

***THE DARK SIDE OF INTERNATIONAL CROSS-LISTING:
Effects on Rival Firms at Home***

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Abstract

The analysis focuses on the stock price impact of firms' U.S. cross-listing on home-market rival firms. A theoretical model is presented that indicates the effect is ambiguous, depending upon the positive price impact of a decrease in the cost of capital for rival firms versus a negative price impact of a market perception of lower growth prospects for rivals. The empirical work uses both listing dates and announcement dates of forthcoming ADR programs. An event study approach is employed to analyze the impact on the home market price of the rival firm around the dates of listing and announcement of listing. We find negative cumulative average abnormal returns for the rival firms around the announcement and listing dates, consistent with rival firms being hurt by the listing. The evidence suggests that investors see rivals as having poorer growth prospects relative to the listing firm. We also find evidence that the positive effect that listers experience is associated with their being viewed as having better growth prospects.

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THE DARK SIDE OF INTERNATIONAL CROSS-LISTING: Effects on Rival Firms at Home

I. Introduction

When foreign firms list their shares on a U.S. stock exchange, this may affect the stock price of the listing firm. It may also affect stock prices of firms in the same industry and country as the listing firm, as investors revise their expectations of firm values. This paper studies the stock price impact on home-market rival firms of firms' cross-listing in the United States.

Existing empirical evidence indicates that a firm listing its shares in the United States experiences a positive change in its share price at home.¹ Yet positive or negative spillover effects may be experienced by its primary home-market rival which is not listed in the U.S. A positive spillover effect could be generated if the U.S. listing provides a positive signal for both the listing firm and its primary home-market rivals. This could involve a market integration effect where home market firms are now priced in a global context rather than in a segmented market. Foerster and Karolyi (1999) and Errunza and Miller (2000) find a strong negative impact of cross-listings on the cost of capital. Eaton, Nofsinger and Weaver (2003) show that the cost of capital falls for cross listing firms, and that the size of the fall is related to the disclosure quality of the home country. If there is also a fall in the cost of capital for rival firms that are not cross-listed, then rivals may benefit from the cross-listing. However, it is also possible that rival firms may be

¹ See Karolyi (1998) for a survey of the effects of listing shares abroad.

harmed by a firm's U.S. listing. When a firm lists in the U.S. it meets the stringent disclosure requirements of U.S. regulations and bonds with the U.S. market, and thus might be better able to exploit growth opportunities. If rivals are seen as firms with relatively lower growth opportunities with respect to the listing firm, then this creates a negative impact on the rival.

Looking at the effects of cross-listings on rival firms is an interesting topic in itself. However, it is also an important topic in that it might help us understand the source of positive effects that firms experience by cross-listing. There are two main hypotheses regarding why firms experience positive abnormal returns when they create an ADR program, and these two hypotheses have different implications for rival firms. The first is the risk sharing hypothesis, and the second is the growth opportunities hypothesis.

The risk sharing hypothesis states that firms benefit from cross-listing in the U.S. since their cost of capital falls with the cross-listing.² To the degree that firms are correlated with the listing firm, the cost of capital should also fall for other firms in the country, thus creating a positive impact on rival firms. One paper that addresses this issue is Fernandes (2003). He looks at the impact of cross listings on home market firms when the first ADR is created in a sample of emerging market ADRs. Using monthly data, he finds a positive effect on home-market firms when the first ADR is created.

The growth opportunities hypothesis states that by cross listing a firm is better able to take advantage of growth opportunities and this is reflected in a positive price impact on the listing firm. The implication of this second hypothesis on rival firms is different from the first. Rival firms are seen as having relatively lower growth prospects, and therefore we might expect a negative impact on their stock price. In this sense,

² See Errunza and Losq (1985) and Stulz (1999).

examining the effects of cross listings on rival firms may help in understanding the sources of cross listing benefits.

We use a sample of American Depositary Receipts to examine empirically the effects of cross-listing on rival firms. Most foreign companies are traded in the U.S. as American Depositary Receipts. An American Depositary Receipt (ADR) is a negotiable certificate denominated in U.S. dollars that represents the ownership of shares in a non-U.S. company. ADRs may trade on organized exchanges or over-the-counter (OTC) and can be either capital raising or not. Our sample consists of Level II and Level III ADRs as well as Canadian direct listings.³

Listing in the U.S. may offer several advantages. Firms might list in the U.S. for the following reasons: to enlarge their shareholder base; as a means of advertising aimed at enhancing their visibility and image for the company's products; to raise capital; to be in a liquid secondary market; to use the ADR in a takeover of a U.S. firm, or to be better able to exploit growth opportunities by signaling their good quality to investors by submitting themselves to increased disclosure through compliance with U.S. SEC regulations, and “bonding” with the U.S. market. This “bonding” can be legal (Coffee (1999, 2002)) or reputational (Siegel (2003)). Theoretical models by Fuerst (1998), Moel (1999), Cantale (1996) and Huddart, Hughes and Brunnermeier (1999) predict that firms will disclose more information at the time of listing as a means of signaling their high quality. Empirically, there are numerous papers that study the effect of firms that cross-

