BEYOND BORDERS AND INSTITUTIONAL CONSTRAINTS

U.S. EQUITY CROSS-LISTING AND REFINANCING RISK IN EMERGING MARKET FIRMS

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Beyond Borders and Institutional Constraints: U.S. Equity Cross-listing and Refinancing Risk in Emerging Market Firms

Abstract:

Examining U.S. cross-listings across 25 emerging markets between 1988 and 2024, this paper provides evidence that firms experience a reduction in refinancing risk following an equity cross-listing on a U.S. exchange. The effect emerges gradually and persists over time. Over-the-counter listings show smaller and short-lived effects concentrated around the listing event, while private placements show no detectable impact. Extending the analysis to institutional heterogeneity, the reduction associated with exchange listings is concentrated in countries with weaker disclosure requirements and debt enforcement, where the institutional gap relative to U.S. standards is largest. Although the underlying mechanisms cannot be fully identified, exchange listings appear to relax financing constraints along a non-price dimension, with benefits substituting for weak home-country institutions.

Keywords:

Cross-listing, Refinancing risk, Debt maturity, Emerging markets, Bonding hypothesis, Institutional quality

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1 Introduction

The institutional environment in which a firm operates shapes the structure of its debt financing. Firms in weaker institutional environments face greater refinancing risk and rely proportionally less on long-term financing than those in developed markets (Demirgüç-Kunt and Maksimovic, 1999). In these environments, weak creditor protection (Qian and Strahan, 2007) makes debt maturity a key contractual tool for managing borrower risk, substituting for price-based mechanisms (Diamond, 2004). The elevated refinancing risk observed among emerging market firms may therefore reflect not a deliberate choice, but binding constraints.

One potential mechanism for emerging market firms to escape these constraints is cross-listing on a U.S. exchange. By subjecting themselves to SEC disclosure requirements and U.S. regulatory oversight, cross-listed firms effectively rent stronger legal and governance standards than those available at home. Prior cross-listing literature has documented financing benefits, including reductions in the cost of equity (e.g., Hail and Leuz, 2009; Foerster and Karolyi, 1999; Miller, 1999) and bond yields (Ball, Hail, and Vasvari, 2018), though conclusions differ on whether these benefits are stronger in weaker or stronger institutional environments. The focus, however, has been primarily on the cost of capital. To address this gap, we examine the following research question:

Does U.S. equity cross-listing reduce refinancing risk for emerging market firms, and does this effect vary with home-country institutional quality?

This paper contributes to the cross-listing literature in two ways. First, we extend the analysis of cross-listing benefits beyond the cost of capital to refinancing risk, a non-price dimension of corporate financing. We focus on emerging markets, where financing frictions are most pronounced. Second, we contribute to the cross-country determinants of cross-listing benefits by examining how the effect varies across home-country institutional environments, providing evidence on whether cross-listing acts as a substitute for or complement to home-country institutions.

To answer this question, we construct a panel of 323,715 firm-year observations across 25 emerging market countries spanning 1988 to 2024. Our treatment group consists of 1,097 unique firms cross-listed on U.S. markets, classified into exchange listings, over-the-counter listings, and private placements based on their differing regulatory requirements. We capture firms' exposure to refinancing risk through their debt maturity structure, measured as the proportion of long-term debt maturing within one year, following Friewald, Nagler, and Wagner (2022).

To estimate the relationship between cross-listing and refinancing risk, we employ a difference-in-differences design with firm- and country-year-fixed effects. This specification exploits within-firm changes around cross-listing events relative to non-cross-listed firms from the same country-year and absorbs both time-invariant firm characteristics and time-varying country-level shocks. We estimate separate effects across listing types to capture differences in regulatory commitment. We further examine the dynamics of the effect using an event-study specification, allowing us to assess whether the effects are anticipatory, short-lived, or persistent over time.

To capture how the effect varies across institutional environments, we use two complementary cross-sectional specifications. First, following Hail and Leuz (2009), we partition the sample using the global median splits of debt enforcement quality from Djankov, Hart, McLiesh, and Shleifer (2008) and disclosure quality from La Porta, Lopez-de-Silanes, and Shleifer (2006). Second, we estimate continuous interactions between cross-listing and the institutional measures

to exploit the full variation in institutional quality. Finally, we conduct a range of robustness checks to ensure that our results are not driven by sample selection or measurement choices.

Our findings show that exchange cross-listings are associated with a 4.7 percentage-point reduction in refinancing risk, while over-the-counter listings show a smaller effect of 2.9 percentage points, and private placements show no detectable effect. The exchange listing effect emerges gradually and persists over time, while the over-the-counter effect is short-lived and concentrated around the listing event. The exchange effect remains robust across alternative sample compositions, whereas the over-the-counter effect does not hold up in robustness specifications and should be interpreted with caution. Together, these findings suggest that the magnitude of the effect follows the regulatory hierarchy across listing types, and that the strength of regulatory commitment appears important for persistent effects, while differences across listing types may also reflect firm-level selection and listing motives.

Furthermore, the reduction in refinancing risk is concentrated among exchange-listed firms from countries with weak debt enforcement and low disclosure quality, where the institutional gap relative to the U.S. is largest. This suggests that cross-listing operates as a substitute for weaker local institutions rather than complementing stronger ones, placing our findings in line with the equity-side evidence in Hail and Leuz (2009) and in contrast to the debt-pricing evidence in Ball et al. (2018).

Taken together, our findings indicate that U.S. cross-listing is associated with a meaningful reduction in refinancing risk, although the underlying mechanism cannot be fully identified. The empirical pattern is most consistent with the bonding hypothesis, which posits that stronger regulatory commitment produces stronger and more persistent effects, and that the benefits substitute for weak home-country institutions. However, the relative contribution of bonding versus alternative channels, such as reduced market segmentation and firm selection, cannot be fully disentangled. To the extent that the effect is causal, the results suggest that compressed maturity structures in emerging markets reflect a binding constraint rather than choice, with cross-listing revealing a preference for lower refinancing risk once that constraint is relaxed.

The remainder of the paper proceeds as follows. Section 2 reviews the related literature. Section 3 describes the data, sample construction, and variable definitions. Section 4 outlines the empirical methodology. Section 5 presents the main results, followed by robustness checks. Section 6 discusses the findings, and Section 7 concludes.

2 Related literature

This paper contributes to the literature on the financing benefits of cross-listing on a U.S. exchange (e.g., Foerster and Karolyi, 1999; Miller, 1999; Doidge, Karolyi, and Stulz, 2004; Hail and Leuz, 2009; Ball et al., 2018). These studies document substantial benefits, including reductions in the cost of equity and bond yields, though the underlying mechanisms remain debated, with proposed channels including bonding to U.S. regulatory standards (Coffee, 1999; Stulz, 1999), reduced market segmentation (Gozzi, Levine, and Schmukler, 2008), and improved access to capital and growth opportunities (Doidge et al., 2004). We contribute to this literature by examining how the benefits of cross-listing translate to a non-price dimension of corporate financing, refinancing risk, and assessing which mechanism best fits the observed patterns through our discussion of the underlying channels.

A related branch of the literature examines how cross-listing benefits vary across institutional en-

vironments, but reaches conflicting conclusions. Hail and Leuz (2009) find that equity benefits are concentrated in weaker institutional environments, consistent with cross-listing substituting for deficient local institutions. In contrast, Ball et al. (2018) find that bond yield benefits are strongest in stronger institutional environments, consistent with complementarity, in which cross-listing builds on existing local institutions rather than substituting for weak ones. These differences suggest that the nature of cross-listing benefits depends on the dimension of corporate financing considered. We extend this line of work by examining how the cross-listing effect varies across institutional environments in the context of refinancing risk.

This paper also relates to the literature on debt maturity and refinancing risk. Shorter debt maturities involve a trade-off, where the established benefits of mitigating agency conflicts and disciplining managers[1] are weighed against the higher refinancing risk associated with the immediacy of debt rollover under uncertain credit conditions (Diamond, 1991; He and Xiong, 2012; Harford, Klasa, and Maxwell, 2014). More recent research suggests that the cost side dominates, with refinancing risk systematically priced by equity investors (Friewald et al., 2022) and the disciplinary benefits of short maturities flipping to amplify negative shocks under financing frictions (Della Seta, Morellec, and Zucchi, 2020). The conditions under which a compressed maturity structure appears most justified theoretically may therefore be precisely those under which it is least freely chosen. We therefore focus on emerging markets, where firms rely proportionally less on long-term financing (Demirgüç-Kunt and Maksimovic, 1999) and where compressed maturity structures may reflect underlying financing frictions rather than firm preference (Diamond and Rajan, 2001).

Linking these two literatures, refinancing risk provides a useful setting to examine cross-listing benefits, as the financing frictions that shape emerging market firms' refinancing risk are precisely those that cross-listing is argued to alleviate.

3 Data and sample construction

3.1 Sample construction

We obtain firm-level accounting data from Compustat Global and Compustat North America, covering the period 1988 to 2024. This extended sample period captures both the early expansion of emerging-market American Depositary Receipt (ADR)[2] activity and the more recent period of financial integration, providing variation across multiple economic cycles. The sample consists of non-financial firms from 25 emerging market countries identified by the MSCI Emerging Markets classification 2023. Kuwait and Saudi Arabia are excluded due to insufficient Compustat coverage and the absence of ADR observations. Argentina, Pakistan, and Russia are included despite not currently holding MSCI emerging market status, as each held this classification for a substantial portion of the sample period and contributed meaningful ADR observations.

Following Hail and Leuz (2009), Friewald et al. (2022), and Gozzi et al. (2008), we impose several sample restrictions to ensure comparability with prior cross-listing and refinancing risk

[1] The established benefits of shorter debt maturity include mitigation of underinvestment and debt overhang problems (Myers, 1977), disciplining of borrowers through creditor exit options (Diamond, 1991, 2004), and signaling of borrower quality (Flannery, 1986). Barclay and Smith (1995) and Guedes and Opler (1996) provide empirical evidence consistent with these theoretical predictions.

[2] ADR programs encompass three distinct listing types: exchange listings on NYSE, NASDAQ, or AMEX, over-the-counter listings, and private placements under Rule 144A. These are described in detail in Section 3.2.

literature. Financial firms (SIC codes 6000-6999) are excluded, as their capital structures are shaped by regulatory requirements rather than discretionary financing decisions, rendering debt maturity comparisons with non-financial firms uninformative. We remove observations with nonpositive or missing total assets, and those with total debt exceeding total assets. Missing debt values are set to zero, and observations with negative total debt are removed. Following Gozzi et al. (2008), firms with fewer than three annual observations are excluded to ensure within-firm time-series consistency. After applying these filters, the base sample comprises 323,715 firm-year observations across 24,944 unique firms.

Cross-listing records, constructed as described in Section 3.2, are matched to the base sample by linking depositary receipt identifiers, including ISIN and ADR CUSIP codes, to GVKEYs through the CRSP-Compustat link tables. We identify 1,097 unique cross-listed firms during the sample period, which constitute the treatment group: 408 are exchange-listed, 396 have over-the-counter listings, and 293 participate through private placements under Rule 144A. The remaining 23,847 firms constitute the non-cross-listed control group, reported in Table 1.

