The Correlation Between Cross-Listing Premia, US Stock Prices, and Volume of US Trading: A Challenge to Law-Based Theories of Cross-Listing

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Abstract

This paper tests whether "legal bonding" is a primary cause of cross-listing premia. There are three main sets of findings. First has to do with the relationship between premia and the US stock prices. I find that premia and returns of NYSE- and NASDAQ-traded firms are strongly correlated with main US indices; however, premia and returns of OTC- and PORTAL-traded foreign firms are not correlated with US indices. Correlation only exists for firms with above-median portion of US-based trading in their total trading volume. Correlation is triggered by cross-listing; I find no significant correlation before listing. Riskier firms, firms from industries with higher global Tobin's Q, and firms from high-GDP countries and countries that have better corporate governance exhibit more correlation with US indices. The second set of findings has to do with the existence of premia in different types of firms. I find premia only in firms with above-median portions of US trading in their total trading volume; firms with below-median US trading have no premia, regardless of their listing level. The third set of findings has to do with the evolution of premia from the time of cross-listing. Premia decline significantly after listing, disappearing almost entirely after year six. The decay in premia is particularly sharp for foreign firms with below-median portion of US trading. Most of these findings cannot be explained by "legal bonding", and some of them are inconsistent with legal bonding.

Introduction

It is well known that foreign firms cross-listed in the US enjoy "cross-listing premia" – higher market valuations than non-cross-listed firms (Doidge, Karolyi, and Stulz 2004). The causes of these premia are not yet clear. Early literature attributed benefits of cross-listing to reduced market segmentation and increased liquidity, visibility, and shareholder base.[1] More recent research suggests that cross-listing is beneficial because of "bonding": by cross-listing in the US, controllers and managers of foreign firms voluntarily subject themselves to US laws and institutions, credibly promising not to exploit minority investors (Stulz 1999; Coffee 1999 and 2002). Since stronger investor protection can increase value of minority shares, firms located in countries with poor investor protection may benefit by "borrowing" more stringent US laws through cross-listing.

The bonding theory has a growing empirical support. Firms from countries with weak investor protection regimes are more likely to cross-list in the US (Reese and Weisbach, 2002), while firms that have a large controlling shareholder are less likely to cross-list (Doidge, Karolyi, Lins, Miller, and Stulz, 2006). Not only do cross-listed firms have higher valuations than non-cross listed firms, but cross-listed firms subject to US regulation (listed on levels 2 or 3) have higher valuations than cross-listed firms not subject to US regulation (listed on levels 1 or 4) (Doidge, Karolyi, Stulz 2004). Moreover, US-regulated cross-listed firms from countries with weak investor protection regimes enjoy higher premia (Doidge, Karolyi, Stulz 2004). Cross-listed firms have lower private benefits of control, as proxied by voting premia in dual class shares (Doidge 2004). When firms cross-list in the US, their cost of capital declines (Hail and Leuz 2006).

However, the criticism of the bonding hypothesis has also been growing. It stemmed from the observation that cross-listed firms can misbehave without suffering notable legal consequences, which may render bonding toothless. The SEC enforcement against foreign issuers is weak, and private litigation is rare (Siegel 2005; Licht 2003). The fact of cross-listing doesn't seem to change firms' earnings management, at least in

[1] See Karolyi 1996 and 2004 for literature review.

some poorly governed countries (Lopes, Tukamoto, and Galdi 2007), though this result is disputed (Lang, Raedy, and Yetman).

The most recent literature concentrated on separating the value of different cross-listing effects – bonding, liquidity, capital cost, market segmentation, and so forth. Separating these effects empirically is hard because firms opting into the US capital market "borrow" a bundle of things – not only "legal" ones (laws on the books, enforcement, regulators, judges, competent lawyers, and other legal professionals), but also "non-legal" ones (investors, consumers, analysts and other financial professionals, the ability to trade around the clock, and so forth). The fact that foreign firms listed on level-23 are traded at a higher premium than those listed on level-14 is consistent with the bonding hypothesis, but is also consistent with investor recognition hypothesis (if investors pay more attention to firms traded on national exchanges), analyst coverage hypothesis (if analyst coverage adds more value if a firm is traded on national exchange, or if trading on national exchange adds more analysts that are not picked up by existing databases), and so forth.

One way to avoid the joint hypothesis problem is to study the relative governance between cross-listed and non-cross-listed firms (Leuz, 2006; Lel and Miller 2008), instead of looking at valuations. This view, however, requires us to rely on either (1) largely discredited country-level corporate governance indices (Spammann 2008 provides a discussion of systematic coding biases), or on (2) firm-level governance proxies, thereby overlooking a key source of bonding: rules supplied by the law and therefore unreflected in firm-level governance measures.

This paper suggests a different approach to separating the effects of bonding. I start with the observation that the US has at least five different legal regimes governing foreign companies. The first applies to firms raising capital in the US through a public offering ("Level-3" firms). Level-3 foreign firms are subject to the highest level of disclosure (or at least the level requiring the most up-to-date information). The are also subject to the highest litigation risk: Section 11 strict liability for a year from capital raising, followed by Section 10b scienter-based liability. The second group is "Level-2" firms, listed on national exchanges. Level-2 and Level-3 foreign firms are subject to substantively similar disclosure requirements, but Level-2 firms are allowed to delay

reporting somewhat. Level-2 firms are subject only to the scienter-based Section 10b liability. The third group is foreign firms traded on Bulletin Board. These firms have gone through a recent regime change: Bulletin Board firms had no mandatory disclosure requirements prior to 1998, and became subject to the regular Level-2 disclosure obligations thereafter. Formally, foreign Bulletin Board firms have been subject to the same litigation regime in both periods, but in reality, the absence of mandatory disclosure significantly reduces the risk of litigation; as a result, the year of 1998 marks not only the increased disclosure exposure, but also the somewhat increased litigation exposure as well. The forth group is OTC-traded foreign firms. These firms are not subject to mandatory disclosure. Their litigation exposure is small but non-trivial: it is propelled by the existence of entrepreneurial plaintiffs' attorneys who usually have no difficulty finding a named plaintiff; their litigation risk is, however, lower than that of Level-2 firms because of the reluctance of US courts to assert jurisdiction over firms that have very little contact with anything located in the US and because of the practical difficulty of collecting damages. The fifth group is PORTAL-traded foreign firms. These are likewise not subject to mandatory disclosure; their litigation exposure is likely even smaller than that of OTC firms, since litigation in PORTAL cases is normally originated by institutions, rather than plaintiffs' attorneys.

The cornerstone of the US securities laws is disclosure. If most of the bonding value comes from the enhanced disclosure requirements, then, one can make the following predictions. First, level-3 companies should get the highest boost to their premia, followed by level-2 companies; level-1 and level-4 companies will get no benefit. Second, this boost should have a permanent component that never disappears entirely even as other valuation-enhancing factors fluctuate. Third, the difference between level-2 and level-3 premia should be low in the first year after capital raising (due to somewhat more up-to-date disclosures of level-3 firms), and nonexistent thereafter. Finally, there should be no category of firms that enjoy no premia despite benefitting form the improved disclosure, or at least any such category would need an explanation.

If litigation exposure is the main source of bonding, one could make the following predictions. First, firms with higher volumes of US trading and higher volatility of stock price returns should get the highest boost to premia, regardless of their listing level. This

is so because damages in securities class actions are calculated on the basis of trading volumes and stock price volatility. Second, if mandatory disclosure requirements provide an independent boost to litigation exposure, we should observe a positive relationship between premia, on one hand, and the US trading volume and return volatility, on the other hand, separately for each of the five groups of foreign companies. Third, if litigation exposure drives premia, level-3 firms should experience an increase in premia within the first year of capital raising, with a sharp decline at the expiration of that litigation period. This is so because the first year after capital raising provides the best opportunities for litigation by removing the requirement to show scienter.

In the long run and on aggregate across companies, if cross-listing premia are primarily caused by bonding, then, the fluctuations of premia over time should follow the fluctuations in comparative quality of laws and institutions affecting investor protection in the US and at a firm's home country. If nothing changes in US laws and the laws of a firm's home country, the premia should remain constant over time; if US laws remain constant, but foreign laws improve (as is commonly argued; see, for example, Doidge, Karolyi, and Stulz 2007), the premia should decline.

I assemble a large panel of all firms cross-listed in the US between 1995 and 2006, on all levels of listing. I separate all cross-listed firms into two groups – US-regulated (listed in the US on levels 2 or 3, or "level-23") and US-unregulated (listed in the US on levels 1 or 4, or "level-14").[2] One well-known difficulty is that comparing cross-listed firms to the universe of all non-cross-listed firms might result in comparing apples and oranges: cross-listed firms might be vastly different, with different patterns across countries, in a way that cannot be captured through available financial and accounting variables. To reduce this problem, I compare cross-listed firms not with the universe of non-cross-listed firms, but with a sample of non-cross-listed firms that are similar to cross-listed firms. For each cross-listed firm, I select a match – a non-cross-listed public firm from the same country with the closest propensity to cross-list. The propensity to cross-list is based on industry, firm asset size, profitability, and leverage. I

[2] A subset of level-1 firms (those traded on OTCBB) is regulated similarly to exchange-traded firms. Accordingly, I treat OTCBB firms, together with exchange-traded firms, as US-regulated firms. For parsimony, I call this group a "level-23" group, even though it includes a small number of level-1 firms.

then compute "cross-listing premium" – the difference between the Tobin's Q of a cross-listed company and the Tobin's Q of its match.

I then look at changes in cross-listing premia over time, separately for level-23 and level-14 cross-listed firms, and ask whether these trends follow the pattern that one would expect based on the US disclosure rules and litigation regime. The answer is no.

I find that the premia of level-23 firms are strongly positively correlated with the NASDAQ and NYSE indices. Premia of level-14 firms, however, are not correlated with any of the US indices; this is true even for large level-14 firms that have a massive volume of US trading and are otherwise very similar to a typical level-23 firm. Furthermore, premia of level-14 firms are not correlated even with the index of their own trading platform (OTC, comprised of US firms); thus, it is not the case that foreign firms pick up the beta of whatever trading platform they join. Contrary to prior studies (Foerster and Karolyi (1998); Baruch, Karolyi, Lemmon (2008)), I do not find that returns (or premia) of foreign firms significantly correlate with US indices prior to cross-listing. Instead, I find (1) no pre-cross-listing correlation for any type of firms; (2) no correlation for level-14 firms at any time; and (3) strong correlation for level-23 firms during the cross-listing periods. Nothing in the US corporate or securities laws would predict this pattern.

I next ask what predicts the extent of correlation between returns or premia of foreign firms and US indices. I find that the strongest predictor is the firm's US trading volume. Other robust predictors are: firm's global industry Tobin's Q, risk, size, and the home country GDP/capita. That is, foreign firms that most resemble US firms – large volume of US trading, large size, well-governed (as proxied by Tobin's Q) located in a rich country – have premia that most follow US markets.

The next question is whether cross-listing premia correlate with the NASDAQ/NYSE indices and not with the OTC index because of the different regulatory treatment of firms comprising those indices. The answer is no. Here, I exploit a natural experiment. US companies traded on the Bulletin Board were not subject to the SEC regulation prior to 1999 and became fully regulated since mid-2000. Thus, the Bulletin Board index comprised of US firms is a "non-regulated" index prior to 1999 and a "regulated" index (like the NASDAQ and NYSE indices) since 2001. I find that the

Bulletin Board index did not correlate with cross-listing premia before it was SEC-regulated, and still does not correlate today. Thus, the law does not explain this pattern of correlations.

