Relative Governance and the Global Cross-Listing Decision: Extending the Bonding Hypothesis

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Abstract

The primary objective of this study is to extend the bonding hypothesis by developing what we term as the relative bonding hypothesis. We hypothesize that firms seek the advantages of stronger investor protections by listing in countries whose governance is relatively better than its own. This means that firms can achieve bonding without listing in the U.S and that the governance advantages of bonding are not only for ADRs. We investigate how relative bonding affects cross-listing behavior in the international financial markets by using a comprehensive set of cross-listings and create the *relative* level of governance standards between the host market and the home market. We find that firms are more likely to choose a cross-listing destination if the host country has better governance than the home country, except those firms from countries whose managers enjoy greater private benefits of control. We also find that there is valuation premium even when cross-listing occurs outside of the U.S. The premia are even stronger if the host country has better governance than that of the home country. We conclude that although bonding might explain the existence of ADRs, *relative bonding* helps to explain the extensive cross-listing which occurs outside of the U.S.

Keywords: Governance, Bonding, Cross-listing, International financial markets

1. Introduction

Firms have pursued capital raising opportunities by listing their shares on foreign markets for decades. The benefits and motives for firms who choose to cross-list their shares abroad have been extensively studied in the literature. Among the most popular explanations include a reduced cost of capital, access to a larger market, increased diversification of their shareholder base, greater visibility, improved liquidity, and better shareholder protection (Dahya, Dimitrov, & McConnell, 2008; Doidge, Karolyi, & Stulz, 2004; Doidge, Karolyi, Lins, Miller, & Stulz, 2009; Hail & Leuz, 2009; Karolyi, 1998, 2006, 2012; Lel & Miller, 2008; Mitton, 2002; Reese & Weisbach, 2002). Current analysis of this phenomenon emphasizes the bonding hypothesis of Coffee (1999, 2002) and Stulz (1999) as an explanation. Bonding refers to the process by which foreign firms from countries with weak legal environment commit themselves to provide investors with greater shareholder protection by listing their shares on exchanges in countries with stronger legal protection. The literature on the bonding hypothesis is, however, overwhelmingly focused on cross-listings to U.S. exchanges. There are only few studies of cross-listings on exchanges outside the U.S. (Fernandes & Giannetti, 2014; Sarkissian & Schill, 2004, 2016). This study extends the bonding literature by examining cross-listings not only on U.S. exchanges, but also on exchanges globally.

As mentioned above, the benefits of bonding by cross-listing onto U.S. exchanges have been well documented. Cross-listing on the U.S. exchanges, however, might be unavailable or costly for smaller firms or firms from emerging markets. Those firms who are not able to benefit from listing their shares in the U.S. might seek alternatives. For example, if investors value governance, as suggested by Doidge et al. (2004, 2009), then cross-listed firms who bond themselves to better governance are at an advantage relative to other domestic firms. There are reasons to believe that those firms who are unable to list their shares in the U.S. might try to list on an alternative market. As Chen and Macmillan (1992) suggest, firms are committed to defend their market position by duplicating or matching a competitor's move. Gains obtained by first movers motivate other firms to undertake comparable responses. It is also repeatedly observed that, in some situations, organizations imitate the actions of others.

Therefore, we conjecture that firms are likely to commit themselves to better governance by cross-listing on an alternative exchange.

Meanwhile, the bonding hypothesis has been largely ignored when studies try to explain integration within the global equity market. We observe an increasing number of foreign listings around the world. Sarkissian and Schill (2004) find that proximity plays a key role in choosing overseas listing destinations. However, there is little study of the motivations of these global foreign listings from the perspective of bonding. Examining only those firms which cross-list in the U.S. can lead to mismeasurement of the true extent of bonding. This, in turn, results in failure to understand the full extent of world capital market integration.

We hypothesize that firms that want to improve their governance but are unable to meet the listing requirements of U.S. exchanges might choose a middle path. That is, they list on an exchange in a country whose governance is better than their own, but not as strong as that available in the U.S. We called this practice *relative bonding*. We explore the cross-listing activities globally by examining whether firms bond not necessarily to the country with the best governance, but to a country with relatively better governance. Using measures of the *relative* level of governance standards between the host market and the home market, we examine whether the bonding hypothesis can be applied to all foreign listings, including those that are cross-listed on exchanges outside the U.S.

We follow Doidge, Karolyi, and Stulz (2013) and use three separate measures of country level corporate governance to assess *relative bonding*. First, we use shareholder rights that are captured by the (revised) anti-director index and anti-self-dealing index of Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2008). Second, we include security laws. These security laws are measured with the disclosure index and liability standard index of La Porta, Lopez-de-Silanes, and Shleifer (2006). Third, we use the rule of law and corruption index of La Porta, Lopez-de-Silanes, and Shleifer (2002) to reflect government enforcement power.

Our empirical findings are consistent with *relative bonding* that firms are more likely to list overseas if the governance of the host country is stronger than that of its home country. Our results continue to hold even controlling for differences in the economic and capital market conditions between the host and home countries. This indicates that the effect of the *relative* governance standard between the host country and home country is even more relevant to the choice of cross-listing destinations because those economic and capital market factors are well known to be related to investor protection (Fernandes and Giannetti, 2014; La Porta, Lopez‐de‐Silanes, Shleifer, & Vishny, 1997). We also document that firms from countries whose managers enjoy greater private benefits of control are less willing to cross-list to countries with better governance.

Our results show that firms who cross-list through *relative bonding* enjoy higher Tobin's q ratios. This finding not only provides important implications in the motives and consequences of bonding for both firms and investors, but also extends the scope of bonding to the global equity market.

This study contributes to the literature in two important ways. Most importantly, we extend the analysis of governance bonding to include *relative bonding*. That is, we develop and test the premise that bonding can occur not just with countries having the best governance such as the U.S. or the U.K., but with countries simply having better governance. Disregarding these cross-listings with other countries underestimates the scope of bonding and ignores some of the nuances associated with the cross-listing decision.