To construct the dependent variable and firm-level control variables, the following items are extracted from Compustat: *long-term debt due in one year* (*dd1*), *total long-term debt* (*dltt*), *total assets* (*at*), *total liabilities* (*lt*), *net property plant and equipment* (*ppent*), *gross property plant and equipment* (*ppegt*), *earnings before interest and taxes* (*ebit*), *net sales* (*sale*), and *depreciation and amortization* (*dp*).

For comparability with prior cross-listing and refinancing risk literature, we include the standard set of firm-level controls, reducing the baseline regression sample to 277,295 firm-year observations after dropping observations with missing control data. Variable definitions are provided in Section 3.3.

3.2 Cross-listing data

We construct the cross-listing dataset by combining multiple complementary sources, as no single database provides comprehensive coverage of both active and historical U.S. cross-listing programs. For each firm, we collect information on (i) listing type, (ii) initiation date, and (iii) termination date.

We obtain data on U.S. listings across all listing types from the primary depositary institutions, namely Citibank, Bank of New York Mellon, and Deutsche Bank, as well as from the exchange directories of NYSE, NASDAQ, and AMEX. To mitigate survivorship bias, we include both active and inactive cross-listings, following Hail and Leuz (2009). Restricting the sample to currently listed firms would condition on listing survival and systematically exclude firms that delisted during the sample period.

For firms with missing or ambiguous initiation dates due to program renewals or upgrades, we manually verify listing histories using SEC EDGAR filings. Specifically, we recover the earliest verifiable listing date from Form F-6 and Form 20-F filings and assign it as the program start date. To further cross-validate listing histories, we supplement the dataset with the historical cross-listing sample of Hail and Leuz (2009)[3], which provides additional information on program initiation and termination dates for listings no longer reported in current directories.

[3]The historical cross-listing dataset of Hail and Leuz (2009) is not publicly available and was accessed upon request. It is used to cross-validate listing histories and does not introduce additional firms beyond those identified from primary sources.

We restrict treatment to U.S. cross-listings, covering exchange listings (EXCH) on NYSE, NASDAQ, and AMEX, over-the-counter listings (OTC), and private placements under Rule 144A (PP). This restriction follows prior research showing that cross-listing effects are strongest for U.S. listings relative to other foreign markets (Doidge et al., 2004; Hail and Leuz, 2009). Within the OTC category, we exclude unsponsored listings initiated by broker-dealers without firm involvement, as these reflect no voluntary governance commitment.

The three listing types reflect a gradient of regulatory commitment, from most to least binding. EXCH listings require firms to register with the SEC and file Form 20-F, entailing reconciliation to U.S. GAAP and exposure to SEC enforcement and shareholder litigation under the full set of U.S. securities laws. OTC listings do not require Form 20-F or U.S. GAAP reconciliation but mandate home-country disclosures and remain subject to Rule 10b-5 and the Foreign Corrupt Practices Act, exposing firms to a narrower set of litigation risks. PP require neither SEC registration nor public disclosure, with access restricted to qualified institutional buyers under Rule 144A and exemption from most U.S. securities laws (Hail and Leuz, 2009; Ball et al., 2018).

3.3 Variable construction

3.3.1 Dependent variable

We measure firms' exposure to refinancing risk through the maturity composition of their long-term debt. Following Friewald et al. (2022) and Harford et al. (2014), we define refinancing intensity, *RI*, as the proportion of long-term debt scheduled to mature within one year:

$$RI_{it} = \frac{dd1_{it}}{dd1_{it} + dltt_{it}}$$

where *dd1* is the portion of debt originally issued at maturities beyond one year that is contractually due within one year of the balance sheet date, and *dltt* is long-term debt maturing beyond one year, both from Compustat. The denominator therefore represents the firm's total long-term debt outstanding.

Our construction differs from Friewald et al. (2022) and Harford et al. (2014) in the horizon used to define refinancing exposure. They classify long-term debt as debt maturing beyond three years, extending the numerator to debt due within three years.[4] This granularity is not consistently reported for emerging market firms in Compustat Global, so we restrict the numerator to *dd1*. While narrower, this isolates the most immediate refinancing horizon, where firms have the least scope to delay rollover.

Our measure isolates refinancing risk specifically, distinct from short-term debt. A related literature instead uses the Compustat item *dlc*, debt in current liabilities, as a measure of short-term debt (Barclay and Smith, 1995; Schmukler and Vesperoni, 2006). However, *dlc* includes revolving credit facilities and other short-term instruments that non-financial firms typically repay at maturity rather than refinance, reflecting liquidity management and operational financing rather than refinancing risk (Harford et al., 2014; Friewald et al., 2022). A firm that reduces its refinancing intensity following cross-listing may therefore see no change in *dlc*. To avoid this conflation, we restrict our measure to *dd1*.[5]

[4] Specifically, Friewald et al. (2022) and Harford et al. (2014) construct the numerator as *dd1* + *dd2* + *dd3*, where *dd2* and *dd3* are long-term debt due in the second and third years, respectively.

[5] We test the sensitivity of our results to this measurement choice in Section 5.3.

3.3.2 Control variables

We include six firm-level and two country-level controls from prior cross-listing and refinancing risk literature. Size and GDP per capita are entered in logarithmic form; all other variables are entered in level form. Variable definitions are summarized in Appendix A.

Size is defined as the natural logarithm of total assets. Larger firms face lower information asymmetries and have greater reputational capital, both of which are associated with longer debt maturities (Ball et al., 2018).

Leverage is measured as total liabilities divided by total assets. Its relationship with debt maturity is theoretically ambiguous: higher leverage may signal default risk and shorter maturities, while safer firms may simultaneously access both greater leverage and longer-term financing (Ball et al., 2018).

Tangibility is measured as net property, plant, and equipment divided by total assets, capturing the quality of the assets available as collateral. Firms with greater tangibility can more readily meet collateral requirements and access longer-term financing (Ball et al., 2018).

Profitability is measured as earnings before interest and taxes divided by average total assets. More profitable firms are perceived as better able to meet debt obligations, supporting access to longer-term financing (Ball et al., 2018).

(Sales) growth is measured as the year-on-year change in net sales over total assets, following Chen, Ganum, Liu, Martinez, and Martinez Peria (2019). We use this accounting-based proxy rather than market-to-book, since the latter is endogenous to cross-listing (Hail and Leuz, 2009). Firms with greater growth opportunities rely more on short-term debt to mitigate debt overhang (Myers, 1977).

Asset maturity is constructed as gross property, plant, and equipment divided by total assets, multiplied by gross property, plant, and equipment divided by depreciation, following Guedes and Opler (1996). The maturity matching principle predicts that firms with longer-lived assets use longer-term debt to align liability maturities with the horizon over which assets generate value (Myers, 1977).

Log GDP per capita is the natural logarithm of annual GDP per capita, sourced from the World Bank. Higher income levels are associated with more developed financial systems and debt markets, reducing financing frictions (Demirgüç-Kunt and Maksimovic, 1999).

Inflation is the annual percentage change in the consumer price index, sourced from the IMF World Economic Outlook database. High inflation is associated with higher interest rates and shorter debt maturities, as creditors are unwilling to bear long-term nominal exposure (Ball et al., 2018).

All continuous variables are winsorized at the 1st and 99th percentiles, except for log-transformed variables.

3.4 Institutional Characteristics

To examine whether the effect of cross-listing on refinancing intensity varies with home-country institutional quality, we focus on two institutional dimensions theorized to be central to refinancing risk: (i) the legal-institutional capacity to enforce creditor claims and (ii) the quality of the corporate disclosure environment. We measure these dimensions using the debt enforce-

ment score of Djankov et al. (2008) and the disclosure quality index of La Porta et al. (2006). Country-level values for both indices are reported in Table 3.

Debt Enforcement captures the quality of the legal-institutional environment that shapes refinancing risk. The strength of mechanisms protecting creditor claims directly affects creditors' willingness to lend at long maturities, and Diamond (2004) shows that when enforcement is weak, borrowers and lenders rely on shorter maturities as a partial substitute for legal protection. The score captures the time, cost, and procedural efficiency with which secured creditors recover claims through insolvency proceedings, going beyond the creditor rights index of La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998) by reflecting how enforcement operates in practice rather than statutory provisions of bankruptcy law.

Disclosure Quality reflects the informational environment in which firms raise external finance and is central to firms' exposure to refinancing risk. Mandatory disclosure reduces information asymmetries between firms and creditors, which can otherwise lead lenders to shorten maturities to retain flexibility in the presence of uncertainty (Diamond, 1991). The index is constructed as the arithmetic mean of six prospectus disclosure requirements for newly listed firms, with higher values indicating more stringent standards. Because cross-listing commits firms to U.S. disclosure standards, this dimension captures the regulatory gap that cross-listing directly bridges.

3.5 Summary statistics

Table 1: Sample Composition by Country and Listing Type

Table 1 reports the sample composition by country and cross-listing type. The sample comprises 323,715 firm-year observations from non-financial firms across 25 emerging market countries over the period 1988-2024. We exclude financial firms (SIC 6000-6999) and observations with nonpositive or missing total assets or debt data required to construct refinancing intensity. ADR observations comprise private placements under Rule 144A (PP), over-the-counter (OTC) listings, and exchange listings on the NYSE, Nasdaq, or Amex by non-U.S. firms. For each country-listing category, we report the number of unique firms, firm-year observations, and average refinancing intensity (Mean RI), defined as *dd1* / (*dd1* + *dltt*), where *dd1* is long-term debt due within one year and *dltt* is long-term debt due in more than one year. Firms are classified into four groups: non-cross-listed firms, exchange-listed firms (EXCH), OTC listings, and Rule 144A private placements (PP). For cross-listed firms with multiple active listings in the same year, the firm-year is assigned to the highest tier based on the regulatory hierarchy EXCH > OTC > PP. The Total (average) row reports the simple mean of country-level mean RI, giving equal weight to each country. A value of zero indicates no observations.