The second set of results has to do with the existence of premia in different types of foreign firms. I find that level-23 firms with below-median volumes of US trading have no cross-listing premia at all. This remains true even for level-3 firms, which are subject to the strictest disclosure rules and the most plaintiff-friendly litigation environment. Level-3 firms with below-median volume of US trading have no premia, as compared to unregulated OTC- or PORTAL-traded firms. This result is robust to different definitions of "median," different limitations of the sample, inclusion of different control variables, and different regression specifications. This finding is inconsistent with the disclosure-based theory of bonding because the applicability of the disclosure requirements does not depend on the volume of US trading.

I then ask whether the litigation exposure might explain the relationship between the volume of US trading and premia. The answer seems to be no. Litigation risk depends on expected damages; the damages, in turn, depend on (1) the absolute volume of US trading, (2) volatility of returns, and (3) company size. What I find, however, is that it's the *relative* volume of US trading (relative to the firm's total trading volume), rather than the absolute volume, that affects firm value. The relative volume of US trading (or volume controlling for total worldwide trading) is not a good measure of litigation risk, but it's a good measure of the firm's exposure to the US market microstructure. I also find that volatility of returns does not predict Tobin's Q, and firm size predicts it inconsistently and sometimes negatively.

My final set of findings has to do with the evolution of premia after cross-listing. I find that level-23 firms have significantly higher premia than level-14 firms *only* during the first six years after cross-listing. The premia sharply decline thereafter and never fully rebound. This is inconsistent with both disclosure-based and litigation-based theories of bonding.

This paper makes several contributions to the cross-listing literature. I document that cross-listing premia of some (but not all) foreign firms are strongly correlated with some (but not all) US indices over time. I analyze this correlation over time and present

cross-sectional results linking firm-level characteristics to the correlation between premia and US stock prices. I also document that cross-listing premia are not strongly attached to the level of US regulation: to the contrary, premia disappear completely for firms with below-median US trading volume, even when those firms are fully subject to the strictest level of US regulation. Finally, I analyze the evolution of premia in years after cross-listing, finding the "end of premia" periods, separately for high-US-trading and low-US-trading foreign firms.

This paper proceeds as follows. Section 1 describes the sample and variables. Section 2 develops the methodology. Section 3 presents the results.

1. Sample and Variables

1.1. Sample and Propensity Matching

To construct a sample of cross-listed companies, I begin with a list of all foreign companies cross-listed in the United States on all levels of listing (OTC = level 1, stock exchanges and NASDAQ = levels 2 and 3, and PORTAL = level 4). Foreign firms can be listed in the US either directly or as American Depository Receipts (ADRs). I obtain the list of ADRs by combining ADR databases from Citibank, Deutsche Bank, JP Morgan, and the Bank of New York. Each of these sources claims to be comprehensive, in fact, none is. Some foreign firms, especially from Canada and Israel, are listed directly, rather than as ADRs. To identify these firms, I collect data on securities of non-US issuers traded directly on NYSE, NASDAQ, AMEX, OTC Bulletin Board, and Pink Sheets from the websites for these exchanges and trading platforms. I then merge these lists; remove duplicates, reconcile discrepancies, and obtain the total number of foreign cross-listed firms – 4,062. I cross-check the lists of ADRs provided by the four banks against the lists of traded foreign companies provided by NYSE and other trading platforms to ensure consistency.

For companies that had several listing types, I assign the most regulated listing level. That is, if a company is traded on NYSE (level 2) and over-the-counter (level 1), I treat it as a level 2 company. Firms whose highest listing level is 1 or 4 are coded as "level-14" firms; firms whose highest listing level is 2 or 3 are coded as "level-23" firms.

The only exception is firms traded on Bulletin Board: although they are technically level-1 firms, they are reporting companies under US securities laws, and are therefore subject to SOX. Therefore, I treat these firms as "level-23" firms.[3]

I match cross-listed firms onto the Datastream database, which contains share price and financial data. I keep only firms which were cross-listed at year-end 2001 and have full or partial financial data during 2000-2005. I drop firms if key financial or accounting variables (size, EBITDA, sales, debt) are missing for more than two years in the row. If a firm is missing data for a particular financial variable in a particular year but has data for other years, I assign the median value for that country, industry, and year. After removing firms that were not listed in the US before SOX or for which financial information was not available on Datastream, I obtain the sample of 1,694 cross-listed firms.

I select matching non-cross-listed firms from the same country based on propensity to cross list (the predicted probability of cross-listing from a logit model of a firm's decision to cross-list). Let D_i be a dummy variable, which equals 1 if a firm is cross-listed and zero otherwise, and let $\mathbf{X}_i$ be a vector of firm-level variables. For each country with one or more cross-listed firms, I select matches from a pool of all firms from that country with full or partial financial data in Datastream during 2000-2005, again dropping firms with missing data for more than two years in a row, and using country medians to fill in missing data for shorter periods. I estimate a logit model, separately for each country:

$$prob(D_i = 1) = \alpha + \beta_i * X_i + \varepsilon_i$$

The financial variables included in X_i are computed as of 2001 -- the last pre-SOX year. They are measures of ln(asset size), two-digit NAICS industry code, ROA (EBITDA/total assets), pre-SOX sales growth (geometric average sales growth from 1999 to 2001), and leverage (total debt over book value of equity).

I then use the coefficients from the logit regression to compute the probability of cross-listing $E(D_i)$ for each firm:

[3] Other studies, including my own prior work, incorrectly treat OTC Bulletin Board companies as not subject to SOX.

$$E(D_i) = \alpha + \beta_i * X_i$$

Within each country, I match each cross-listed firm to its "nearest neighbor" in cross-listing propensity among the non-cross-listed firms without replacement. This creates matched pairs of companies that are similar in characteristics that predict cross-listing.

After removing firms that did not have matches in their countries, I obtain the final sample of 1,073 cross-listed firms and 1,073 non-cross-listed matches. 407 cross-listed firms are level-23; the other cross-listed firms are level-14.

The propensity matching is, inevitably, imperfect. One problem is that I match already cross-listed firms against non-cross-listed firms, yet the fact of cross-listing affects the variables I use for the match. This endogeneity will result in misspecification of the matching variables –one would ideally want to match based on the hypothetical values that the cross-listed firm would have if it were not cross-listed. I also need to limit the variables I match on to preserve sample size. However, any resulting mismatch will be important for my results only if omitted matching variables (or any misspecification of variables) correlate with the sources of both the second and third differences – that is, with the after-minus-before SOX change in Tobin's q or market/book, and the difference in this change between level-23 and level-14 pairs. This possibility cannot be excluded, but I know of no reason to expect such a correlation. I address match imperfection through robustness checks, and obtain similar results (i) studying firm-level changes in Tobin's *q* (relative to an index of non-cross-listed firms from the same country) instead of pair changes; and (iii) in unreported regressions in which I conduct a simpler match on country and industry, and as close as possible in market capitalization.

Table 1, Panel A provides summary statistics on cross-listed firms subject to SOX, cross-listed firms not subject to SOX, and matching non-cross-listed firms. On average, cross-listed companies are larger than their matches. Panel B lists the number of firms in each country.

1.2. Variables

For each firm, I compute year-end and month-end Tobin's q as (market value of common shares plus book value of preferred shares plus book value of debt), divided by

book value of assets, from January 1990 through the end of December 2005. While market values are available for each month, book values are only available annually; for monthly values of Tobin's q, I use the most recent available annual data and interpolate it to create monthly values. I then compute a pair's Tobin's q for each firm, each month – the difference between the Tobin's q of a cross-listed company and its match. The interpolation undoubtedly creates noise, but there is no reason why it should create bias. The alternative is to use annual measures of Tobin's Q; this loses valuable monthly information. I report monthly results; in robustness checks, I use annual values of Tobin's Q, with similar results (not reported). Pair Tobin's q's are winsorized at 1%/99%, as are firm-level Tobin's q's in regressions that use these variables. Winsorizing at 0.5%/99.5% produces similar results (not reported).

I also use the following firm-level control variables. All data is from Datastream. All non-dummy firm-level and country-level control variables are normalized to mean = 0, $\sigma = 1$. I use these control variables for the cross-listed firm only, not for its matching firm.

I measure firm size as ln(sales) as of year-end of each year between 1990 and 2005. As robustness checks, I use firm asset size and market capitalization, with similar results.

I use sales growth as a proxy for a firm's growth opportunities. Sales growth is defined as the two-year geometric average of annual growth in sales.

To estimate the sensitivity of a firm's stock price to information in the US relative to information in the home market, I use the measure developed in Baruch Karolyi Lemmon (2008). This measure is estimates the incremental effect of US index movements (I use the NASDAQ index) in explaining variation in the firm's stock price beyond the information contained in the movements in the firm's home market index.

Global industry Tobin's Q is a median Tobin's Q of the firm's global industry. I use the two-digit industry classification.

I also use the following country-level variables to measure the quality of home-country governance. Except as indicated below, higher scores indicate better governance.

Spammann: A country-level variable developed by Holger Spammann (2006), measuring multiple aspects of investor protection under company and securities laws.

The components include rules governing board composition, voting, disclosure, preemptive rights, and so forth. I use the cumulative measure. This measure can be understood as updating, refining, and correcting the better-known LLSV measures of antidirector rights ((La Porta et al. 1998) and securities law protections (La Porta et al. 2006).

Country Disclosure (S&P): Standard and Poor's Transparency Rankings from 2002. S&P compiled these rankings at the firm level. Because of their limited coverage, I would lose a considerable fraction of the sample if I used this variable as a firm-level control. As in Litvak (2007a), I use the firm-level scores develop a country-level measure of disclosure, which equals the country median of the disclosure measure for all cross-listed firms in my sample. The total S&P score is composed of three sub-scores—for financial transparency and information disclosure, board and management structure and process, and ownership structure and investor relations (Patel and Dallas, 2002). I use the overall S&P score; results using sub-scores are consistent (not reported). This survey is available only for 2002.

GDP per capita is from the World Bank's World Development Indicators database for 2001.

Table 1, Panel B presents Pearson correlation coefficients for the main variables in this study.

2. Methodology
[to be added]

3. Results

3.1. Correlations with Indices

3.1.1. Figures

Figure A looks at the time fluctuations in cross-listing premia, defined as the difference between the Tobin's Q of a cross-listed company and the Tobin's Q or its non-cross-listed match. Cross-listing premia of level-23 firms (blue line) exhibit a strong "bubble" pattern, very similar to that seen in the NASDAQ index. To simplify the

comparison, I add the line representing the value of the NASDAQ index (green line). The two lines move together throughout the range. The correlation between the median cross-listing premium of level-23 firms and the NASDAQ Index is 0.83. The cross-listing premia of level-14 firms (red line) does not move similarly. While the NASDAQ index exhibits the bubble around the late 1990s, the premia for level-14 firms steadily decline over the years.

In Figure B, I look more closely at the bubble years (1998 through 2001). I compare the monthly fluctuations in premia of level-23 firms with changes in the NASDAQ index. The co-movement is striking. The correlation between the two values is 0.81. In Figure C, I repeat the procedure for level-14 firms. The correlation falls to only 0.29.

3.1.2. Tables

In Table 3, I move to regression analysis and ask whether changes in NASDAQ predict changes in premia, controlling for a variety of firm-level characteristics, and controlling for period effects. The dependent variable is the fractional change in cross-listing premium (Tobin's Q of a cross-listed company minus Tobin's Q of its non-cross-listed match). Tobin's Qs here are calculated monthly between 1995 and 2006; I obtain similar results with annual observations (not reported). Regressions in columns #1 and #2 include firm fixed effects, firm clusters to address the problem of serial correlation (Bertrand et all, 2004), and period (month) dummies. Regression in column #3 uses the same specification, but with firm random effects, to preserve coefficients on time-invariant variables (Spammann). Independent variables include: dummy for level 2 or 3 listing; fractional-change in the NASDAQ index; their interaction; firm size (ln sales); sales growth; global industry Tobin's Q; GDP per capita of home country; and Spammann index of corporate governance. Including other variables (such as firm risk, leverage, ROA, or more country-level variables), or excluding some of the used variables, does not notably change the results.

