



Controlling shareholders and market timing: Evidence from cross-listing events



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ABSTRACT

We find partial support for a permanent increase in firm value following U.S. cross-listings. Cross-listed firms with capital-raising intentions on U.S. exchanges and firms cross-listing after the Sarbanes-Oxley Act exhibit an increase in firm value. Yet, investors are worse off in the long run when owning insider-controlled cross-listings. Compared to non-insider-owned cross-listings, insider-owned firms have a greater rise in value around the cross-listing year but also a larger decline in the post-cross-listing years. In fact, insider-owned firms lose value by the fifth year, compared with their value before cross-listing. Lastly, we show that liquidity and visibility enhance the value of cross-listings.

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1. Introduction

Firms around the world have benefitted from reduction in capital barriers in the last few decades. Specifically, emerging-market firms have become more open to the world economy by cross-listing in more developed stock markets. For instance, the U.S. equity market is the most popular destination for foreign firms looking to cross-list their stock abroad. Cross-listed firms deposit part of their shares in investment banks which subsequently issue American depository receipts (ADRs)¹; ADRs trade in the U.S. similar to shares of U.S. firms.² Particularly after the early 1990s, there has been a rise in cross-listings from emerging countries outpacing developed-countries cross-listings due to the greater expectations for benefits from listing on more developed stock exchanges such as those in the U.S. (Esqueda & Jackson, 2015).

There is a consensus in the literature regarding improvements in financial performance in the short-run; however, the long-run

consequences of cross-listing are controversial. We attempt to disentangle the inconclusive evidence on the permanent increase in valuation following U.S. cross-listings. Our main contribution lies on evaluating the effect of ownership structure, a proxy for potential agency issues, on the value of cross-listed firms. On the one hand, asset pricing theories indicate that market value increases due to cross-listings should be permanent as investors perceive reduction in risk; on the other hand, the market-timing hypothesis suggests that the increase in firm value is not permanent as managers choose to cross-list after periods of extraordinary performance.

Extant literature describes reasons to cross-list in the U.S. For instance, early cross-listing literature claims that firms cross-listing in the U.S. reduce their cost of capital (Stapleton & Subrahmanyam, 1977; Errunza & Losq, 1985; Alexander, Eun, & Janakiraman, 1988). Other authors find that cross-listed firms increase liquidity (Karolyi, 1998; Foerster & Karolyi, 2000), enhance investor recognition and shareholder base (Foerster & Karolyi, 1999), improve information transparency (Lang, Lins, & Miller, 2003; Karolyi, 2006; Fernandes & Ferreira, 2008), and increase shareholder protection by bonding to stricter regulation (Stulz, 1999; Coffee, 1999, 2002; Doidge, Karolyi, & Stulz, 2004).³ Specifically, the increase in shareholder protection implicit in the bonding hypothesis has recently been the subject of abundant research due to its relevant

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¹ ADRs are negotiable certificates issued by a depository bank and represent rights to the cash flows of non-U.S. firms. ADRs were first created in 1927 by J.P. Morgan as a means for U.S. investors to participate in the London Stock Market. However, it was after 1990 that the popularity of ADRs increased among firms and investors.

² The U.S. offers four types of ADRs. Type I trade only over-the-counter (OTC). Type II and type III ADR programs are U.S. exchange traded, and Rule 144-A ADRs (PORTAL) are private offerings exclusive to qualified investors.

³ Karolyi (2006, 2012) provides a detailed description of these cross-listing hypotheses.

implications and the current debate is still inconclusive (Karolyi, 2012). Despite the documented findings, there is no evidence that the cross-listing outcomes benefit investors in the long run. For instance, Licht (2003) calls into question the bonding benefit and argues that cross-listings are insensitive to crucial features of the U.S. securities regulation as corporate insiders from foreign firms are subject to less restrictive provisions of SEC rules. Similarly, Siegel (2005) mentions that, despite being subject to SEC regulation, foreign firms can still act opportunistically as there is a low level of securities law enforcement toward foreign firms. We posit that when shareholders' protection is low, managers pursue cross-listings even if it is not in the best interest of shareholders, i.e. there is not a value increasing outcome. Therefore, using cross-listed firms, we test the bonding hypothesis (firm value increases in the long run) versus the market-timing hypothesis or "avoiding" hypothesis put forward by Licht (2003) (firm value does not increase in the long run).

The cross-listing premium is defined as the increase in firm value due to the cross-listing event. Given the existence of a self-selection bias, we employ comparable non-cross-listed firms to measure the change in value due to cross-listing. In this paper, we study the long-term increases in value of foreign firms after cross-listing their stocks in the U.S. Specifically, we measure the benefit for shareholders in terms of Tobin's q , a widely-used proxy for firm value, due to an improvement in the shareholder protection following a cross-listing event.⁴ In the context of the bonding hypothesis, we measure the implications of ownership structure, a proxy for corporate governance, on the long-term performance of cross-listed firms. The effect of ownership structure on the value of cross-listings has received some attention from researchers; however, extant literature mostly focuses on its short-term effects, makes little distinction on firm-level corporate governance, and provides modest evidence on firm-value over multiple cross-listing years.

Exploring the long-term performance of emerging-market firms has become particularly relevant for U.S. investors due to the significant number of firms that cross-list in the U.S. and their substantial impact on financial markets. Additionally, it is important for managers and practitioners to know whether there is a long-lasting benefit from cross-listing in the U.S. King and Segal (2009) provide some background for this paper. Our manuscript enhances their findings in several ways. First, their focus is on Canadian cross-listed firms whose characteristics differ greatly from our sample of emerging economies. For instance, less-developed countries have a weaker level of regulation (Doidge et al., 2004), more ownership concentration (La Porta, Lopez-de-Silanes, & Shleifer, 1999; Claessens & Yurtoglu, 2013), and existing regulations are less likely to be enforced (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 2000). These differences might impact previous findings on developed countries cross-listings as the improvement in shareholder protection described by the bonding hypothesis is stronger in emerging-market cross-listings. In particular, La Porta et al. (2002) find that the degree of shareholder protection has a significant impact on foreign-firm valuations.

Second, our paper adds to the cross-listing literature by documenting the effect of liquidity on the long-term post-cross-listing value. Dodd, Louca, and Paudyal (2015) note that the increase in liquidity is particularly relevant for U.S. cross-listings. Specifically, King and Segal (2009) do not include measures to control for liquidity effects on firm value in their study as Mittoo's (2003) argues that, due to integration with the U.S. stock market, liquidity has a negligible effect on the value of cross-listed Canadian firms; however, the effect of liquidity on the value of firms from emerging economies might differ from Canadian firms due to the different and time-varying degrees of market integration (Esqueda, Assefa, & Mollick, 2012). Third, we explore the effect of the enhanced reporting requirements and corporate governance

mandates, encompassed in the Sarbanes-Oxley Act (SOX), on the long-term value of emerging market cross-listings. This shift in U.S. corporate governance, affecting exchange-traded cross-listings, represents a structural break for bonding hypothesis testing. For instance, Esqueda and Jackson (2015) suggest that managerial opportunism of cross-listed firms decreases after the enactment of the SOX. To our knowledge, our study is the first to analyze the behavior of the long-term value of emerging-market cross-listings in a comparable framework.

This paper is presented in the following order. Section 2 defines our main research questions. Section 3 describes the sample and econometric technique. Section 4 discusses our findings and potential implications. Section 5 presents the concluding remarks.

2. Hypothesis development

Evidence suggests that, in the long run, investors are not able to consistently earn positive abnormal returns by holding shares of newly cross-listed firms. For instance, Foerster and Karolyi (2000) find that firms underperform a benchmark three years after cross-listing; however, firms with high liquidity have positive abnormal returns. Mittoo (2003) finds that Canadian firms underperform a benchmark index by the third post-cross-listing year. Sarkissian and Schill (2009) find no abnormal returns for firms that list abroad during the ten post-cross-listing years. Luo, Fang, and Esqueda (2012) show that Chinese firms listed on U.S. exchanges underperform matching firms three years after the listing event. Lastly, Esqueda and Jackson (2015) find that firms cross-list following periods of abnormal returns and, particularly, insider-owned cross-listings are not able to maintain the pre-cross-listing returns. We can, however, explain the lower returns as a consequence of the decrease in risk. For instance, Gozzi et al. (2008) state that when firms "bond" themselves to higher corporate governance standards, they are subject to a lower cost of capital. Consistent with this argument, Doidge et al. (2009) document an average 37% increase in value (short-term) after a firm is cross-listed; however, on the long-run, the evidence is mixed. For instance, O'Connor (2009) finds that firm value increases only after the fifth year for exchange-traded firms and OTC cross-listings. King and Segal (2009) find that Canadian firms have a permanent increase in valuation if they increase investor recognition or have a dual-class share structure.

