are computed for each firm based on Model 1 for returns before January 1973 and Model 3 for returns after that date. The first, second, and third listings refer to the calendar order of listing date in our dataset. The fourth and above listings are pooled into one group. The number of monthly observations for the respective subsamples is presented in the lower plot.

Second, we highlight the differences in return patterns for three subsets of listings: the listings of US firms abroad, the listings of non-US firms in the United States, and the listings of non-US firms on markets outside the United States. Figure 4 depicts the annualized residual returns for three subsets of listings and the corresponding observation frequencies. The number of firm-listing month observations is always greater than 80. Since the CRSP return data are available for a much longer time series, the number of observations for the US firm subsample is less affected by the extended event window. The return plot shows that the general pattern in returns around an overseas listing

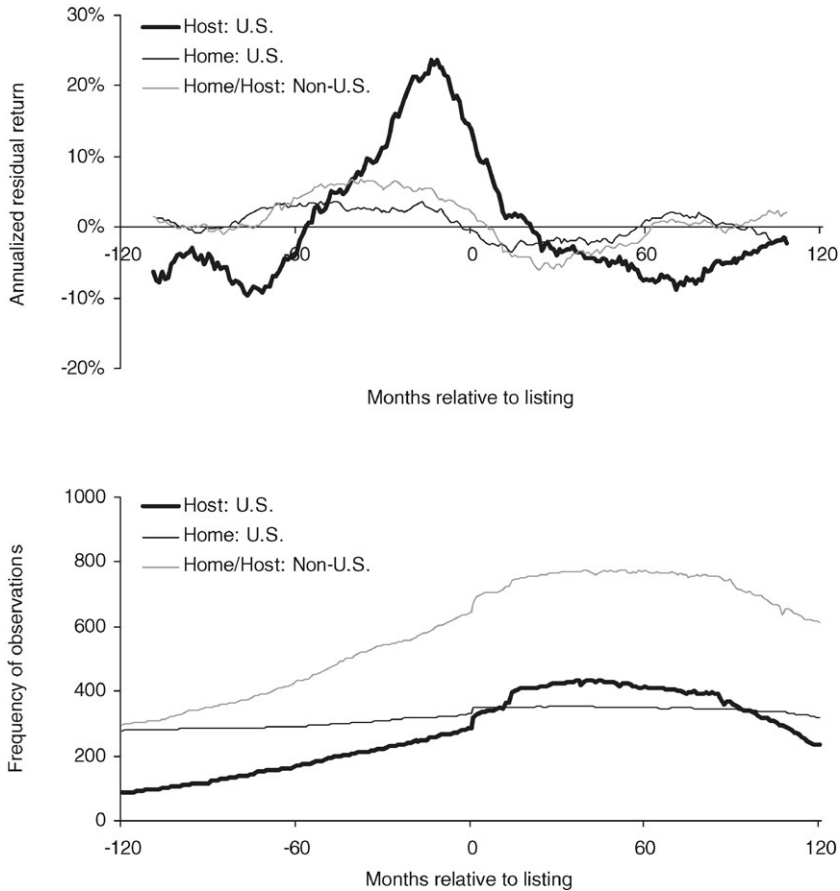


Figure 4

Annualized moving-average returns for overseas listings by home and host markets

Monthly residual dollar-denominated returns are averaged across firms and then annualized by cumulating the returns over months $t - 12$ to $t + 11$ and dividing by two. The residual returns are computed for each firm based on Model 1 for returns before January 1973 and Model 3 for returns after that date. The number of monthly observations for the respective subsamples is presented in the lower plot.

that we described earlier is also present at the disaggregate level, although relative magnitudes vary across markets. Foreign firms that list in the United States experience the largest prelisting increase in residual return, reaching about 24% per year. In comparison, the maximum level of annualized residual returns for foreign listings outside the United States is less than 7% per year. The postlisting decline in returns is again markedly steeper for listings in the United States than for the other two groups of listings. However, a comparison between the magnitude of Period 1 and Period 4 returns for the US-listed firms shows little difference.

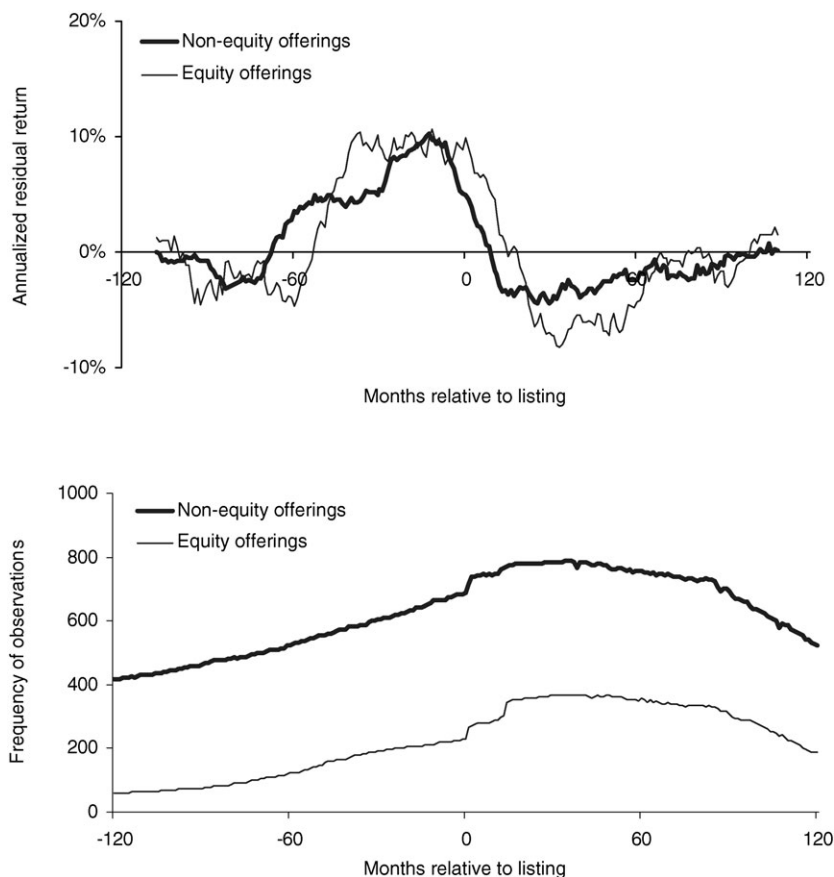


Figure 5

Annualized moving-average returns for overseas listings with and without equity issuance