Column 1 contains the basic specification; Column 2 adds firm-level variables; Column 3 add country-level characteristics. The results are similar. The movement of the

NASDAQ index is a strong predictor of fluctuations in cross-listing premia of level-23 firms, as compared to level-14 firms.

In Table 4, I show that the correlation with NASDAQ exists only during the cross-listing periods, and only for level-23 firms. This rejects the hypothesis that the firms whose premia correlated with US indices before listing happened to cross-list. I show this result using two different approaches. In Panel A, the dependent variable is monthly pair return (return of a cross-listed company minus return of its non-cross-listed match); independent variables are the same as in Table 3. All regressions here use firm and month fixed effects and firm clusters. In Panel B, I use the Baruch-Karolyi-Lemmon measure of the sensitivity of a firm's stock price to the NASDAQ index. This variable takes one time-invariant value for each cross-listed company in the sample. Panel B uses country fixed effects and country clusters.

In Table 5, I take a more nuanced look at the relationship between different US indices and the cross-listing premia. I find that the premia of NYSE-listed foreign firms are correlated with both NYSE and NASDAQ indices and the premia of the NASDAQ-listed foreign firms are correlated only with the NASDAQ index. The premia of foreign firms traded on the OTC (non-BB) are not correlated with any US index. No group of foreign firms has premia correlated with the index of US-based OTC companies.

In Table 6, I ask whether a firm's volume of US-based trading, as a fraction of its total trading volume, can predict the correlation of premia with US indices. The intuition is that a firm whose stock is barely traded in the US is less likely to be affected by the US market trends. This is in fact what I find. Among all foreign firms with high (above median) portion of US trading in their total trading volume, level-23 firms are more strongly correlated with the NASDAQ index than level-14 firms. However, there is no such gap among firms with below-median US trading.

In Table 7, I investigate what predicts the extent of the relationship between the NASDAQ index and stock prices of foreign companies. The basic specification is in Panel A. I again use the Baruch-Karolyi-Lemmon measure of the sensitivity of the stock's value to the US market. Consistent with the results reported in prior tables, the status of being traded on a major US exchange is a strong predictor of correlation with US markets. So is the firm's US trading volume, either alone or as a ratio of the firm's

US trading volume to its worldwide volume. Firms from industries with higher Tobin's Qs, larger, and riskier firms all move more closely with NASDAQ, as do firms from high-GDP countries.

In Panel B, I ask what types of level-23 firms are particularly likely to trace the NASDAQ index. The answer is again similar to those reported in prior tables. Level-23 firms with higher US trading volume, riskier, and coming from richer countries with better corporate governance are more sensitive to fluctuations of the US markets.

In Table 8, I investigate whether the premia of SEC-regulated foreign firms correlate with the NYSE/NASDAQ indices, but not with the OTC index, because the NYSE/NASDAQ firms are subject to the US regulation while the OTC firms are (almost) not. I exploit a natural experiment here. Prior to 1999, US companies traded on OTCBB were not subject to the SEC disclosure regulation; after 2001, they are. Thus, if the correlation between cross-listing premia and the indices is driven by the exposure of the index to the US laws, we should observe no correlation with the OTCBB index before 1999 and a positive correlation after 2001. I find no such change in correlations. As controls, I ask whether premia of level-23 firms correlated with the NASDAQ index during those same years; the answer is yes (columns 3 through 6).

Table 9 presents one of the key findings of the paper. Because disclosure regulation is the backbone of the US securities law, it is particularly important to know whether the exposure to the US disclosure obligations affects premia of foreign firms. The answer appears to be no. Level-2 and level-3 firms with below-median trading volumes have no cross-listing premia, even though they are subject to US disclosure requirements regardless of the volume of US-traded securities. This contradicts one of the main predictions of the bonding hypothesis – that the listing premium should always remain positive for level-2 or especially level-3 firms.

In Table 10, I ask whether litigation-based bonding theory can explain the absence of premia in low-US-trading firms. The answer is no. US-based trading may impact bonding indirectly, through affecting expected damages from securities class actions, and therefore through affecting a firm's liability exposure. However, for litigation-based theory, it's the absolute volume of US trading that matters, not the relative portion of US trading volume in a firm's worldwide trading. I find that the

absolute value of US trading does not itself predict Tobn's Q of cross-listed companies; it's only the relative trading volume that does so. The latter is consistent with various liquidity-based explanations for cross-listing premia, but not with the litigation-bonding explanation. I also find no predictive power of US trading among level-14 firms, even though those firms are also exposed to US litigation, albeit to a lesser extent than level-23 firms. Finally, I find that another important factor driving litigation – volatility of firm's returns – does not predict firm value at all. Firm size, which is often thought of as positively affecting lawyers' litigation incentives, is a negative predictor here.

Finally, I look at the evolution of premia from the time of cross-listing. For this, I conduct a cohort analysis. Figures D through I provide graphic illustrations of my cohorts. In Figure D, I display mean cross-listing premia for level-23 firms, around year "zero" (year of listing), starting two years before listing. Each colored line represents a different "observation" year (calendar year for which the premia was recorded). For example, the navy line represents mean premia of level-23 firms which were, as of 1995, just listed, listed a year ago, etc. In Figure E, I summarize figure D by taking an average value for each year since cross-listing across all "observation" (calendar) years. One can see that premia increase a year before cross-listing and then sharply decline thereafter, going down to just over 10% in year 8 and remaining around that number thereafter.

In Figures F through I, I separate level-23 firms by the volume of US trading. In Figure F, I present the results for firms with above-median volume of US trading. Again, each line represents a different "observation" year (calendar year). Figure G summarizes Figure F by averaging across all observation years. Here again, we see high original premia with a sharp decline. We also see that for high-US-trading firms, the average premium remains significant and high after 8 years, at around 40%, although there is a substantial variation across observation years, although again there is a substantial variation across observation years

In Figures H and I, I do the same for firms with below-median US trading. The original premia of such firm is significantly lower than those of high-trading firms, and the following decline is sharper. There is no premia in such firms by year 7 since cross-listing. Here again, we see a substantial variation across observation years, ranging from 44% in 1999 to below-zero in years 1997, 2000, 2003, and 2004.

In Table 11, I ask whether this result survives in regressions. The answer is yes. In Panel A, I look at the evolution of pair Tobin's Q (Tobin's Q of a cross-listed company minus Tobin's Q of its non-cross-listed match) from the time of listing. Each column represents a separate regression, with a sample limited to companies listed, by the time of observation, to the months indicated in the top row. For example, in Column (4), the sample is pairs where the cross-listed company is listed from 0 to 12 months; in Column (5), from 13 to 24 months, and so forth. The first three columns show premia 3, 2, and 1 year prior to cross-listing. All regressions use firm random effects and clusters, as well as period and country fixed effects. The results are not significantly affected when I remove firm random effects, and instead use only country and period fixed effects and firm clusters. Including or excluding various firm- or country-level variables does not significantly change the results. The coefficient of interest is that on the dummy-23 variable.

The main result here is that Level-23 firms have a significant premia over level-14 firms, but only for the first six years after cross-listing; after that, the difference disappears. There is also no significant premia to Level-23 firms, as compared to Level-14 firms, before cross-listing. This is consistent with results represented in Figures D through I. These results are partly consistent with Gozzi, Levine, and Schmukler (2006), who find the decline in premia after cross-listing, but also find a significant premium before cross-listing, which I don't find.

In Panel B, I ask whether the correlations between the firm's stock price and the US indices exhibit similar decay after cross-listing. The answer is no. Here, the dependent variable is pair return (return of a cross-listed company minus return of its non-cross-listed match). The coefficient of interest is that on the fractional-change of the NASDAQ index. The fluctuations in the NASDAQ index remain a significant predictor of changes in returns of level-23 firms throughout the years from cross-listing.

Next, I ask whether there are cohort patterns in the relationship between the US trading volume and the premium, and if so, whether these patterns are consistent with the bonding hypothesis. To remind: the litigation version of the bonding hypothesis predicts that most of the relationship between US trading volume and premia should occur in the first few years after cross-listing, when the possibilities for a successful litigation are the

greatest. In Table 12, I break down the first ten years after cross-listing on three parts: 4 years + 3 years + 3 years. I find that during most litigious early years after entering the US markets, the US trading volume of foreign firms does not significantly predict premia; however, several years later, trading volume becomes a strong predictor and remains such through the end of the first decade. The results are similar if I divide cohorts differently (two years each, or one year, like in Table 11). This result is not consistent with bonding predictions.

Finally, in Table 13, I use cohort analysis to test another version of the law-based bonding theory. Level-3 firms have higher disclosure requirements (or at least the requirement of being more up-do-date) than level-2 firms, but only during the time of capital raising and during a short time afterwards. In later years, the disclosure difference disappears. Likewise, level-3 firms are exposed to more litigation risk than level-2 firms, but only within a year of capital raising. Therefore, a law-based theory of bonding predicts that level-3 firms enjoy higher premia, as compared to level-2 firms, in years immediately following capital raising, but not many years later.

I test this prediction in Table 13. Only level-23 pairs are included here; in columns (1) and (3), the sample is limited to firms listed from 0 to 5 years by the observation year; in columns (2) and (4), to first listed from 6 to 10 years. The dependent variable is the pair Tobin's Q (Tobin's Q of a cross-listed company minus Tobin's Q of its non-cross-listed match). In a basic specification (columns 1 and 2), I find the result the opposite to what the law-based bonding would predict. There is no measurable difference between premia of level-2 and level-3 firms in the first five years immediately following cross-listing and capital raising; however, there is a moderate difference in the following five years. The gap between the premia of level-3 and level-2 listing, however seems to be driven entirely by the difference in US trading volume; when trading volume is taking into account (Columns 3 and 4), level-3 firms have premia not significantly different from level-2 firms in all years. This result is not consistent with law-based bonding theory.

Conclusion

This paper uses long-term panel data to investigate the sources of cross-listing premia. Some of my main findings (e.g., the correlation between premia and some, but not all, of the US indices, and the existence of the correlation only during the listing period) are not explained by any of the law-based bonding theories. However, these correlations findings are not necessarily inconsistent with bonding, just not explanatory. It is possible that, while other factors explain this correlation, bonding still remains a component of premia. Still, the strength of this correlation suggests that bonding might only account for a minor part of the premia.

Furthermore, my other findings (most notably, the absence of premia among firms with below-median US trading volume and the near-disappearance of premia after year 7 from listing) are in fact inconsistent with law-based theories of bonding. Because the US securities laws are disclosure-based, level 2 or 3 listing exposes firms to the same amount of bonding regardless of their trading volume and regardless of their age since listing, and therefore there is no reason for low-trading or older firms to have lower, or even non-existent, premia.

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Figure A. *Overview of apparent bubble in cross-listing premia*. Median cross-listing premia (Tobin's Q of a cross-listed company minus Tobin's Q of its non-cross-listed match) from 1995 through 2005 for level-23 firms (blue line), level-14 firms (red line); and the NASDAQ index (green line). Correlation between Level-23 premia and NASDAQ=0.83; between Level-14 premia and NASDAQ=-0.49.