Previous findings about the relationship between firm value and U.S. cross-listings may be influenced by the fact that firms have been often considered homogenous regarding their corporate governance. Heterogeneity of firms' corporate governance is supported by Klapper and Love (2004), who find a wide variation of corporate governance across firms with the same legal framework. Therefore it is necessary to consider shareholder protection at the firm level. For instance, O'Connor (2012) finds that only firms offering strong corporate governance benefit from becoming investable. Whether there are permanent gains from cross-listing is inconclusive in the extant literature.

The bonding hypothesis implies that shareholders benefit as firms improve shareholder protection following a U.S. cross-listing (Doidge et al., 2004). Such improvement in corporate governance is expected to permanently increase firm value (i.e. a permanent cross-listing premium) and therefore, the value of cross-listed firms should be permanently superior to non-cross-listed firms (Doidge et al., 2009). Specifically, controlling insiders try to maximize the value of their stake in the firm (k) as shown in the following equations based on Doidge et al. (2004).

$$\text{Max}_f k \left(C - fC - \frac{1}{2}bf^2pC \right) + fC \quad (1)$$

where,

k is the equity ownership in the firm

f the controlling shareholder diverts a share of the firm

C cash flow the controlling shareholder take for himself before distributing the rest as dividends

⁴ Lang et al. (2003), Doidge et al. (2004), Gozzi, Levine, and Schmukler (2008), Doidge, Karolyi, Lins, Miller, and Stulz (2009), King and Segal (2009), and Wang and Esqueda (2014) use Tobin's q as a measure of value of cross-listed firms and La Porta, Lopez-de-Silanes, et al. (2002) and Lins (2003) use Tobin's q to measure the value of foreign firms.

p the quality of investor protection for the shareholder not listed in the U.S. and $p_{U.S.}$ is the investor protection when the firm lists in the U.S.
 b is a constant
 z is the ability to get financing for future growth opportunities; whose interval is $(0, z^{max})$
 z^* threshold or expected value of z
 $v(p)$ a decreasing convex function of p
 First-order condition,

$$-kC - bfpkC + C = 0 \tag{2}$$

Upon rearranging terms we get the optimal amount of cash flows to divert to the controlling shareholder as a function of ownership, as indicated by Doidge et al. (2004).

$$f = \frac{1-k}{bpk} \tag{3}$$

The total gain for the controlling shareholder are found by substituting Eq. (3) into Eq. (1) and rearranging,

$$kC + \frac{1(1-k)^2}{2bpk} C \tag{4}$$

The first term in Eq. (4) equals the dividends received by the controlling shareholder. The second term corresponds to the net private benefits of control if the firm does not cross-list in the U.S. Which are represented by $v(p)C$. $v(p)$ is a decreasing convex function of p .

$$k(C+z) + \frac{1(1-k)^2}{2bp_{u.s.}k} (C+z) = k(C+z) + v(p_{u.s.})(C+z) \tag{5}$$

The controlling shareholder wants the firm to list its shares in the U.S. if Eq. (5) exceeds Eq. (4), as shown in Eq. (6).

$$kz + v(p_{u.s.})z > [v(p) - v(p_{u.s.})]C \tag{6}$$

Doidge et al. (2004) show that when controlling shareholders own k share of the firm, they try to maximize their wealth by attempting to cross-list in the U.S. However, if corporate governance is not

Table 1
 Frequency of sample firms by home country.

Panel A. Matching firms				Panel B. Cross-listed firms		
No.	Country	Frequency	Percent	Country	Frequency	Percent
1	Argentina	25	0.75	Argentina	14	6.45
2	Brazil	39	1.17	Brazil	35	16.13
3	Chile	76	2.28	Chile	13	5.99
4	China	771	23.13	China	63	29.03
5	Colombia	12	0.36	Colombia	0	0.00
6	Czech Republic	7	0.21	Czech Republic	0	0.00
7	Hong Kong	134	4.02	Hong Kong	9	4.15
8	Hungary	14	0.42	Hungary	1	0.46
9	India	111	3.33	India	13	5.99
10	Indonesia	128	3.84	Indonesia	2	0.92
11	Malaysia	107	3.21	Malaysia	0	0.00
12	Mexico	42	1.26	Mexico	31	14.29
13	Pakistan	13	0.39	Pakistan	0	0.00
14	Peru	34	1.02	Peru	1	0.46
15	Philippines	66	1.98	Philippines	3	1.38
16	Poland	77	2.31	Poland	0	0.00
17	Russia	61	1.83	Russia	5	2.30
18	Singapore	62	1.86	Singapore	1	0.46
19	South Africa	47	1.41	South Africa	6	2.76
20	South Korea	666	19.98	South Korea	8	3.69
21	Sri Lanka	4	0.12	Sri Lanka	0	0.00
22	Taiwan	647	19.41	Taiwan	8	3.69
23	Thailand	74	2.22	Thailand	0	2.22
24	Turkey	111	3.33	Turkey	1	0.00
25	Venezuela	6	0.18	Venezuela	3	1.38
	Total	3334	100.00	Total	217	100.00

Table 2
 Variables description.

Variable	Description	Source
InsiderOwner	InsiderOwner indicates that the firm has an insider owner or group of insider with at least 10% claim in the company.	Esqueda (2016)
OwnerConcentration	Indicates that there is at least one investor that owns at least 10% of the firm.	
InsiderCrossListed.	Shows whether the firm cross-listed has insider ownership.	
Dual-class	Indicates whether the firm uses more than one class of stock with different voting rights.	
Owner*Dual-class	Represents the interaction of OwnerConcentration * Dual-class.	
Cross-listed	Cross-listing dummy equals one during the listing year and thereafter.	Bank of New York, Citibank, and Chase Bank depository receipts websites.
Capital-raising	Capital-Raising indicates that the cross-listing firm is an ADR level 3.	
SOX	Equals one during 2002 and thereafter.	
Civil	Indicates the legal origin, civil or common law.	La Porta et al. (2000)
Antidirectors	Is the Antidirectors rights index from the firm's home country.	
Total assets	Book value of total assets is in millions of USD.	Datastream Thomson Reuters
MarketCap	MarketCap is the market capitalization in billions of USD.	
Tobin's q	Equals the market value of equity plus the book value of liabilities divided by the book value of total assets.	
ExcessQ	Is the difference in firm value between a cross-listing and a matching firm or a matching-firm portfolio.	
NYSE	Equals 1 if the firm trades on the NYSE. The host exchange is the NYSE or Nasdaq. No cross-listing choose the AMEX during our sample period.	
Turnover	Turnover equals annual volume divided by total number of shares outstanding.	
NumAnalyst	Represents the number of analyst following the firm or the number of estimations from different analysts reported.	I/B/E/S
StockMarket	Equals the ratio of the aggregate market value of listed shares in the cross-listed firm's home country deflated by the corresponding GDP	Beck et al. (2000)

effectively higher than before cross-listing (i.e., $p_{u.s.} > p$ does not hold), as documented by Licht (2003) and Siegel (2005), firms do not optimize financing for future growth opportunities (z^*). In this scenario, Eq. (6) holds and still leads to a cross-listing event since the loss of private benefits (right-hand side of the equation) is not significantly different than zero,

$$[v(p) - v(p_{u.s.})]C = 0 \tag{7}$$

This leads insiders to cross-list in the U.S. to signal a higher firm value (through a non-existent z^*) and still extract private benefits equal to: $kz + v(p_{u,s})z$. In summary, when insider owners have discretion over the firm's management, the value of the cross-listed firm is not higher than before cross-listing. This scenario provides arguments for the hypotheses against the benefits of cross-listings. The "opposing" hypotheses state that there is no real increase in value and previous cross-listing benefits are explained by window dressing as managers cross-list right after a good performance or due to a selection bias since firms that cross-list are those with better prospects and growth opportunities. For instance, Dharan and Ikenberry (1995) state that the post-listing anomaly is in part explained by managers timing the application for listing. Hence, managers may cross-list on an exchange before a decline in performance which effectively explains the short-lived gains, thereby supporting the window dressing hypothesis. We test the hypothesis of whether firm value increases permanently after a cross-listing event. In addition, we explore the effect of insider-ownership on the cross-listing premium.

As cross-listings are expected to offer shareholder protection similar to the host country firms, the cross-listing gains should be higher for firms with weak corporate governance and from countries with weak investor protection (Dojige et al., 2004). In emerging countries, ownership structure warrants particular attention as it significantly affects agency issues (Claessens & Yurtoglu, 2013). In addition, La Porta et al. (1999) note that ownership structure is substantially different in developing economies, hence, we focus this study on firms from emerging countries. Lins (2003) finds that firm value declines when firms are controlled by insiders. Yet, Dojige et al. (2004) indicate that firms that cross-list benefit more if they are controlled by insiders. In this paper, we use dummy variables to identify the nature of the controlling shareholders (insider or outsider) similar to Lins (2003), King and Segal (2009), and Esqueda (2016).