	Non-cross-listed firms			**Exchange Listed**			**OTC**			**PP (Rule 144A)**		
Country	Unique firms	Firm years	Mean RI	Unique firms	Firm years	Mean RI	Unique firms	Firm years	Mean RI	Unique firms	Firm years	Mean RI
UAE	93	974	0.265	1	6	0.375	0	0	0	2	28	0.423
Argentina	62	1,181	0.439	17	281	0.247	8	103	0.279	0	0	0
Brazil	345	5,832	0.291	39	717	0.106	67	724	0.173	6	98	0.181
Chile	169	3,248	0.211	17	362	0.105	5	81	0.143	0	10	0.069
China	8,097	94,469	0.369	245	1,715	0.377	97	1,355	0.347	11	102	0.289
Colombia	52	893	0.279	1	17	0.147	5	49	0.119	1	19	0.140
Czech Republic	40	384	0.195	0	0	0	0	0	0	1	29	0.107
Egypt	130	1,385	0.289	0	0	0	6	73	0.396	5	79	0.182
Greece	247	3,607	0.244	4	36	0.124	3	50	0.148	2	44	0.103
Hungary	32	332	0.255	0	0	0	5	93	0.151	4	59	0.196
Indonesia	765	8,941	0.321	5	94	0.159	2	38	0.164	0	0	0
India	4,836	69,819	0.152	11	171	0.262	15	253	0.104	135	1,535	0.147
South Korea	2,185	25,137	0.333	8	164	0.248	7	72	0.225	12	213	0.247
Mexico	92	1,715	0.191	31	616	0.184	30	364	0.147	4	79	0.158
Malaysia	1,255	19,615	0.305	0	0	0	12	140	0.223	0	0	0
Pakistan	369	5,677	0.311	0	0	0	2	59	0.181	2	28	0.145
Peru	103	1,888	0.300	3	54	0.191	2	27	0.271	0	0	0
Philippines	195	2,950	0.273	3	40	0.195	7	107	0.316	2	42	0.240
Poland	742	8,665	0.404	0	0	0	4	47	0.335	4	88	0.191
Qatar	26	366	0.284	0	0	0	0	0	0	1	20	0.088
Russia	202	2,585	0.341	4	51	0.305	45	532	0.288	43	546	0.240
Thailand	810	11,462	0.337	0	0	0	12	199	0.240	0	3	0.363
Turkey	488	5,473	0.404	2	29	0.328	3	42	0.263	6	104	0.314
Taiwan	2,186	28,773	0.287	8	157	0.185	13	210	0.217	48	661	0.254
South Africa	326	4,595	0.261	9	206	0.177	46	569	0.213	4	59	0.226
Total (average)	23,847	309,966	0.294	408	4,716	0.219	396	5,187	0.225	293	3,846	0.205

Table 2: Descriptive Statistics for Sample Variables by Listing Type

The sample comprises 323,715 firm-year observations from non-financial firms across 25 emerging market countries over the period 1988-2024 (see Table 1). Table 2 reports descriptive statistics for the variables used in the regression analyses, partitioned by listing type. We report means and standard deviations for the full sample and separately for non-cross-listed firms, exchange-listed firms (EXCH), over-the-counter listings (OTC), and private placements under Rule 144A (PP). Refinancing intensity is defined as *dd1* / (*dd1* + *dltt*), where *dd1* is long-term debt due within one year and *dltt* is long-term debt due in more than one year (both from Compustat). Size is the natural logarithm of total assets (*at*). Leverage is total liabilities divided by total assets (*lt* / *at*). Tangibility is net property, plant, and equipment divided by total assets (*ppent* / *at*). Profitability is earnings before interest and taxes divided by average total assets (*ebit* / *at_avg*, where *at_avg* is the average of current and lagged *at*). Sales growth is the year-on-year change in the sales-to-assets ratio (Chen et al., 2019), based on net sales (*sale*). Asset maturity follows Guedes and Opler (1996), defined as (*ppegt* / *at*) × (*ppegt* / *dp*), where *ppegt* is gross property, plant, and equipment and *dp* is depreciation and amortization. All firm-level variables are extracted from Compustat Global and Compustat North America. Macroeconomic controls are sourced externally: Log GDP per capita is the natural logarithm of GDP per capita (World Bank WDI); Inflation is the annual percentage change in the consumer price index (IMF World Economic Outlook). All firm-level continuous controls are winsorized at the 1st and 99th percentiles. Firm-year and unique-firm counts are reported below the bottom rule.

	All		**Non-cross-listed firms**		**Exchange Listed**		**OTC**		**PP (Rule 144A)**	
Variable	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Refinancing Intensity	0.291	0.301	0.294	0.302	0.246	0.291	0.245	0.286	0.199	0.236
Size	8.075	2.679	7.996	2.650	9.494	3.033	9.631	2.531	10.592	2.388
Leverage	0.497	0.210	0.496	0.210	0.519	0.215	0.523	0.194	0.516	0.200
Tangibility	0.332	0.222	0.329	0.220	0.382	0.252	0.403	0.242	0.402	0.226
Profitability	0.055	0.099	0.055	0.099	0.052	0.117	0.066	0.095	0.067	0.086
Sales Growth	0.042	0.445	0.042	0.447	0.044	0.375	0.046	0.401	0.030	0.390
Asset Maturity	13.598	17.627	13.513	17.630	13.673	14.998	17.026	19.799	15.644	16.724
Log GDP per Capita	8.609	1.216	8.606	1.225	8.920	0.767	8.575	0.918	8.524	1.284
Inflation	4.590	15.532	4.500	15.129	6.762	25.124	7.056	27.734	5.904	6.321
Firm-years	323,715		309,966		4,716		5,187		3,846	
Unique firms	24,944		23,847		408		396		293	

From Table 1, we observe that the sample is unevenly distributed across countries. China and India account for the largest shares, with China dominating the non-cross-listed, EXCH, and OTC groups, and India representing the largest share of the PP group. Several other countries contribute relatively few cross-listings. Within countries, cross-listed firms on average exhibit lower refinancing intensity than non-cross-listed firms.

Turning to Table 2, we observe that cross-listed firms exhibit lower average refinancing intensity than non-cross-listed firms (mean 0.294) over the sample period, with the lowest values observed among PP firms (0.199) and similar means for EXCH (0.246) and OTC (0.245). Cross-listed firms also differ from non-cross-listed firms along several observable characteristics. In particular, they tend to be larger, with mean log assets ranging from 9.5 to 10.6 across listing types, compared to 8.0 for non-cross-listed firms, and exhibit higher tangibility and, on average, higher profitability, although the profitability gap is smaller and concentrated among OTC and PP firms.

Table 3: Country-Level Institutional and Macroeconomic Characteristics

Table 3 reports country-level institutional and macroeconomic characteristics for the 25 emerging market countries in the sample. Debt enforcement is the recovery rate from Djankov et al. (2008), measured as the discounted recovery value of a typical firm in insolvency, expressed as cents on the dollar. The measure captures the efficiency with which secured creditors recover claims and reflects the effectiveness of the legal-institutional environment in practice. Disclosure quality is the disclosure index from La Porta et al. (2006), constructed as the arithmetic mean of six prospectus disclosure requirements for newly listed firms, with higher values indicating more stringent disclosure standards. Debt enforcement is classified as HIGH if the recovery rate is greater than or equal to 46.7 and LOW otherwise, based on the global threshold from Djankov et al. (2008). Disclosure quality is classified as HIGH if the index is greater than or equal to 0.58 and LOW otherwise, based on the global threshold from La Porta et al. (2006). For non-zero values, each cell reports the raw value followed by a binary indicator in parentheses, where 1 denotes HIGH and 0 denotes LOW. A value of 0 indicates that the institutional measure is unavailable for that country. Log GDP per capita is the natural logarithm of GDP per capita, and inflation is the annual percentage change in the consumer price index. Log GDP per capita and inflation are sample-period averages from the World Bank World Development Indicators (WDI) and IMF World Economic Outlook, respectively.

Country	Debt Enforcement	Disclosure Quality	Log GDP per Capita	Inflation (%)
Argentina	35.80 (0)	0.50 (0)	9.09	30.02
Brazil	13.40 (0)	0.25 (0)	8.86	21.40
Chile	40.90 (0)	0.58 (1)	9.18	4.42
China	43.60 (0)	0	8.71	2.17
Colombia	64.80 (1)	0.42 (0)	8.55	6.61
Czech Republic	40.70 (0)	0	9.59	4.26
Egypt	28.60 (0)	0.50 (0)	7.84	12.34
Greece	53.80 (1)	0.33 (0)	9.95	2.41
Hungary	46.70 (1)	0	9.34	6.71
India	0	0.92 (1)	7.09	6.25
Indonesia	25.10 (0)	0.50 (0)	7.96	5.86
Malaysia	48.40 (1)	0.92 (1)	8.95	2.32
Mexico	72.60 (1)	0.58 (1)	9.07	7.84
Pakistan	0	0.58 (1)	6.98	10.11
Peru	41.80 (0)	0.33 (0)	8.40	3.27
Philippines	17.50 (0)	0.83 (1)	7.70	4.32
Poland	67.70 (1)	0	9.51	3.42
Qatar	0	0	11.17	3.08
Russia	39.00 (0)	0	9.14	9.67
South Africa	39.80 (0)	0.83 (1)	8.60	6.02
South Korea	88.10 (1)	0.75 (1)	10.24	2.46
Taiwan	93.80 (1)	0.75 (1)	10.04	1.28
Thailand	54.90 (1)	0.92 (1)	8.53	2.02
Turkey	6.60 (0)	0.50 (0)	9.21	25.72
UAE	21.80 (0)	0	10.71	2.45

Table 3 shows that institutional quality varies considerably along both dimensions, despite the sample consisting exclusively of emerging market countries. Several countries qualify as HIGH under the global thresholds from Djankov et al. (2008) and La Porta et al. (2006), particularly along the disclosure dimension, indicating substantial within-group institutional heterogeneity.

4 Methodology

Our analysis proceeds in two stages. We first estimate the effect of cross-listing on refinancing intensity using a difference-in-differences design. We then examine whether the effect varies with home-country institutional quality using median-split subsamples and continuous interactions.

4.1 Cross-listing Indicators

To capture differences across the regulatory hierarchy described in Section 3.2, we estimate separate coefficients for each listing type using three binary indicators. Following Hail and Leuz (2009) and Ball et al. (2018), we define:

$$L_{it}^{\ell} = \mathbb{1}[\text{firm } i \text{ maintains listing type } \ell \text{ in year } t]\,, \qquad \ell \in \{\text{EXCH, OTC, PP}\}$$

Each indicator equals 1 in the years during which firm i has an active listing of the corresponding type, and 0 otherwise. For firms with multiple concurrent listings, we assign the indicator according to the regulatory hierarchy: EXCH > OTC > PP. Estimating the three listing types separately allows us to assess whether the magnitude of the effect aligns with differences in regulatory stringency.

We use active rather than post-listing indicators as our primary treatment specification. Post-listing dummies, as in Gozzi et al. (2008), code the indicator as one in all years following the listing event, regardless of whether the firm remains listed. While such specifications may capture persistence beyond the active period, they also combine years of active cross-listing with post-delisting years during which the listing no longer imposes regulatory requirements. This conflation is uneven across firms, given the heterogeneity in listing durations (Appendix B). Active indicators avoid this noise and provide a cleaner identification of whether cross-listing affects refinancing intensity.

4.2 Baseline specification

We estimate the effect of cross-listing on refinancing intensity using ordinary least squares (OLS) in a difference-in-differences design with firm and country-year fixed effects. The primary specification is:

$$RI_{it} = \alpha_i + \mu_{ct} + \beta_1 EXCH_{it} + \beta_2 OTC_{it} + \beta_3 PP_{it} + X_{it}'\delta + \varepsilon_{it} \tag{1}$$

where RI_{it} denotes refinancing intensity for firm i in year t, α_i are firm fixed effects, μ_{ct} are country-year fixed effects, and X_{it} is the vector of firm-level controls defined in Section 3.3.2. Standard errors are clustered at the firm level to account for heteroskedasticity and serial correlation within firms over time (Petersen, 2009).