Monthly residual dollar-denominated returns are averaged across firms and then annualized by cumulating the returns over months $t - 12$ to $t + 11$ and dividing by two. The residual returns are computed for each firm based on Model 1 for returns before January 1973 and Model 3 for returns after that date. The listing is assumed to be associated with an equity issuance if it is placed within ± 12 months from the equity issuance date. The number of monthly observations for the respective subsamples is presented in the lower plot.

Third, since overseas listings are often accompanied by the equity issuance in the domestic or foreign markets, we want to differentiate the price impact of the listing event from that of the equity offer. Figure 5 shows the annualized residual returns for the two subsets of listings: those without an accompanying equity offering and those with an accompanying equity offering. The sample observation frequencies are also shown. We obtained the equity offering dates for all international issues from the SDC database. Since most of the equity issue dates in this database start after 1980, overseas listings prior to 1980 are not included in our equity issue analysis. We assume that there is a simultaneous issuance of equity with the placement of foreign listing if the equity offer date

is within 12 months of the listing date. The maximum proportion of the listing sample with equity offerings to that without over the 241-month window is 47%, and the minimum is 14%. The figure is able to highlight some differences in the valuation patterns between these two subsets of listings. We can see that while the average returns in Period 2 reach similar levels for listings with and without the equity offer, the steepness of the increase in returns from Period 1 to Period 2 is somewhat higher for listings with equity offer. This pattern is expected since the two corporate events reinforce each other. Similarly, again due to the joint reinforcement effect, the decline in returns in the first postlisting Period 3 appears to be slightly greater for listings accompanied by equity issuance. We observe no average valuation differences across the two samples in Period 4.

To test the statistical significance of the return patterns, we follow the analysis of Table 4, but add additional right-hand-side variables to Equation (4), where the dependent variable is from the Combination model (Model 1 before 1973 and Model 3 after). The regression model is as follows:

$$\begin{aligned} \hat{\epsilon} = & \{\alpha_1 + \phi_1 D(t - 60, t - 1) + \theta_1 D(t, t + 59) + \delta_1 D(t + 60, t + 120)\} \\ & + D(\text{First Listing})\{\alpha_2 + \phi_2 D(t - 60, t - 1) \\ & + \theta_2 D(t, t + 59) + \delta_2 D(t + 60, t + 120)\} \\ & + D(\text{Home} = \text{US})\{\alpha_3 + \phi_3 D(t - 60, t - 1) \\ & + \theta_3 D(t, t + 59) + \delta_3 D(t + 60, t + 120)\} \\ & + D(\text{Host} = \text{US})\{\alpha_4 + \phi_4 D(t - 60, t - 1) \\ & + \theta_4 D(t, t + 59) + \delta_4 D(t + 60, t + 120)\} \\ & + D(\text{Equity Offering})\{\alpha_5 + \phi_5 D(t - 60, t - 1) \\ & + \theta_5 D(t, t + 59) + \delta_5 D(t + 60, t + 120)\} \\ & + \eta_1 D(\tau = \text{Feb } 1926) + \dots + \eta_{960} D(\tau = \text{Dec } 2001) + u, \end{aligned} \quad (7)$$

where $D(\text{First Listing})$ indicates whether the listing is the earliest listing in our sample for that firm, $D(\text{Home} = \text{US})$ indicates whether the firm originates from the United States, $D(\text{Host} = \text{US})$ indicates whether the listing is placed in the United States, and $D(\text{Equity Offering})$ indicates that an equity offering in any market by the listing firm was identified within one year of the listing date.

Table 5 presents these results. Because we have many right-hand-side variables with repetitive interactions, we report the results in matrix form with the combined row and column headings identifying the interactive terms. The first row lists only the mean values for each period, whereas the subsequent rows list the interaction term between the characteristic (e.g., Home = US) and the time period dummy identified in the column heading. Regression 1 has only the first listing dummy in Equation (7). Consistent with Figure 2, the estimates show that the Period 2 run-up is particularly important and possibly unique to

Table 5
Residual returns for overseas listings across listing sequence, markets, and equity offerings

	Intercept	Period 2 Prelisting transitory $D(t - 60, t - 1)$	Period 3 Postlisting transitory $D(t, t + 59)$	Period 4 Post-listing steady state $D(t + 60, t + 120)$	Adj R^2
Regression 1					
Column variable	0.5657 (0.83)	0.2120 ^b (2.04)	-0.0286 (-0.28)	-0.0744 (-0.71)	0.0273
$D(\text{First Listing})^*$	-0.1309 (-1.16)	0.6623 ^a (4.49)	-0.0678 (-0.48)	0.0690 (0.49)	
Regression 2					
Column variable	0.6872 (1.00)	0.1992 (1.53)	-0.0806 (-0.63)	-0.0214 (-0.16)	0.0276
$D(\text{Home} = \text{US})^*$	0.03375 (0.25)	-0.2446 (-1.45)	-0.0374 (-0.23)	-0.0908 (-0.55)	
$D(\text{Host} = \text{US})^*$	-0.5472 ^a (-3.33)	1.1179 ^a (5.41)	0.8178 ^a (4.26)	-0.0596 (-0.31)	
Column variable	-0.0426 (-0.37)	0.4370 ^a (2.88)	-0.2193 (-1.52)	0.1052 (0.72)	
$D(\text{First Listing})^*$					
Regression 3					
Column variable	0.4512 (0.58)	0.1905 (1.25)	0.1719 (1.05)	0.1350 (0.76)	0.0303
$D(\text{Equity Offering})^*$	0.0299 (0.14)	-0.0526 (-0.21)	-0.0157 (-0.07)	-0.0087 (-0.04)	
Column variable	-0.1798 (-1.21)	0.9554 ^a (4.93)	-0.0920 (-0.49)	-0.0334 (-0.18)	
$D(\text{First Listing})^*$					