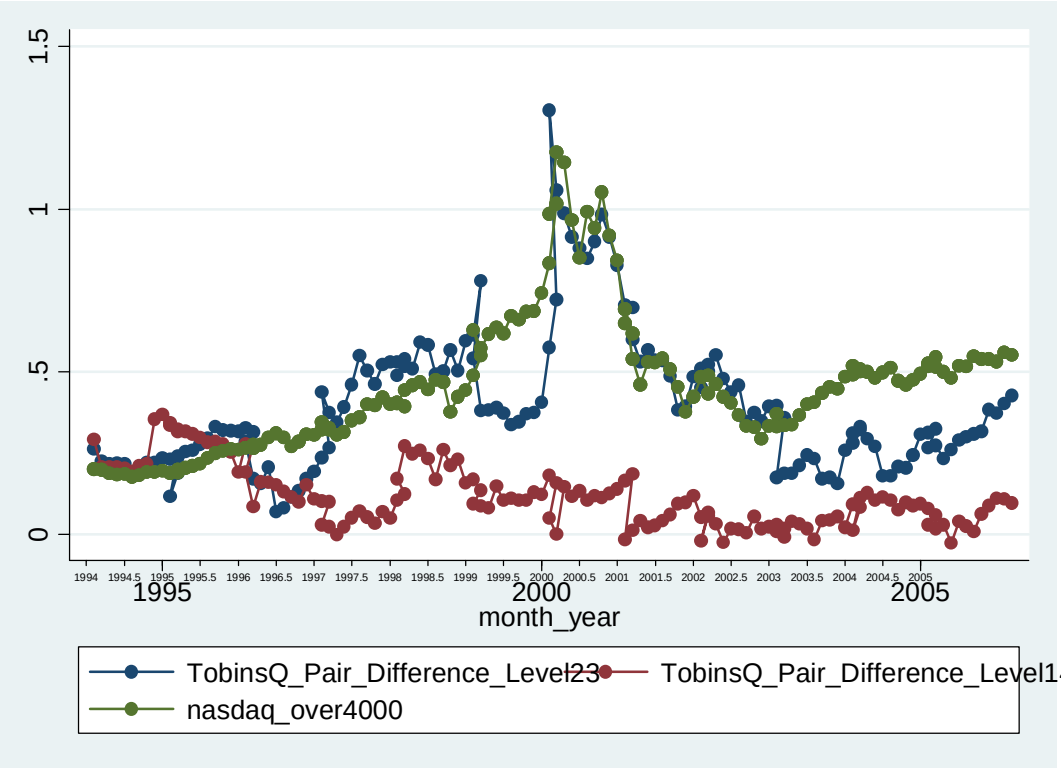

Figure B. *Expanded view of bubble period for level-23 firms.* Median cross-listing premia for 1998-2002 for level-23 firms (blue line) and the NASDAQ index (red line). Correlation = 0.81.

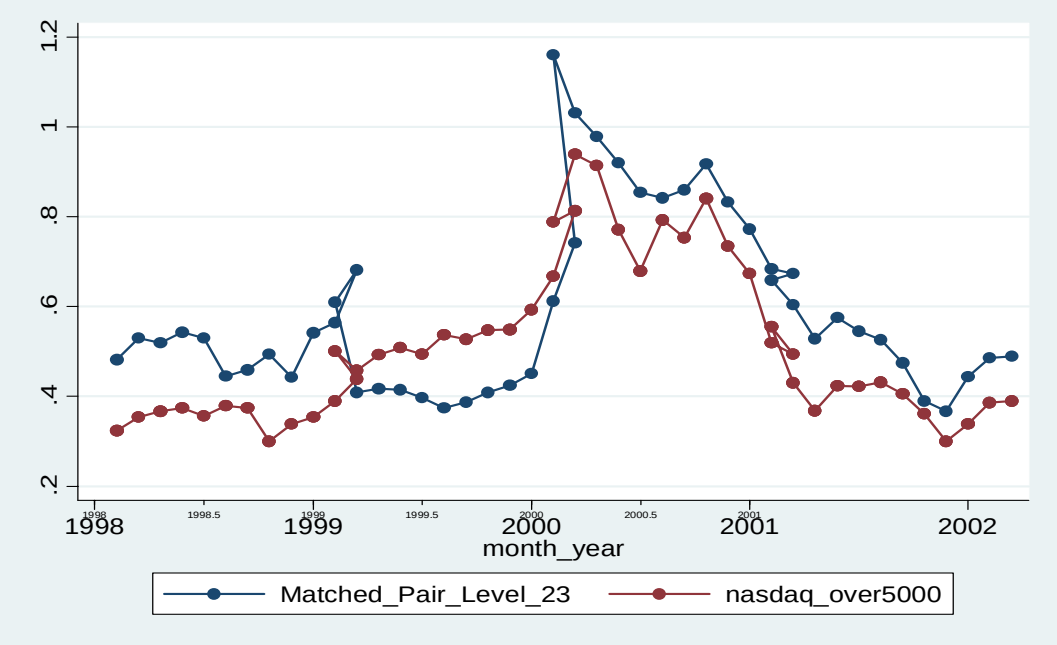

Figure C. *Expanded view of bubble period for level-23 firms.* Median cross-listing premia for 1998-2002 for level-14 firms (blue line) and the NASDAQ index (red line). Correlation = -0.29.

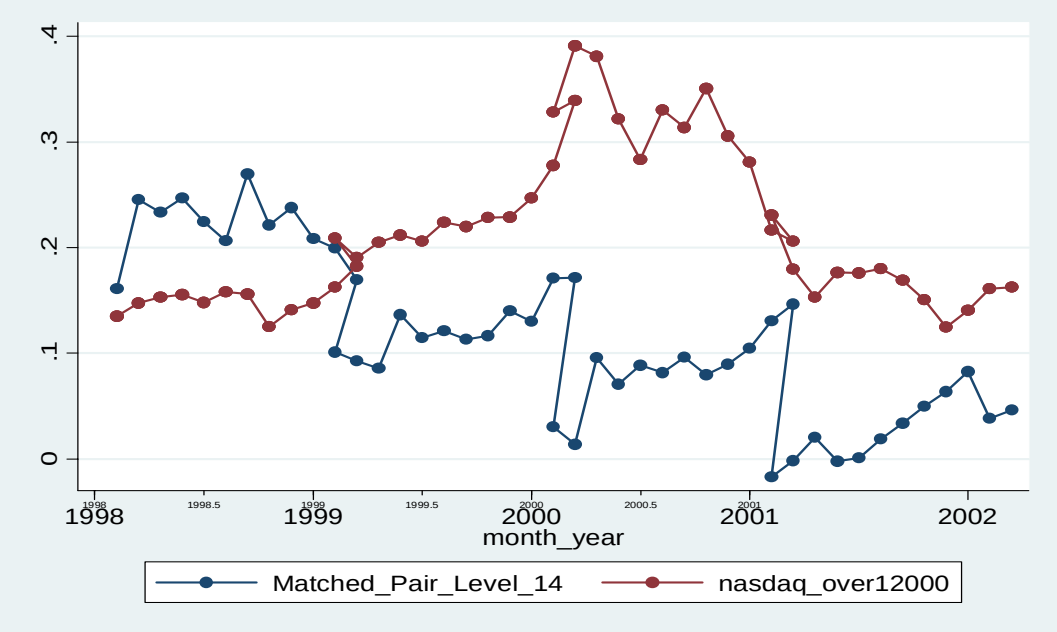

Figure D: Premia Decay Since Cross-Listing: All Level-23 Firms

Mean cross-listing premia for level-23 firms, separately for each year of observation, by years since cross-listing.

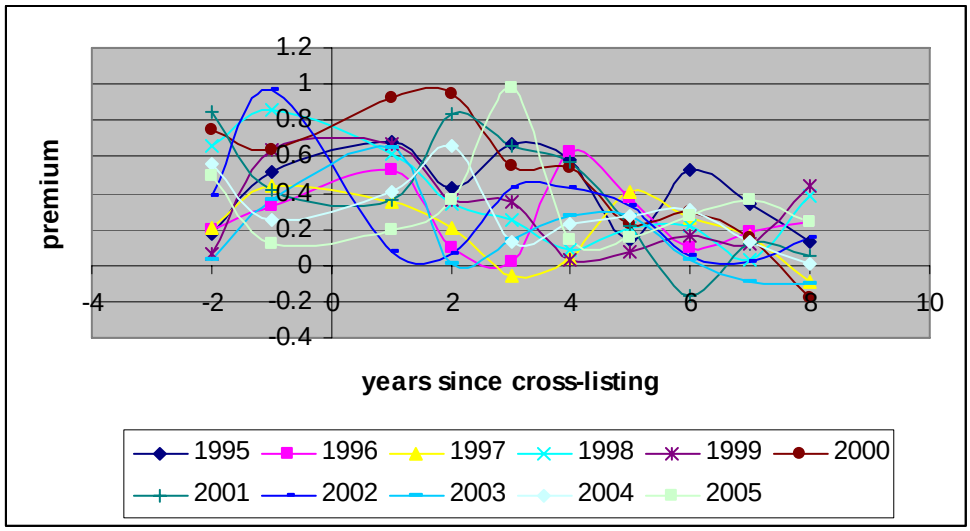

Figure E: Premia Decay Since Cross-Listing: All Level-23 Firms

Mean cross-listing premia for level-23 firms, averaged across all observation from 1995 through 2005; by years since cross-listing

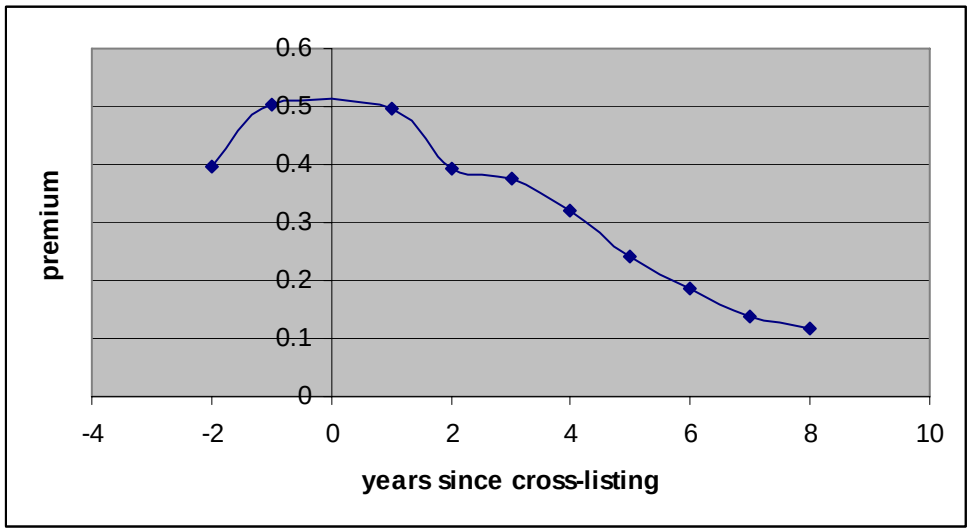

Figure F: Premia Decay Since Cross-Listing: High-US-Trading Firms

Mean premia (Tobin's Q of cross-listed company minus Tobin's Q of its non-cross-listed match), separately for each year of observation, by years since cross-listing. Sample: level-23 pairs with above-median portion of US trading in their total trading volume.