³ There are four types of ADRs. Level I ADRs trade over-the-counter and require no reconciliation to U.S. Generally Accepted Accounting Principles (GAAP) and so involve minimal disclosure under U.S. Securities and Exchange Commission (SEC) regulations. Level II ADRs are for firms that list on a U.S. exchange but raise no new capital. Level III ADRs are for firms that want to raise capital and be listed on a U.S. exchange. Level II and Level III ADRs require U.S. GAAP reconciliation and full disclosure as with any U.S. firm. Finally, Rule 144A ADRs are for firms that seek private U.S. placements to qualified institutional buyers (QIBs). They do not require GAAP reconciliation or full SEC disclosure.

list. A survey of the effects of listing shares abroad is conducted by Karolyi (1998). Overall, evidence indicates that companies experience an increase in home-market value in the month around the listing. This is consistent with both the risk sharing and the growth opportunities hypotheses. Miller (1999) shows that when a foreign firm decides to list in the U.S. it benefits in terms of abnormal returns around the announcement of the listing. Doidge, Karolyi and Stulz (2004) analyze the difference in firm values for foreign firms that list in the U.S. and those that do not. They find that the value of firms that list in the U.S. is higher than the value of firms from the same country that do not list in the U.S. The valuation differential is found to be 16.5% on average. They explain the differential by arguing that cross-listed firms are better able to take advantage of growth opportunities.

Our focus is on the impact of the U.S. listing on rival firms' share values. There has been little work related to this issue. Lang, Raedy and Yetman (2002) match a sample of foreign firms that cross-list with one of firms that are not cross-listed, and compare their characteristics. They find that relative to non-cross-listed firms, cross-listed firms tend to have stronger earnings performance, are valued more highly by the market, and smooth their local-GAAP earnings less aggressively than non-cross-listed firms so that the resulting accounting data are more highly correlated with share price and stock returns. Additional related papers from the accounting literature include Foster (1981) and Freeman and Tse (1992) who document that the disclosures of one firm can affect share prices of others. In the empirical finance literature, Hertzal (1991) estimated the impact of stock repurchases on rival firms' stock prices and found that stock repurchase effects are basically firm-specific with no significant effects on rivals.

After the first draft of our paper was written, we learned of another study that addresses related issues. Lee (2002) explores the source of the positive price impact for listing firms in emerging markets. As part of his analysis, he examines portfolios of rival firms associated with firms that have listed in the United States and finds that rival firms, as a group, tend to have negative abnormal returns. Our analysis is different from his in that we analyze the impact on the primary rival of the listing firm. We do not use indexes of industry rivals since firms in the same industry might be very different in size and trading frequency, further, the effects of firms being viewed with relatively lower growth opportunities with respect to the listing firm should apply to similar firms in the industry. Further, we consider both emerging and developed markets. Another paper that looks at the effects of cross-listings on rival firms is that by Bradford, Martin and Whyte (2002). They analyze the impact of cross-listings on both U.S. rivals and domestic-market rivals, by looking at listing dates. Instead of focusing on a matched rival, they create portfolios of all rival firms in the industry for which data are available, and find a positive impact on U.S. rival firms. Using monthly prices, they do not find an effect on home market rival firms. More recently, Karolyi (2003) finds negative spillover effects of cross-listings on the local market, for a sample of emerging equity markets. Additionally, using a panel of 55 countries Levine and Schmukler (2003) find that internationalization has a negative spillover effect on the liquidity of domestic firms.

The model developed in Section II depicts 2 firms located outside of the United States. Firm i lists its shares on a U.S. exchange and firm j does not. We want to analyze the impact of firm i 's listing on firm j . More specifically, we seek to analyze the impact of i 's listing on the share price of j in the home country. In our model, there is a

controlling shareholder who controls the management of the firm and who can expropriate cash flows from minority shareholders. If the firm lists in the U.S., this reduces the level of optimal expropriation of cash flows by the controlling shareholder, but the firm is better able to exploit growth opportunities and its cost of capital falls. All of these effects work in the same direction: an increase in the price of the cross-listed firm. The effects of this cross listing on the rival firm are twofold. First, there is a positive effect on the rival firm if its cost of capital falls. Second, there is a negative effect on the rival since the market assigns a lower probability to it having good growth prospects after the cross listing. The two effects work in opposite directions and hence the effect of the cross-listing on the rival firm depends on which effect dominates. The effect of cross listings on rival firms is therefore more of an empirical question.