This study also constructs the most comprehensive sample appearing in the literature for our analysis of cross-listing. We use listings from all stock exchanges, including smaller or regional exchanges. Pagano, Roell, and Zechner (2002) use a sample of listings in the U.S. and major European exchanges from 1986 to 1997. Sarkissian and Schill (2004) use listings from 44 home countries to 25 host markets as of 1998. Fernandes and Giannetti (2014) observe listing patterns across 24 countries from 1980 to 2006. Sarkissian and Schill (2016) analyze the determinants of cross-listing waves from 73 home countries to the top 8 host markets as of 1998, 2003, and 2006. These studies limit themselves to foreign listings across major stock exchanges. Exchanges such as the Stuttgart Stock Exchange, the second largest German stock exchange, are ignored. Our sample includes listings on *all* stock exchanges in each country.

We organize the remainder of our study as follows. Section 2 provides a review of the literature. Section 3 discusses our data and sample construction. Section 4 presents a geographical overview of cross-listing patterns. We then discuss our method in Section 5 and provide our findings from a country level analysis and firm level analysis in Section 6. In Section 7, we examine the effect of bonding on firm valuation while Section 8 contains our robustness testing. We conclude with a summary and a brief discussion of the importance of these findings in Section 9.

2. Literature Review

Coffee (1999, 2002) and Stulz (1999) contend that bonding is a mechanism through which foreign firms from countries with weak legal environment commit themselves to provide investors with greater shareholder protection by listing their shares in countries with stronger legal environment. An extensive literature has documented evidence for bonding (Please see Karolyi 1998, 2006, 2012 for a detailed review). However, Karolyi (2012) suggests that the empirical research on international cross-listings focuses on the U.S. as the target market. There are only a few studies investigating foreign listings outside the U.S. For example, Pagano et al. (2002) document the cross-listing of European companies on the U.S. exchanges, and the cross-listing of U.S. companies in Europe during the period of 1986 to 1997. They find that the number of European companies that cross-list their shares increased considerably, but most of the increase went to U.S. exchanges. At the same time, the number of U.S. companies that cross-list in Europe fell by a third. They also document that Europeans countries with the most companies listing their shares overseas and countries being least able to attract foreign listings are those with the highest trading costs and with the lowest accounting standard or worst shareholder protection. Sarkissian and Schill (2004) find that home bias has played a key role in choosing overseas listing destinations. They find that firms choose to list their shares in foreign countries that are close to their home markets, share similar language or colonial ties, experience heavy trade activities, and have similar industrial base. More recently, Fernandes and Giannetti (2014) observe listing patterns across 24 countries from 1980 to 2006. They find large waves in exchanges' ability to attract foreign companies and a tendency of listings to concentrate in the U.S. and the U.K. Doidge, Karolyi, and Stulz (2013) find that, from 1990 to 2011, the share of world IPO activities increased significantly by non-U.S. firms from countries with weak governance due to financial globalization. They suggest that the law and governance of a firm's country of origin have become less important in affecting a country's IPO activity. Both Fernandes and Giannetti (2014) and Doidge et al. (2013) use corporate governance to explain foreign listing or global IPO activities. However, Fernandes and Giannetti (2014) use the absolute level of governance of home country or host country as two separate factors, while Doidge et al. (2013) only examine the governance standard of the home country. Our study differs from the literature by using the *relative* governance level of host country and home country, and examine the effect of governance deviation on foreign listing activities. Finally, Sarkissian and Schill (2016) document large variations in foreign listing activities across countries and over time. However, their study finds that the stringency of law or accounting practices play a secondary role, if any, in determining cross-listing activities. Due to our limited understanding of how bonding affects cross-listing behavior outside the U.S., we contend that there is strong need to revisit bonding hypotheses in a relative fashion globally.

3. Data and Sample Construction

We collect data on foreign listings from 2000 to 2014 from a variety of sources. We begin with the Morningstar database. We obtain all firms' domestic and foreign listings on all exchanges from all countries provided by Morningstar. This includes listings not only on major stock exchanges, but also on smaller or regional stock exchanges around the world. We also obtain delisted listings for which we are able to obtain their listing and delisting dates. This results in an initial sample of 134,719 domestic and foreign listings from 128 home countries in 39 host countries. The same firm can appear in the data several times because of multiple listings on different exchanges or different share classes. We remove duplicated listings that occur in the same year on the same exchange. We retain the listing of primary shares if multiple share classes are reported.

Our sample is a considerable expansion of that present in the existing literature. Contrary to those studies which only focus on the major stock exchanges (Fernandes & Giannetti, 2014; Pagano et al., 2002; Sarkissian & Schill, 2004, 2016;), we include listings on all stock exchanges. As suggested by Burhop and Lehmann-Hasemeyer (2014), small firms tend to list on regional stock exchanges. Ignoring those regional stock exchanges are likely to create a bias towards larger firms as well as underestimate the full scope of cross-listing activity.

We cross-check and complement listings provided by Morningstar with a number of other sources. For example, for listings on the U.S. exchanges, we verify against CitiBank, Bank of New York, JP Morgan, Deutsche bank, as well as NYSE, NSADAQ, and OTC websites. We also confirm with the American Depository Receipts (ADRs) listings provided by Doidge et al. (2009). One key difference between our data and the data used in Pagano et al. (2002), Doidge et al. (2009), Sarkissian and Schill (2004, 2016), and Fernandes and Giannetti (2014) is that we include ADRs that are listed on OTC website as well as in the Morningstar data base. Although exchange listings impose more stringent governance relative to OTC listings, Doidge et al. (2004, 2009) still find positive valuation premium for OTC listings. To fully understand the mechanism of cross-listing worldwide, we include OTC listings in our

main analysis and later exclude them for robustness test. Although some ADRs listed on OTC are not actively traded, their motivation for listing abroad must be analyzed in any comprehensive study of cross-listings.

For listings on U.K. exchanges, we cross-check data with the website of the London Stock Exchange. Besides the London Stock Exchange, our data includes listings on the London Stock Exchange International Trading Services. The London Stock Exchange Trading Services are designed to maximize liquidity for all participants and include fully electronic order-driven services for liquid U.K. and international Global Depositary Receipts and quote driven market maker services for less liquid securities. We later exclude these listings for robustness test and obtain identical results.