Firm fixed effects absorb time-invariant unobservable characteristics associated with the cross-listing decision. Country-year fixed effects further absorb macroeconomic conditions, financial development, and other country-time variation. The combination of firm and country-year fixed effects extends prior cross-listing designs, which use either firm- and year-fixed effects (Hail and Leuz, 2009) or cross-firm comparisons with country-, industry-, and year-fixed effects (Ball et al., 2018). Identification, therefore, comes from within-firm changes in refinancing intensity around cross-listing events, relative to non-cross-listed firms in the same country-year. However,

a remaining concern is time-varying selection, as firms may cross-list when their refinancing risk changes for reasons unrelated to cross-listing, which firm-fixed effects cannot fully control for.

We estimate four specifications, all of which include firm fixed effects. Model 1 includes year fixed effects without controls. Model 2 replaces year fixed effects with country-year fixed effects. Model 3 adds the full set of firm- and country-level controls to Model 1. Model 4 combines firm and country-year fixed effects with controls and serves as our primary specification, with country-level controls absorbed by the country-year fixed effects.

4.3 Institutional heterogeneity

To examine whether the cross-listing effect varies with home-country institutional quality, we estimate cross-sectional specifications with country, industry (2-digit SIC), and year fixed effects.

We use two complementary approaches. First, following Hail and Leuz (2009) and Ball et al. (2018), we partition countries into high- and low-institution groups based on the global median of debt enforcement and disclosure quality. This provides directly interpretable estimates without imposing functional form assumptions. Second, we interact the cross-listing indicators with the standardized institutional measures to capture how the effect varies continuously, exploiting the full distribution but imposing a linear relationship.

Median split. We partition countries as HIGH or LOW using the global thresholds reported in Djankov et al. (2008) and La Porta et al. (2006):

$$\text{HIGH}_c^{\text{ENF}} = \mathbf{1}[\text{Djankov}_c \geq 46.7], \quad \text{HIGH}_c^{\text{DISC}} = \mathbf{1}[\text{LaPorta}_c \geq 0.58]$$

We use these global thresholds rather than the within-sample median, which would compare the weakest institutions to the slightly less weak, producing a partition of limited interpretive value. The following specification is then estimated separately for the HIGH and LOW subsamples for each institutional dimension:

$$\begin{aligned} RI_{it} = \alpha_c + \psi_s + \gamma_t + \beta_1 EXCH_{it} + \beta_2 OTC_{it} + \beta_3 PP_{it} \\ + \theta \cdot \text{Cross-listed firm}_i + X'_{it}\delta + \varepsilon_{it} \end{aligned} \tag{2}$$

where α_c, ψ_s, and γ_t are country, industry (2-digit SIC), and year fixed effects, and X_{it} is the vector of firm-level controls defined in Section 3.3.2. We drop firm fixed effects from this specification to preserve statistical power, following Hail and Leuz (2009) and Ball et al. (2018), and instead include a *Cross-listed firm* indicator showing whether a firm is ever cross-listed during the sample period, which captures the uniform permanent difference between ever-listed and never-listed firms in our sample.

Continuous interaction. We interact each cross-listing indicator with the standardized institutional measure Z_c:

$$\begin{aligned} RI_{it} = \alpha_c + \psi_s + \gamma_t + \beta_1 EXCH_{it} + \beta_2 OTC_{it} + \beta_3 PP_{it} \\ + \beta_4 (EXCH_{it} \times Z_c) + \beta_5 (OTC_{it} \times Z_c) + \beta_6 (PP_{it} \times Z_c) \\ + \theta \cdot \text{Cross-listed firm}_i + X'_{it}\delta + \varepsilon_{it} \end{aligned} \tag{3}$$

where Z_c is the country-level institutional measure standardized across the sample, and the *Cross-listed firm* indicator and other terms are defined as in equation (2). The interaction coefficients β_4, β_5, and β_6 reveal how the cross-listing effect varies with institutional quality across countries.

5 Empirical results

5.1 Baseline Results

Table 4 reports the difference-in-differences estimates from regressing refinancing intensity on the cross-listing indicators described in equation (1). All specifications show that EXCH listings have a negative and significant effect on refinancing intensity at the 1% level. In the primary specification (M4), the coefficient of -4.7 implies that, following a U.S. exchange listing, a firm's refinancing intensity declines, on average, by 4.7 percentage points relative to its pre-listing level and to non-cross-listed firms, within the same country-year. Across the four specifications, the coefficient magnitude ranges from -7.1 percentage points (M1) to -4.7 percentage points (M4). The magnitude decreases as controls and country-year fixed effects are introduced, with most of the reduction occurring upon the inclusion of controls. This pattern suggests that part of the raw effect reflects observable firm characteristics and time-varying country conditions. Nevertheless, the magnitude does not materially change and is at least 4.7 percentage points across all specifications.

Regarding the other listing types, the coefficients on OTC are negative and statistically significant across all specifications, with magnitudes ranging from -4.0 percentage points (M2) to -2.9 percentage points (M4). In the primary specification (M4), the coefficient is significant at the 5% level and remains economically smaller than the EXCH effect. By contrast, PP remains statistically insignificant throughout, with coefficients occasionally positive but economically small. These results suggest that the benefits of cross-listing are primarily concentrated among exchange-listed firms, with smaller but consistent effects also observed for OTC listings.

All control variables enter with the expected signs in the primary specification (M4). Larger, more leveraged, more tangible, and more profitable firms exhibit lower refinancing intensity, while sales growth is positively associated with refinancing intensity. These patterns are consistent with the determinants of refinancing intensity discussed in Section 3.3.2.

Overall, the results indicate that both EXCH and OTC listings are associated with statistically significant reductions in refinancing intensity, while PP listings show no robust effect. The estimated magnitudes suggest an ordering of EXCH > OTC > PP, with EXCH producing the largest effect, OTC a smaller but significant one, and the PP effect not statistically distinguishable from zero. This pattern is consistent with the regulatory hierarchy and associated commitment levels across cross-listing types.

Table 4: Difference-in-Differences Estimates – Cross-Listing and Refinancing Intensity

Table 4 reports OLS estimates from four difference-in-differences specifications. The dependent variable is refinancing intensity, defined as *dd1* / (*dd1* + *dltt*), where *dd1* is long-term debt due within one year and *dltt* is long-term debt due in more than one year. EXCH, OTC, and PP are dummy variables equal to one in firm-years during which firm i has an active exchange listing, over-the-counter listing, or Rule 144A private placement, respectively, and zero otherwise. M1 and M2 include only listing-type indicators with firm and either year or country-year fixed effects. M3 and M4 additionally include firm-level controls (size, leverage, tangibility, profitability, sales growth, asset maturity) and macroeconomic controls (log GDP per capita, inflation); macro variables are absorbed by country-year fixed effects in M2 and M4. The number of observations varies across specifications due to data availability for control variables. Standard errors are clustered at the firm level and reported in parentheses. For expositional purposes, all coefficients are multiplied by 100. ***, **, and * denote $p < 0.01$, $p < 0.05$, and $p < 0.10$, respectively.

	M1	**M2**	**M3**	**M4**
EXCH	-7.115***	-6.348***	-4.987***	-4.665***
	(1.556)	(1.557)	(1.602)	(1.666)
OTC	-3.207***	-3.963***	-2.315*	-2.885**
	(1.150)	(1.128)	(1.224)	(1.186)
PP	0.762	-0.517	1.887	0.500
	(1.235)	(1.097)	(1.265)	(1.089)
Size			-1.252***	-2.200***
			(0.131)	(0.135)
Leverage			-13.207***	-12.388***
			(0.627)	(0.619)
Tangibility			-9.466***	-10.236***
			(0.813)	(0.782)
Profitability			-6.829***	-6.959***
			(1.028)	(1.004)
Sales Growth			0.662***	0.621***
			(0.126)	(0.125)
Asset Maturity			-0.006	-0.006
			(0.007)	(0.007)
Log GDP per Capita			-0.687	
			(0.435)	
Inflation			0.017***	
			(0.004)	
Fixed effects:				
Year	Yes	No	Yes	No
Country-Year	No	Yes	No	Yes
Firm	Yes	Yes	Yes	Yes
Controls	No	No	Yes	Yes
N	323,715	323,690	277,121	277,295
R^2	0.373	0.390	0.389	0.408

5.1.1 Dynamics of cross-listing effects

Building on the baseline results, we examine the dynamics around the listing event to assess whether the effects are anticipated, short-lived, or take time to materialize. We trace out the evolution of refinancing intensity by replacing each of the three cross-listing indicators with a series of event-time dummies marking individual years from $\tau \leq -3$ through $\tau = +6$, and an indicator for the period beyond $\tau = +7$. The reference period is $\tau = -1$, the year immediately before the cross-listing. Table 5 provides the coefficient estimates for the specifications corresponding to Models 3 and 4 of Table 4.

For EXCH listings, the pre-listing coefficients ($\tau \leq -3$, $\tau = -2$) are small and statistically insignificant in the main specification (M4), providing no indication of differential pre-trends. The marginally negative coefficient at $\tau = -2$ in the alternative specification (M3) does not survive the inclusion of country-year fixed effects, suggesting it reflects time-varying country-level conditions rather than a robust pre-trend. Following the listing event, the coefficients become increasingly negative over time. While the immediate post-listing effects ($\tau = 0$ to $\tau = +4$) are modest and largely insignificant in the primary specification (M4), with the exception of $\tau = +3$, the estimates turn economically large and statistically significant from $\tau = +5$, reaching -7.8 percentage points. The effect persists thereafter, with estimates of -6.6 percentage points at both $\tau = +6$ and $\tau \geq +7$. A similar post-listing pattern is observed in the alternative specification (M3), although the coefficients become negative earlier and build up more gradually, with effects emerging from $\tau = +2$ and reaching -8.7 percentage points at $\tau \geq +7$. These long-run magnitudes are larger than the corresponding baseline estimates from Table 4, suggesting that the average effect during active treatment reflects the gradual accumulation of cross-listing benefits over time.

OTC listings exhibit a different time-series pattern. In both specifications, the coefficient at $\tau = -2$ is large and statistically significant, indicating the presence of pre-trends. The post-listing coefficients remain negative and significant in the immediate listing window ($\tau = 0$ and $\tau = +1$), but fade and become inconsistent thereafter, with no clear long-run effect. This suggests that the OTC effect is concentrated around the listing event rather than reflecting a sustained effect. Combined with the presence of pre-trends, this suggests that OTC firms may already be on improving trajectories prior to listing, consistent with selection or anticipatory adjustments, such as preparations for listing or other concurrent firm-level developments, rather than a clear causal effect of the listing itself.