This table shows the results of a time-series cross-section regression of monthly residual returns for firms listing in a foreign market. Regression 1 is of the following form:

$$\hat{e} = \{\alpha_1 + \phi_1 D(t - 60, t - 1) + \theta_1 D(t, t + 59) + \delta_1 D(t + 60, t + 120)\} + D(\text{First Listing})\{\alpha_2 + \phi_2 D(t - 60, t - 1) + \theta_2 D(t, t + 59) + \delta_2 D(t + 60, t + 120)\} + \sum \eta_\tau D(\tau) + u.$$

The dependent variable, residual return e , is computed based on the local and world market model (Model 3), $r_{it} = a_i + b_{iL}r_{Lt} + b_{iW}r_{Wt} + e_{it}$, where all returns are in US dollars less the return on the 30-day Treasury bill. For returns prior to 1973, the residuals are computed with the local market (Model 1) due to the unavailability of the world index. The residual return is adjusted for systematic changes in risk between Periods 1 and 2 and between Periods 3 and 4. D^* refers to a corresponding dummy variable, such that $D(t - 120, t - 61)$ is equal to 1 for observations 120 to 61 months prior to the month of the overseas listing date and equal to 0 otherwise. $D(\text{First Listing})$ indicates whether the listing was the earliest calendar time listing in our database. $D(\text{Home} = \text{US})$ and $D(\text{Host} = \text{US})$ indicate whether the listing firm is from the United States or was listed in the United States, respectively. $D(\text{Equity Offering})$ indicates that an equity offering in any market by the listing firm was identified within one year of the listing date. Since the SDC equity offering data are limited prior to 1985, the Regression 3 estimates are based only on data from listing events after and including 1985. For each regression, an array of monthly calendar time dummy variables, $D(\tau)$, from February 1926 to December 2005 is also included, but the coefficient estimates are not reported. The t -statistics are reported in parentheses. Superscripts a, b, and c denote statistical significance at the 1%, 5%, and 10% levels, respectively.

first listings. The first listing Period 2 coefficient is 0.66% per month (almost 7.8% per year) higher than that for the subsequent listings. We also find that the first listing is associated with more negative postlisting abnormal performance both in Periods 3 and 4, although this difference is not statistically significant. Therefore, even the first overseas listing by a firm does not appear to be associated with statistically significant differences in cost of capital effects.

Regression 2 provides information on the relative performance around the listing of US firms listed overseas and non-US firms listed in the United States, while controlling for the listing sequencing. As expected from the patterns in Figure 3, foreign listings of US firms show no differences in valuation effect across all reported periods relative to those from other markets. Furthermore, we find that the prelisting run-up is particularly acute for firms listing in the United States, with monthly residual Period 2 returns of 1.12% per month (13.4% per year) greater than those listed in other markets. Interestingly, Period 3 returns in the United States are statistically more positive than in other markets. More importantly, we find no statistically significant reduction in the Period 4 returns for the US-hosted firms. The slope coefficient of negative 0.06% per month (0.7% a year) indicates that even in economic terms, listing in the United States does not lead to any sizable cost of capital advantages relative to firms listed in other markets. In a similar vein, Hail and Leuz (2004) estimate the reduction in cost of capital associated with US cross-listing at only 0.4 to 1.3 percentage points. Thus, we see no evidence that the US market provides any unique cost of capital benefits to foreign firms listed on its exchanges.¹²

Finally, Regression 3 output shows the results of the relative performance of firm returns around listings controlling for equity offerings and the listing sequencing. Consistent with the patterns observed earlier in Figure 4, we find no significant differences in valuation effect across all periods between foreign listings accompanied by the issuance of equity and those that are not.

Thus, Table 5 results show that firms issuing their first overseas listing and/or firms listing on US exchanges have extraordinary performance prior to the listing event. Yet, we find little evidence that these corporate decisions on average lead to significant long-run reduction in a firm's cost of capital. Therefore, the variation in cost of capital gains across firms may be more related to the relative market characteristics of the home and host markets rather than the peculiarities of a specific host market. We investigate this link more closely in the next section.

4. Return Performance and Relative Market Characteristics

To further investigate the possible valuation gains to particular firms, we examine the relative market characteristics across which firms cross-list.

¹² To examine whether other large markets perform similarly to the United States, we perform a regression similar to Regression 2, but substitute a G5 home and host country (France, Germany, Japan, UK, and the US) dummies, for the US home and host dummies, respectively. The estimation results are similar and are available on request.

4.1 Proxies for cross-market characteristics

Our global sample of cross-listings allows us to test the relative importance of each of the potential motives for overseas listings discussed in Section 1. We begin with construction of proxy variables for each of these motives.

We proxy the cross-border barriers to investment capital using the notion of the diversification potential between two countries measured by their equity market correlation, *CORRELATION*. This variable is estimated as the correlation coefficient using returns in US dollars from Datastream from 1990 to 1998. A high level of correlation between the markets of two countries indicates a high degree of closeness or synchronicity in the two markets' business cycles, and it often coincides with the higher degree of financial and economic integration.