For listings in Germany, we include not only listings on the Frankfurt Stock Exchange, but also listings on Stuttgart Stock Exchange, Berlin Stock Exchange, Dusseldorf Stock Exchange, Hamburg-Hanover Stock Exchange, and the München exchange. Stuttgart Stock Exchange is the second largest stock exchange with many financial powerhouse companies such as Allianz Life Insurance and LBBW Bank. Additionally, nearly all NASDAQ securities are traded in Berlin, but companies from China or South Africa are also available. International Blue Chips are represented as well as interesting small caps. In total, Berlin Stock Exchange enables trading in over 15,000 shares from 82 countries. Ignoring these exchanges not only ignores the full picture of international capital market, but also misjudge the causes and consequences of foreign listings.

We obtain country level variables from the World Bank and obtain corporate governance data from Sheleifer's website. The coverage of countries varies among different governance measures. Djankov, La Porta, Lopez-de-Silanes, and Shleifer (hereafter DLLS, 2008) provide shareholder protection rights captured by (revised) anti-director index and anti-self-dealing index for 72 countries. La Porta, Lopez-de-Silanes, and Shleifer (2006) provide security laws data measured by disclosure index and liability standard index for 49 countries. La Porta, Lopez-de-Silanes, and Shleifer (2002) provide rule of law and corruption index for 214 countries.

Our final sample consists of listings from 98 home countries in 39 host countries. This represents the most comprehensive sample of cross-listing firms that appears in the literature. We then match our listing data with Compustat Global to obtain the necessary financial variables for our firm-level analysis. A list of variable definitions is provided in Appendix. All financial variables are winsorized at 1% and 99% level. Since we are unable to match some foreign firms with Compustat Global dataset, these firms are excluded from firm level analysis. Our final sample for empirical analysis consists of 476,399 firm-year-country observations.

4. Geographical Patterns in Cross-Listings

Table 1 summarizes the pattern of foreign listings for the period 2000 to 2014. We present a matrix of foreign listings, with the home countries appearing in the columns and the host countries along the rows. Each cell of the table contains the *total* number of firms listed overseas at the end of 2000, 2007, and 2014 (top to bottom). This number changes each year due to new listings and de-listings. Because our sample covers foreign listings from 98 home countries in 39 host countries, we report the top 5 host countries with foreign listings as of 2014 while grouping other host countries by region.

We first note that the scope of host markets attracting foreign listings has grown since 2000. The number of foreign firms listed in each host country increases monotonically from 2000 to 2014. We note that our findings differ from that reported in the current literature. Pagano et al. (2002) report that the U.S. is the largest host country as of 1997, followed by the London Stock Exchange and then the Amsterdam Stock Exchange. Sarkissian and Schill (2016) show that the U.S. is the largest host country at the end of 2006, followed by the U.K. and Luxembourg.

Table 1. Number of Cross-Listed Firms in 2000, 2007, and 2014

	Home Country Region								
Host country region	Germany	United States	United Kingdom	Hong Kong	Mexico	Other: Europe	Other: Asia	Other: Rest of world	Total
Germany		1145	116	79	6	564	536	250	2696
		3278	728	384	21	1588	1480	2494	9973
		3430	773	435	56	1855	2014	3127	11690
United States	26		123	63	34	215	280	987	1728
	43		174	85	43	314	601	1530	2790
	201		690	222	91	1111	2245	3806	8366
United Kingdom	10	84		0		186	86	142	508
	119	86		4		582	89	281	1161
	392	200		5		1921	113	316	2947
Hong Kong		6	1				167	1	175
		8	2				490	2	502
	1	9	5			3	770	5	793
Mexico									0
	2	82	3			3	2	3	95
	7	218	21	1		38	36	56	377
Other: Europe	17	47	7		2	78	51	31	233
	40	94	35	3	9	295	158	91	725
	48	99	55	13	11	453	249	133	1061
Other: Asia		1	1	12		2	42	6	64
		8	5	28		6	152	19	218
		14	11	44		15	253	22	359
Other: Rest of world		53	17	4		16	7	36	133
	1	110	44	5		24	17	104	305
	6	326	74	14	11	54	51	214	750
Total	53	1336	265	158	42	1061	1169	1453	
	205	3666	991	509	73	2812	2989	4524	
	655	4296	1629	734	169	5450	5731	7679	

Table 1 shows that, however, Germany surpasses the U.S. as the largest host country in the years 2000, 2007, and 2014. This is due to our inclusion of all stock exchanges in Germany and not just the Frankfurt Stock Exchange. Foreign companies are increasingly interested in accessing the German capital market. A large number of U.S. firms as well as firms from Europe and Asia list their shares in Germany. This is because if the shares of a foreign company are already listed on a European stock exchange, an additional listing onto the Frankfurt Stock Exchange can be obtained easily.

We also observe other geographical patterns in this distribution of cross-listings. We find that Hong Kong is the fourth largest host country after the U.S. and the U.K. Most of their listings originate from China due to their close political and economic ties. We also discover that firms often choose cross-listing destinations within the same region. For instance, European firms will often cross-list onto another European exchange while Asian firms will choose an Asian market to cross-list into.

5. Methodology

We investigate the effect of *relative* bonding on a firm's decision to cross-list by using both country level analysis and firm level analysis. To examine the effect of differences in the quality of country governance on firms' decisions to list their shares abroad, we create two *relative* governance measures as our primary variable of interest. The first *relative* governance measure is an indicator variable that equals one if a foreign listing's host country has better governance than its home country. The second *relative* governance measure is the percentage difference in governance index values calculated as the host country's governance index value minus the home country's governance index value divided by the home country's governance index.

In our country level analysis, we follow Sarkissian and Schill (2004), and construct our dependent variable as the number of foreign listings from country *i* in country *j* divided by the number of domestic firms in country *i* for every year *t*. This ratio captures the proportion of domestic firms in a given country that elect to cross list their shares in a given foreign country. Since the number of foreign listings is censored at zero, we estimate a maximum-likelihood Tobit regression.