Taken together, the dynamics provide further insight into the baseline findings. EXCH listings, which carry the strongest regulatory commitment, exhibit persistent reductions in refinancing intensity. OTC listings, which also show a baseline effect, are shown here to be short-lived and anticipatory rather than sustained. PP coefficients show no consistent pattern across event-time bins, consistent with the absence of a detectable effect in the baseline.

Table 5: Dynamic Effects of Cross-Listing on Refinancing Intensity

Table 5 reports event-study estimates of the dynamic effect of U.S. cross-listing on refinancing intensity. The dependent variable is refinancing intensity, defined as *dd1* / (*dd1* + *dltt*), where *dd1* is long-term debt due within one year and *dltt* is long-term debt due in more than one year. We trace the evolution of refinancing intensity around the listing event by replacing each of the three cross-listing indicators with a series of event-time dummies. Specifically, EXCH_τ, OTC_τ, and PP_τ are dummy variables equal to one in event year τ relative to firm i's first cross-listing of the corresponding type, and zero otherwise, where $\tau \in \{\leq -3, -2, 0, +1, +2, +3, +4, +5, +6, \geq +7\}$. The reference period is $\tau = -1$, the year immediately before the cross-listing. The top panel reports estimates from a specification with firm and year fixed effects; the bottom panel uses firm and country-year fixed effects, the most stringent specification controlling for time-varying country-level shocks. Both specifications include the firm-level controls (*size*, *leverage*, *tangibility*, *profitability*, *sales growth*, *asset maturity*) introduced in Table 4. Standard errors clustered at the firm level are reported in parentheses. For expositional purposes, all coefficients are multiplied by 100. ***, **, and * denote p < 0.01, p < 0.05, and p < 0.10, respectively.

Year relative to listing	$\tau \leq -3$	$\tau = -2$	$\tau = 0$	$\tau = +1$	$\tau = +2$	$\tau = +3$	$\tau = +4$	$\tau = +5$	$\tau = +6$	$\tau \geq +7$
Specification with firm and year fixed effects (N = 277,121)										
EXCH	-1.242	-6.430*	-0.833	-1.492	-4.313*	-6.192**	-5.271*	-8.912***	-7.676***	-8.657***
	(3.507)	(3.681)	(2.233)	(2.340)	(2.432)	(2.579)	(2.838)	(2.616)	(2.972)	(2.647)
OTC	2.582	-5.083***	-3.711*	-5.032**	-3.327	-4.639**	-2.483	-3.058	-4.234*	-3.351
	(2.209)	(1.956)	(2.080)	(2.192)	(2.177)	(2.225)	(2.264)	(2.443)	(2.218)	(2.168)
PP	-1.394	-2.241	-0.976	1.581	-0.660	-0.161	0.698	-1.537	3.566	1.298
	(2.169)	(1.804)	(1.895)	(2.090)	(2.090)	(2.296)	(2.281)	(2.148)	(2.530)	(2.186)
Specification with firm and country-year fixed effects (N = 277,295)										
EXCH	-0.246	-5.085	-0.633	-0.921	-3.736	-5.266**	-4.461	-7.827***	-6.579**	-6.624**
	(3.461)	(3.787)	(2.239)	(2.385)	(2.447)	(2.604)	(2.906)	(2.666)	(3.040)	(2.736)
OTC	1.830	-5.303***	-3.604*	-4.806**	-3.033	-4.559**	-2.268	-2.747	-4.043*	-1.612
	(2.182)	(1.941)	(2.064)	(2.185)	(2.134)	(2.201)	(2.238)	(2.452)	(2.199)	(2.129)
PP	-0.298	-1.734	-1.778	-0.678	-3.176	-2.809	-1.974	-3.994*	0.759	-1.687
	(2.055)	(1.753)	(1.902)	(2.060)	(2.079)	(2.281)	(2.294)	(2.084)	(2.505)	(2.145)

5.2 Institutional heterogeneity results

We next examine whether the cross-listing effect varies with home-country institutional quality. Table 6 reports median-split estimates in Panel A and continuous interactions with z-scored institutional measures in Panel B.

Panel A shows that in low-disclosure countries, the EXCH coefficient is -7.1 percentage points and significant at the 1% level, while no effect is found in high-disclosure countries. The same pattern applies to debt enforcement, although with a smaller magnitude. The EXCH coefficient is -3.2 percentage points in low-enforcement countries and significant at the 5% level, while insignificant in high-enforcement countries. For the other listing types, no clear heterogeneity emerges. OTC coefficients are insignificant across subsamples, while PP coefficients are positive and statistically significant only in high-disclosure countries, indicating higher refinancing intensity relative to non-cross-listed firms.

As the median split provides a discrete partition of institutional quality, we turn to Panel B, which incorporates interaction terms, to further examine whether the relationship holds across the full distribution.

The continuous interaction specification shows a positive and significant interaction between institutional quality and EXCH listing. The upward slope implies that the effect of cross-listing in reducing refinancing intensity is more pronounced in weaker institutional environments and weakens, or even reverses, as institutional quality improves. The *EXCH* × *Enforcement* coefficients of 2.8 and *EXCH* × *Disclosure* of 4.8 imply that a one standard deviation decrease in institutional quality is associated with a 2.8 and 4.8 percentage point larger reduction in refinancing intensity for EXCH-listed firms relative to non-cross-listed firms.

At the sample mean of disclosure quality, the standalone EXCH coefficient is positive at 2.7 percentage points and significant at the 10% level, indicating that EXCH listings do not reduce refinancing intensity at average disclosure levels. Combined with the positive slope of the interaction term, this reinforces the interpretation that the effect operates primarily in weaker disclosure environments and is consistent with the results in panel A.

Turning to the other listing types, the median split for OTC does not detect a similar pattern, and no clear statistical presence emerges along the institutional distribution, although the significant interaction slope suggests that the effect varies with institutional quality. For PP, the standalone coefficient at the sample mean of disclosure is positive and significant. Combined with the interaction slope and the median-split result in high-disclosure countries, this points to higher refinancing intensity for PP-listed firms in stronger disclosure environments.

Taken together, the results indicate that the effect of cross-listing on refinancing intensity varies with institutional quality. The reduction associated with EXCH listings is concentrated in weaker institutional environments, with strong support along both the disclosure and enforcement dimensions. As the specifications in this section are cross-sectional, the *Cross-listed firm* indicator mitigates but does not fully eliminate selection within the cross-listed group. For EXCH listings, a consistent within-firm effect in Section 5.1 supports a stronger interpretation, although the results should still be viewed as suggestive rather than conclusive. In contrast, for OTC listings, the cross-sectional patterns are weaker and less consistent, suggesting that the motives behind OTC listings are less tied to home-country institutional quality, in line with the short-lived and anticipatory effects found in Table 5. For PP listings, the lack of a within-firm effect makes the cross-sectional patterns difficult to interpret and likely driven by underlying differences in firm characteristics rather than institutional factors.

Table 6: Institutional Heterogeneity in Cross-Listing Effects

Table 6 reports OLS estimates from cross-sectional specifications examining how the effect of U.S. cross-listing on refinancing intensity varies with home-country institutional quality. The dependent variable is refinancing intensity, defined as *dd1* / (*dd1* + *dltt*), where *dd1* is long-term debt due within one year and *dltt* is long-term debt due in more than one year. EXCH, OTC, and PP are dummy variables equal to one in firm-years during which firm i has an active exchange listing, over-the-counter listing, or Rule 144A private placement, respectively, and zero otherwise. The Cross-listed firm dummy equals one for firms that hold an active cross-listing of any type at any point during the sample period and zero otherwise. Panel A reports estimates of equation (2), in which the cross-listing indicators are estimated separately on HIGH and LOW subsamples defined by global thresholds from the original source papers: debt enforcement is classified as HIGH if the Djankov et al. (2008) recovery rate is at least 46.7 (cents on the dollar) and LOW otherwise; disclosure quality is HIGH if the La Porta et al. (2006) disclosure index is at least 0.58 and LOW otherwise. Panel B reports estimates of equation (3), in which each listing-type indicator is interacted with a z-scored institutional measure Z_c, where Z_c is the country-level value of the relevant institutional variable standardized to mean zero and unit variance across the country sample. The interaction terms (EXCH × Enforcement, OTC × Enforcement, PP × Enforcement, and the corresponding interactions with Disclosure) capture how the cross-listing effect interacts with institutional quality. All specifications include firm-level controls (*size*, *leverage*, *tangibility*, *profitability*, *sales growth*, *asset maturity*) and macroeconomic controls (*log GDP per capita*, *inflation*). Country, industry, and year fixed effects are included as indicated. The number of observations varies across specifications due to data availability for control variables. Standard errors are clustered at the firm level and reported in parentheses. For expositional purposes, all coefficients are multiplied by 100. ***, **, and * denote p < 0.01, p < 0.05, and p < 0.10, respectively.

Panel A: Median splits at global thresholds (Djankov 46.7; La Porta 0.58)

	Enforcement		**Disclosure**	
	HIGH	LOW	HIGH	LOW
EXCH	+0.692	-3.211**	+0.230	-7.078***
	(2.179)	(1.360)	(1.607)	(1.713)
OTC	-0.800	-0.981	+0.067	-1.510
	(1.304)	(1.401)	(1.119)	(1.849)
PP	+1.760	-2.900	+2.316**	-2.203
	(1.669)	(1.798)	(1.092)	(2.242)
Cross-listed firm	-1.072	+0.744	-3.376***	-5.334***
	(1.194)	(1.193)	(0.805)	(1.568)
Size	-2.387***	-3.119***	-0.617***	-1.243***
	(0.107)	(0.104)	(0.072)	(0.147)
Leverage	-10.701***	-12.959***	-10.756***	-18.986***
	(0.868)	(0.860)	(0.611)	(1.667)
Tangibility	-14.867***	-20.088***	-7.842***	-13.829***
	(0.928)	(0.969)	(0.679)	(1.779)
Profitability	-14.771***	-3.489**	-6.247***	-3.245
	(1.503)	(1.502)	(1.125)	(3.004)
Sales Growth	+1.249***	+1.064***	+0.102	-0.836*
	(0.254)	(0.236)	(0.143)	(0.458)
Asset Maturity	+0.045***	+0.051***	-0.017**	+0.010
	(0.012)	(0.012)	(0.009)	(0.016)
Log GDP per Capita	-3.735***	-2.068***	+22.274***	-7.779***
	(1.131)	(0.548)	(0.692)	(1.227)
Inflation	-0.092	+0.029***	-0.024	+0.010
	(0.075)	(0.005)	(0.042)	(0.007)
Country FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	90,487	119,699	156,461	26,108
R^2	0.087	0.117	0.143	0.133

Table 6 (continued): Institutional Heterogeneity in Cross-Listing Effects

Panel B: Continuous interaction with z-scored institutional measures		
	(1)	**(2)**
EXCH	-1.578	+2.740*
	(1.203)	(1.619)
OTC	-0.557	+1.097
	(1.103)	(1.054)
PP	-1.186	+2.369**
	(1.290)	(0.991)
EXCH × Enforcement	+2.831***	
	(0.738)	
OTC × Enforcement	+1.230	
	(0.783)	
PP × Enforcement	+2.267***	
	(0.735)	
EXCH × Disclosure		+4.768***
		(0.743)
OTC × Disclosure		+2.423***
		(0.618)
PP × Disclosure		+3.634***
		(0.629)
Cross-listed firm	+0.492	-4.300***
	(0.922)	(0.741)
Size	-2.859***	-0.654***
	(0.077)	(0.064)
Leverage	-11.719***	-11.308***
	(0.629)	(0.580)
Tangibility	-18.115***	-9.020***
	(0.691)	(0.647)
Profitability	-7.898***	-4.406***
	(1.097)	(1.062)
Sales Growth	+1.114***	+0.029
	(0.176)	(0.138)
Asset Maturity	+0.049***	-0.009
	(0.009)	(0.008)
Log GDP per Capita	-0.263	+13.477***
	(0.394)	(0.594)
Inflation	+0.022***	+0.002
	(0.005)	(0.004)
Country FE	Yes	Yes
Industry FE	Yes	Yes
Year FE	Yes	Yes
N	210,186	182,570
R^2	0.105	0.138

5.3 Robustness results

Table 7 summarizes several robustness checks of our main results. Each test re-estimates Models 3 and 4 in Table 4, with a single change to the sample or the dependent variable.