We use two sets of variables to proxy the cross-border barriers to information flow. If overseas listings overcome information barriers, we expect that cross-listing valuation gains will be the greatest when the host market is relatively larger and less familiar. If the foreign listing has limited effect on information flow, cross-listings will generate the best gains when the host market is more familiar. The relative size of the markets is based on the logarithm of the total capitalization of the foreign market at the end of 1998 divided by the total capitalization of the home market, *MARKET SIZE*. The extent of investor familiarity is measured using the same proximity variables as those of Sarkissian and Schill (2004). We capture the economic proximity of the countries, *EXPORT*, as the percentage of the home country exports going to the host country. We obtain these data from the 1996 *International Trade Statistics Yearbook*. We measure cultural familiarity, *D(CULTURE)*, with a dummy variable equal to 1 if the countries share a common major spoken language or if they were affiliated with the same major colonial empire. To capture the familiarity due to a common industrial base, we create an industrial structure similarity variable, *INDUSTRY STRUCTURE*, which is estimated as the correlation of industry rankings between each pair of countries, for all firms listed overseas. We use the correlation of the ranks rather than the listings to reduce the importance of magnitude, but we focus more on which industries are the most important in each country. Lastly, the measure of geographic proximity, *DISTANCE*, is the great circle distance in megameters between the two capital cities.

Our liquidity measure is the same as in Domowitz, Glen, and Madhavan (2001)—the Elkins/McSherry estimates of average one-way trading cost for pension funds, investment managers, and brokerage houses. As a relative measure of liquidity, *LIQUIDITY*, we use the log ratio of estimated trading costs of the host market divided by that of the home market taken with the negative sign. Since Elkins/McSherry does not provide a liquidity measure for Israel, we interpolate the measure to be 84.5 based on the LOT trading cost estimate of similar emerging markets from Lesmond (2005). We represent the accounting disclosure differences by a dummy variable, *D(DISCLOSURE)*, which takes

on the value of 1 if country j requires a financial statement disclosure that is substantially different than that of country i . The disclosure dummy is obtained using the disclosure standards and requirements reported by the IASC at the end of 1998. The legal protection measure for each market is based on the La Porta et al. (1997) country indexes of the efficiency of the judicial system. This measure, unlike other law-related country indexes in La Porta et al. (1997), accounts for the “efficiency and integrity of the legal environment as it affects business, particularly foreign firms” and therefore represents the most suitable legal measure for our study. We construct our $D(LAW)$ variable as a simple dummy variable with a value of 1 if the host market has a better legal environment measure.¹³ Finally, to take into account the tax advantages of certain markets, we set a dummy variable, $D(TAX)$, to 1 if the host country is considered a tax haven.¹⁴

Table 6 reports the means and cross-correlation coefficients of market characteristics. The average correlation of equity market returns is about 0.5. There are no extremely high cross-correlations much in excess of 0.65 in absolute value. We can observe, however, that certain variables seem to share larger commonalities. For instance, the correlation of geographic distance with market correlation is negative 0.63, and it is expected, since proximate countries tend to maintain more return correlation than distant ones. The correlation of relative market size with export variable is positive 0.50, while that with liquidity measure is 0.58.

4.2 Which home-host market characteristics most affect the cost of capital gains?

To identify the potential effect of various cross-market characteristics on changes in firm returns around listing, we regress residual returns from Model 1 on these characteristics (individually or as a group) while controlling for the listing sequencing and the US host market. We use the following regression model:

$$\begin{aligned} \hat{\epsilon} = & \{\alpha_1 + \phi_1 D(t - 60, t - 1) + \theta_1 D(t, t + 59) + \delta_1 D(t + 60, t + 120)\} \\ & + D(\text{First Listing})\{\alpha_2 + \phi_2 D(t - 60, t - 1) \\ & + \theta_2 D(t, t + 59) + \delta_2 D(t + 60, t + 120)\} \\ & + D(\text{Market} = X_i)\{\alpha_5 + \phi_5 D(t - 60, t - 1) \\ & + \theta_5 D(t, t + 59) + \delta_5 D(t + 60, t + 120)\} \\ & + \eta_1 D(\tau = \text{Feb 1926}) + \dots + \eta_{960} D(\tau = \text{Dec 2005}) + u, \end{aligned} \quad (8)$$

¹³ We find that our results are no different if we substitute the anti-self-dealing index of Djankov et al. (forthcoming) as our measure of differences in legal characteristics across markets.

¹⁴ In our sample of 25 host countries, five markets are classified as tax havens based on the US Internal Revenue Service classification, namely, Hong Kong, Ireland, Luxembourg, Singapore, and Switzerland.

Table 6
Summary statistics of measures of market characteristics

	<i>CORRELATION</i>	<i>MARKET SIZE</i>	<i>EXPORT</i>	<i>D(CULTURE)</i>	<i>INDUSTRY STR.</i>	<i>DISTANCE</i>	<i>LIQUIDITY</i>	<i>D(DISCLOSURE)</i>	<i>D(LAW)</i>	<i>D(TAX)</i>
Mean	0.475	0.390	15.75	0.381	0.428	5.418	0.144	0.546	0.389	0.169
Cross-correlations										
<i>CORRELATION</i>	1.000	−0.013	0.410	0.490	0.295	−0.631	−0.160	−0.004	−0.047	−0.333
<i>MARKET SIZE</i>		1.000	0.495	0.197	−0.167	−0.093	0.575	0.289	0.497	−0.336
<i>EXPORT</i>			1.000	0.448	0.153	−0.445	0.252	0.315	0.448	−0.266
<i>D(CULTURE)</i>				1.000	0.089	−0.260	0.042	0.217	0.162	−0.213
<i>INDUSTRY STR.</i>					1.000	−0.106	−0.153	0.212	−0.149	−0.164
<i>DISTANCE</i>						1.000	0.018	0.259	−0.250	0.078
<i>LIQUIDITY</i>							1.000	0.091	0.403	−0.168
<i>D(DISCLOSURE)</i>								1.000	0.006	−0.449
<i>D(LAW)</i>									1.000	0.059
<i>D(TAX)</i>										1.000