To estimate the cross-listing premium, we calculate firm value (Tobin's q) adjusted for that of the benchmark firm annually during the pre- and post-cross-listing years. Throughout this paper, we refer interchangeably to the cross-listing premium as ExcessQ. On the one hand, the increase in firm value due to cross-listing may be permanent as predicted by extant cross-listing hypotheses. On the other hand, non-existent value increases can certainly raise questions about the soundness of the cross-listing benefits. Gozzi et al. (2008) find that the value of cross-listings increases only before and during the internationalization year, and then the value gains dwindle in the following two years. O'Connor (2009) finds that firm value increases only after the fifth year for exchange-traded cross-listings. However, King and Segal (2009) and Dojige et al. (2009) suggest there are permanent valuation gains.

Share ownership indicates how cash flows are distributed among shareholders; however, when a firm has multiple share classes, cash flow rights might differ from voting rights (La Porta et al., 1999). Disparities between cash flow and voting rights are particularly relevant in foreign markets. For instance, O'Connor (2012) finds that firms benefit less if they have a dual-class share structure when becoming investable. However, King and Segal (2009) find that Canadian cross-listings with dual-class shares have a more robust increase in value when cross-listing in the U.S. Therefore, in addition to the nature of controlling shareholder (insider or outsider), we control for the firm-level voting rights by identifying firms with a dual-class share structure.

3. Sample and econometric technique

3.1. Sample

We form a comprehensive list of ADRs from emerging markets from the Bank of New York, Chase Bank, and Citigroup websites.⁵ In order to

⁵ The corresponding depository receipts websites are: <http://www.adrbnymellon.com>, <https://www.adr.com>, and <http://www.citiadr.idmanagedsolutions.com/>, respectively.

Table 3
Descriptive statistics.

Variable	N	Mean	S.D.	Min	Max
Panel A. Cross-listed firms					
Tobin's q	1892	1.69	1.34	0.42	6.46
ExcessQ	1881	0.33	1.30	-2.34	5.53
Total assets	2140	6.30	16.60	0.00	309.00
MarketCap	1900	6.52	19.70	0.00	326.00
NetSales	2147	3.56	11.90	0.00	205.00
Antidirectors	2709	3.20	1.62	1.00	5.00
StockMarket	2614	1.51	1.77	0.00	7.43
Turnover	1530	1.10	2.99	0.00	24.67
NumAnalyst	2709	2.22	3.73	0.00	29.00
Panel B. Non cross-listed firms					
Variable	N	Mean	S.D.	Min	Max
Tobin's q	98,846	1.46	1.00	0.42	6.46
Total Assets	106,574	1.03	4.73	0.00	458.00
MarketCap	98,872	0.79	4.58	0.00	330.00
NetSales	106,853	0.81	4.10	-0.03	406.00
Tobin's q equals the market value of equity plus the book value of liabilities divided by the book value of total assets. Total Assets is in Millions of USD. MarketCap is the Market Capitalization in Billions of USD. NetSales represents the net operating revenue in Billions of USD. Antidirectors is the Antidirectors rights index from the firms' home country. StockMarket is the Domestic Stock market development. Turnover equals annual volume divided by total number of shares outstanding. NumAnalyst is the number of analyst following the firm or the number of estimations from different analysts reported by I/B/E/S database.					
Panel C. Frequency of categorical variables					
Variable	Total	Yes/no	N	%	
InsiderOwner	2664	Yes	1179	44%	
		No	1485	56%	
Ownership concentration	2709	Yes	2571	95%	
		No	138	5%	
Dual-class	2651	Yes	480	18%	
		No	2171	82%	
Capital raising	2709	Yes	1281	47%	
		No	1428	53%	
SOX	2709	Yes	981	36%	
		No	1728	64%	
NYSE	2709	Yes	2123	78%	
		No	586	22%	
Civil	2709	Yes	2322	86%	
		No	387	14%	
InsiderOwner * Cross-listed	2664	Yes	700	26%	
		No	1964	74%	
InsiderOwner * Capital raising	2664	Yes	735	28%	
		No	1929	72%	
Cross-listing event * Insider-owner	2664	Yes	102	4%	
		No	2562	96%	
InsiderOwner * Dual-class shares	2651	Yes	306	12%	
		No	2345	88%	
Ownership concentration * Dual-class shares	2651	Yes	465	18%	
		No	2186	82%	
Ownership Conc. * Dual-class shares * Cross-listed	2651	Yes	292	11%	
		No	2359	89%	

Insider Owner indicates that the firm has an insider owner or group of insider owners with at least 10% claim in the company. Ownership Concentration indicates that there is at least one investor, insider or outsider, that owns at least 10% of the firm. Dual-class equals to one if the firm uses more than one classes of stock and with different voting rights. Capital Raising indicates that the cross-listing is type 3. SOX equals one during and after the enactment of the SOX Act in 2002. NYSE is a dummy variable if the firm's host stock exchange is the NYSE. Civil indicates the legal origin civil or common law. Cross-listing event equals to one during the cross-listing year and zero otherwise.

be included in the sample, cross-listed firms must have data available in Datastream Thomson Reuters. The sample period spans the years from 1990 to 2010 and includes > 10,000 firms from emerging countries from which the matching firms are selected. The list of firms and emerging countries is similar to Wang and Esqueda (2014) and Esqueda (2016). Table 1 depicts the list of countries used in our sample. Panel A shows the number of matching firms by country and panel B includes only the cross-listed firms. The sample includes cross-listings completed between 1990 and 2008, in order to have data for the cross-listing year plus two

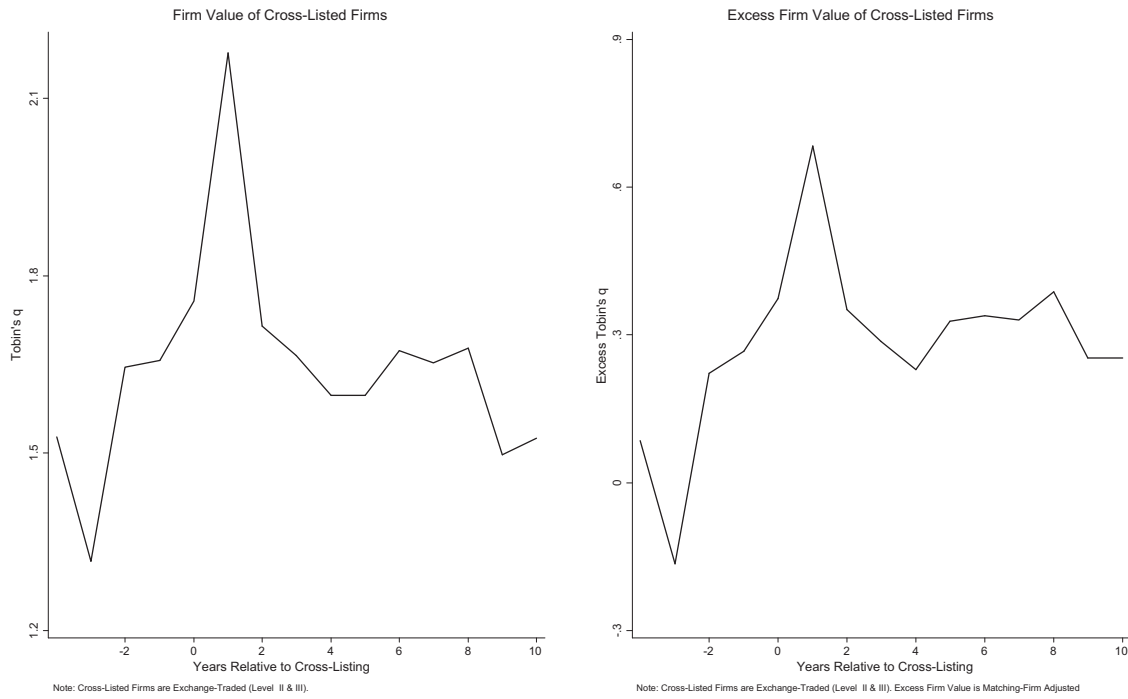


Fig. 1. Value of cross-listed firms.