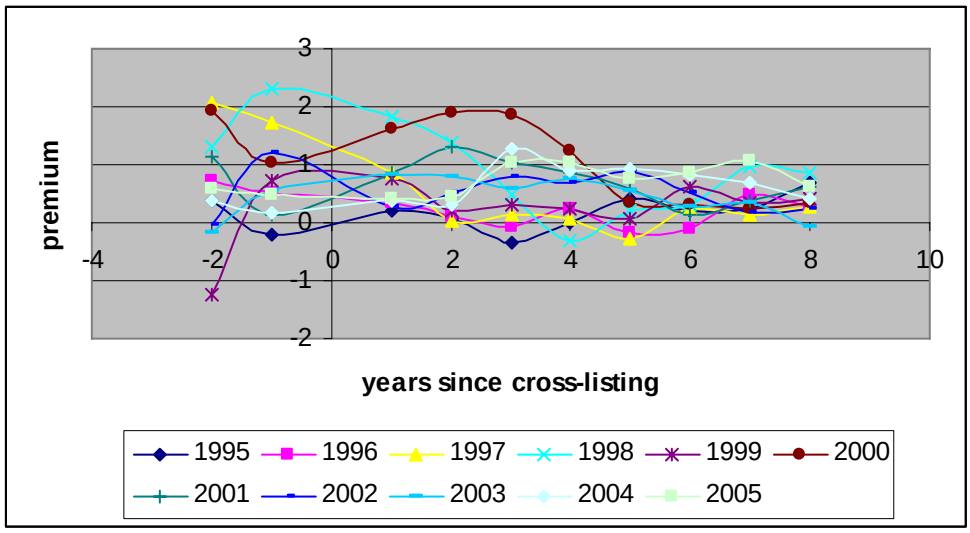

Figure G: Premia Decay Since Cross-Listing: High-US-Trading Firms

Mean premia (Tobin's Q of cross-listed company minus Tobin's Q of its non-cross-listed match), averaged across all years of observation; by years since cross-listing. Sample: level-23 pairs with above-median portion of US trading in their total trading volume.

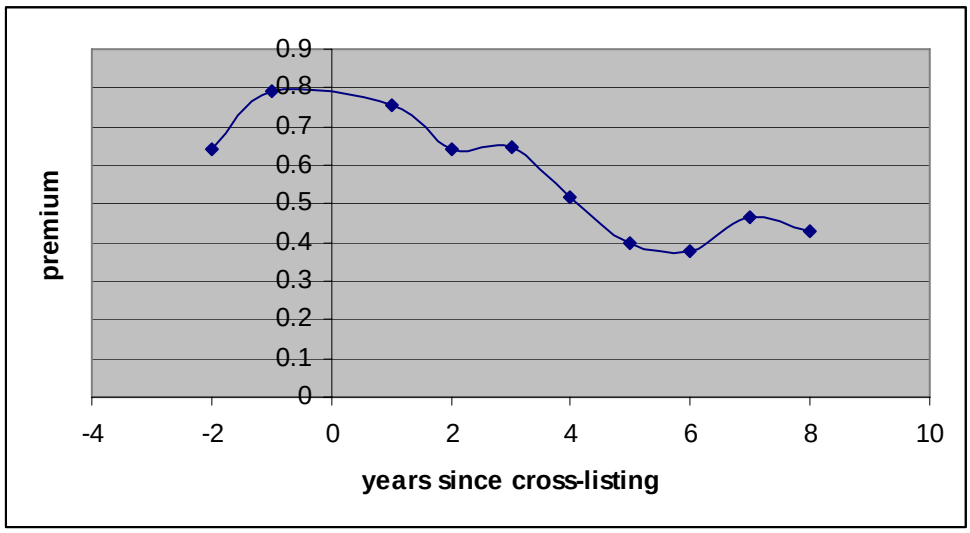

Figure H: Premia Decay Since Cross-Listing: Low-US-Trading Firms.

Mean premia (Tobin's Q of cross-listed company minus Tobin's Q of its non-cross-listed match), separately for each year of observation, by years since cross-listing. Sample: level-23 pairs with below-median portion of US trading in their total trading volume.

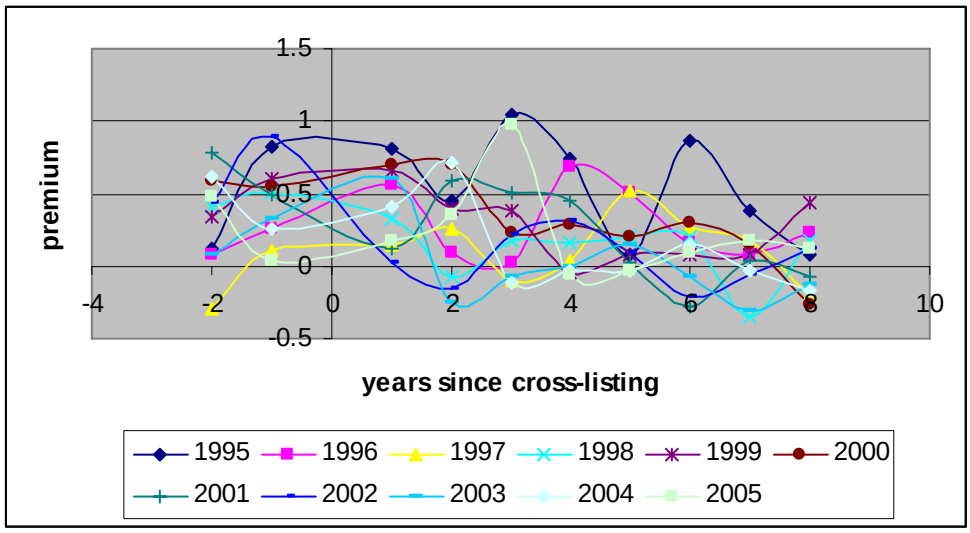

Figure I: Premia Decay Since Cross-Listing: Low-US-Trading firms.

Mean premia (Tobin's Q of cross-listed company minus Tobin's Q of its non-cross-listed match), averaged across all years of observation; by years since cross-listing. Sample: level-23 pairs with below-median portion of US trading in their total trading volume.

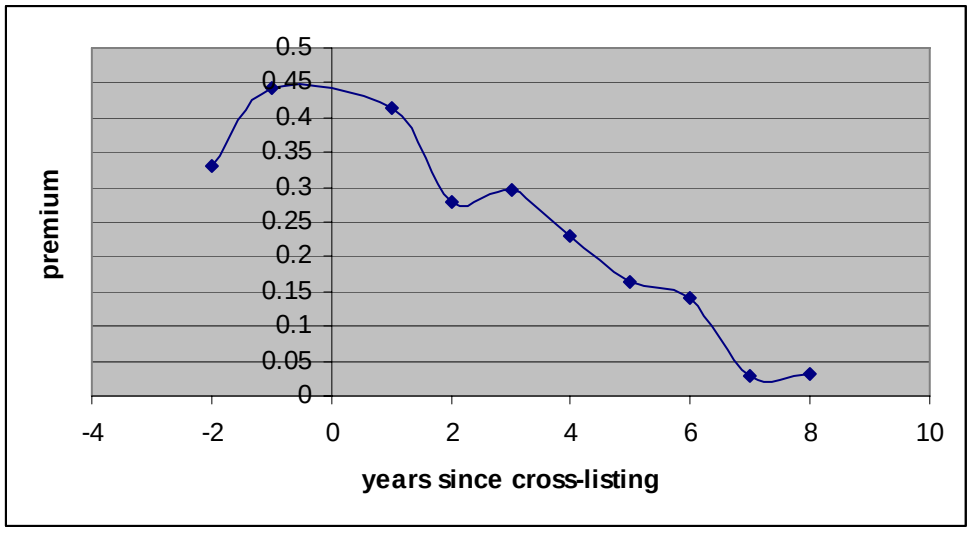

Table 1, Panel A: Summary Statistics

Variables are measured as of year-end of 2001; winsorized at 1%/99% level.

	Firms	Mean	Std. Dev.
	Level-23 Cross-Listed Firms		
Tobin's Q	331	1.366251	0.846759
Assets	349	1.00E+09	3.76E+09
Sales Growth	337	0.009651	0.049723
ROA	329	2.242153	21.19873
Leverage	348	0.283463	0.212897
Unsystem. Risk	353	0.02335	0.019261
	Level-14 Cross-Listed Firms		
Tobin's Q	646	0.902781	0.846759
Assets	664	6.22E+08	2.33E+09
Sales Growth	660	0.010737	0.039715
ROA	636	4.224027	22.34646
Leverage	664	0.277139	0.224403
Unsystem. Risk	685	0.027221	0.021
	Non-Cross-Listed Matched Firms		
Tobin's Q	933	0.90784	1.036815
Assets	977	3.33E+08	1.15E+09
Sales Growth	970	0.018545	0.061953
ROA	905	5.527303	38.20105
Leverage	976	0.2385645	0.281007
Unsystem. Risk	1009	0.028583	0.027501

Table 2: Pearson Correlations

Significant results (at 5% level or better) are in **boldface**; p-values are in parentheses. Level-23 firms only (subject to SOX)

	Tobin's Q	Asset Size	Sales Growth	ROA	Leverage	Unsystem Risk	Current Ratio	GDP per Capita	S&P Disclosure
Assets	-0.067	1							
p-value	(0.221)								
Sales Growth	-0.065	**0.516**	1						
p-value	(0.247)	**(0.00)**							
ROA	**-0.130**	0.011	0.050	1					
p-value	**(0.022)**	(0.838)	(0.381)						
Leverage	**-0.126**	-0.001	0.033	**-0.207**	1				
p-value	**(0.022)**	(0.991)	(0.545)	**(0.000)**					
Unsyst Risk	0.055	-0.015	-0.022	-0.049	-0.074	1			
p-value	(0.322)	(0.781)	(0.687)	(0.381)	(0.168)				
Current Ratio	-0.004	-0.013	-0.016	0.016	-0.071	-0.013	1		
p-value	(0.948)	(0.829)	(0.789)	(0.790)	(0.215)	(0.826)			
GDP/Capita	0.052	-0.025	0.046	-0.039	-0.064	-0.096	0.033	1	
p-value	(0.353)	(0.645)	(0.406)	(0.490)	(0.238)	(0.075)	(0.575)		
S&P Disclosure	**0.128**	-0.058	-0.074	-0.093	-0.078	-0.116	-0.040	**0.686**	1
p-value	**(0.041)**	(0.338)	(0.234)	(0.136)	(0.203)	(0.053)	(0.542)	**(0.00)**	
Spammann	0.015	0.003	0.043	0.047	-0.089	0.071	-0.039	**-0.173**	**-0.436**
p-value	(0.795)	(0.962)	(0.441)	(0.408)	(0.106)	(0.192)	(0.506)	**(0.001)**	**(0.00)**

Table 3

The table shows that pair premia of level-23 firms correlate with the NASDAQ index more strongly than premia of level-14 firms. The dependent variable is monthly fractional-change in cross-listing premium (Tobin's Q of a cross-listed company minus Tobin's Q of its non-cross-listed match). Dependent variables are: monthly fractional-change in the NASDAQ index; a dummy for trading on level 2 or 3; their interaction; ln of sales of the cross-listed company in a pair (a measure of size); sales growth of the cross-listed company; global industry Tobin's Q; ln GDP per capita of firm's home country; Spammann's corporate governance index. The coefficient of interest is that on the interaction of the dummy-23 and NASDAQ. Regressions in columns (1) and (2) use firm and period (month) fixed effects and firm clusters; regression in column (3) uses firm random effects to preserve the coefficient on the time-invariant variable (Spammann corporate governance index). All non-dummy independent variables are normalized. *T*-statistics are reported under regression coefficients. Symbols *, **, *** indicate significance at 10%, 5%, and 1% levels. Significant results (at 5% level or better) are in **boldface** for variables of interest.