This table shows the means and cross-correlation coefficients of market characteristics. *CORRELATION* is the correlation between the host and home equity markets. *MARKET SIZE* is the relative size of the host market equity capitalization divided by the market equity capitalization of the home market. *EXPORT* is the percentage of exports from the home country going to the host country based on the 1996 United Nations Statistics Department data. *D(CULTURE)* is set to 1 if both the home and the host countries share a common major spoken language or if they were part of the same colonial empire. *INDUSTRY STRUCTURE* is the correlation of the ranked industry distribution of firms listed overseas between each pair of countries. *DISTANCE* is the great circle distance between capitals of countries—the home and host countries in megameters. *LIQUIDITY* is the log ratio of the host country liquidity to that in the home country as measured by Elkins/McShery taken with the negative sign. *D(DISCLOSURE)* is set to 1 if the host country has more stringent disclosure requirements than the home country. *D(LAW)* is set to 1 if the host country has better legal protection than the home country based on the La Porta et al. (1997) country indexes of the efficiency of judicial system. *D(TAX)* is set to 1 if the host country is considered a tax haven.

where $D(\text{Market} = X_i)$ denotes market characteristic X_i , such as *CORRELATION*, *MARKET SIZE*, *EXPORT*, etc.

The results are presented in Table 7. In each regression, we control for the listing sequencing and the calendar month dummies. Scanning the univariate tests in Panel A, we observe large transitory effects across many market characteristics. Overseas listings in larger markets with greater liquidity, disclosure requirements, and legal protection, as well as economic and cultural proximity, are associated with larger run-ups in prelisting returns. Following the listing, returns tend to immediately decline the most for listings in smaller markets with less liquidity, disclosure, economic and industrial distance, as well as those in tax havens. However, by Period 4, we find very little evidence of any permanent differences in firm returns regardless of the market characteristics. In the univariate tests, the sole variable with a positive and significant coefficient is $D(\text{CULTURE})$, suggesting that firms that list in markets that are culturally distinct from their own achieve significantly greater gains.

To examine the joint correlation structure, we provide the results of multivariate tests of Equation (7) in Panel B of Table 7. We again control for the listing sequencing and monthly calendar dummies. In the multivariate setup, we find that many of the transitory relations identified in Panel A are better explained by other market characteristics. More precisely, the transitory return effects associated with liquidity, disclosure, and legal protection become insignificant, while those of market size and economic and geographical proximity remain significant in Period 2 and/or Period 3. The coefficients of particular interest in the table are again the Period 4 estimates that measure the postlisting permanent incremental valuation effects. Again, we find little evidence of significant reduction in the cost of capital above as explained by the culture variable. The one exception is disclosure, which is weakly significant. Since this variable is a dummy variable, we can interpret the coefficient of -0.3302 to imply that firms that cross-list in markets with more stringent disclosure requirements achieve an average reduction in returns of 0.33% a month (4.0% annually).¹⁵

¹⁵ One concern with the Panel B results is that the market characteristics may vary over time. Although we would like to improve the timeliness of our right-hand-side variables to match the market characteristics at the event time, data availability prohibits such variable collection. However, we can test the importance of this concern by trimming our sample to only those listings that occur within a reasonable time of the market characteristic estimation. We conduct our multivariate estimation based on the listings that occur in the 1990s, but find no qualitative differences with the full sample estimation. Another potential concern with the Panel B results is that of multicollinearity in the right-hand-side variables. In our test setup, multicollinearity can be a problem if there is an approximate linear relationship among the regressors. The effect of such correlation structure is an increase in the variance of the coefficient estimates. It may be that some of the coefficient estimates are unreliable if they change dramatically with different test specification or may have abnormally high standard errors, such that the coefficient estimates are reported to be zero, when in reality, they are significant. The correlation coefficients in Table 6 provide some evidence of strong correlation in the regressors. For example, the correlation coefficient between *CORRELATION* and *DISTANCE* is -0.63 , and the correlation coefficient between *MARKET SIZE* and *LIQUIDITY* is 0.58 . However, the correlation coefficients between all other variables are below 0.50 . To address the effect of multicollinearity, we rerun the multivariate regression, dropping out in turn each of the market characteristics variables. The results are similar and so do not appear to depend on correlation structure with any one set of variables. Next, we conduct an F -test of the restriction that the explanatory power of the Period 4 coefficients on various right-hand-side variables is jointly zero. We find no significant explanatory power

Table 7
Residual returns for overseas listings across event time periods and market characteristics

Regression	Right-hand-side variable	Intercept	Period 2 Prelisting transitory $D(t - 60, t - 1)$	Period 3 Postlisting transitory $D(t, t + 59)$	Period 4 Postlisting steady state $D(t + 60, t + 120)$	Adj R^2
Panel A: Univariate regressions						
(1)	<i>CORRELATION</i> *	-0.6244 ^c	0.6333	1.1783 ^c	0.1206	0.0273
	Column variable	(-1.65)	(1.36)	(2.68)	(0.27)	
(2)	<i>MARKET SIZE</i> *	-0.0671 ^a	0.1649 ^a	0.1205 ^a	-0.0009	0.0275
	Column variable	(-2.63)	(5.28)	(4.09)	(-0.03)	
(3)	<i>EXPORT</i> *	-0.0065 ^b	0.0168 ^a	0.0080 ^b	0.0015	0.0274
	Column variable	(-2.02)	(4.35)	(2.22)	(0.42)	
(4)	<i>D(CULTURE)</i> *	-0.2770 ^b	0.4549 ^a	0.1163	0.2831 ^c	0.0273
	Column variable	(-2.23)	(2.83)	(0.77)	(1.86)	
(5)	<i>INDUSTRY STRUCTURE</i> *	0.0077	-0.0982	0.7427 ^b	-0.4471	0.0273
	Column variable	(0.03)	(-0.28)	(2.21)	(-1.32)	
(6)	<i>DISTANCE</i> *	0.0048	0.0114	-0.0250	-0.0052	0.0273
	Column variable	(0.33)	(0.61)	(-1.44)	(-0.29)	
(7)	<i>LIQUIDITY</i> *	-0.2807	0.7981 ^a	0.4319 ^b	0.0617	0.0273
	Column variable	(1.60)	(3.64)	(2.08)	(0.29)	
(8)	<i>D(DISCLOSURE)</i> *	-0.0956	0.3562 ^b	0.2512 ^c	-0.1735	0.0275
	Column variable	(-0.83)	(2.37)	(1.79)	(-1.23)	
(9)	<i>D(LAW)</i> *	-0.1254	0.5354 ^a	0.0262	0.0535	0.0270
	Column variable	(-0.89)	(3.07)	(0.16)	(0.32)	
(10)	<i>D(TAX)</i> *	0.2550 ^c	-0.3818 ^c	-0.6360 ^a	-0.0675	0.0273
	Column variable	(1.65)	(-1.96)	(-3.41)	(-0.36)	

Table 7
(Continued)

Panel B: Multivariate regression.