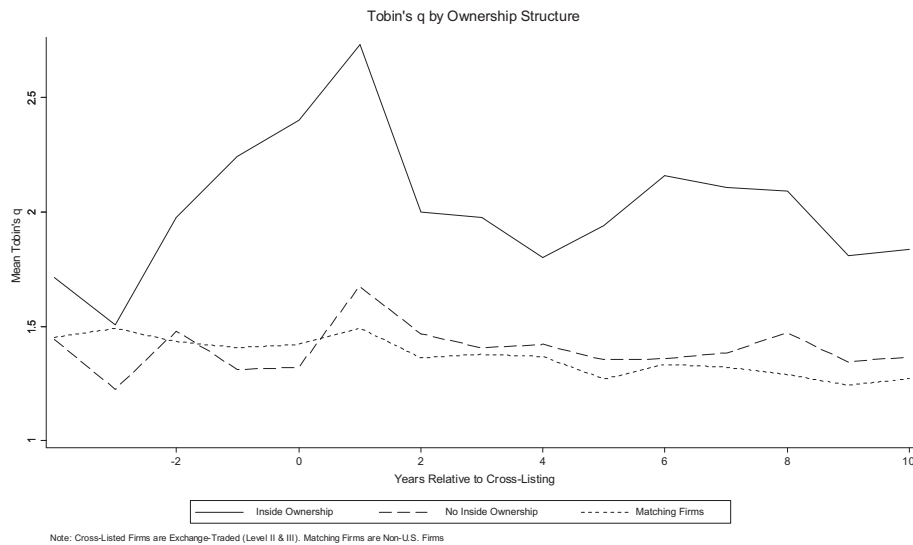


Fig. 2. Value of cross-listed firms by insider-ownership.

years of data after the cross-listing event. Similar to Esqueda (2016) and Esqueda and Jackson (2015), only the earliest sponsored ADR programs are considered in the sample.⁶

We exclude financial firms (SIC codes between 6000 and 6999) as this industry tends to be highly regulated in most countries; removing this industry is a common practice in related studies (O'Connor, 2009; Esqueda, 2016). Specifically, firms may be required by law to maintain different capital requirements, which might result in misleading assumptions about the value of Tobin's q. Similar to Miller (1999), we control for the level of economic development of the home country. We use the Beck, Demirgüç-Kunt, and Levine (2000) database to measure the

development of the stock market in the cross-listing's home country.⁷ Ayyagari and Doidge (2010) use the same index to control for the maturity of domestic capital markets. We collect the data starting from 1990 as Datastream has limited accounting data from emerging countries before that year (Li, Morck, et al., 2004).

The bonding hypothesis implies that cross-listed firms are more regulated than those firms that do not cross-list if the host country has stricter rules than their home country (Stulz, 1999; Coffee, 1999, 2002). Doidge et al. (2004) suggest that firms with weak investor protection tend to benefit the most from cross-listing on exchanges with better protection to shareholders. Lins (2003), Doidge et al. (2004), and Doidge et al. (2009) establish that whether or not the controlling shareholder is an insider matters, since a controlling shareholder can extract private benefits, particularly when their voting rights exceed

⁶ The sample includes only exchange-traded ADRs since OTC and PORTAL firms are not required to submit annual reports to the Securities and Exchange Commission (SEC) and most data for these (non-exchange-traded) firms is unavailable in CRSP, I/B/E/S, and Datastream; King and Segal (2009), Dodd et al. (2015), and Esqueda and Jackson (2015) follow a similar approach.

⁷ Stock market development is defined as the average value of listed shares deflated by GDP (Beck et al., 2000).

Table 4
Univariate tests. Pre-cross-listing and post-cross-listing value.

Years relative to cross-listing event	−1	1	2	3	4	5	6	7	8	9	10
Panel A. All firms											
ExcessQ											
Obs.	66	67	67	67	63	57	53	51	47	41	35
After	0.39	0.45	0.35	0.48	0.45	0.48	0.5	0.4	0.51	0.42	0.51
Before	0.25	0.27	0.27	0.27	0.25	0.28	0.31	0.3	0.29	0.37	0.53
Difference	0.14	0.19*	0.09	0.21**	0.20*	0.20*	0.19	0.09	0.22	0.04	−0.02
Tobin's q											
Obs.	68	69	69	69	65	59	55	53	49	43	37
After	1.79	1.79	1.61	1.7	1.71	1.72	1.77	1.66	1.74	1.6	1.7
Before	1.65	1.66	1.66	1.66	1.62	1.64	1.69	1.7	1.7	1.81	1.95
Difference	0.15	0.13	−0.05	0.05	0.09	0.08	0.08	−0.03	0.03	−0.2	−0.25
Panel B. ExcessQ by ownership structure											
Insider-Owned Firms											
Obs.	26	26	26	26	24	21	19	18	16	15	15
After	0.97	0.93	0.66	1.01	0.96	0.97	1.11	1.00	1.04	1.08	0.97
Before	0.8	0.8	0.8	0.8	0.91	1.03	1.16	1.15	1.15	1.23	1.23
Difference	0.16	0.13	−0.15	0.2	0.05	−0.06	−0.05	−0.15	−0.12	−0.15	−0.25
Non-Insider-owner firms											
Obs.	39	40	40	40	38	36	34	33	31	26	20
After	0.01	0.16	0.17	0.15	0.13	0.19	0.16	0.07	0.24	0.04	0.16
Before	−0.11	−0.07	−0.07	−0.07	−0.16	−0.16	−0.17	−0.16	−0.16	−0.12	0.01
Difference	0.12*	0.23**	0.24**	0.22**	0.29**	0.35**	0.32*	0.23*	0.40***	0.15*	0.16

Panel A uses values corresponding to two years before the cross-listing date. ExcessQ is the matching firm(s) adjusted-value of the cross-listed firm. Tobin's q is used as a proxy for firm value. P-value (1) are for one-tailed *t*-tests of the null hypothesis: ExcessQ (Tobin's q) after cross-listing is not higher than ExcessQ (Tobin's q) before cross-listing. Significance levels are for one-tailed *t*-tests. Panel B Shows firm value by Insider-Ownership category. ExcessQ is the matching firm(s) adjusted-value of the cross-listed firm. "After" ExcessQ is measured during the year relative to the cross-listing event indicated above. "Before" ExcessQ is measured one and two years before the cross-listing date. P-values are for one-tailed *t*-tests of the null hypothesis: ExcessQ after cross-listing is not higher than ExcessQ before the cross-listing event. Significant levels are indicated as: **p* < 0.10, ***p* < 0.05, ****p* < 0.01.

Panel C. Univariate tests of ExcessQ before and after cross-listing by insider-ownership category.

	All firms	Insider-Owner	Non-insider-Owner	D-in-D
Firms	199	97	102	
Post-cross-listing	0.2602	0.3825	0.1440	
Pre-cross-listing	0.6489	1.0739	0.2447	
Difference (Δ ExcessQ)	−0.3887***	−0.6914***	−0.1007	0.5907***
<i>t</i> -test	***	***	*	***

Non-parametric Wilcoxon paired signed rank tests show whether the average ExcessQ during the three years subsequent to the cross-listing event (Post-cross-listing) is significantly higher than the average ExcessQ during the cross-listing year and up to three years before cross-listing (Pre-cross-listing). The column Differences-in-Differences shows the tests of whether the change in ExcessQ (Δ ExcessQ) from the pre-cross-listing to the post-cross-listing period differ significantly by insider ownership category (Insider-Owner versus Non-Insider-Owner). We additionally show the parametric two-tailed *t*-tests of mean differences with unequal variances in the last row. Wilcoxon: **z* < 0.10, ***z* < 0.05, ****z* < 0.01; *t*-test.

* *p* < 0.10.

** *p* < 0.05.

*** *p* < 0.01

their cash flow rights. The variables of interest, ownership structure variables (dual-class share structure, insider-ownership, and ownership concentration), are obtained from Esqueda (2016). In addition, we control for the level of investor protection at the country level using the anti-directors rights and judicial efficiency indices from La Porta et al. (2000).

We estimate firm value starting up to five years before the cross-listing event and up to 10 years after the cross-listing event. Firm value is measured using a matched-firm-adjusted Tobin's q. Tobin's q has been commonly employed as a measure of value of cross-listed firms (Lang et al., 2003; Doidge et al., 2004; Gozzi et al., 2008; Doidge et al., 2009; King & Segal, 2009; Wang & Esqueda, 2014). Tobin's q is estimated as the market value of equity plus the book value of liabilities divided by the book value of total assets. Table 2 offers a summary of the variables of interest and the control variables along with their corresponding source. To remove the influence of outliers, we Winsorize the data at the 1% level for Tobin's q and Sales Growth.⁸ Table 3 shows the descriptive statistics for the sample of cross-listed firms in Panel A and for matching-

firms in Panel B. On average, cross-listed firms appear to be larger than non-cross-listed firms and have higher Tobin's q.

Lang et al. (2003) find that firm value increases after firms cross-list due improvements in their information environment provided by analyst coverage indicated in the Institutional Brokers System (I/B/E/S). Similarly, Fernandes and Ferreira (2008) find that the information environment improves following cross-listing events. To control for firm visibility and shareholder base, we use the number of analysts from I/B/E/S as in Lang et al. (2003) and Fernandes and Ferreira (2008). Analyst coverage is measured during November and July of the current fiscal year as suggested by Lang et al. (2003). Additionally, we use a dummy variable to identify whether the host stock exchange is the NYSE as this exchange tends to provide more exposure to their listed firms during our sample period.