In the first test (*Alternative DV*), we replace refinancing intensity with an alternative dependent variable defined as the ratio of debt in current liabilities to total debt, *dlc* / (*dlc* + *dltt*). As discussed in Section 3.3.1, *dlc* differs from *dd1* in that it includes components related to liquidity management and operational financing, which may conflate refinancing risk with broader short-term financing behavior and introduce noise into the estimated cross-listing effect (Harford et al., 2014; Friewald et al., 2022). The EXCH coefficient in the primary specification (M4) is insignificant, while in M3 it is negative and significant at the 1% level at -5.7 percentage points, larger in magnitude than the baseline estimate. One plausible explanation for the insignificance in M4 is that the use of operational short-term debt differs across countries, and that the country-year fixed effects absorb this variation, leaving insufficient identifying variation tied to cross-listing. The OTC coefficient is insignificant in both specifications. Overall, these results are in line with our baseline choice of *dd1* as a more focused measure of refinancing intensity.

Next, we examine alternative sample selection choices. First, (*Excluding China*), we assess the impact of the largest country in terms of observations on the results, China. Excluding China-domiciled firms reduces the sample to 194,420 firm-year observations and removes 353 cross-listed firms. The EXCH coefficient in the primary specification (M4) is negative and significant at the 10% level with a magnitude of -3.6 percentage points, smaller than the full-sample estimate of -4.7 percentage points, while in M3 it is insignificant. This pattern indicates that China is a meaningful driver of the baseline result, contributing both a large share of cross-listed firms and substantial within-firm variation. Nevertheless, the EXCH effect is preserved in the primary specification, indicating that the effect is not driven exclusively by Chinese firms. The OTC coefficient, in contrast, becomes insignificant across both specifications, suggesting that the baseline OTC effect is sensitive to the inclusion of Chinese firms.

Second, (*Post-2010 listings*), we examine the timing of cross-listings by restricting the treatment group to firms that cross-listed in 2010 or later. While our full sample spans 1988 to 2024, this subsample isolates modern cross-listings in the post-financial-crisis period, characterized by greater financial market integration and more developed emerging market institutions. The EXCH coefficient in the primary specification (M4) is negative and significant at the 5% level with a magnitude of -5.5 percentage points, larger than the full-sample estimate. The PP coefficient is also significant and negative at -6.7 percentage points, in contrast to its insignificance in the baseline and other robustness checks. Although based on a smaller treated sample, these results indicate that the EXCH effect persists in a modern environment of greater integration and institutional development. The PP coefficient also suggests that PP listings may influence refinancing intensity in this period, though this result should be interpreted with caution, given the smaller subsample and inconsistency with the baseline. The OTC coefficient is again insignificant, which may reflect the smaller subsample or the absence of an OTC effect in this period.

Across the three robustness checks, the EXCH effect is broadly preserved across the sample restrictions, while the *Alternative DV* results are mixed but support our baseline choice of measure. The OTC coefficient is insignificant across all robustness specifications, suggesting that the baseline effect is sensitive to sample composition. Overall, the main inferences regarding EXCH listings are preserved, though the OTC findings should be interpreted with caution.

Table 7: Robustness Checks

Table 7 reports robustness tests of the main difference-in-differences specifications (M3 and M4 from Table 4). The dependent variable is refinancing intensity, defined as *dd1* / (*dd1* + *dltt*), except in the Alternative DV columns, which replace it with *dlc* / (*dlc* + *dltt*), where *dlc* is total debt in current liabilities. Excluding China removes all China-domiciled firms from the sample. Post-2010 listings restricts the sample to firms cross-listed in 2010 or later. EXCH, OTC, and PP are dummy variables equal to one in firm-years during which firm i has an active exchange listing, over-the-counter listing, or Rule 144A private placement, respectively, and zero otherwise. All specifications include firm-level controls (*size*, *leverage*, *tangibility*, *profitability*, *sales growth*, *asset maturity*). M3 additionally includes macroeconomic controls (*log GDP per capita*, *inflation*); these are absorbed by the country-year fixed effects in M4. Fixed effects are included as indicated. The number of observations varies across specifications due to data availability for control variables. Standard errors are clustered at the firm level and reported in parentheses. For expositional purposes, all coefficients are multiplied by 100. ***, **, and * denote $p < 0.01$, $p < 0.05$, and $p < 0.10$, respectively.

	Alternative DV		**Excluding China**		**Post-2010 listings**	
	M3	**M4**	**M3**	**M4**	**M3**	**M4**
EXCH	-5.730***	-2.721	-2.580	-3.603*	-6.314**	-5.524**
	(1.667)	(1.739)	(2.089)	(2.096)	(2.605)	(2.559)
OTC	-0.730	-1.165	-1.493	-1.495	-1.980	-1.423
	(1.317)	(1.224)	(1.175)	(1.132)	(1.874)	(1.884)
PP	1.610	0.425	0.640	0.254	-5.984***	-6.719***
	(1.571)	(1.419)	(1.257)	(1.129)	(1.943)	(1.984)
Size	-0.723***	-1.564***	-0.319**	-1.456***	-2.817***	-3.047***
	(0.138)	(0.153)	(0.135)	(0.141)	(0.197)	(0.202)
Leverage	-5.257***	-3.344***	-12.121***	-12.398***	-14.058***	-13.341***
	(0.693)	(0.683)	(0.702)	(0.690)	(0.762)	(0.769)
Tangibility	-19.149***	-20.040***	-9.514***	-9.865***	-12.573***	-12.601***
	(0.943)	(0.909)	(0.887)	(0.845)	(1.058)	(1.059)
Profitability	-11.004***	-11.585***	-9.592***	-9.085***	-5.318***	-4.918***
	(1.068)	(1.046)	(1.148)	(1.111)	(1.242)	(1.248)
Sales Growth	0.101	0.124	0.629***	0.470***	0.593***	0.615***
	(0.131)	(0.130)	(0.131)	(0.130)	(0.160)	(0.160)
Asset Maturity	0.015*	0.008	-0.007	-0.007	-0.023**	-0.023**
	(0.008)	(0.008)	(0.008)	(0.007)	(0.010)	(0.010)
Log GDP per Capita	-3.270***		10.801***		-3.405***	
	(0.467)		(0.629)		(0.820)	
Inflation	0.027***		0.017***		0.093***	
	(0.006)		(0.004)		(0.017)	
Fixed effects:						
Year	Yes	No	Yes	No	Yes	No
Country-Year	No	Yes	No	Yes	No	Yes
Firm	Yes	Yes	Yes	Yes	Yes	Yes
N	277,121	277,295	194,246	194,420	186,540	186,664
R^2	0.498	0.518	0.373	0.400	0.420	0.426

6 Discussion

6.1 Cross-listing and refinancing risk

Prior research shows that cross-listing reduces the cost of capital in both equity (Hail and Leuz, 2009) and debt markets (Ball et al., 2018), but focuses primarily on pricing outcomes. Our results in Table 4 extend this evidence to a non-price dimension by showing that U.S. cross-listings reduce firms' exposure to refinancing risk in emerging markets. However, the mechanism(s) through which these benefits arise remain debated in the literature.

Given that our sample consists of firms from emerging market countries over a long time period, one possible interpretation is that the effects reflect a relaxation of market segmentation barriers as firms gain access to deeper U.S. capital markets, in line with the segmentation view supported by Gozzi et al. (2008). However, the magnitudes of the coefficients across listing types do not align with this interpretation. Segmentation theories predict broadly similar effects across listing types, since access alone, rather than the strength of commitment, drives the benefit. Our results instead show a clear hierarchy of effects, with EXCH listings producing the largest reduction, OTC a smaller effect, and PP no detectable effect at all. At the same time, this does not fully rule out a role for segmentation, as improved access to international capital markets may still contribute to the observed effects alongside commitment-based mechanisms.

This pattern is more consistent with the bonding hypothesis (Coffee, 1999; Stulz, 1999), which predicts that the strength of the cross-listing effect tracks the strength of the regulatory and disclosure commitments imposed on the firm. EXCH listings impose substantially stricter ongoing disclosure and compliance requirements than OTC or PP listings, and these stronger commitments may be necessary to credibly affect long-run capital structure decisions. From the perspective of refinancing risk specifically, an EXCH listing may reduce information asymmetry between firms and creditors by signaling sustained compliance with U.S. disclosure standards, thereby helping to overcome information barriers that may have constrained access to long-term debt under home-country reporting alone.

Building on this, the absence of a PP effect can be understood through the same lens. PP listings impose limited disclosure obligations and are restricted to a small group of qualified institutional investors, which can signal both a low level of commitment to broader creditors and even widen information asymmetry, since only a select group has access to the firm-specific information. In addition, PP listings are often used by growth-oriented firms (Ball et al., 2018), for which shorter maturities may reflect a deliberate preference for financing flexibility and the mitigation of debt overhang concerns (Myers, 1977), rather than binding financing constraints. PP-listed firms may therefore not seek to reduce refinancing risk, and even when they do, the lower commitment may not be sufficient to credibly extend debt maturity.

The dynamics around the listing event provide further insight into the source of these benefits. The bonding hypothesis predicts that effects should emerge after the listing event and persist for at least as long as the regulatory commitment is maintained. Our results align with this prediction for EXCH listings, where the reduction in refinancing intensity emerges gradually and persists in the long run. For OTC listings, however, the pattern is markedly different, with significant pre-trends and short-lived effects that fade soon after the listing event. This contrast suggests that the strength of commitment plays a central role in generating persistent changes in refinancing risk.

The dynamics also raise an identification concern for OTC listings. The significant pre-trends

and short-lived post-listing effects are inconsistent with a sustained, listing-driven shift in financing conditions. Instead, they suggest anticipatory adjustments or firm-specific developments around the listing event, possibly reflecting other listing motives such as expanding the shareholder base (Hail and Leuz, 2009). As with PP, the apparent OTC effect may therefore reflect listing-type selection rather than a causal response to the listing itself.