	Intercept	Period 2 Prelisting transitory $D(t - 60, t - 1)$	Period 3 Postlisting transitory $D(t, t + 59)$	Period 4 Postlisting steady state $D(t + 60, t + 120)$	Adj R^2
Column variable	0.8879 (1.08)	-0.7016 (-1.30)	-0.6254 (-1.22)	0.6179 (1.19)	
<i>CORRELATION</i> *	-0.4570	0.9016	1.0511	-0.8008	
Column variable	(-0.75)	(1.18)	(1.45)	(-1.09)	
<i>MARKET SIZE</i> *	-0.0616	0.0944 ^b	0.1637 ^a	-0.0122	
Column variable	(-1.64)	(2.01)	(3.73)	(-0.28)	
<i>EXPORT</i> *	-0.0018	0.0109 ^c	-0.0036	0.0030	
Column variable	(-0.39)	(1.90)	(-0.69)	(0.56)	
<i>D(CULTURE)</i> *	-0.1789	0.1769	-0.2081	0.4591 ^b	
Column variable	(-1.17)	(0.89)	(-1.12)	(2.44)	
<i>INDUSTRY STRUCTURE</i> *	-0.1158	0.1020	0.9525 ^b	-0.2958	
Column variable	(-0.38)	(0.25)	(2.54)	(-0.79)	
<i>DISTANCE</i> *	-0.0128	0.0629 ^b	-0.0106	-0.0063	
Column variable	(-0.57)	(2.12)	(-0.38)	(-0.22)	
<i>LIQUIDITY</i> *	0.1170	-0.2650	-0.2474	0.1664	
Column variable	(0.54)	(-0.96)	(-0.95)	(0.64)	
<i>D(DISCLOSURE)</i> *	0.0769	-0.0312	0.0104	-0.3302 ^c	
Column variable	(0.49)	(-0.15)	(0.05)	(-1.69)	
<i>D(LAW)</i> *	0.1383	0.0382	-0.3200	-0.0907	
Column variable	(0.74)	(0.16)	(-1.45)	(-0.41)	
<i>D(TAX)</i> *	0.0722	0.0950	-0.1671	-0.3377	
Column variable	(0.38)	(0.38)	(-0.70)	(-1.41)	
<i>D(First Listing)</i> *	-0.0258	0.4565 ^a	-0.1274	-0.0042	0.0275
Column variable	(-0.21)	(2.61)	(-0.84)	(-0.03)	

This table shows the results of a time-series cross-section regression of monthly residual returns for firms listing in a foreign market in a univariate (Panel A) and multivariate (Panel B) setting. Each regression includes interactive variables with the column variables. For example, Regression 1 in Panel A is of the following form:

$$\hat{\epsilon} = \{\alpha_1 + \phi_1 D(t - 60, t - 1) + \theta_1 D(t, t + 59) + \delta_1 D(t + 60, t + 120)\} + D(\text{First Listing})\{\alpha_2 + \phi_2 D(t - 60, t - 1) + \theta_2 D(t, t + 59) + \delta_2 D(t + 60, t + 120)\} \\ + D(\text{CORRELATION})\{\alpha_3 + \phi_3 D(t - 60, t - 1) + \theta_3 D(t, t + 59) + \delta_3 D(t + 60, t + 120)\} + \sum \eta_i D(\tau) + u.$$

The dependent variable, residual return e , is computed based on the local and world market model (Model 3), $r_{it} = a_i + b_{iL}r_{Lt} + b_{iW}r_{Wt} + e_{it}$, where all returns are in US dollars less the return on the 30-day Treasury bill. For returns prior to 1973, the residuals are computed with the local market (Model 1) due to the unavailability of the world index. The residual return is adjusted for systematic changes in risk between Periods 1 and 2 and between Periods 3 and 4. $D(\tau)$ refers to a corresponding dummy variable, such that $D(t - 60, t - 1)$ is equal to 1 for observations 60 to 1 month prior to the month of the overseas listing date and equal to 0 otherwise. For each regression, an array of monthly calendar time dummy variables, $D(\tau)$, from February 1926 to December 2005 is also included. For the ease of presentation, only the coefficients on the market characteristic interaction variable are included (ϕ_3 , θ_3 , and δ_3). The t -statistics are reported in parentheses. Superscripts a, b, and c denote statistical significance at the 1%, 5%, and 10% levels, respectively.