	(1)	(2)	(3)
Dummy-23 *	**0.023**	**0.022**	**0.022**
NASDAQ Index	**(2.97)*** **	**(2.78)*** **	**(2.84)*** **
	0.003	-0.005	0.005
Dummy-23	(0.28)	(0.45)	(1.06)
	-0.052	-0.006	-0.058
NASDAQ Index	(1.29)	(0.28)	(1.27)
		-0.009	
Ln Sales		(0.65)	
		-0.071	
Sales Growth		(5.20)***	
Global Industry		0.005	
Tobin's Q		(1.33)	
			-0.001
GDP/Capita			(0.56)
Spammann			-0.002
Corporate Law			
Index			(1.05)
	-0.187	-0.031	-0.208
Constant	-1.41	-0.43	-1.4
	Firm FE and Clusters; Period FE	Firm FE and Clusters; Period FE	Firm RE and Clusters; Period FE
Observations	36499	35081	33357
Pairs	651	623	593
R-squared	0.02	0.03	

Table 4

Panel A. The table shows that returns of level-23 firms correlate with the NASDAQ index during the period of cross-listing, but not before listing; returns of level-14 pairs don't correlate with NASDAQ at all. The dependent variable is monthly pair return (return of a cross-listed company minus return of its non-cross-listed match). Independent variables are: monthly returns on the NASDAQ index; a dummy for trading on level 2 or 3 interacted with NASDAQ index returns (a dummy for level-23 trading drops out because of firm fixed effects); ln of sales of the cross-listed company in a pair (a measure of size); sales growth of the cross-listed company; global industry Tobin's Q. The coefficient of interest is that on the interaction of the dummy-23 and NASDAQ. All regressions use firm and period (month) fixed effects and firm clusters. All non-dummy independent variables are normalized. *T*-statistics are reported under regression coefficients. Symbols *, **, *** indicate significance at 10%, 5%, and 1% levels. Significant results (at 5% level or better) are in **boldface** for variables of interest.

	Listing Period	Non-Listing Period	Listing Period	Non-Listing Period	Listing Period	Non-Listing Period
	Level-23 Pairs		Level-14 Pairs		All Pairs	
NASDAQ Index Return	**0.087**	-0.005	0.01	-0.076	0.014	-0.02
	(5.61)* **	(0.09)	(0.29)	(0.41)	(0.45)	(0.39)
Dummy-23 * NASDAQ Index					**0.014**	0.01
					(4.17)* **	(1.59)
Ln Sales	-0.021	-0.016	-0.015	-0.008	-0.016	-0.011
	(2.30)**	(0.89)	(2.30)**	(0.40)	(2.95)***	(0.82)
Sales Growth	0.005	0.002	-0.001	-0.006	0	-0.002
	(1.57)	(0.30)	(0.61)	(0.76)	(0.18)	(0.39)
Global Industry Tobin's Q	-0.004	0.006	0.001	0.003	0	0.004
	(1.27)	(1.18)	(0.64)	(0.50)	(0.05)	(0.99)
Constant	-0.016	0.049	-0.03	-0.262	0.039	-0.071
	(0.74)	(0.71)	(0.98)	(0.44)	(0.39)	(0.41)
Firm & Month FE; Firm Clusters	yes	yes	yes	yes	yes	yes
Observations	13632	4845	35532	4432	49164	9277
Pairs	234	98	454	113	688	211
R-squared	0.03	0.04	0.01	0.03	0.01	0.03

Panel B. The table shows that NASDAQ movements explain more variation in stock prices of level-23 firms than level-14 firms, but this is true only while the firm is cross-listed. Prior to cross-listing, firms that ultimately ended up listing on major US exchanges did not correlate more strongly with US markets than firms that later started trading on OTC or PORTAL. The dependent variable is the Baruch-Karolyi-Lemmon measure of the sensitivity of a firm's stock price to information in the US relative to information in the home market. In Columns (1) and (3), this sensitivity is measured during periods of cross-listing, and in Columns (2) and (4), before cross-listing. Independent variables are: dummies for trading on level 2 or 3, and separately on NYSE or NASDAQ; ln of sales of the cross-listed company in a pair (a measure of size); sales growth of the cross-listed company; global industry Tobin's Q. The sample includes only cross-listed companies. The coefficients of interest are those on the dummy-23, dummy-NYSE, and dummy-NASDAQ. All regressions use country fixed effects and clusters. All non-dummy independent variables are normalized. *T*-statistics are reported under regression coefficients. Symbols *, **, *** indicate significance at 10%, 5%, and 1% levels. Significant results (at 5% level or better) are in **boldface** for variables of interest.

Correlation of firm's returns with NASDAQ:	During Cross-Listing	Before Cross-Listing	During Cross-Listing	Before Cross-Listing
Dummy-23	**2.435**	0.817		
	(3.17)* **	(1.26)		
Dummy-NYSE			**1.882**	0.768
			(2.30) **	(1.05)
Dummy-NASDAQ			**4.131**	1.265
			(4.03)* **	(1.32)
Ln Sales	0.062	0.226	0.338	0.29
	(0.22)	(0.88)	(1.32)	(0.73)
Sales Growth	0.151	-0.059	0.139	-0.08
	(1.41)	(0.31)	(1.25)	(0.45)
Global Industry Tobin's Q	0.448	0.476	0.401	0.459
	(2.89)***	(1.55)	(2.70)***	(1.53)
Constant	2.574	1.681	2.616	1.675
	(8.90)***	(4.63)***	(9.19)***	(4.83)***
Country FE & Clusters	yes	yes	yes	yes
Observations	728	245	728	245
Countries	43	30	43	30
R-squared	0.04	0.05	0.05	0.05

Table 5

The table shows that (a) returns of level-23 cross-listed firms are correlated with the indices of the platforms on which those firms are traded, and sometimes with indices of similar platforms, but not with indices of dissimilar platforms; and (b) cross-listed OTC-traded firms (level 1) are not correlated with any of the US indices. The dependent variable is pair return (return of a cross-listed company minus return of its non-cross-listed match). Independent variables are: monthly returns on the three indices (NYSE, NASDAQ, and OTC); ln of sales of the cross-listed company in a pair (a measure of size); sales growth of the cross-listed company; global industry Tobin's Q. The coefficient of interest is that on the indices. All regressions use firm and month fixed effects and firm clusters. All non-dummy independent variables are normalized. *T*-statistics are reported under regression coefficients. Symbols *, **, *** indicate significance at 10%, 5%, and 1% levels. Significant results (at 5% level or better) are in **boldface** for variables of interest.

Sample:	NYSE Pairs			NASDAQ Pairs			OTC Pairs		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
NYSE Index	**0.019**			-0.006			0.004		
	(2.08)**			(0.53)			(0.81)		
NASDAQ Index		**0.091**			**0.176**			-0.053	
		(4.49)***			**(3.24)*****			(1.45)	
OTC Index			0.000			0.010			0.001
			(0.07)			(1.08)			(0.22)
Ln Sales	-0.001	0	0.003	-0.037	-0.037	-0.035	-0.019	-0.019	-0.021
	(0.08)	(0.05)	(0.26)	(2.75)***	(2.70)***	(2.55)**	(2.89)***	(2.89)***	(2.90)***
Sales Growth	0.003	0.002	0.002	0.008	0.008	0.008	-0.002	-0.002	-0.002
	(0.53)	(0.46)	(0.47)	(1.83)*	(1.73)*	(1.80)*	(0.51)	(0.48)	(0.55)
Global Industry Tobin's Q	0.002	0.002	0.002	-0.013	-0.013	-0.013	0.002	0.002	0.002
	(0.55)	(0.52)	(0.53)	(1.82)*	(1.81)*	(1.96)*	(0.85)	(0.87)	(0.78)
Constant	-0.006	-0.053	-0.055	-0.057	-0.291	-0.009	0.007	0.023	-0.014
	(0.28)	(2.38)**	(2.69)***	(1.71)*	(3.10)***	(0.34)	(0.59)	(0.69)	(1.85)*
Observations	9105	9105	8951	4395	4395	4246	24922	24922	23725
Pairs	166	166	166	67	67	67	312	312	312
R-squared	0.03	0.03	0.03	0.07	0.07	0.07	0.01	0.01	0.01

Table 6

The table shows that only the firms with above-median ratio of US trading volume/ total trading volume have returns and premia correlated with US indices. Dependent variables are: in Columns (1) and (2), monthly fractional-change in pair Tobin's Q (Tobin's Q of a cross-listed company minus Tobin's Q of its non-cross-listed match); in Columns (3) and (4), monthly pair return (return of a cross-listed company minus return of its match). Independent variables are: dummy for level 2 or 3 listing; monthly return on the NASDAQ index; their interaction; ln of sales of the cross-listed company in a pair (a measure of size); sales growth of the cross-listed company; global industry Tobin's Q. The coefficient of interest is that on the interaction variable. All regressions use firm and month fixed effects and firm clusters. All non-dummy independent variables are normalized. *T*-statistics are reported under regression coefficients. Symbols *, **, *** indicate significance at 10%, 5%, and 1% levels. Significant results (at 5% level or better) are in **boldface** for variables of interest.

Dependent Variable:	Fractional Change in Pair Tobin's Q		Pair Return	
Sample:	Above Median US Trading	Below Median US Trading	Above Median US Trading	Below Median US Trading
	(1)	(2)	(3)	(4)
Dummy-23 * NASDAQ Index	**0.026**	-0.005	**0.013**	0.013
	(2.82)* **	(0.16)	**(2.92)*** **	-1.44
Dummy-23	-0.004	-0.004	-0.017	-0.008
	(0.27)	(0.17)	(2.44)**	-1.03
NASDAQ Index	0.02	-0.024	0.002	0.02
	(0.50)	(1.52)	-0.04	-0.57
Ln Sale	-0.039	0.008	-0.018	-0.016
	(1.72)*	(0.43)	(2.69)***	(2.40)**
Sales Growth	-0.043	-0.091	-0.002	0.002
	(2.91)***	(4.62)***	-0.59	-0.69
Global Industry Tobin's Q	0.009	0.003	0.002	0
	(1.34)	(0.60)	-0.71	-0.29
Constant	0.011	-0.054	0.032	-0.03
	(0.08)	(0.95)	-0.73	-0.97
Observations	15173	19908	24248	34193
Pairs	296	327	338	380
Firm and Period FE; Firm Clusters	yes	yes	yes	yes
R-squared	0.04	0.03	0.02	0.01

Table 7

Panel A. The table shows the factors predicting the correlation between NASDAQ movements and stock prices of cross-listed firms. The dependent variable is the Baruch-Karolyi-Lemmon measure of the sensitivity of a firm's stock price to information in the US relative to information in the home market, measured during the periods of cross-listing. Independent variables are: dummy for trading on level 2 or 3, a firm's worldwide trading volume; a firm's trading volume in the US; ratio of a firm's US trading volume to its worldwide trading volume; ln of sales of the cross-listed company in a pair (a measure of size); sales growth of the cross-listed company; global industry Tobin's Q. The sample includes only cross-listed companies. All regressions use country fixed effects and clusters. All non-dummy independent variables are normalized. *T*-statistics are reported under regression coefficients. Symbols *, **, *** indicate significance at 10%, 5%, and 1% levels. Significant results (at 5% level or better) are in **boldface** for variables of interest.