In our firm level analysis, we follow Fernandes and Giannetti (2014) and create our dependent variable as an indicator variable that equals one if a firm from country *i* is cross-listed in country *j* in that year, and zero otherwise.

6. Empirical Results

6.1 Country Level Analysis

Table 2. Tobit Regressions of Cross Listing, Relative Governance, and Market Characteristics

	Governance measure					
	(1) Anti-self-dealing index	(2) Anti-director index	(3) Disclosure index	(4) Liability standard index	(5) Corruption	(6) Rule of Law
Intercept	6.530	6.321	4.113	6.402	7.581	7.653
D (Governance)	3.962	2.349	4.706	1.872	1.119	0.817
	(<.0001)	(<.0001)	(<.0001)	(0.001)	(0.066)	(0.021)
R (Market turnover) t-1	0.048	0.048	0.045	0.048	0.051	0.050
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
R (Market volatility) t-1	0.090	-0.317	-0.254	-0.202	-0.342	-0.242
	(0.880)	(0.594)	(0.669)	(0.735)	(0.566)	(0.687)
R (Market return) t-1	0.008	0.007	0.009	0.005	0.006	0.005
	(0.661)	(0.695)	(0.617)	(0.779)	(0.748)	(0.751)
R (Inflation) t-1	-0.004	-0.003	-0.004	-0.004	-0.002	-0.002
	(0.740)	(0.818)	(0.758)	(0.774)	(0.873)	(0.849)
R [log (Market cap/GDP)] t-1	0.179	0.182	0.028	0.371	0.446	0.559
	(0.473)	(0.481)	(0.913)	(0.140)	(0.076)	(0.023)
R [log(GDP)] t-1	1.314	1.510	1.215	1.314	1.144	1.153
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
R (GDP per capita growth) t-1	0.058	0.061	0.059	0.060	0.062	0.061
	(0.013)	(0.008)	(0.011)	(0.009)	(0.008)	(0.009)
D (Eurozone)	6.501	5.761	7.036	5.873	5.525	5.574
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
D (Same region)	2.809	3.047	3.037	3.196	3.107	3.082
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes

Note: P-values are provided in parentheses.

Table 2 presents our regression results of country level analysis. We report results using *relative* governance level measured by an indicator variable, (*D(Governance)*), that equals one if host country has better governance than the home country. In unreported tests, we use the percentage difference of governance index values between the host country and home country, and obtain qualitatively identical results. The coefficients of the *relative* level of governance between the host country and the home country are positive and statistically significant across all governance measures after controlling other economic and financial market variables. This is consistent with the *relative* bonding hypothesis that firms from countries with weaker governance standards commit themselves to countries with stronger legal environment. For example, Model 1 shows that, on average, 4 out of 100 domestic firms from a country will choose to cross-list their shares in another country if the host country has better anti-self-dealing protection.

We also include other market and economic control variables suggested in the literature that affect a firm's decision to list its shares overseas. To capture the relative competitiveness between the host market and the home market, we construct our variables by taking the ratios of the measures (Sarkissian & Schill, 2004). For example, we control market turnover which can proxy market liquidity because Doidge et al. (2013) find that firms from countries with low market turnover are more likely to choose a global IPO than a domestic IPO. We divide the turnover of the host country *j* by the turnover measure of home country *i*, (*R (Market turnover)*), as our relative turnover measure. This variable captures whether firms choose to list their shares in countries with higher liquidity relative to their home countries.

Consistent with the literature (Bekaert, Harvey, & Lundblad, 2005; Fernandes & Giannetti, 2014; Sarkissian & Schill, 2004, 2016), we include the relative level of other main economic and financial market factors such as market return, market volatility, market capitalization scaled by GDP, GDP per capita, and the growth of GDP per capita. These variables capture the relative performance, size, and growth between the host country and home country, and determine the choice made by a firm when it lists its shares overseas. We also include the relative level of inflation because monetary and exchange rate policies can affect market returns and market volatility (Mullins, 1993).

Finally, we control the geographic factor using an indicator variable that equals one if both home country and host country are in the same region. Sarkissian and Schill (2004) document evidence that firms prefer to list their shares in foreign countries that are close to their home markets. We use the regional classification from La Porta et al. (2002). We also include an indicator variable that equals one if the host country is a member of the Eurozone countries during the year of the cross-listing. This is because the introduction of euro has provided investors with the easiest and most efficient ways to diversify their portfolio across borders. Recent studies by Baele (2005), Fratzscher (2002), Hardouvelis, Malliaropulos, and Priestley (2006), Kim, Moshirian, and Wu (2005), as well as Morana and Beltratti (2002) provide empirical evidence on the impact of the introduction of the euro on European stock markets. Investors view a single currency zone as a single area of financial opportunity, and European stock markets have experienced substantial integration. This, in turn, can affect the cross-listing activities.

Our result has important implication because this indicates that, after considering a cross-listing destination with higher liquidity, higher market returns, richer in terms of GDP, and greater growth relative to those of its home market, a firm still values better governance provided by the host country. Firms also favor a cross-listing destination that is within the same region of its own, and are drawn to the financial opportunity in Eurozone. That is, when firms choose a cross-listing destination, governance improvement remains a crucial factor after assessing other economic and financial market performance, as well as the geographic factor of the host country.

6.2 Private Benefits of Control and Cross-Listing

The U.S. cross-listing literature establishes that the additional investor protections provided by a U.S. exchange listing constrains the consumption of private benefits of control by managers. Managers from countries whose firms provide only a weak protection for their shareholders enjoy a higher level of the private benefits of control and face increased proprietary costs when increasing transparency. This reduces their desire to list shares on the exchange of a foreign country with better governance standards. Consistent with this view, Doidge et al. (2009) find evidence that when private benefits are high, controlling shareholders are less likely to cross-list in the U.S. due to the potential loss of the private benefits of control. Therefore, we argue that firms from countries whose managers enjoy greater private benefits of control are less likely to choose a cross-listing destination whose governance is more stringent than its own.