3.2. Methodology

As firms self-select to participate in the cross-listing "treatment," there is an endogeneity concern. To control for self-selection bias, we identify a comparable non-cross-listed firm and calculate the difference in value, thereby quantifying the cross-listing effect. Whereas a number of variables can be used to select matching firms, there is a consensus in the literature about using industry, growth opportunities, firm size, sales growth, and country factors as relevant variables that determine

⁸ Similarly, O'Connor (2009) removes the upper 1% values of the observations. We truncate the values at negative 100% at the lower end of sales growth. We use the natural Logarithm of Total Assets in USD as a proxy for Size.

Table 5
Random effects Hausman-Taylor panel estimations.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
StockMarket	−0.248*** (0.034)	−0.252*** (0.035)	−0.291*** (0.041)	−0.224*** (0.033)	−0.239*** (0.034)	−0.249*** (0.035)	−0.263*** (0.035)
NYSE	−0.188 (0.236)	0.041 (0.276)	0.336 (0.341)	−0.344 (0.232)	−0.222 (0.236)	0.029 (0.276)	0.108 (0.303)
Antidirectors	1.213 (1.087)	0.38 (1.347)	2.702** (1.267)	0.507 (1.041)	1.224 (1.078)	0.379 (1.347)	2.569* (1.327)
CrossListEvent	0.312*** (0.064)	0.260*** (0.079)	0.354*** (0.101)	0.127 (0.085)	0.136 (0.085)	0.095 (0.106)	0.09 (0.108)
CLevent-Insider				0.425*** (0.122)	0.382*** (0.124)	0.354** (0.154)	0.353** (0.156)
NumAnalyst			−0.012 (0.009)				−0.002 (0.007)
Turnover		0.009 (0.016)	0.040** (0.018)			0.010 (0.016)	0.009 (0.017)
InsiderOwner	0.543*** (0.185)	0.604*** (0.225)	0.682*** (0.258)		0.453** (0.184)	0.558** (0.225)	0.614** (0.248)
Dual-class	0.107 (0.245)			0.111 (0.254)	0.095 (0.245)		
Const	−1.561 (2.270)	−1.09 (2.680)	−6.937** (3.447)	0.025 (2.189)	−1.352 (2.273)	−1.006 (2.681)	−4.155 (2.790)
N	1768	1425	997	1768	1768	1425	1425
Country effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Chi2	152.46	116.42	103.66	154.11	162.4	121.38	115.72
F	6.93	5.29	4.51	7.01	7.06	5.28	4.82

The dependent variable is ExcessQ. StockMarket is the Domestic Stock market development. NYSE is a dummy variable if the firm's host stock exchange is the NYSE. Antidirectors is the Antidirectors rights index. CrossListEvent is the dummy variable for the Cross-Listing year. InsiderOwner indicates that the firm has an insider-owner or group of insider-owners with at least 10% claim in the company. CLevent-Insider represents the interaction of CrossListEvent * InsiderOwner. NumAnalyst is the number of analyst following the firm or the number of estimations from different analysts reported by I/B/E/S database. Turnover is a proxy for market liquidity and equals annual volume divided by total number of shares outstanding. Dual-class, OwnerConcentration, and InsiderOwner are dummy variables for firms' ownership structure. Country Dummies Coefficients are not reported for brevity. ExcessQ is the firm value adjusted for that of a matching firm. Standard errors are in parentheses.

* p < 0.10.

** p < 0.05.

*** p < 0.01.

comparable firms (Dojidge et al., 2004; O'Connor, 2009; Esqueda & Jackson, 2015). We identify matching firms based on size (book value of assets), sales growth, industry, and country legal origin⁹ as similar variables have been employed in the cross-listing literature. Similar to Esqueda and Jackson (2015), we determine the closest matching firm (or matching firm portfolio) using the coarsened exact matching (CEM) procedure by Blackwell, Iacus, King, and Porro (2009). The CEM requires fewer assumptions, is more easily automated, and possesses more attractive statistical properties for many applications than do existing matching methods.¹⁰

Panel methodology is appropriate for this study because it facilitates the analysis of time series and takes advantage of the cross-sectional differences between countries. Random effects panels require $Cov(x_{it}, v_i) = 0$ to generate efficient coefficients; however, Hausman (1978) tests indicate that there is endogeneity of the regressors with the firm random effect; hence, random effects are not feasible. The alternative fixed effects model is not suitable as the sample contains time-invariant regressors; however, the Hausman-Taylor random effects is suitable for our sample. The Hausman-Taylor estimator can accommodate random effects models when there is endogeneity of the regressors with the firm effects and assumes that some (but not all) of the regressors in x and z are correlated with u_i but none correlated with e_i .

Our base panel model is a variant of:

$$ExcessQ_{it} = \alpha + \sum_{j=1}^m \beta_j x_{it}^j + \sum_{k=1}^n \delta_k z_{it}^k + \alpha_i + v_{it} + e_{it} \quad (8)$$

⁹ La Porta et al. (2000) describes countries' legal origin as follows: "Common law countries have the strongest protection of outside investors – both shareholders and creditors – whereas French civil law countries have the weakest protection. German civil law and Scandinavian countries fall in between."

¹⁰ This matching methodology matches each treated firm (cross-listed) with the firm that has the most similar properties in the universe of non-treated firms or with a portfolio of firms that share similar characteristics (Blackwell et al., 2009).

where, $ExcessQ_{it}$ is the matching-firm-adjusted Tobin's q. α_i and α_c are firm and country effects respectively, v_{it} is the firm specific effect and e_{it} is an idiosyncratic error term. x_{it} represents a group of j regressors (time-variant) and z_{it} is the vector of k (time-invariant) regressors; both sets of variables are described in detail in Table 2.

Extant literature suggests that the sample and hence the coefficients of our control variables may vary significantly across different subsamples. Specifically, we create three sets of subsamples: insider-controlled vs non-insider-controlled, pre-SOX vs post-SOX, and capital-raising vs non-capital-raising. We employ seemingly unrelated regressions (SUR) across the three categories of subsamples. SUR is able to statistically compare the coefficients of the regressors across groups. We report robust standard errors to account for possible autocorrelation in panel data. As a robustness test, we run cross-sectional regressions using ordinary least squares with country effects. We test whether the change in ExcessQ, before and after cross-listing, can be explained by ownership structure. The dependent variable measures the change in firm value between the two years prior and five years after the cross-listing event. This difference in value between the pre- and post-cross-listing years is labeled *Premium* hereafter.

4. Results and discussion

Fig. 1 shows that the mean Tobin's q of cross-listed firms peaks during the cross-listing year but soon declines close to pre-cross-listing levels. When their ExcessQ (matching-firm-adjusted Tobin's q) is estimated, we observe a similar pattern. Fig. 1 suggests that, on average, there are negligible long-term valuation gains following U.S. cross-listings. However, Fig. 2 indicates that the level and behavior of the cross-listing premium strongly depends on whether the firm is insider-owned. Specifically, firms with insider ownership have a larger spike in ExcessQ, yet the cross-listing premium dissipates at the end of the sample period. The cross-listing premium of firms without insider-ownership remains

Table 6
Random effects Hausman-Taylor estimations by cross-listing year.

	(1)	(2)	(3)	(4)	(5)	(6)
Year -1	-0.358*** (0.113)	-0.332** (0.154)	-0.358*** (0.113)	-0.338** (0.153)	-0.359*** (0.112)	-0.340** (0.152)
Year 2	-0.298*** (0.078)	-0.240*** (0.092)	-0.298*** (0.078)	-0.242*** (0.092)	-0.292*** (0.078)	-0.244*** (0.092)
Year 3	-0.316*** (0.080)	-0.259*** (0.093)	-0.315*** (0.080)	-0.249*** (0.094)	-0.310*** (0.080)	-0.252*** (0.093)
Year 4	-0.303*** (0.085)	-0.293*** (0.097)	-0.302*** (0.085)	-0.279*** (0.098)	-0.299*** (0.085)	-0.283*** (0.097)
Year 5	-0.244*** (0.089)	-0.246** (0.101)	-0.243*** (0.089)	-0.227** (0.102)	-0.238*** (0.089)	-0.231** (0.101)
Year 6	0.186* (0.092)	0.174* (0.104)	0.184** (0.092)	0.154 (0.105)	0.179* (0.092)	0.159 (0.104)
Year 7	-0.183* (0.096)	-0.164 (0.107)	-0.182* (0.096)	-0.148 (0.108)	-0.176* (0.095)	-0.151 (0.107)
Year 8	-0.163 (0.101)	-0.163 (0.112)	-0.162 (0.101)	-0.147 (0.112)	-0.154 (0.100)	-0.15 (0.111)
Year 9	-0.262** (0.107)	-0.281** (0.117)	-0.261** (0.107)	-0.266** (0.118)	-0.255** (0.106)	-0.268** (0.117)
Year 10	-0.257** (0.115)	-0.312** (0.124)	-0.255** (0.115)	-0.298** (0.125)	-0.250** (0.113)	-0.300** (0.123)
StockMarket	-0.289*** (0.037)	-0.254*** (0.038)	-0.289*** (0.037)	-0.271*** (0.039)	-0.295*** (0.037)	-0.274*** (0.039)
NYSE	-0.252 (0.259)	-0.275 (0.232)	-0.258 (0.255)	-0.122 (0.301)	-0.128 (0.289)	-0.015 (0.298)
Antidirectors	1.352 (1.107)	-0.363 (0.383)	1.355 (1.094)	1.473 (1.166)	1.306 (1.113)	1.244 (1.041)
ConcOwnerDual	0.253 (0.286)					
Turnover		0.011 (0.016)		0.007 (0.017)		0.006 (0.017)
InsideOwnerDual			0.540* (0.298)	0.584 (0.355)		
NumAnalyst				-0.004 (0.008)	-0.002 (0.007)	-0.004 (0.008)
InsiderOwner					0.606*** (0.233)	0.582** (0.246)
Const	-1.605 (2.539)	2.025* (1.171)	-1.601 (2.478)	-1.724 (2.702)	-1.698 (2.578)	-1.475 (2.469)
N	1560	1336	1560	1323	1570	1333
Country effects	Yes	Yes	Yes	Yes	Yes	Yes
NumAnalyst Miss = 0?	N/A	N/A	N/A	Yes	Yes	Yes
Chi2	152.391	116.94	156.005	110.495	155.838	115.85
F	5.08	3.90	5.20	3.45	5.03	3.62