	(1)	(2)	(3)	(4)
Dummy-23	**1.979**	**1.817**	1.504	**1.69**
	(2.21)**	**(1.99)****	(1.37)	**(1.89)***
Firm's Total Trading Volume		0.195		
		(0.67)		
Firm's US Trading Volume		**1.345**		
		(2.75)***		
Ratio: Firm's US to Total Trading Volume			**0.914**	**0.823**
			(2.07)**	**(2.00)****
Ln Sale	0.57	0.463	0.564	**0.763**
	(1.81)*	(1.56)	(1.69)*	**(2.93)*****
Sales Growth	0.144	0.091	0.219	0.246
	(1.10)	(0.73)	(1.54)	(1.79)*
Global Industry Tobin's Q	**0.328**	0.282	**0.411**	**0.484**
	(2.03)**	(1.81)*	**(2.57)****	**(2.43)****
Firm's Unsystematic Risk	**1.129**	**1.083**	0.691	0.548
	(3.01)***	**(2.89)*****	(1.64)	(1.39)
Ln GDP/Capita	**1.308**	**1.32**	**1.258**	
	(2.65)***	**(2.66)*****	**(2.48)****	
Spammann Index	0.547	0.61	0.373	
	(1.30)	(1.44)	(0.81)	
Home Country's Median Firm Liquidity				0.207
				(1.61)
Constant	3.26	3.313	3.225	2.883
	(4.62)***	(4.51)***	(4.39)***	(6.18)***
Observations	639	639	578	655
Countries	32	32	32	42

Panel B. The table shows the factors predicting the correlation between NASDAQ movements and stock prices of cross-listed firms. The dependent variable is the Baruch-Karolyi-Lemmon measure of the sensitivity of a firm's stock price to information in the US relative to information in the home market, measured during the periods of cross-listing. Independent variables are: dummy for trading on level 2 or 3; firm's worldwide trading volume; a firm's trading volume in the US; ln of sales of the cross-listed company in a pair (a measure of size); sales growth of the cross-listed company; global industry Tobin's Q; a firm's Tobin's Q; ln GDP/capita of home country; Spammann corporate governance index; and the interactions with all of the above variables with the dummy for level 2 or 3 listing. The sample includes only cross-listed companies. All regressions use country fixed effects and clusters. All non-dummy independent variables are normalized. *T*-statistics are reported under regression coefficients. Symbols *, **, *** indicate significance at 10%, 5%, and 1% levels. Significant results (at 5% level or better) are in **boldface** for variables of interest.

Dum-23 * Ln Sales	0.219	0.245	0.126
	(0.30)	(0.32)	(0.18)
Dum-23 * Firm's Unsystematic Risk	**1.873**	**1.866**	**1.757**
	(2.39)**	**(2.43)****	**(2.19)****
Dum-23 * Ln GDP/Capita	**1.688**	**1.67**	**1.712**
	(2.21)**	**(2.17)****	**(2.26)****
Dum-23 * Spammann Index	**1.75**	**1.803**	**1.816**
	(2.61)***	**(2.67)*****	**(2.76)*****
Dum-23 * Firm's US Trading Volume	**3.75**	**3.774**	**3.672**
	(2.02)**	**(2.03)****	**(2.04)****
Dum-23 * Firm's Total Trading Volume	0.296	0.281	0.342
	(0.73)	(0.69)	(0.85)
Dum-23 * Tobin's Q		2.334	
		(1.01)	
Dum-23 * Sales Growth			-0.382
			(1.46)
Dum-23 * Global Industry Tobin's Q			**0.738**
			(2.43)**
Dummy-23	**1.681**	**1.71**	**1.655**
	(2.61)***	**(2.63)*****	**(2.46)****
Ln Sales	0.205	0.143	0.220
	(0.43)	(0.28)	(0.49)
Sales Growth	0.06	0.033	0.275
	(0.41)	(0.22)	(1.75)*
Global Industry Tobin's Q	**0.301**	**0.313**	-0.041
	(2.22)**	**(2.31)****	(0.27)
Firm's Unsystematic Risk	-0.145	-0.15	-0.133
	(0.51)	(0.51)	(0.47)
Ln GDP/Capita	0.81	0.848	0.806
	(1.60)	(1.62)	(1.60)
Spammann Index	-0.34	-0.353	-0.358
	(0.71)	(0.73)	(0.74)
Firm's Total Trading Volume	-0.072	-0.053	-0.107
	(0.38)	(0.29)	(0.56)
Firm's US Trading Volume	-3.962	-3.996	-3.880
	(1.64)	(1.66)*	(1.64)
Tobin's Q		-2.248	
		(1.08)	
Constant	2.957	2.974	2.908
	(4.53)***	(4.37)***	(4.36)***
Observations	578	578	578
Countries	32	32	32

Table 8

The table shows that the switch of Bulletin-Board firms from non-SEC-regulated to SEC-regulated status did not affect the correlation between the BB Index and the returns of foreign cross-listed firms. This suggests that US regulation does not drive the correlation between pair returns and indices. The dependent variable is monthly pair return (return of a cross-listed company and the return of its non-cross-listed match. Independent variables are: monthly returns on three US indices (Bulletin Board, NASDAQ, and NYSE); their interactions with the dummy for level 2 or 3 listing (dummy-23 drops out because of firm fixed effects); ln of sales of the cross-listed company in a pair (a measure of size); sales growth of the cross-listed company; global industry Tobin's Q. The coefficient of interest is that on the interaction between dummy-23 and the indices. In Columns (1), (3), and (5), the sample is limited to pre-BB-switch years (1994 through 1998). In columns (2), (4), and (6), the sample is post-BB-switch years (2001 through 2005). The sample includes pairs listed on all levels. All regressions use firm and month fixed effects and firm clusters. All non-dummy independent variables are normalized. *T*-statistics are reported under regression coefficients. Symbols *, **, *** indicate significance at 10%, 5%, and 1% levels. Significant results (at 5% level or better) are in **boldface** for variables of interest.

Sample:	1995-1998 (pre-switch)	2001-2005 (post-switch)	1995-1998 (pre-switch)	2001-2005 (post-switch)	1995-1998 (pre-switch)	2001-2005 (post-switch)
	(1)	(2)	(3)	(4)	(5)	(6)
Dummy-23 * Bulletin Board (US) Index	0.011	0.002				
	(1.28)	(0.74)				
Dummy-23 * NASDAQ Index			**0.014**	**0.014**		
			(2.00)**	**(3.41)*****		
Dummy-23 * NYSE Index					**0.016**	**0.013**
					(2.99)***	**(3.57)*****
Bulletin Board (US) Index	0.002	0.002				
	(0.41)	(0.47)				
NASDAQ Index			0.074	0.009		
			(5.96)***	(0.25)		
NYSE Index					0.003	0.002
					(0.76)	(0.37)
Ln Sales	0	-0.012	-0.006	-0.011	-0.005	-0.011
	(0.02)	(1.30)	(0.37)	(1.27)	(0.35)	(1.25)
Sales Growth	-0.012	0.005	-0.009	0.005	-0.009	0.005
	(1.69)*	(1.86)*	(1.37)	(1.94)*	(1.44)	(1.85)*
Global Industry Tobin's Q	0.003	-0.001	0.002	-0.001	0.002	-0.001
	(0.64)	(0.38)	(1.21)	(0.31)	(1.23)	(0.29)
Constant	-0.011	-0.018	-0.072	-0.012	0.004	0.002
	(1.81)*	(2.51)**	(5.12)***	-0.2	-0.38	-0.28
Observations	7026	32575	8696	32575	8696	32575
Number of pairs	263	684	263	684	263	684
R-squared	0.01	0.01	0.01	0.01	0.01	0.01

Table 9

The table shows that cross-listing premia exist only for firms with above-median ratio of US trading volume/ total trading volume. Firms with below-median portion of US trading have no premia, regardless of level of US regulation. The dependent variable is pair Tobin's Q (Tobin's Q of a cross-listed company minus Tobin's Q of its non-cross-listed match). The sample is limited as follows: columns (1), (3), and (5) include only pairs with above-median ratio of US-to-total trading volume; columns (2), (4), and (6) include pairs with below-median ratio of US-to-total trading volume. In columns (1) through (4), "median" is for all pairs in the sample, including level-1 pairs. In columns (5) and (6), "median" is for the level-23 pairs in the sample (and is therefore higher, so above median sample is smaller). Dependent variables are: dummies for trading on level 2 or 3, or only on level-2 or on level-3; the NASDAQ index; ln of sales of the cross-listed company in a pair (a measure of size); sales growth of the cross-listed company; global industry Tobin's Q, and ln GDP of a company's home country. The coefficient of interest is that on the dummy-23, dummy-2, and dummy-3. All regressions use firm and month fixed effects and firm clusters. All non-dummy independent variables are normalized. *T*-statistics are reported under regression coefficients. Symbols *, **, *** indicate significance at 10%, 5%, and 1% levels. Significant results (at 5% level or better) are in **boldface** for variables of interest.

Sample: US trading/total trading volume	Above-median	Below-median	Above-median	Below-median	Above-median	Below-median
Median based on	All firms	All firms	All firms	All firms	Level-23 firms	Level-23 firms
	(1)	(2)	(3)	(4)	(5)	(6)
Dummy-23	**0.368**	0.053				
	(2.62)* **	(0.40)				
Dummy-2			0.188	0.117	**0.522**	-0.031
			(1.30)	(0.79)	**(2.56)** **	(0.26)
Dummy-3			**0.702**	-0.242	**0.55**	0.41
			(3.29)* **	(0.70)	**(2.69)*** **	(1.52)
NASDAQ Index	0.072	0.016	0.073	0.017	0.105	0.022
	(1.64)	(0.69)	(1.71)*	(0.71)	(1.79)*	(0.90)
Ln Sales	-0.169	-0.148	-0.175	-0.147	-0.183	-0.145
	(1.66)*	(2.04)**	(1.71)*	(2.04)**	(1.55)	(2.10)**
Sales Growth	0.355	0.18	0.356	0.181	0.386	0.237
	(3.44)***	(1.48)	(3.47)***	(1.50)	(2.38)**	(2.48)**
Global Industry Tobin's Q	0.386	0.276	0.38	0.277	0.382	0.304
	(5.00)***	(5.04)***	(4.94)***	(5.05)***	(5.55)***	(5.43)***
Ln GDP	-0.658	0.223	-0.674	0.26	2.136	0.156
	(1.91)*	(1.54)	(1.96)**	(1.70)*	(17.25)***	(1.00)
Constant	-0.982	0.177	-1.231	0.276	-0.004	-0.104
	(4.00)***	-1.03	(4.05)***	-1.29	-0.01	-0.51
Firm FE and Clusters; Month FE	yes	yes	yes	yes	yes	yes
Observations	2150	2862	2150	2862	1106	3906
Pairs	358	382	358	382	207	533

Table 10

The table shows predictors of Tobin's Q of cross-listed companies. The dependent variable is the Tobin's Q of each company, calculated monthly. The sample is split as follows: level-23 firms (Columns 1 and 2), level-14 firms (Columns 3 and 4). Independent variables are: the NASDAQ index; firm's US trading volume; ratio of firm's US-based volume over its worldwide trading volume; firm's returns volatility (standard deviation of returns); firm size (ln of sales), sales growth, and global industry Tobin's Q. All non-dummy independent variables are normalized. *T*-statistics are reported under regression coefficients. Symbols *, **, *** indicate significance at 10%, 5%, and 1% levels. Significant results (at 5% level or better) are in **boldface** for variables of interest.

Sample:	Level-23		Level-14	
	(1)	(2)	(3)	(4)
NASDAQ Index	0.14	0.131	0.026	0.025
	(3.59)***	(3.57)***	(1.31)	(1.36)
Firm's US Trading Volume		0.068		-0.111
		(0.95)		(1.41)
Ratio US/Total Trading Volume	**0.096**		0.018	
	(2.59)* **		(0.58)	
Firm's Returns Volatility	0.03	0.023	-0.01	-0.011
	(1.08)	(0.82)	(1.06)	(1.44)
Ln Sales	-0.273	-0.275	-0.066	-0.109
	(2.66)***	(2.69)***	(0.95)	(1.75)*
Sales Growth	0.021	0.022	-0.023	-0.01
	(1.49)	(1.52)	(1.47)	(0.79)
Global Industry Q	0.235	0.238	0.141	0.137
	(4.08)***	(4.06)***	(4.61)***	(5.08)***
Constant	0.399	0.699	0.651	0.576
	(2.39)**	(5.22)***	(6.54)***	(6.37)***
Firm RE & Clusters; Period FE; Country FE	yes	yes	yes	yes
Observations	13758	13759	33248	35877
Pairs	234	234	421	454

Table 11

Panel A. The table shows that level-23 firms have a significant cross-listing premium only for the first six years of cross-listing. The dependent variable in all regressions is the pair Tobin's Q (Tobin's Q of a cross-listed company minus Tobin's Q of its non-cross-listed match). The sample includes pairs listed on all levels. In each column, the sample is limited to the indicated months since cross-listing. The coefficient of interest is that on the dummy for level-23 listing. Other dependent variables are: the NASDAQ index; the ratio of a firm's US trading volume/ total trading volume; ln of sales of the cross-listed company in a pair (a measure of size); sales growth of the cross-listed company, global industry Tobin's Q. All regressions use firm random effects; period (month) fixed effects; country fixed effects, and firm clusters. Removing firm random effects does not significantly change the results. All non-dummy independent variables are normalized. *T*-statistics are reported under regression coefficients. Symbols *, **, *** indicate significance at 10%, 5%, and 1% levels. Significant results (at 5% level or better) are in **boldface** for variables of interest.