Consistent with DLLS (2008), we use the block premium of Dyck and Zingales (2004) to proxy the private benefits of control. The block premium is the median premium paid for control in corporate control transactions in each country. This variable has been interpreted as a measure of private benefits of control in several studies such as

DLLS (2008), Doidge et al. (2009), Grossman and Hart (1988), and Nenova, (2003). Therefore, we use the block premium to capture the magnitude of the private benefits of control, and we expect that firms from countries having higher block premiums are less willing to choose a cross-listing destination with more stringent governance.

Table 3. Cross-Listing and the Private Benefits of Control

	Governance measure			
	(1) Anti-self-dealing index	(2) Anti-director index	(3) Disclosure index	(4) Liability standard index
Intercept	2.543	3.997	2.106	3.881
D (Governance)	4.809	2.988	5.752	3.701
	(<.0001)	(<.0001)	(<.0001)	(<.0001)
D (Governance) * D (Premium> median)	-3.031	-2.392	-3.120	-3.883
	(<.0001)	(0.002)	(<.0001)	(<.0001)
R (Market turnover) t-1	0.042	0.043	0.039	0.041
	(<.0001)	(<.0001)	(<.0001)	(<.0001)
R (Market volatility) t-1	-0.394	-1.082	-0.656	-0.864
	(0.505)	(0.064)	(0.261)	(0.142)
R (Market return) t-1	0.003	0.001	0.005	-0.002
	(0.853)	(0.934)	(0.769)	(0.923)
R (Inflation) t-1	0.001	0.001	0.001	0.001
	(0.420)	(0.454)	(0.533)	(0.461)
R [log (Market cap/GDP)] t-1	0.839	0.996	0.582	1.180
	(0.001)	(<.0001)	(0.021)	(<.0001)
R [log(GDP)] t-1	1.069	1.029	0.912	0.773
	(<.0001)	(<.0001)	(<.0001)	(0.000)
R (GDP per capita growth) t-1	0.050	0.054	0.050	0.053
	(0.038)	(0.024)	(0.035)	(0.026)
D (Eurocurrency)	6.212	5.809	6.730	5.960
	(<.0001)	(<.0001)	(<.0001)	(<.0001)
D (Same region)	4.156	4.532	4.162	4.435
	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Year fixed effect	Yes	Yes	Yes	Yes

Note: P-values are provided in parentheses.

In Table 3, we create an indicator variable, *D (Premium> median)*, that equals one if a country's block premium is above the world median, and zero otherwise. As shown in Table 3, we continue to find that the coefficients on the dummy variable of *relative* governance between the host and home country are significantly positive across all model specifications. For example, Model 1 shows that, on average, 5 out of 100 domestic firms from a country will choose to cross-list their shares in another country if the host country has better anti-self-dealing protection. Further, the coefficients on the interaction term between the indicator variables of *relative* governance and the block premium are significantly negative for all models. In Model 1, the sum of the coefficient of the *relative* governance indicator variable and the coefficient of the interaction term is 2, suggesting that only 2 out of 100 firms will be still willing to cross-list on exchanges with better anti-self-dealing protection given that their managers consume greater private benefits of control. This result is consistent with the literature, and confirms our conjecture that firms from countries whose managers enjoy greater private benefits of control are less willing to cross-list to countries with better governance.

6.3 Firm Level Analysis

In this section, we explore how relative governance between the host and home country affects a firm's decision to cross-list using firm level observations with firm-specific characteristics. Our dependent variable is an indicator

variable that equals one if a firm from country *i* is cross-listed in country *j* in that year, and zero otherwise. Because one firm can choose to cross-list in multiple foreign countries, we cluster standard errors at the firm level in all models.

Table 4. Logit Analysis of the Cross-Listing Decision with Firm Characteristics

	Governance Measure					
	(1) Anti-self-dealing index	(2) Anti-director index	(3) Disclosure index	(4) Liability standard index	(5) Corruption	(6) Rule of Law
Intercept	7.061	19.386	3.092	14.549	-6.311	21.532
D (Governance)	9.057	29.388	10.755	24.602	30.407	27.889
	(<.0001)	(0.001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
R (Market turnover) t-1	1.579	2.586	1.352	2.295	4.200	2.584
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
R (Market volatility) t-1	1.003	-1.492	1.034	-1.081	-2.693	-3.716
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
R (Market return) t-1	0.116	0.062	0.008	0.026	0.075	0.363
	(<.0001)	(0.345)	(0.775)	(0.535)	(0.001)	(<.0001)
R (Inflation) t-1	-0.001	-0.005	-0.002	0.000	0.009	0.0002
	(0.006)	(0.038)	(0.006)	(0.157)	(0.142)	(0.752)
R [log (Market cap/GDP)] t-1	-0.956	-1.495	-1.314	-0.638	-1.720	1.229
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
R [log(GDP)] t-1	-0.893	-1.559	-1.208	-1.528	-2.478	-3.512
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
R (GDP per capita growth) t-1	0.019	0.011	0.020	0.003	0.000	-0.002
	(0.296)	(0.064)	(0.259)	(0.347)	(0.933)	(0.094)
D (Eurocurrency)	2.410	2.144	2.445	2.291	2.044	1.908
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
D (Same region)	-21.246	-23.848	-18.249	-19.040	-90.278	-24.108
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(0.071)	(<.0001)
Log (SALES)t-1	0.165	0.145	0.167	0.138	0.049	0.124
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Market-to-book t-1	0.0001	0.00004	0.0001	0.00004	0.0001	0.0004
	(0.426)	(0.549)	(0.391)	(0.551)	(0.947)	(0.589)
ROA t-1	0.002	0.003	0.001	0.003	0.117	0.007
	(0.662)	(0.518)	(0.780)	(0.451)	(0.023)	(0.281)
Firm age	0.022	0.023	0.019	0.029	0.022	0.027
	(<.0001)	(<.0001)	(0.0002)	(<.0001)	(<.0001)	(<.0001)
Sales growth t-1	0.011	0.007	0.010	0.002	0.001	0.002
	(0.679)	(0.777)	(0.683)	(0.838)	(0.092)	(0.390)
R-square	0.3958	0.3977	0.3968	0.3815	0.3577	0.3807
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes

Note: P-values are provided in parentheses.