EXCH listings, by contrast, exhibit no comparable pre-trends. This pattern is more consistent with a structural change in financing conditions associated with the listing. While this does not establish causality, it strengthens the interpretation of a sustained shift rather than temporary or anticipatory behavior. In the context of emerging markets, where refinancing risk often reflects binding financing frictions rather than purely optimal choice (Demirgüç-Kunt and Maksimovic, 1999; Diamond and Rajan, 2001), the gradual post-listing EXCH effect can be interpreted as a revealed preference for longer-term debt. Under this interpretation, and to the extent that cross-listing relaxes financing constraints through credible bonding, EXCH-listed firms appear to move toward a refinancing risk profile preferred under less constrained conditions.

Nevertheless, relaxing financing constraints may not fully account for the observed effect. An alternative interpretation is that cross-listing is closely linked to firm growth, which may, in turn, drive changes in firms' refinancing risk profiles. Cross-listing can both enable and reflect growth opportunities, as firms may seek international listings to access capital for expansion, while improved financing conditions following cross-listing may further support growth. Prior research shows that firms expand their asset base following internationalization as access to capital improves (Gozzi et al., 2008), and as firms grow and invest in longer-lived assets, maturity-matching considerations (Myers, 1977) may lead to a gradual reduction in refinancing risk. While we control for firm size, sales growth, and asset maturity in the baseline specification, these effects may not be fully captured. Moreover, these explanations need not be mutually exclusive, and the relative contribution of each channel is hard to disentangle.

6.2 Institutional heterogeneity

Table 6 shows that the effect of EXCH listings varies across institutional environments, with stronger effects in countries with weaker disclosure and enforcement. These findings suggest that the institutional quality gap plays a central role in shaping the benefits of cross-listing. This pattern is consistent with the substitution view, whereby firms from weaker institutional environments benefit more from cross-listing by effectively "renting" stronger external institutions. Under this interpretation, the largest gains arise where the institutional gap is greatest, aligning with the findings of Hail and Leuz (2009) for cost-of-capital outcomes and suggesting that the same mechanism may extend to non-price dimensions of debt financing.

By contrast, our results are not aligned with the complementarity view advanced by Ball et al. (2018), who document that the benefits of cross-listing for debt pricing are stronger in firms from higher-quality institutional environments. Their interpretation is that cross-listing cannot fully substitute for weak home-country legal institutions, as creditors ultimately rely on local enforcement in the event of default. In our setting, we instead observe a pattern consistent with substitution, even along the debt-enforcement dimension, where complementarity would be most expected. This suggests that the role of institutional quality depends on the underlying mechanism through which cross-listing affects financing outcomes. While both sets of results relate to debt financing, our findings indicate that non-price dimensions, such as refinancing risk, may respond differently than the price of debt.

One plausible explanation for this divergence lies in the underlying institutional channels that shape each financing dimension. The price of debt may depend more heavily on creditors' ability to recover claims in the event of default, where home-country enforcement plays a central role (Qian and Strahan, 2007). Refinancing risk, by contrast, may depend more on information frictions between borrowers and lenders (Diamond, 1991), which the improved disclosure associated with U.S. cross-listing can help mitigate even when home-country enforcement remains weak. This distinction may explain why our results align more closely with the substitution mechanism observed for equity-side outcomes than with the complementarity pattern documented for debt pricing.

Taken together, these findings suggest that the cross-listing effect reflects an interaction between firm-level incentives and country-level institutional characteristics, with the dominant channel depending on the financing outcome examined.

6.3 Limitations

A primary limitation of our study is the endogenous nature of the cross-listing decision. Firms self-select into U.S. listings, and the same firm-level factors that drive this choice may also be correlated with refinancing risk. We aim to obtain a cleaner identification by introducing firm- and country-year-fixed effects, a combination not previously employed in the cross-listing literature. However, fixed effects do not capture time-varying firm-level unobservables that may coincide with the listing decision. This issue could be partially addressed with a Heckman-style selection correction, which would explicitly model the cross-listing decision and account for non-random selection into treatment. In practice, implementing such a correction in this setting is difficult, as it requires variables that predict the cross-listing decision without directly affecting refinancing risk. Such exclusion restrictions are hard to identify in the cross-listing context (Hail and Leuz, 2009). The findings should therefore not be interpreted as being based on fully isolated relationships.

A second limitation of the study concerns the interpretation of the heterogeneity results. The analysis relies on comparisons between groups of cross-listed and non-cross-listed firms over time, rather than purely within-firm changes. As a result, the estimated differences may reflect not only the effect of cross-listing, but also underlying differences in firm characteristics across groups. In particular, firms that choose to cross-list may differ systematically from non-cross-listed firms, and these differences may vary across institutional environments. The heterogeneity results should therefore be interpreted as suggestive of a directional relationship, while still providing insights into how cross-listing effects differ across institutional environments.

A third limitation concerns data coverage and the granularity of the dependent variable. Coverage of emerging market firms in Compustat is sparser in the pre-listing period in our sample, particularly for firms that cross-listed earlier, leaving some within-firm comparisons based on relatively few pre-listing observations. The direction of any resulting bias is not straightforward. While prior evidence documenting shorter debt maturities among emerging market firms (Demirgüç-Kunt and Maksimovic, 1999) suggests that fuller pre-listing coverage would more likely amplify than reduce the estimated effects, although this cannot be established with certainty. In addition, our dependent variable captures debt maturing within one year, whereas alternative thresholds, such as the three-year measure used by Friewald et al. (2022), would capture broader refinancing exposure. We were unable to retrieve such granular maturity breakdowns for emerging market firms in Compustat. The findings should therefore be interpreted as informative about immediate refinancing dynamics, while the extent to which cross-listing

affects medium-term refinancing risk remains unclear, given the available data.

Finally, our EXCH listings measure pools Level II (non-capital-raising) and Level III (capital-raising) ADRs. While the two differ in whether new equity is raised, both carry equivalent SEC registration and disclosure obligations, which is the channel relevant to the bonding interpretation we emphasize. Prior evidence on broader internationalization events suggests comparable patterns across these listing types (Gozzi et al., 2008), although this remains untested in our setting.

7 Conclusion

This paper examines whether U.S. cross-listing reduces refinancing risk for emerging market firms and whether this effect varies with home-country institutional quality. Using a panel of firms across 25 emerging markets from 1988 to 2024, we find that exchange listings are associated with a meaningful reduction in refinancing risk, while over-the-counter listings show weaker effects, and private placements show no detectable effect.

The dynamics around the listing event further suggest that the strength and persistence of the effect follow the regulatory hierarchy across listing types. Exchange listings, which impose the strongest disclosure and regulatory requirements, generate gradual and sustained reductions in refinancing risk. In contrast, the effects associated with over-the-counter listings are short-lived and partly anticipatory, suggesting that they may reflect firm-specific developments around the listing event or listing-type selection rather than a structural shift in financing conditions.

Referring back to the research question, the findings further show that the reduction in refinancing risk is concentrated in exchange-listed firms from countries with weaker disclosure and enforcement environments. This pattern suggests that exchange cross-listing operates as a substitute for weaker home-country institutions, with firms benefiting most where the institutional gap to U.S. standards is largest.

Building on prior cross-listing literature, this paper contributes by extending the analysis beyond the cost of capital to a non-price dimension of corporate financing, providing new evidence on how cross-listing may shape firms' exposure to rollover risk. At the same time, the results suggest that these effects are not uniform, but reflect the interplay between the form of cross-listing, the institutional environment in which firms operate, and firm-level listing motives. Overall, the findings are most consistent with bonding-based arguments of cross-listing.

Taken together, the results return us to the setting that motivated the analysis. The compressed maturity structures observed in emerging markets may reflect binding financing frictions that exchange listings help relax, allowing firms to move toward lower refinancing risk. However, the extent to which the observed effects can be attributed to the cross-listing event and the regulatory commitment it entails, rather than alternative mechanisms, remains difficult to disentangle. We leave a more precise identification of these underlying channels to future research.

References

Ball, Ryan T., Luzi Hail, and Florin P. Vasvari, 2018, Equity cross-listings in the U.S. and the price of debt, *Review of Accounting Studies* 23, 385–421.

Barclay, Michael J., and Clifford W. Smith Jr., 1995, The maturity structure of corporate debt, *Journal of Finance* 50, 609–631.

Chen, Sophia, Paola Ganum, Lucy Qian Liu, Leonardo Martinez, and Maria Soledad Martinez Peria, 2019, Debt maturity and the use of short-term debt: Evidence from sovereigns and firms, *IMF Departmental Paper No. 19/03*.

Coffee, John C. Jr., 1999, The future as history: The prospects for global convergence in corporate governance and its implications, *Northwestern University Law Review* 93, 641–708.

Della Seta, Marco, Erwan Morellec, and Francesca Zucchi, 2020, Short-term debt and incentives for risk-taking, *Journal of Financial Economics* 137, 179–203.

Demirgüç-Kunt, Asli, and Vojislav Maksimovic, 1999, Institutions, financial markets, and firm debt maturity, *Journal of Financial Economics* 54, 295–336.

Diamond, Douglas W., 1991, Debt maturity structure and liquidity risk, *Quarterly Journal of Economics* 106, 709–737.

Diamond, Douglas W., 2004, Presidential address, committing to commit: Short-term debt when enforcement is costly, *Journal of Finance* 59, 1447–1479.

Diamond, Douglas W., and Raghuram G. Rajan, 2001, Banks, short-term debt and financial crises: Theory, policy implications and applications, *Carnegie-Rochester Conference Series on Public Policy* 54, 37–71.

Djankov, Simeon, Oliver Hart, Caralee McLiesh, and Andrei Shleifer, 2008, Debt enforcement around the world, *Journal of Political Economy* 116, 1105–1149.

Doidge, Craig, G. Andrew Karolyi, and René M. Stulz, 2004, Why are foreign firms listed in the US worth more?, *Journal of Financial Economics* 71, 205–238.

Flannery, Mark J., 1986, Asymmetric information and risky debt maturity choice, *Journal of Finance* 41, 19–37.

Foerster, Stephen R., and G. Andrew Karolyi, 1999, The effects of market segmentation and investor recognition on asset prices: Evidence from foreign stocks listing in the United States, *Journal of Finance* 54, 981–1013.

Friewald, Nils, Florian Nagler, and Christian Wagner, 2022, Debt refinancing and equity returns, *Journal of Finance* 77, 2287–2329.

Gozzi, Juan Carlos, Ross Levine, and Sergio L. Schmukler, 2008, Internationalization and the evolution of corporate valuation, *Journal of Financial Economics* 88, 607–632.

Guedes, José, and Tim Opler, 1996, The determinants of the maturity of corporate debt issues, *Journal of Finance* 51, 1809–1833.