The dependent variable is ExcessQ. ExcessQ is the firm value adjusted for that of a matching firm or matching-firm portfolio. Year number is relative to the cross-listing year. In this model, the reference year is the cross-listing year (Year 1). StockMarket is the domestic stock market development. NYSE is a dummy variable if the firm's host stock exchange is the NYSE. Antidirectors is the Antidirectors rights index. Turnover is a proxy for market liquidity and equals annual volume divided by total number of shares outstanding. Dual-class equals to one if the firm uses more than one class of stock and with different voting rights. InsiderOwner indicates that the firm has an insider-owner or group of insider-owners with at least 10% claim in the company. InsideOwnerDual is the interaction of InsiderOwner * Dual-class. NumAnalyst is the number of analyst following the firm or the number of estimations from different analysts reported by I/B/E/S database. Country dummies coefficients are not reported for brevity. Standard errors are in parentheses.

* $p < 0.10$.

** $p < 0.05$.

*** $p < 0.01$.

mostly unchanged, with ExcessQ around zero, during the sample period. These univariate results suggest that insider ownership has an effect on ExcessQ.

Table 4 Panel A shows the univariate tests of firm value (Tobin's q) and cross-listing premium (ExcessQ) for all firms during each cross-listing year. We test the difference between the current Tobin's q (each year) and the Tobin's q before cross-listing (two years prior to the cross-listing year). We proceed similarly to measure the change in ExcessQ following the cross-listing event. Whereas Tobin's Q does not increase significantly after cross-listing at any of the cross-listing years, ExcessQ increases significantly during the first five years. Yet, the change in ExcessQ becomes non-significant after the fifth cross-listing year. There seems to be only a short-lived increase in ExcessQ as no cross-listing premium is found to subsist by year 10.

In Table 4 Panel B, we segment the sample by InsiderOwner category and perform univariate tests on the change ExcessQ (before and after cross-listing) similar to the full sample tests shown in Panel A. Whereas non-insider-owned cross-listings experience a significant improvement

in the ExcessQ, insider-controlled firms do not have an improvement; in fact, they have an average decline in excess firm value, albeit not significant. At minimum, this evidence indicates that insider-owned firms benefit the least from cross-listing.¹¹ Table 4 Panel C confirms that the decline in value after the cross-listing year is stronger for the subsample of insider-owned firms. The average ExcessQ during the three years following the cross-listing year has statistically significant decline compared to the average ExcessQ three years before (-0.3887). However, the magnitude of the decline is higher for insider-owned cross-listings (-0.6914) versus non-insider-owned cross-listings (-0.1007). The difference in the loss of ExcessQ (0.5907), Difference-in-Differences, is statistically significant at the 1% level.

Table 5 shows the results of Hausman-Taylor random effects where the dependent variable is the matching-firm-adjusted value (ExcessQ).

¹¹ Additional univariate tests indicate that both firm value and ExcessQ differ significantly by insider-ownership category; however, this difference in value exists prior to the cross-listing event. Results are not shown for brevity but are available upon request.

Table 7
Seemingly unrelated regressions by insider-ownership.

	(1)		(2)		(3)	
	Insider	Non-Ins	Insider	Non-Ins	Insider	Non-Ins
Year – 1	–0.317 (0.287)	–0.269** (0.130)	–0.228 (0.285)	–0.275** (0.129)	–0.342 (0.280)	–0.285** (0.132)
Year 2	–0.717*** (0.169)	–0.140** (0.070)	–0.515*** (0.152)	–0.117* (0.069)	–0.716*** (0.168)	–0.138** (0.070)
Year 3	–0.765*** (0.192)	–0.202* (0.108)	–0.491*** (0.168)	–0.173* (0.100)	–0.767*** (0.191)	–0.200* (0.111)
Year 4	–0.824*** (0.223)	–0.107 (0.132)	–0.558*** (0.211)	–0.082 (0.123)	–0.804*** (0.219)	–0.107 (0.134)
Year 5	–0.677*** (0.221)	–0.163 (0.129)	–0.365* (0.216)	–0.136 (0.121)	–0.651*** (0.220)	–0.168 (0.121)
Year 6	–0.506* (0.290)	–0.213 (0.149)	–0.173 (0.258)	–0.189 (0.139)	–0.486* (0.285)	–0.22 (0.139)
Year 7	–0.42 (0.280)	–0.192 (0.146)	–0.144 (0.275)	–0.173 (0.140)	–0.408 (0.279)	–0.20 (0.133)
Year 8	–0.603* (0.329)	–0.113 (0.157)	–0.318 (0.302)	–0.094 (0.153)	–0.600* (0.329)	–0.121 (0.143)
Year 9	–0.655** (0.306)	–0.207 (0.165)	–0.490* (0.294)	–0.185 (0.158)	–0.658** (0.304)	–0.217 (0.147)
Year 10	–0.523* (0.301)	–0.211 (0.143)	–0.414 (0.303)	–0.186 (0.139)	–0.523* (0.296)	–0.221* (0.132)
StockMarket	–0.211*** (0.080)	–0.002 (0.056)	–0.215*** (0.081)	–0.003 (0.056)	–0.191** (0.076)	0.002 (0.050)
NYSE	–0.336 (0.333)	–0.119 (0.404)	–0.269 (0.373)	–0.104 (0.408)		
Antidirectors	–0.421*** (0.146)	–0.044 (0.058)	–0.457*** (0.138)	–0.043 (0.058)	–0.444*** (0.144)	–0.044 (0.058)
NumAnalyst	0.085*** (0.027)	0.017 (0.016)			0.083*** (0.027)	0.016 (0.017)
Civil	–2.373*** (0.560)	–0.32 (0.315)	–2.283*** (0.589)	–0.308 (0.317)	–2.478*** (0.560)	–0.34 (0.359)
N	1570		1570		1570	
Chi2	32.38		24.73		32.44	
Significantly different?	*		**		***	
Firm effects	Yes		Yes		Yes	

The dependent variable is ExcessQ. ExcessQ is the firm value adjusted for that of a matching firm or matching-firm portfolio. Subsamples by InsiderOwner category. InsiderOwner indicates that the firm has an insider-owner or group of insider-owners with at least 10% claim in the company. Year number is relative to the cross-listing year. In this model, the reference year is the cross-listing year (Year 1). StockMarket is the domestic stock market development. NYSE is a dummy variable if the firm's host stock exchange is the NYSE. Antidirectors is the Antidirectors rights index. NumAnalyst is the number of analyst following the firm or the number of estimations from different analysts reported by I/B/E/S database. Civil indicates the legal origin civil or common law. All models include firm effects. Standard errors are in parentheses.

* p < 0.10.

** p < 0.05.

*** p < 0.01.

Ownership concentration does not have a significant effect on ExcessQ; however, if an insider has ownership in the firm at or above 10% (*Insider-Owner*), the firm value is significantly higher than that for non-insider owner firms. *Dual-Class* has no significant effect on ExcessQ. The positive effect of dual-class shares is not as robust in emerging markets as reported by King and Segal (2009) for a sample of Canadian cross-listings. However, *Insider-Owner* is positive and significant at the 1% level in all model specifications in Table 5. There is also a strong positive effect of the cross-listing event, indicating that firms have higher valuation gains during the cross-listing year. Columns four to seven include a dummy variable for the cross-listing event with an interaction for firms with insider ownership; *CrossListEvent* * *InsiderOwner* (*CLevent-Insider*).