Table 4 presents our results from a logit regression estimated for our sample firms. We report results using *relative* governance level measured by an indicator variable that equals one if host country has better governance than the

home country. In unreported tests, we use the percentage difference of governance index values between the host country and home country, and obtain qualitatively identical results. The coefficients of the governance variables are significantly positive across all model specifications. This indicates that a firm is more likely to list its shares in a foreign country if the governance of the host country is better than the governance of its home country.

In addition to various national economic factors, we also control for several firm characteristics. Following Doidge et al. (2009), we control for firm growth opportunities using sales growth as well as the market-to-book ratio. This is because managers are more likely to forgo the private benefits of control if the need for external financing to fund growth opportunities is high. We control for firm size with the natural logarithm of total sales in U.S. dollars. We also control for firm profitability with ROA since higher quality firms might be more likely to cross-list to signal their quality.

The results of our firm level analysis are consistent with those from our preceding country level analysis. That is, there is evidence for our *relative bonding* hypothesis that firms from countries with weaker governance commit themselves stronger foreign governance by listing their shares abroad. These results are robust after controlling for both country and firm characteristics. We determine that when a firm chooses a cross-listing destination, governance improvement remains an important factor even after assessing other economic and financial market performance. We conclude that a firm can achieve the goal of stronger governance by choosing a cross-listing destination where the host country simply has better governance that of the home country.

7. Firm Value and Cross-Listing

In this section, we examine how cross-listing decisions and relative governance affect a firm's valuation. Doidge et al. (2004) provide evidence that foreign companies with shares cross-listed in the U.S. have higher Tobin's q ratios than those of non-cross-listed firms from the same country. They contend this occurs because a U.S. listing reduces the ability of controlling shareholders to expropriate corporate wealth, thus allowing the firm to take greater advantage of growth opportunities. Gozzi, Levine, and Schmukler (2008), however, question the persistence of these higher q ratios for foreign firms listed in the U.S. or London, and contend that valuation premia are associated with a pre-listing run-up in market returns rather than bonding to a better governance system. Yet, King and Segal (2009) find that foreign firms with dual-class shares that cross-list into the U.S. experience a sizeable and permanent valuation benefit.

Consistent with Doidge et al. (2004, 2013), Gozzi et al. (2008), King and Segal (2009), and Sarkissian and Schill (2012), we use Tobin's q as our measure of firm value. We estimate it as the firm's total assets minus the book value of equity plus the market value of equity divided by the book value of total assets. We analyze the effect of cross-listing on firm valuation for foreign firms in four categories: (1) firms with both U.S. and non-U.S. listings; (2) firms with either U.S. or non-U.S. listings; (3) firms with U.S. listings only; and (4) firms with non-U.S. listings only.

Table 5 shows the regression results where the dependent variable is Tobin's q. Consistent with Gozzi et al. (2008), we create an indicator variable, *cross-list*, that equals one if a firm cross-lists internationally and zero otherwise. We also interact *cross-list* with two relative governance measures: (1) *D (Rule of law)* which is an indicator variable that equals one if the host country has a better rule of law than that of the home country and zero otherwise; and (2) *% change (Rule of law)* is the percentage change in governance calculated as the host country's governance index minus the home country's governance index divided by the home country's governance index. Finally, we include several control variables suggested by the literature (Doidge et al., 2004; Gozzi et al., 2008; King & Segal, 2009; Sarkissian & Schill, 2012).

Table 5. Cross-Listing and Firm Valuation

	Both U.S. and non-U.S. listing			Either U.S. or non-U.S. listing			Only U.S. listing			Only non-U.S. listing		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Intercept	17.47	19.04	30.36	5.56	5.79	15.89	24.43	26.74	38.32	8.49	8.83	9.43
Cross-list	1.79 (<.0001)	1.80 (<.0001)	1.79 (<.0001)	1.08 (<.001)	1.14 (<.0001)	1.12 (<.0001)	2.72 (<.0001)	2.74 (<.0001)	2.77 (<.0001)	0.37 (0.0004)	0.23 (0.01)	0.23 (0.02)
Cross-list * D (Rule of law)	-0.04 (0.68)			0.04 (0.61)			-0.22 (0.17)			0.44 (0.002)		
Cross-list * % change (Rule of Law)		0.08 (<.0001)	0.08 (<.0001)		0.07 (<.0001)	0.07 (<.0001)		0.09 (<.0001)	0.08 (<.0001)		0.03 (0.006)	0.03 (0.007)
Cross-list* Sales growth $_{t-1}$			0.05 (0.78)			0.06 (0.74)			0.08 (0.712)			0.33 (0.002)
Log (SALES) $_{t-1}$	-0.67 (<.0001)	-0.65 (<.0001)	-0.65 (<.0001)	-0.58 (<.0001)	-0.55 (<.0001)	-0.56 (<.0001)	-0.83 (<.0001)	-0.83 (<.0001)	-0.85 (<.0001)	-0.80 (<.0001)	-0.77 (<.0001)	-0.79 (<.0001)
Sales growth $_{t-1}$	0.001 (0.94)	0.001 (0.94)	0.001 (0.96)	0.001 (0.94)	0.001 (0.95)	0.001 (0.97)	0.002 (0.92)	0.002 (0.92)	0.001 (0.94)	0.001 (0.927)	0.001 (0.938)	0.001 (0.941)
Country Q $_{t-1}$	0.00 (0.52)	0.00 (0.53)	0.00 (0.60)	0.00 (0.70)	0.00 (0.68)	0.00 (0.48)	0.00 (0.39)	0.00 (0.40)	0.00 (0.44)	0.00 (0.70)	0.00 (0.77)	0.00 (0.78)
GDP per capita $_{t-1}$			-1.56 (<.0001)			-1.49 (<.0001)			-1.60 (<.0001)			-0.06 (0.75)
R-square	0.087	0.086	0.086	0.076	0.076	0.077	0.088	0.087	0.087	0.095	0.092	0.092
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: P-values are provided in parentheses.