Hail, Luzi, and Christian Leuz, 2009, Cost of capital effects and changes in growth expectations around U.S. cross-listings, *Journal of Financial Economics* 93, 428–454.

Harford, Jarrad, Sandy Klasa, and William F. Maxwell, 2014, Refinancing risk and cash hold-

ings, *Journal of Finance* 69, 975–1012.

He, Zhiguo, and Wei Xiong, 2012, Rollover risk and credit risk, *Journal of Finance* 67, 391–430.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny, 1998, Law and finance, *Journal of Political Economy* 106, 1113–1155.

La Porta, Rafael, Florencio Lopez-de-Silanes, and Andrei Shleifer, 2006, What works in securities laws?, *Journal of Finance* 61, 1–32.

Miller, Darius P., 1999, The market reaction to international cross-listings: Evidence from depositary receipts, *Journal of Financial Economics* 51, 103–123.

Myers, Stewart C., 1977, Determinants of corporate borrowing, *Journal of Financial Economics* 5, 147–175.

Petersen, Mitchell A., 2009, Estimating standard errors in finance panel data sets: Comparing approaches, *Review of Financial Studies* 22, 435–480.

Qian, Jun, and Philip E. Strahan, 2007, How laws and institutions shape financial contracts: The case of bank loans, *Journal of Finance* 62, 2803–2834.

Schmukler, Sergio L., and Esteban Vesperoni, 2006, Financial globalization and debt maturity in emerging economies, *Journal of Development Economics* 79, 183–207.

Stulz, René M., 1999, Globalization, corporate finance, and the cost of capital, *Journal of Applied Corporate Finance* 12, 8–25.

Appendix

Appendix A: Variable definitions

This table reports definitions and sources for the variables used in the regression analyses.

Variable name	Definition	Source
Dependent variable		
Refinancing Intensity	Ratio of long-term debt due in one year to total long-term debt: *dd1* / (*dd1* + *dltt*). Captures the share of long-term debt that requires refinancing within one year.	Compustat Global
DLC ratio	Ratio of debt in current liabilities to total debt: *dlc* / (*dlc* + *dltt*). Used as alternative measure in robustness tests.	Compustat Global
Cross-listing dummies		
EXCH	Dummy equal to one for firms with active U.S. exchange listings on NYSE, NASDAQ, or AMEX (Level II/III ADRs), and zero otherwise.	Citibank, Bank of New York Mellon, Deutsche Bank ADR directories; NYSE, NASDAQ, AMEX exchange directories; SEC EDGAR
OTC	Dummy equal to one for firms with active U.S. over-the-counter listings (Level I ADRs), and zero otherwise.	Citibank, Bank of New York Mellon, Deutsche Bank ADR directories; SEC EDGAR
PP	Dummy equal to one for firms with active U.S. private placements under Rule 144A, and zero otherwise.	Citibank, Bank of New York Mellon, Deutsche Bank ADR directories; SEC EDGAR
Cross-listed firm (*ever-listed*)	Dummy equal to one for firms that hold an active cross-listing of any type at any point during the sample period, and zero otherwise. Used in cross-sectional specifications without firm fixed effects.	Citibank, Bank of New York Mellon, Deutsche Bank ADR directories; SEC EDGAR
Firm characteristics		
Size	Natural logarithm of total assets: log(*at*).	Compustat Global
Leverage	Total liabilities to total assets ratio: *lt* / *at*.	Compustat Global
Tangibility	Net property, plant, and equipment to total assets: *ppent* / *at*.	Compustat Global
Profitability	Earnings before interest and taxes to average total assets: *ebit* / *at_avg*, where *at_avg* is the average of current and lagged total assets.	Compustat Global
Sales Growth	Year-on-year change in the sales-to-assets ratio (within firm): Δ(*sale*/*at*).	Compustat Global
Asset Maturity	Gross property, plant, and equipment over total assets, multiplied by gross property, plant, and equipment over depreciation: (*ppegt*/*at*) $\times$ (*ppegt*/*dp*).	Compustat Global
Country characteristics		
Log GDP per Capita	Natural logarithm of annual GDP per capita in constant USD.	World Bank World Development Indicators

Variable name	Definition	Source
Inflation	Annual percentage change in the consumer price index.	IMF World Economic Outlook
Institutional measures		
Debt enforcement	Country-level recovery rate measuring how effectively creditors recover debt from defaulted firms (cents on the dollar). Used as a binary indicator (HIGH = 1 if at least 46.7, LOW = 0 otherwise) and as a z-scored continuous measure.	Djankov, Hart, McLiesh, and Shleifer (2008)
Disclosure quality	Country-level disclosure index ranging from 0 to 1, capturing the stringency of prospectus disclosure requirements for newly listed firms. Used as a binary indicator (HIGH = 1 if at least 0.58, LOW = 0 otherwise) and as a z-scored continuous measure.	La Porta, Lopez-de-Silanes, and Shleifer (2006)

Appendix B: Listing Duration by Listing Type

Listing Duration by Listing Type

This table reports the distribution and summary statistics of listing duration by listing type. Listing duration is measured in years between the first and last year a firm has an active listing of the corresponding type, inclusive, and is right-censored at the end of the sample period (2024) for firms with ongoing listings. Unlike the main analysis, concurrent listings are not collapsed to the highest regulatory tier here, so a single firm with multiple active listing types appears in more than one column.

	EXCH	**OTC**	**PP**
Distribution of listing duration (number of firms)			
1-3 years	59	36	42
4-6 years	106	65	42
7-9 years	63	62	39
10-15 years	61	78	84
16-20 years	27	69	60
Over 20 years	92	94	52
Summary statistics (years)			
N (firms)	408	404	319
Mean	12.0	13.7	12.7
Median	8.0	12.0	12.0
Minimum	1	1	1
Maximum	36	36	32

Appendix C: Institutional Heterogeneity Excluding China

Institutional Heterogeneity in Cross-Listing Effects (excluding China)

This table replicates Table 6 excluding all China-domiciled firms (including reclassified Cayman, Bermuda, and BVI offshore firms). The dependent variable is refinancing intensity, defined as *dd1* / (*dd1* + *dltt*), where *dd1* is long-term debt due within one year and *dltt* is long-term debt due in more than one year. EXCH, OTC, and PP are dummy variables equal to one in firm-years during which firm i has an active exchange listing, over-the-counter listing, or Rule 144A private placement, respectively, and zero otherwise. The Cross-listed firm dummy equals one for firms that hold an active cross-listing of any type at any point during the sample period and zero otherwise. Panel A reports estimates of equation (2), in which the cross-listing indicators are estimated separately on HIGH and LOW subsamples defined by global thresholds: debt enforcement is HIGH if the Djankov et al. (2008) recovery rate is at least 46.7 (cents on the dollar) and LOW otherwise; disclosure quality is HIGH if the La Porta et al. (2006) disclosure index is at least 0.58 and LOW otherwise. Panel B reports estimates of equation (3), in which each listing-type indicator is interacted with a z-scored institutional measure Z_c, where Z_c is the country-level value of the relevant institutional variable standardized to mean zero and unit variance across the country sample. All specifications include firm-level controls (*size*, *leverage*, *tangibility*, *profitability*, *sales growth*, *asset maturity*) and macroeconomic controls (*log GDP per capita*, *inflation*). Country, industry, and year fixed effects are included as indicated. Standard errors are clustered at the firm level and reported in parentheses. For expositional purposes, all coefficients are multiplied by 100. ***, **, and * denote $p < 0.01$, $p < 0.05$, and $p < 0.10$, respectively.

Panel A: Median splits at global thresholds (Djankov 46.7; La Porta 0.58)

	Enforcement		**Disclosure**	
	HIGH	LOW	HIGH	LOW
EXCH	+0.692	-4.521***	+0.230	-7.078***
	(2.179)	(1.410)	(1.607)	(1.713)
OTC	-0.800	+0.999	+0.067	-1.510
	(1.304)	(1.372)	(1.119)	(1.849)
PP	+1.760	-1.321	+2.316**	-2.203
	(1.669)	(1.788)	(1.092)	(2.242)
Cross-listed firm	-1.072	-4.286***	-3.376***	-5.334***
	(1.194)	(1.162)	(0.805)	(1.568)
Size	-2.387***	-1.348***	-0.617***	-1.243***
	(0.107)	(0.125)	(0.072)	(0.147)
Leverage	-10.701***	-16.392***	-10.756***	-18.986***
	(0.868)	(1.444)	(0.611)	(1.667)
Tangibility	-14.867***	-14.621***	-7.842***	-13.829***
	(0.928)	(1.458)	(0.679)	(1.779)
Profitability	-14.771***	-5.978**	-6.247***	-3.245
	(1.503)	(2.471)	(1.125)	(3.004)
Sales Growth	+1.249***	-0.645*	+0.102	-0.836*
	(0.254)	(0.391)	(0.143)	(0.458)
Asset Maturity	+0.045***	+0.037**	-0.017**	+0.010
	(0.012)	(0.016)	(0.009)	(0.016)
Log GDP per Capita	-3.735***	-5.599***	+22.274***	-7.779***
	(1.131)	(1.143)	(0.692)	(1.227)
Inflation	-0.092	-0.004	-0.024	+0.010
	(0.075)	(0.005)	(0.042)	(0.007)
Country FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	90,487	36,772	156,461	26,108
R^2	0.087	0.128	0.143	0.133

Institutional Heterogeneity in Cross-Listing Effects (excluding China, continued)

Panel B: Continuous interaction with z-scored institutional measures		
	(1)	**(2)**
EXCH	-0.748	+2.740*
	(1.388)	(1.619)
OTC	+1.066	+1.097
	(1.074)	(1.054)
PP	+0.394	+2.369**
	(1.222)	(0.991)
EXCH × Enforcement	+3.622***	
	(0.888)	
OTC × Enforcement	+1.216	
	(0.961)	
PP × Enforcement	+2.188**	
	(0.870)	
EXCH × Disclosure		+4.768***
		(0.743)
OTC × Disclosure		+2.423***
		(0.618)
PP × Disclosure		+3.634***
		(0.629)
Cross-listed firm	-3.107***	-4.300***
	(0.850)	(0.741)
Size	-1.813***	-0.654***
	(0.084)	(0.064)
Leverage	-12.529***	-11.308***
	(0.745)	(0.580)
Tangibility	-14.587***	-9.020***
	(0.789)	(0.647)
Profitability	-12.879***	-4.406***
	(1.295)	(1.062)
Sales Growth	+0.712***	+0.029
	(0.214)	(0.138)
Asset Maturity	+0.039***	-0.009
	(0.010)	(0.008)
Log GDP per Capita	-4.310***	+13.477***
	(0.729)	(0.594)
Inflation	+0.002	+0.002
	(0.004)	(0.004)
Country FE	Yes	Yes
Industry FE	Yes	Yes
Year FE	Yes	Yes
N	127,259	182,570
R^2	0.095	0.138

Appendix D: AI Disclaimer

This thesis has made use of AI-based tools to support grammar refinement, LaTeX formatting, and R coding syntax. The tools used are Grammarly and Anthropic's Claude.