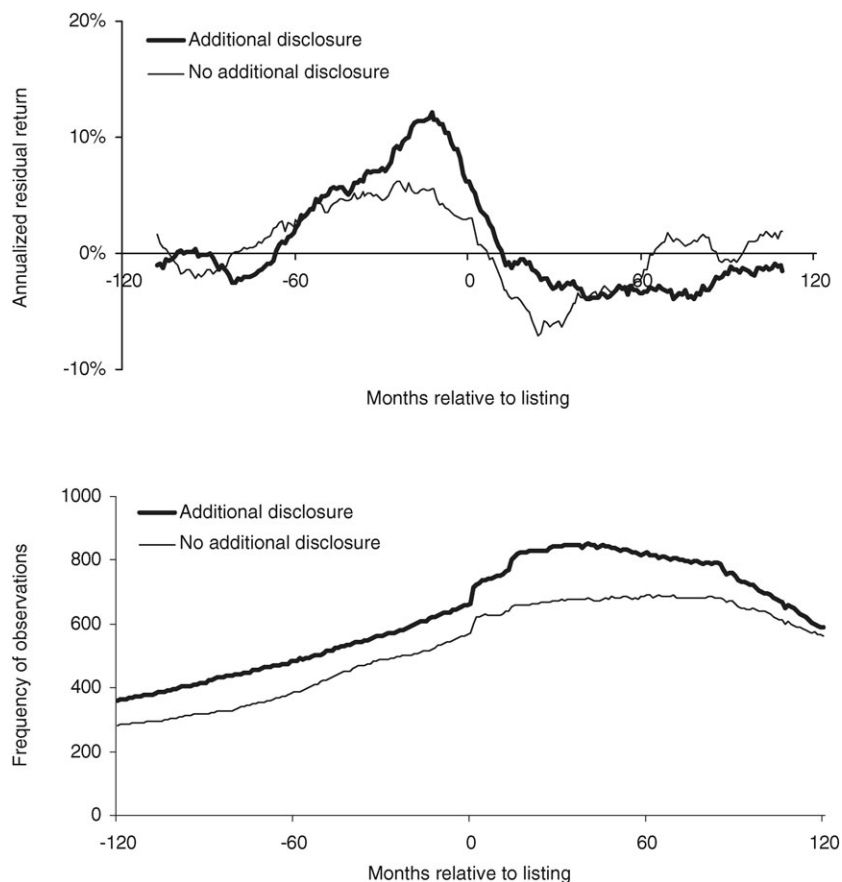


Figure 6

Annualized moving-average returns for overseas listings by host market information disclosure

Monthly residual dollar-denominated returns are averaged across firms and then annualized by cumulating the returns over months $t - 12$ to $t + 11$ and dividing by two. The residual returns are computed for each firm based on Model 1 for returns before January 1973 and Model 3 for returns after that date. The listing is assumed to be placed in a market with additional (no additional) information disclosure if the host country has more (less or the same) stringent disclosure standards than the home country. The number of monthly observations for the respective subsamples is presented in the lower plot.

We provide more insights on the impact of disclosure standards on firm returns around the listing in Figure 6. It shows the annualized moving-average returns for overseas listings by host market information disclosure requirements. The listing is assumed to be placed in a market with high (low) information disclosure standards if the host country has more (less or the same)

when testing for joint significance across various combinations of variables without significant t -statistics in the multivariate regression. In fact, a test on the joint explanatory power of all insignificant Period 4 variables suggests that these variables do not maintain any individual or collective explanatory power. These tests suggest that our results are not particularly sensitive to test specification and concerns of multicollinearity across regressors.

stringent disclosure requirements than the home country. Listings between markets with the same level of disclosure requirements are omitted. The figure reveals differences in the valuation patterns between the two subsets of listings in Periods 2, 3, and 4. We can see that while the run-up of average returns in Period 2 for listings in high-disclosure markets is larger than that for those placed in low-disclosure markets, the subsequent decline in Period 3 is less profound for the first group of listings. This pattern drastically contrasts with the previous ones (e.g., for firms listed in the United States, or the first listing) for which more steepness in valuation gains in Period 2 is followed by more decline in Period 3 returns relative to the average Period 1 return level. Finally, the figure illustrates that firms listed in markets with more stringent disclosure rules relative to their home market achieve sizable cost of capital gains in Period 4.

5. Return Performance and Firm Characteristics

Kang and Stulz (1997); and Sarkissian and Schill (2004) argue that overseas listings reflect rather than reduce the information barriers that lead to investor home bias in international investment. Kang and Stulz find that foreign ownership increases with firm size and exports. Sarkissian and Schill suggest that the wider international familiarity associated with large firms and those that produce tradable output allow these firms greater flexibility in their choice of foreign listing market. If such firm characteristics affect foreign ownership and foreign market choice, it is likely that such characteristics also affect the associated valuation effects. Therefore, we test whether cross-sectional differences among firms, such as their size and output tradability, affect their pre- and postlisting performance.

We classify firms into tradable and nontradable by their industry, following Sarkissian and Schill (2004). There are eight tradable industries: chemicals, consumer goods (including food), electronics (including electrical equipment and computers), manufacturing, healthcare (i.e., pharmaceuticals, drugs, biotechnology), mining, oil and gas, and paper (including forestry and printing); and eight nontradable industries: construction, financials (including banks and insurance), leisure (i.e., hotels and leisure equipment), retail (including distributors), support services, telecommunications (including media), transportation, and utilities. In our sample, about 65% of the listings are from firms we classify as tradable. We construct a dummy variable that takes the value of one for tradable firms.

We classify firms based on their size as follows. First, we obtain the US dollar-denominated market capitalization from CRSP or Datastream at the end of the calendar month preceding the listing date. Since market size and firm size are correlated, we use separate market-size breakpoints. For every country, we classify a cross-listed firm as large (small) if its capitalization exceeds (does not exceed) the home country median firm capitalization during approximately a calendar decade when the listing took place. The decades are 1970–1979,

Table 8
Residual returns for overseas listings across event time periods and firm characteristics