We show in Table 5 that the cross-listing premium persists across the listing types that a firm adopts. The coefficients on *cross-list* for foreign firms are significantly positive across all model specifications, indicating that these firms enjoy a valuation premium relative to domestic firms from the same country.

Our results also show that there is valuation premium when the cross-listing host country has better governance than that of home country. The coefficients of the interaction term between *cross-list* and *relative* governance are significantly positive across almost all model specifications. For example, the coefficient of the interaction term in model 10 when a firm cross-lists on a non-U.S. exchange is 0.44, indicating that firms with non-U.S. foreign listings have Tobin's q ratios that are, on average, 44% higher than the q ratios of domestic firms when the cross-listing results in an improved rule of law. This finding has important implication in the bonding hypothesis as we document evidence that valuation premium exists even when cross-listing takes place outside of the U.S. Our results are consistent with Doidge et al. (2004, 2009) and King and Segal (2009) who argue that firms enjoy a valuation premium from cross-listings to countries with better governance. This is because such a cross-listing increases the legal protection available to shareholders, reduces information asymmetry between managers and investors, and limits the extent to which controlling shareholders can expropriate wealth from the firm.

8. Robustness Test

8.1 Exclusion of U.S. Listings and Firms

To eliminate the possibility that our analysis is driven by the presence of U.S. observations in our sample, we reconduct our analysis excluding observations where the U.S. is either a home or host country. We present our results in Table 6.

Table 6. Tobit Analysis Without U.S. Listings and Firms

	Governance measure					
	(1) Anti-self-dealing index	(2) Anti-director index	(3) Disclosure index	(4) Liability standard index	(5) Corruption	(6) Rule of Law
Intercept	-0.342	-1.892	-0.706	0.845	-0.604	-0.075
D (Governance)	1.536	5.514	2.071	-0.559	2.444	1.160
	(0.003)	(<.0001)	(<.0001)	(0.299)	(<.0001)	(0.076)
R (Market turnover) t-1	0.029	0.023	0.028	0.032	0.032	0.031
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
R (Market volatility) t-1	-0.939	-0.999	-0.959	-1.258	-1.217	-1.040
	(0.121)	(0.092)	(0.111)	(0.037)	(0.042)	(0.086)
R (Market return) t-1	-0.008	-0.006	-0.007	-0.009	-0.009	-0.009
	(0.667)	(0.733)	(0.703)	(0.622)	(0.596)	(0.607)
R (Inflation) t-1	0.001	0.001	0.001	0.001	0.001	0.001
	(0.379)	(0.345)	(0.413)	(0.402)	(0.374)	(0.392)
R[log(Market cap/GDP)] t-1	0.318	-0.516	0.149	0.565	0.285	0.519
	(0.202)	(0.045)	(0.565)	(0.024)	(0.249)	(0.032)
R[log(GDP)] t-1	0.307	0.444	0.293	0.270	-0.196	-0.005
	(0.140)	(0.031)	(0.158)	(0.193)	(0.410)	(0.985)
R(GDP per capita growth) t-1	0.041	0.038	0.041	0.043	0.042	0.044
	(0.193)	(0.223)	(0.190)	(0.170)	(0.176)	(0.164)
D (Eurocurrency)	8.652	9.163	8.905	8.364	8.344	8.362
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
D (Same region)	6.347	6.217	6.400	6.580	6.694	6.606
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes

Note: P-values are provided in parentheses.

As shown in Table 6, our findings show strong support for *relative bonding* in the cross-listing decision. We show that firms use destinations other than the U.S. to achieve a stronger set of investor protections. Five of the six relative governance indicator variables are significantly positive, indicating that the relatively better governance of the host country is positively associated with the number of foreign listings flowing to the host country. Thus, bonding occurs beyond the case of ADRs, indicating that bonding is more extensive than currently implied in the literature.

8.2 Alternative Governance Measure

To ensure that our results are not due to our choice of governance measures, we use two alternative governance indices: (1) legal system and property rights index and, (2) regulation index, published in the *Economic Freedom of the World (EFW)* (Gwartney, Lawson, and Hall, 2016). These variables are not direct measures of shareholder protection, but are found to be associated with economic development, GDP growth, and the quality of government across countries (Carlsson & Lundström, 2002; Cole, 2003; La Porta et al., 2002).

The literature suggests that the quality of government, such as a non-corrupt bureaucracy, a legal system protective of property rights, and modest taxation, is instrumental to economic development and growth (De Long & Shleifer, 1993; Easterly & Levine, 1997; Knack & Keefer, 1995; Mauro, 1995). La Porta et al. (2002) also contend that government quality is associated with government intervention which can be proxied by the property rights index. This is because a good government, which is relatively non-interventionist, protects property rights. Furthermore, La

Porta et al. (2002) suggest an association between each country's legal origin and the protection of property rights and regulation. Because legal origin is a proxy for investor protection and the effect of such protection on capital markets (La Porta et al. 1997, 1998), we use the index of legal system and property rights as our first alternative governance measure.

In addition to property rights index, we use the regulation index which assess the degree to which regulations are present in the credit and labor markets as well as business. This index is relevant to corporate governance because it measures the extent of bank ownership, tax compliance, and bureaucracy. These are all important factors affecting law and finance (La Porta et al. 1997, 1998, 2000, 2002).