Months Since Cross-Listing:	-36 tru -24	-23 tru -12	-11 tru 0	1 tru 12	13 tru 24	25 tru 36	37 tru 48	49 tru 60	61 tru 72	73 tru 84	85 tru 96	97 tru 108	109 tru 120	121+
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Dummy-23	-0.111	0.096	0.492	**1.067**	**0.757**	**0.607**	**0.491**	**0.607**	**0.717**	0.161	0.098	-0.069	-0.067	0.12
	(0.57)	(0.33)	(1.61)	**(3.65)*** **	**(3.10)*** **	**(2.64)*** **	**(2.26)** **	**(2.92)*** **	**(2.58)*** **	(0.65)	(0.51)	(0.28)	(0.24)	(0.69)
NASDAQ Index	0.278	-0.22	0.218	0.019	0.166	0.048	0.179	-0.174	-0.03	-0.024	-0.173	-0.025	0.135	-0.02
	(1.83)*	(1.27)	(1.68)*	(0.18)	(1.68)*	(0.42)	(2.41)**	(1.31)	(0.21)	(0.30)	(0.85)	(0.31)	(1.37)	(0.33)
US/Total TradingVolume	0.119	0.167	-0.043	0.031	0.025	0.031	0.118	0.113	0.036	0.134	0.044	0.007	0.064	0.07
	(1.79)*	(2.13)**	(0.36)	(0.52)	(0.86)	(0.59)	(1.87)*	(2.20)**	(0.97)	(3.31)***	(0.80)	(0.16)	(1.86)*	(0.93)
Ln Sales	-0.355	-0.179	-0.21	-0.351	-0.03	-0.18	-0.189	-0.007	-0.213	-0.168	-0.036	0.054	-0.071	0.048
	(2.70)***	(0.83)	(1.17)	(1.54)	(0.19)	(1.33)	(1.44)	(0.07)	(1.27)	(1.70)*	(0.42)	(0.64)	(0.77)	(0.56)
Sales Growth	0.116	0.025	0.045	0.012	-0.006	-0.069	-0.043	0.017	0.02	-0.041	-0.001	-0.008	0.021	0.008
	(2.28)**	(0.52)	(0.99)	(0.36)	(0.24)	(2.87)***	(1.35)	(0.62)	(0.63)	(1.12)	(0.05)	(0.31)	(0.65)	(0.38)
Global Industry Tobin's Q	0.549	0.459	0.282	0.149	0.107	0.347	0.287	0.261	0.245	0.259	0.006	0.566	0.162	0.131
	(5.65)***	(4.16)***	(3.12)***	(1.95)*	(1.45)	(3.16)***	(3.08)***	(1.53)	(2.41)**	(3.12)***	(0.03)	(3.01)***	(2.11)**	(2.93)***
Constant	-1.225	-0.093	-0.934	-0.64	-0.299	-0.531	-1.525	-1.172	-0.442	-0.925	-0.487	0.149	-0.315	-0.534
	(2.61)***	(0.15)	(1.99)**	(1.47)	(0.89)	(1.39)	(3.45)***	(2.41)**	(0.65)	(2.72)***	(1.25)	(0.38)	(0.88)	(1.17)
Firm RE & Clusters; Period and Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1470	1716	1961	2621	3209	3641	3845	3795	3467	3275	3120	3126	2655	14127
Pairs	134	164	203	252	311	342	353	359	339	321	294	298	256	258

Panel B. The table shows that returns of level-23 firms are significantly correlated with the NASDAQ index, and this correlation does not dissipate over time after cross-listing. The dependent variable is pair return (return of a cross-listed company minus return of its non-cross-listed match). The sample includes pairs listed on all levels. In each column, the sample is limited to the indicated months since cross-listing. Independent variables are: monthly returns on the NASDAQ index; the ratio of a firm's US trading volume/ total trading volume; ln of sales of the cross-listed company in a pair (a measure of size); sales growth of the cross-listed company, global industry Tobin's Q. The coefficient of interest is that on the indices. All regressions use firm random effects, country and month fixed effects, and firm clusters. All non-dummy independent variables are normalized. *T*-statistics are reported under regression coefficients. Symbols *, **, *** indicate significance at 10%, 5%, and 1% levels. Significant results (at 5% level or better) are in **boldface** for variables of interest.

Months Since Cross-Listing:	0-12	13-24	25-36	37-48	49-60	61-72	73-84	85-96	97-108	109-120	121+
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
NASDAQ Index	**0.102**	**-0.087**	0.013	**0.466**	-0.031	**0.134**	0.031	**0.05**	**0.088**	**0.06**	**-0.045**
	(4.99)* **	**(3.71)*** **	(0.66)	**(2.75)*** **	(0.19)	**(8.26)*** **	(0.49)	**(3.53)*** **	**(4.63)*** **	**(3.90)*** **	**(2.66)*** **
Firm's US/Total Trading Volume	0.01	0.007	0.005	-0.006	0.003	0	-0.003	0	-0.012	0.002	-0.003
	(1.31)	(1.29)	(1.08)	(1.10)	(0.59)	(0.01)	(0.43)	0.00	(1.86)*	(0.16)	(0.96)
Ln Sales	0.006	0.015	-0.007	-0.008	-0.015	-0.021	-0.012	0.019	-0.006	0.01	0.002
	(0.48)	(2.35)**	(0.79)	(1.06)	(2.99)***	(1.98)**	(1.34)	(2.01)**	(0.47)	(0.43)	(0.65)
Sales Growth	0.006	-0.006	0.011	0.001	0.006	-0.003	0.042	0.007	-0.041	0.019	0.004
	(0.57)	(0.51)	(0.80)	(0.26)	(1.28)	(0.22)	(2.04)**	(0.26)	(1.54)	(1.26)	(0.68)
Global Industry Tobin's Q	-0.01	-0.014	0.004	-0.008	-0.005	-0.011	-0.016	0.011	0.017	-0.018	-0.007
	(1.38)	(2.24)**	(0.53)	(1.04)	(0.92)	(1.41)	(1.16)	(1.13)	(1.38)	(1.44)	(2.04)**
Constant	0.093	0.127	-0.029	-0.716	0.221	0.213	0.054	0.17	0.131	-0.049	-0.045
	(1.64)	(2.44)**	(1.01)	(3.13)***	(0.99)	(6.77)***	(0.32)	(3.84)***	(2.67)***	(0.65)	(0.49)
Observations	1235	1407	1469	1485	1382	1123	913	757	604	455	2920
Pairs	119	133	137	134	138	117	96	74	63	45	53

Table 12

The table shows that the firm's ratio of US trading volume/ total trading volume predicts the firm's cross-listing premium. However, it does so in the way poorly consistent with the predictions of the bonding theory. In early years after cross-listing (most favorable to litigation), the correlation between US trading volume and premium is low; it increases sharply beginning 5 years after cross-listing. The dependent variable is the pair Tobin's Q (Tobin's Q of a cross-listed company minus Tobin's Q of its non-cross-listed match). The sample includes pairs listed on all levels. In column (1), the sample is limited to pairs where the cross-listed firm is listed between 0 and 4 years; in column (2), between 5 and 7 years; in column (3), between 8 and 10 years. The coefficient of interest is that on the interaction variable between dummy -23 and above-median level of US trading. Other dependent variables are: dummies for trading on level 2 or 3; dummy for above-median ratio of US trading volume/total volume; the NASDAQ index; ln of sales of the cross-listed company in a pair (a measure of size); global industry Tobin's Q. All regressions use firm random effects; country and month fixed effects; and firm clusters. Removing firm random effects does not significantly affect the results. All non-dummy independent variables are normalized. *T*-statistics are reported under regression coefficients. Symbols *, **, *** indicate significance at 10%, 5%, and 1% levels. Significant results (at 5% level or better) are in **boldface** for variables of interest.

Sample:	0-4 years since listing	5-7 years since listing	8-10 years since listing
	(1)	(2)	(3)
Dummy-23 * Above-Median US Trading Dummy	0.436 (1.70)*	**0.943** **(5.98)*** **	**0.68** **(3.44)*** **
Dummy-23	0.269 (2.22)**	-0.052 (0.48)	-0.421 (3.19)***
Above Median US Trading Volume Dummy	-0.059 (0.29)	-0.23 (1.85)*	-0.049 (0.50)
NASDAQ Index	0.047 (0.86)	-0.039 (0.63)	-0.046 (0.64)
Ln Sales	(0.1) (2.70)***	(0.004) (0.08)	(0.07) (1.77)*
Global Industry Tobin's Q	0.375 (7.12)***	0.347 (5.77)***	0.352 (7.57)***
Constant	0.156 (1.1)	0.142 (1.24)	0.453 (2.10)**
Firm RE & Clusters; Period (Month) FE	yes	yes	yes
Observations	13994	11416	9675
R-squared	0.09	0.08	0.06

Table 13

The table shows that level-3 firms do not have higher premia than level-2 firms in years immediately following listing, contrary to the prediction of the disclosure- and litigation-based bonding theory. Level-3 firms have higher premia in later years, which is entirely explained by US trading volume. The dependent variable is the pair Tobin's Q (Tobin's Q of a cross-listed company minus Tobin's Q of its non-cross-listed match). The sample includes only pairs listed on levels 2 or 3. In Columns (1) and (3), the sample is limited to pairs where the cross-listed firm is listed between 0 and 5 years; in Columns (2) and (4), between 6 and 10 years. The coefficient of interest is that on the dummy for level-3 listing. Other dependent variables are: the NASDAQ index; ln of sales of the cross-listed company in a pair (a measure of size); sales growth; a firm's ratio of US to worldwide trading volume. All regressions use firm random effects; country and month fixed effects; and firm clusters. Removing firm random effects does not significantly affect the results. All non-dummy independent variables are normalized. *T*-statistics are reported under regression coefficients. Symbols *, **, *** indicate significance at 10%, 5%, and 1% levels. Significant results (at 5% level or better) are in **boldface** for variables of interest.

Listing Period	0 to 5 years	6 to 10 years	0 to 5 years	6 to 10 years
	(1)	(2)	(3)	(4)
Dummy-3	0.223	**0.379**	0.229	0.311
	(1.00)	**(1.97)****	(0.96)	(1.57)
NASDAQ Index	0.143	0.11	0.115	0.137
	(1.69)*	(0.58)	(1.27)	(0.62)
Ln Sales	-0.272	-0.109	-0.142	-0.119
	(1.81)*	(0.79)	(0.98)	(0.85)
Sales Growth	-0.018	0.022	-0.016	0.015
	(0.61)	(0.98)	(0.62)	(0.62)
Firm's US/Total Trading Volume			-0.045	**0.151**
			(0.58)	**(2.89)*****
Constant	0.532	0.783	0.524	0.572
	(2.72)***	(1.77)*	(2.45)**	(1.20)
Observations	8893	4764	8124	4384
Pairs	231	171	206	157