	Intercept	Period 2 Prelisting transitory $D(t - 60, t - 1)$	Period 3 Postlisting transitory $D(t, t + 59)$	Period 4 Postlisting steady state $D(t + 60, t + 120)$	Adj R^2
Regression 1					
Column variable	0.3644 (0.53)	0.5890 ^a (4.66)	0.2201 ^c (1.83)	-0.0126 (-0.10)	
$D(\text{Firm} = \text{Tradable})^*$	0.2290 ^c (1.94)	-0.0632 (-0.41)	-0.4974 ^a (-3.46)	-0.0579 (-0.40)	0.0272
Column variable					
Regression 2					
Column variable	0.7902 (1.16)	0.3366 ^a (2.98)	0.0811 (0.75)	-0.1825 (-1.64)	
$D(\text{Firm} = \text{Large})^*$	0.3993 ^a (3.48)	-0.3754 ^b (-2.53)	0.5380 ^a (3.84)	-0.1068 (-0.76)	0.0277
Column variable					
Regression 3					
Column variable	0.6280 (0.91)	0.1013 (0.61)	0.3867 ^b (2.45)	-0.1441 (-0.89)	
$D(\text{Firm} = \text{Tradable})^*$	0.1978 ^c (1.66)	0.0239 (0.15)	-0.4705 ^a (-3.25)	-0.0272 (-0.19)	
$D(\text{Firm} = \text{Large})^*$	0.3949 ^a (3.28)	-0.1919 (-1.24)	0.5677 ^a (3.87)	-0.0914 (-0.62)	
Column variable					
$D(\text{First Listing})^*$	0.0215 (0.18)	0.6074 ^a (3.90)	0.0494 (0.33)	0.0220 (0.15)	0.0279
Column variable					

This table shows the results of a time-series cross-section regression of monthly residual returns for firms listing in a foreign market. Each regression includes interactive variables with the column variables. For example, Regression 1 is of the following form:

$$\hat{e} = \{\alpha_1 + \phi_1 D(t - 60, t - 1) + \theta_1 D(t, t + 59) + \delta_1 D(t + 60, t + 120)\} + D(\text{Firm} = \text{Tradable}) \\ \times \{\alpha_2 + \phi_2 D(t - 60, t - 1) + \theta_2 D(t, t + 59) + \delta_2 D(t + 60, t + 120)\} + \sum \eta_i D(\tau) + u.$$

The dependent variable, residual return e , is computed based on the local and world market model (Model 3), $r_{it} = a_i + b_{iL}r_{Lt} + b_{iW}r_{Wt} + e_{it}$, where all returns are in US dollars less the return on the 30-day Treasury bill. For returns prior to 1973, the residuals are computed with the local market (Model 1) due to the unavailability of the world index. The residual return is adjusted for systematic changes in risk between Periods 1 and 2 and between Periods 3 and 4. $D(*)$ refers to a corresponding dummy variable, such that $D(t - 60, t - 1)$ is equal to 1 for observations 60 to 1 month prior to the month of the overseas listing date and equal to 0 otherwise. Firm tradability is defined on an industry classification of the exportability of the firm's output. For every country, we classify a cross-listed firm as large if its capitalization exceeds the home country median firm capitalization during approximately a calendar decade when the listing took place. The decades are 1970–1979, 1980–1989, and 1990–1998. The ranking of firm sizes prior to 1970 is based on all the preceding years. In the regression, an array of monthly calendar time dummy variables, $D(\tau)$, from February 1926 to December 2005 is also included, but the coefficient estimates are not reported. The t -statistics are reported in parentheses. Superscripts a, b, and c denote statistical significance at the 1%, 5%, and 10% levels, respectively.

1980–1989, and 1990–1998. The ranking of firm sizes prior to 1970 is based on all the preceding years. We construct a dummy variable that takes the value of one for large firms.

We repeat the Table 4 experiment by adding the two firm characteristics to our regression models and present the test results in Table 8. We present the test results on output tradability in Regression 1. We find that tradable firms substantially underperform nontradable firms in Period 3 by -0.49% per month (or -5.9% per annum). This result resembles that from market-level tests in Table 7, where we observed that listings from markets sharing large

cross-product trade with the host market exhibit significantly more negative returns during the first five years following the listing. The Period 4 interactive coefficient is still negative but insignificant.

In Regression 2, we perform a similar exercise with firm size. The estimation shows that large firms exhibit significantly smaller abnormal return behavior around the listing. The Period 2 residual returns of large firms relative to those of a small firm are lower by 0.38% per month. Moreover, the Period 3 returns on large firms are significantly higher than on small firms: the difference is 0.54% per month. Such return patterns of large firms are consistent with the notion that they are more fairly priced in the domestic and foreign markets than small firms. Therefore, large firms exhibit less abnormal return effects around their listing on foreign exchanges. The coefficient on the Period 4 cost of capital reduction among large firms is sizable in economic magnitude (-0.11% per month, or -1.3% per annum), but again is insignificantly different from that of small firms. The result is suggestive only that larger firms (and we use size here as a proxy for familiarity) generate large cost of capital gains. In Regression 3 of Table 8, we examine the importance of the two firm-specific characteristics while controlling for the listing sequencing. The overall results are qualitatively very similar to those based on the first two regressions. Thus, our findings indicate significant differences across the two examined firm characteristics, but these differences are confined primarily to the two five-year periods around the listing.

6. Conclusions

We use a comprehensive sample of global listings across all geographic regions to analyze the long-run valuation effects around the foreign-listing date. We find strong evidence of transitory valuation effects. Overseas listings are associated with a substantial prelisting run-up and a profound postlisting decline in firm returns during the five years before and after the listing. On average, we detect no significant cost of capital reduction five to ten years following the listing relative to the equivalent prelisting period. The transitory nature of valuation gains holds for both average US listings and average first-time firm listings.

Looking more broadly at characteristics of home and host markets and listing firms, we examine the permanent and transitory effects of returns across these characteristics. Although we identify several characteristics associated with strong transitory valuation effects, we find almost no characteristics that are associated with permanent return effects. Relative market size, liquidity, and legal protection are among the characteristics for which we find little permanent valuation gains. We do find a permanent relationship between returns and improved disclosure. The correlation with this particular characteristic is consistent with Ammer et al. (2005), who find that information disclosure provides the primary influence on foreign shareholding. Among firm characteristics, neither size nor industry variables are associated with any permanent gain. In

a larger sense, our results provide a view on the state of market integration for equities by identifying the features that generate relevance in a firm's choice of trading venue for its securities.

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