Table 7. Governance Measured by Economic Freedom of the World Indices

	Governance measure	
	(1)	(2)
	Property rights index	Regulation index
Intercept	4.640	7.093
D (Governance)	1.086	2.313
	(0.079)	(0.0002)
R (Market turnover) t-1	0.050	0.051
	(<.0001)	(<.0001)
R (Market volatility) t-1	-1.371	-2.072
	(0.030)	(0.001)
R (Market return) t-1	0.016	0.016
	(0.541)	(0.559)
R (Inflation) t-1	0.001	0.001
	(0.557)	(0.590)
R[log(Market cap/GDP)] t-1	0.754	1.225
	(0.002)	(<.0001)
R[log(GDP)] t-1	0.453	0.870
	(0.063)	(<.0001)
R(GDP per capita growth) t-1	0.052	0.051
	(0.032)	(0.034)
D (Eurocurrency)	5.868	5.471
	(<.0001)	(<.0001)
D (Same region)	5.194	5.260
	(<.0001)	(<.0001)
Year fixed effect	Yes	Yes

Note: P-values are provided in parentheses.

We show our results using EFW indices in Table 7. As anticipated, we find evidence that firms choose a cross-listing destination with the greater protection of property rights or better regulation. This is consistent with our previous findings and supports the *relative* bonding argument that firms achieve better corporate governance by listing their shares overseas.

We conclude from this analysis that our findings regarding *relative bonding* in the decision to cross-list is robust. We find that bonding effects are present for cross-listings that do not involve ADRs as well as using alternative governance measures. We also conduct another unreported robustness test and exclude firms that are not listed on the major stock exchanges. The results remain qualitatively identical. These findings show that firms can achieve their goal of enhanced corporate governance through bonding without the need to cross-list in the U.S.

9. Conclusion and Discussion

Using a comprehensive set of cross-listings, we develop a new variant of bonding, which we define as the *relative bonding* hypothesis. That is, we hypothesize that firms seek the advantages of stronger investor protections by listing in countries whose governance is relatively better than its own. This means that firms can achieve bonding without listing in the U.S and that the governance advantages of bonding are not only for ADRs.

We undertake this analysis by creating two measures of the relative governance. These measures compare the quality of governance between the home and host countries. We find that firms are more likely to choose a cross-listing destination if the host country has better governance than the home country. Our results continue to hold even after controlling for differences in economic and capital market conditions between the host and home country. We also discover that firms prefer cross-listing destinations that offer greater liquidity, higher market returns, richer in terms of GDP, and greater growth. Firms also favor a cross-listing destination that is geographically proximate. They also appear to be drawn to financial opportunities in the Eurozone.

We also find that firms from countries whose managers enjoy greater private benefits of control are less willing to cross-list to countries of better governance. Our results are robust using data excluding U.S. listings and U.S. firms as well as using alternative proxies for governance. In addition, we repeat our analysis by excluding firms that are not listed on the major stock exchanges, and the results are robust.

We further document evidence that there is valuation premium even when cross-listing takes place outside of the U.S. The premia are even stronger if the host country has better governance than that of the home country. This finding not only provides important implications in the motives and consequences of bonding, but also extends the scope of bonding to the global equity market.

We conclude that bonding is an even more important factor in the decision to cross-list than the existing literature suggests. This is because bonding can occur in a relative fashion, and firms often seek relatively stronger governance environments rather than the strongest. Although bonding might explain the existence of ADRs, *relative bonding* helps to explain the extensive cross-listing which occurs outside of the U.S.

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Appendix: List of Variables and Their Definitions

Variable	Definition
R (Market turnover)	Market turnover of the host country divided by that of the home country.
R (Market volatility)	Market volatility of the host country divided by that of the home country.
R (Market return)	Stock market return of the host country divided by that of the home country.
R (Inflation)	Inflation of the host country divided by that of the home country.
R [log (Market cap/GDP)]	Market capitalization/GDP of the host country divided by that of the home country.
R [log (GDP)]	GDP per capita of the host country divided by that of the home country.
R (GDP per capita growth)	GDP per capita growth of the host country divided by that of the home country.
D (Eurocurrency)	An indicator variable that equals 1 if the host country is a member of the Eurozone countries during the year of the cross-listing.
D (Same region)	An indicator variable that equals 1 if both home country and host country are in the same region classified by La Porta, Lopez-de-Silanes, and Shleifer (2002).
Anti-self-dealing index	Average of ex ante and ex post private control of self-dealing, where ex ante is the average of approval by disinterested shareholders and ex ante disclosure; ex post is the average of disclosure in periodic filings and ease of proving wrongdoing. Ranges from 0 to 1, with lower score for less stringent standard. *Source: DLLS (2008)*
Revised Anti-director index	Aggregate index of shareholder rights. The index is formed by summing: (1) vote by mail; (2) shares not deposited; (3) cumulative voting; (4) oppressed minority; (5) pre-emptive rights; and (6) capital to call a meeting. Ranges from 0 to 5, with lower score for less stringent standard. *Source: DLLS (2008)*
Disclosure index	The index of disclosure equals the arithmetic mean of: (1) Prospect; (2) Compensation; (3) Shareholders; (4) Inside ownership; (5) Contracts Irregular; (6) and Transactions. Ranges from 0 to 1, with lower score for less stringent standard. *Source: LLS (2006)*
Liability standard index	The index of liability standards equals the arithmetic mean of: (1) Burden director; (2) Burden distributor; and (3) Burden accountant. Ranges from 0 to 1, with lower score for less stringent standard. *Source: LLS (2006)*
Rule of Law	Assessment of the law and order tradition in the country. Scale from 0 to 10, with lower scores for less tradition for law and order. *Source: La Porta, Lopez-de-Silanes, and Shleifer (2002)*
Corruption index	ICR's assessment of the corruption in government. Lower scores indicate "high government officials are likely to demand special payments" and "illegal payments are generally expected throughout lower levels of government" in the form of "bribes connected with import and export licenses, exchange controls, tax assessment, policy protection, or loans". Scale from 0 to 10, with lower scores for higher levels of corruption. *Source: La Porta, Lopez-de-Silanes, and Shleifer (2002)*
Block Premia	The block premia are computed taking the difference between the price per share paid for the control block and the exchange price two days after the announcement of the control transaction, dividing by the exchange price and multiplying by the ratio of the proportion of cash flow rights represented in the controlling block. We use the country's sample media. *Source: Dyck and Zingales (2004)*