The positive effect of the cross-listing event appears to be stronger if the firm has insider ownership as seen in Fig. 2. This coefficient is consistent with the univariate tests and Figures, suggesting that insider-owned firms have, on average, a higher increase in ExcessQ and higher firm value. However, the higher ExcessQ compared to non-insider-owned firms exists prior to the cross-listing event as indicated by the *InsiderOwner* dummy. Our proxy for liquidity (*Turnover*) is positive and significant in some model specifications; firms with higher turnover appear to have slightly higher valuation gains, consistent with Foerster and Karolyi (1999). Measures of investor base and visibility, *NumAnalyst* and *NYSE*, do not have a significant effect on the post-cross-listing changes in firm value.

In Table 6, we present Hausman-Taylor models where the dependent variable is ExcessQ. We compare the change in ExcessQ during each cross-listing year relative to the cross-listing year (coefficients are relative to Year 1). The negative coefficients for Year – 1 and Year 2 to Year 10 support the idea that firms peak in value during their cross-listing year but soon reverse to pre-cross-listing levels. On Year 9 and Year 10, cross-listed firms give up a significant portion of their value relative to the cross-listing year, between –0.255 and –0.312 ExcessQ. In addition, we confirm that cross-listed firms with insider ownership tend to have a higher ExcessQ than their non-insider ownership peers as indicated by the positive coefficient of *InsiderOwner*. This difference in firm value remains across the pre- and post-cross-listing years in agreement with the idea expressed in Table 5. As expected, firms from countries with a more developed stock market benefit less from cross-listing in the U.S., hence, command a lower Excess Q as indicated by the negative coefficient of *StockMarket*. Similar to Table 5, the coefficients of *NumAnalysts* is negative, albeit not significant. Our proxy for liquidity, *Turnover*, is not significant in these models. Overall, this table illustrates that by the tenth year after cross-listing, firms have a significantly lower value than during the cross-listing year.

In Table 7, we portray SUR that test whether our findings differ significantly across insider-ownership category. After the cross-listing year, Insider-owned firms suffer a significant long-run decline in Excess Q (between –0.414 and –0.658), whereas non-insider-owned firms have a negligible change. This is consistent with the stronger spike in

Table 8

Seemingly unrelated regressions. Subsamples: Capital-Raising category and pre- and post-SOX.

	(1)		(2)		(3)		(4)	
	CR	Non-CR	CR	Non-CR	Post-SOX	Pre-SOX	Post-SOX	Pre-SOX
Year - 1	-0.358 (0.222)	0.034 (0.120)	-0.349* (0.194)	0.066 (0.126)	0.083 (0.091)	-0.292 (0.223)	0.176 (0.110)	-0.282 (0.222)
Year 1	0.903*** (0.294)	0.06 (0.227)	0.954*** (0.291)	0.052 (0.228)	0.731*** (0.223)	0.179 (0.332)	0.851*** (0.229)	0.156 (0.329)
Year 2	0.405 (0.266)	-0.052 (0.217)	0.41 (0.259)	-0.079 (0.219)	0.407** (0.176)	-0.073 (0.328)	0.497*** (0.181)	-0.126 (0.323)
Year 3	0.441 (0.269)	-0.117 (0.210)	0.372 (0.257)	-0.144 (0.212)	0.302* (0.171)	-0.042 (0.328)	0.276 (0.183)	-0.099 (0.324)
Year 4	0.394 (0.268)	-0.129 (0.230)	0.354 (0.258)	-0.147 (0.231)	0.217 (0.193)	-0.036 (0.334)	0.282 (0.212)	-0.099 (0.327)
Year 5	0.488* (0.290)	-0.129 (0.234)	0.414 (0.274)	-0.153 (0.234)	0.202 (0.196)	0.035 (0.337)	0.241 (0.212)	-0.048 (0.331)
Year 6	0.587** (0.282)	0 (0.262)	0.461* (0.263)	-0.017 (0.264)	0.491* (0.286)	0.045 (0.334)	0.522* (0.295)	-0.04 (0.331)
Year 7	0.782*** (0.302)	-0.019 (0.249)	0.656** (0.275)	-0.015 (0.250)	0.738* (0.410)	0.071 (0.333)	0.841** (0.397)	0.007 (0.328)
Year 8	0.594** (0.302)	0.015 (0.252)	0.452 (0.279)	0.031 (0.251)	0.487 (0.386)	0.089 (0.329)	0.462 (0.359)	0.031 (0.324)
Year 9	0.326 (0.300)	0.044 (0.255)	0.234 (0.272)	0.06 (0.256)				
Year 10	0.409 (0.326)	-0.021 (0.247)	0.276 (0.307)	0.008 (0.248)				
StockMarket	-0.220*** (0.082)	-0.179* (0.093)	-0.180** (0.077)	-0.168* (0.094)	-0.150** (0.068)	-0.232* (0.131)	-0.129** (0.063)	-0.204 (0.127)
NYSE	0.058 (0.374)	-0.061 (0.459)	0.007 (0.366)	-0.114 (0.454)	0.106 (0.277)	-0.254 (0.486)	-0.01 (0.265)	-0.292 (0.472)
Antidirectors	-0.293** (0.136)	-0.166** (0.081)	-0.219 (0.133)	-0.175** (0.082)	-0.215* (0.121)	-0.215*** (0.082)	-0.13 (0.104)	-0.211** (0.084)
Turnover	0.148*** (0.038)	-0.003 (0.015)	0.109** (0.047)	-0.005 (0.013)	0.150*** (0.042)	0.011 (0.031)	0.088* (0.051)	0.006 (0.027)
NumAnalyst			0.061** (0.030)	0.031** (0.015)			0.107*** (0.027)	0.038* (0.020)
Civil	-1.654*** (0.589)	-0.955** (0.418)	-1.578*** (0.560)	-1.003** (0.413)	-0.573 (0.405)	-1.502*** (0.485)	-0.549 (0.356)	-1.518*** (0.474)
N	1364		1364		1201		1201	
Chi2	37.97		35.45		21.3		24.3	
Significantly different?	***		***		*		*	
Firm effects	Yes		Yes		Yes		Yes	

The dependent variable is ExcessQ. ExcessQ is the firm value adjusted for that of a matching firm or matching-firm portfolio. Models 1 and 2 report results by Capital-Raising category. Models 3 and 4 show the results by SOX category (pre- and post-SOX). Models 3 and 4 include only eight years in the post-SOX subsample due to data limitations in the number of years. Year number is relative to the cross-listing year. In this model, the reference year is two years before the cross-listing event. (Year - 2). StockMarket is the domestic stock market development. NYSE is a dummy variable if the firm's host stock exchange is the NYSE. Antidirectors is the Antidirectors rights index. NumAnalyst is the number of analyst following the firm or the number of estimations from different analysts reported by I/B/E/S database. Civil indicates the legal origin civil or common law. All models include firm effects. Standard errors are in parentheses.

* p < 0.10.

** p < 0.05.

*** p < 0.01.

value during the cross-listing year for insider-owned firms revealed in univariate tests. The evidence shows that insider-owned firms drop in value, particularly within five post-cross-listing years, as all year dummies are negative and strongly significant. Non-insider-owned firms experience small and marginally significant declines and only during years two and three. Whereas O'Connor (2009) states that cross-listed firms increase in value after the fifth year, our results indicate that this is not the case for the subsample of insider-owned firms. We additionally note that firm visibility measured by NumAnalyst is significant only in firms with prior weak shareholder protection (insider-owned), hence, investors appear to value more strongly analyst coverage for weakly governed firms. Taken as a whole, the regression coefficients are significantly different across subsamples in the three set of regressions. The drift in firm value following cross-listing significantly differs by insider-ownership, as suggested above in Fig. 2.

In Table 8, we report regression results by subsamples. In Models 1 and 2, we test subsamples by capital-raising category. In Models 3 and 4, we report results on the pre- and post-SOX subsamples. Our reference year is two years prior to the cross-listing event; therefore, the year dummies indicate whether there are gains from cross-listing (relative to two years prior to cross-listing). StockMarket has a negative

coefficient as in previous models, supporting the idea that more developed stock markets have less gains from cross-listing in the U.S. In addition, we note that capital-raising cross-listings are able to maintain a positive and significant cross-listing premium until Year 8 and maintain a high and positive coefficient (between 0.28 and 0.41) until year ten, albeit not significant.¹² The coefficients of capital-raising and non-capital-raising cross-listings are significantly different. Moreover, Turnover is positive and strongly significant, yet, only in the subsample of capital-raising firms and during the post-SOX years.

In Models 3 and 4, we test whether the cross-listing premium behaves differently before and after SOX. After the enactment of SOX there are only eight years in our sample, hence we limit the year dummies until Year 8. We find that after the implementation of SOX firms tend to have a higher cross-listing premium than before the SOX. The coefficient for Year 7 is positive and significant only for the post-SOX subsample. This suggests that firms are more likely to have a higher ExcessQ, compared to the pre-cross-listing value, after the passage of the SOX, i.e. the cross-listing premium subsists

¹² The lack of significance of Year 10 for the capital raising subsample may be due to the limited number of capital-raising firms that have been cross-listed for 10 years.

Table 9
Ordinary least squares. Cross-sectional regressions. Dependent variable: Premium.

	(1)	(2)	(3)	(4)	(5)
StockMarket	−0.283 (0.261)	−0.318 (0.266)	−0.255 (0.254)	−0.245 (0.260)	−0.244 (0.260)
NYSE	0.340 (0.244)	0.309 (0.265)	0.248 (0.193)	0.189 (0.201)	0.157 (0.187)
Antidirectors	0.075 (0.052)	0.087 (0.056)	0.099* (0.049)	0.103** (0.047)	0.101* (0.047)
InsiderOwner	−0.508* (0.267)	−0.499* (0.258)	−0.711** (0.325)	−0.703* (0.334)	−0.632* (0.297)
Civil	−0.210 (0.301)	−0.312 (0.294)	−0.253 (0.283)	−0.241 (0.290)	−0.217 (0.297)
CapitalRaising	0.458* (0.243)	0.475* (0.251)	0.479 (0.280)	0.491* (0.274)	0.497* (0.267)
SOX		0.301 (0.357)			
InsideOwnerDual			0.523 (0.302)	0.344 (0.434)	
Dual-class				0.192 (0.402)	0.390 (0.284)
N	56	56	56	56	56
Country effects	Yes	Yes	Yes	Yes	Yes
R ²	0.177	0.190	0.195	0.197	0.194
F	3.561	3.470	3.837	7.265	12.165
Adj-R ²	0.079	0.075	0.080	0.063	0.078

The dependent variable (Premium) is calculated after the firm has been cross-listed for five years and equals the difference between the ExcessQ two years before cross-listing and after five years of cross-listing. ExcessQ is the firm value (Tobin's q) adjusted for that of a matching-firm. StockMarket is the domestic stock market development. NYSE is a dummy variable if the firm's host stock exchange is the NYSE. Antidirectors is the Antidirectors rights index. InsiderOwner indicates that the firm has an insider-owner or group of insider-owners with at least 10% claim in the company. Civil indicates the legal origin civil or common law. CapitalRaising indicates whether a firm is allowed to raise capital in the U.S. (Level 3). SOX equals to one during 2002 and thereafter (the post-SOX period). Dual-class equals to one if the firm uses more than one class of stock and with different voting rights. InsideOwnerDual is the interaction of InsiderOwner * Dual-class. All models include country effects. Standard errors are in parentheses.

* p < 0.10.

** p < 0.05.

in the long run. Consistent with Esqueda and Jackson (2015), the potential gains from cross-listing are higher during the post-SOX period than prior to the enactment of the SOX.

Table 9 presents the results of OLS cross-sectional regressions. These results support the hypothesis that insider ownership affects the long-term value of cross-listed firms. It appears that the initial sharper increase in cross-listing premium is more than offset by the subsequent decline. The dependent variable in these cross-sectional regressions is *Premium*, which measures the difference in ExcessQ between the period two years before and five years after cross-listing. The variable *InsiderOwner* is negative and significant in all model specifications, suggesting that investors' wealth decreases in the long run when they invest in insider-owned cross-listings rather than in comparable firms without insider ownership. We also find evidence that capital-raising firms benefit more from cross-listing than non-capital raising firms (earn a higher *Premium*) as the coefficient of *CapitalRaising* is positive and significant at the 10% level (between 0.458 and 0.497).¹³

We find partial evidence of a permanent increase in value due to a U.S. cross-listing. Overall, the results suggest that managers of insider-controlled firms are able to time the market when they cross-list their stock on U.S. exchanges. In addition, the decline in firm value is more robust prior to the SOX; therefore, firms appear less likely to time the market after the SOX given its more stringent requirements, consistent with Esqueda and Jackson (2015). It appears that the SOX has reduced insiders' incentives to time the market. Lastly, possibly due to the higher compliance requirements than non-capital-raising firms, capital-raising cross-listings appear to have potential to earn a permanent cross-listing premium.¹⁴

¹³ We perform robustness tests using the Difference-in-Difference method (Table A-1). The interaction of the cross-listing treatment and InsiderOwner (*Cross-Listed * InsiderOwner*) suggests that insider-controlled firms have a lower value relative to their pre-cross-listing level, consistent with our previous findings. We thank an anonymous referee for this suggestion.

¹⁴ Both capital-raising (level 3) and non-capital-raising (level 2) ADRs must comply with the Securities Exchange Act of 1934. However, level 3 ADRs must also comply with the Securities Act of 1933 since they are allowed to raise new capital on U.S. exchanges.

5. Concluding remarks

Firms that cross-list in the U.S. have a considerable impact on the financial markets in both the home country and the U.S. After the enactment of the SOX in 2002, firms seem more likely to maintain a cross-listing premium. Capital-raising intentions and ownership structure are important to explain the valuation of cross-listings in the short and long term. Moreover, it appears that investors value more visibility in firms with insider ownership and firms allowed to raise capital on U.S. exchanges. It is important for managers and practitioners to know whether there is a long-lasting benefit from cross-listing on U.S. stock exchanges and whether it can be attained by focusing on measurable and identifiable characteristics such as corporate governance and investor recognition.

We find partial support for a permanent increase in firm value following U.S. cross-listings. Cross-listed firms with capital-raising intentions on U.S. exchanges and firms cross-listing after the Sarbanes-Oxley exhibit potential to earn a permanent cross-listing premium. However, investors are worse off in the long run when owning insider-owned cross-listings. Compared to non-insider-owned firms, insider-owned firms have a larger decline in value during the post-cross-listing years where the initial spike in firm value dwindles. In fact, insider-owned firms lose value by the fifth year when compared to their value before cross-listing. Overall, the behavior of insider-controlled firms relative to non-insider controlled firms raise questions about previous findings supporting the bonding hypothesis. The reaction of firms to the cross-listing event is stronger for firms with insider ownership and investors can take advantage of the early market valuation gains. However, in the long run, investors do not benefit by holding insider-controlled cross-listings rather than a comparable non-insider-controlled cross-listing.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <http://dx.doi.org/10.1016/j.irfa.2016.11.008>.

Table A-1

Random effects Hausman-Taylor – difference-in-differences.

	(1)	(2)	(3)	(4)	(5)
StockMarket	−0.285*** (0.035)	−0.277*** (0.035)	−0.264*** (0.036)	−0.287*** (0.036)	−0.287*** (0.036)
NYSE	−0.165 (0.241)	−0.332 (0.221)	−0.061 (0.246)	−0.177 (0.237)	−0.178 (0.240)
Antidirectors	1.006 (0.945)	−0.192 (0.414)	0.070 (0.451)	1.000 (0.933)	1.071 (0.929)
Cross-listed	0.110* (0.056)	0.104* (0.057)	0.048 (0.066)	0.118** (0.058)	0.117** (0.058)
InsiderOwner	0.708*** (0.190)	0.611*** (0.182)	0.645*** (0.214)	0.709*** (0.192)	0.673*** (0.204)
Cross-listed * InsiderOwner	−0.203** (0.085)	−0.210** (0.085)	−0.130 (0.097)	−0.210** (0.086)	−0.209** (0.086)
NumAnalyst		0.003 (0.006)			
Turnover			0.005 (0.016)		
Dual-class				0.107 (0.244)	
InsideOwnerDual					0.193 (0.273)
Const	−1.562 (2.138)	1.007 (1.348)	−0.033 (1.519)	−1.551 (2.125)	−1.674 (2.097)
N	1796	1796	1428	1768	1768
Country effects	Yes	Yes	Yes	Yes	Yes
Chi2	134.849	135.612	110.668	132.699	133.109
F	6.130	5.896	4.812	5.770	5.787

The dependent variable is ExcessQ. StockMarket is the Domestic Stock market development. NYSE is a dummy variable if the firm's host stock exchange is the NYSE. Antidirectors is the Antidirectors rights index. Cross-listed is a dummy variable indicating whether a firm has cross-listed. InsiderOwner indicates that the firm has an insider-owner or group of insider-owners with at least 10% claim in the company. Given the assumption of constant effects after the treatment, the interaction Cross-listed * InsiderOwner is done after the firm has been listed for more than one year to exclude the excess spike in value during the first cross-listing year. NumAnalyst is the number of analyst following the firm or the number of estimations from different analysts reported by I/B/E/S database. Turnover is a proxy for market liquidity and equals annual volume divided by total number

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