Section III will discuss the data and methodology used for empirically testing the rival firm effect of cross-listing. Then in Section IV, the empirical results are presented. Our findings suggest that rival firms are hurt by the listing of other firms in their industry. Over a 5 day window surrounding the listing date, rival firms experience a -2.20% mean cumulative abnormal return, which is significant at the 1% level. We also find a significant negative impact on rival firms on the day of the announcement of listing. On this day, rival firms experience a -0.32% mean abnormal return. In Section V, we analyze the cross-sectional differences in the abnormal returns of both listing and rival firms. The results appear to offer more support to the growth opportunities hypothesis than the risk sharing hypothesis, as we find significant relationships between abnormal returns and industrial classification, minority shareholder protection, industrial external financial dependence, state of the financial market and default risk.

II. Cross-Listing Effects on Rival Firms: Theory

We start by assuming we have a firm (firm i) with a controlling shareholder who controls the management of the firm.⁴ He owns a fraction γ_i of the firm's equity and expropriates a fraction of the firm's cash flows. Let e_i be the fraction of cash flow expropriated by the controlling shareholder of firm i and C_i be the expected discounted cash flows of this firm. Expropriation is costly; if the controlling shareholder of a firm expropriates a fraction e of cash flows and a share of this, $p(m, e)$, is lost in expropriation, then he only receives $eC[1 - p(m, e)]$.⁵ The cost of expropriation is borne by the controlling shareholder, since if he expropriates eC he loses $eCp(m, e)$. The cost of expropriation varies with the share of expropriation and with the quality of minority shareholder protection of the country, m . In particular, assume that the marginal cost of expropriation is positive $p_e(m, e) > 0$ and increasing $p_{ee}(m, e) > 0$, that stronger minority shareholder protection makes expropriation more costly to the manager $p_m(m, e) > 0$, and that the marginal cost of expropriation increases with better investor protection $p_{em}(m, e) > 0$. Under these conditions, the total cash flow to the manager of firm i is:

$$W_i = \gamma_i(1 - e_i)C_i + e_i C_i [1 - p(m, e_i)] \quad (1)$$

The manager chooses the optimal amount of the firm's cash flows to expropriate by maximizing his own cash flow. If e_i^* is the optimal amount of expropriation by the manager of firm i , then it must satisfy the first order condition:

⁴ La Porta, Lopez-de-Silanes, and Shleifer (1999) examine corporate ownership and find that most large non-U.S. firms have controlling shareholders.

⁵ The qualitative results do not change if we use a specific $p(\cdot)$ function.

$$-\gamma_i + 1 - e_i^* p_e(m, e_i^*) - p(m, e_i^*) = 0 \quad (2)$$

The second order condition is always satisfied:

$$-e_i^* p_{ee}(m, e_i^*) - 2p_e(m, e_i^*) < 0 \quad (3)$$

An increase in minority shareholder protection will reduce the optimal amount of expropriation by the manager:⁶

$$\frac{de_i^*}{dm} = -\frac{-e_i^* p_{em}(m, e_i^*) - p_m(m, e_i^*)}{-e_i^* p_{ee}(m, e_i^*) - 2p_e(m, e_i^*)} < 0 \quad (4)$$

If firm *i* cross-lists in the U.S. by listing on an exchange, this will represent an increase in the level of minority shareholder protection of this firm.⁷ Let e_i^B be the (optimal) fraction of cash flows the controlling shareholder of firm *i* expropriates before the listing, and e_i^A be the optimal fraction of cash flows expropriated after the listing, then by (4) we have that the listing in the U.S. would reduce the fraction of expropriation by the controlling shareholder, so that $e_i^A < e_i^B$.

Now assume that by listing in the U.S. a firm can exploit growth opportunities and realize enhanced future cash flows from growth.⁸ Let *G* be the enhanced future discounted cash flows from growth, and C_i^A be the discounted expected future cash flows for firm *i* after the cross-listing. Assume that the cross listing will reduce the cost of capital for the firm since its risk will be shared by a larger investor base. As the cost of capital falls, the discounted expected future cash flows will change from C_i to C_i^A ,

⁶ This result is similar to that in La Porta et al. (2002).

⁷ The bonding hypothesis was first posited by Coffee (1999, 2002) and suggests that by cross-listing on the NYSE or Nasdaq, firms commit to higher disclosure and greater respect for minority shareholders' rights, since the listing requires the firm to reconcile its financial statements to the U.S. GAAP, to comply with the U.S. SEC, and to meet the requirements of the exchange on which it lists.

⁸ Doidge, Karolyi and Stulz (2004) argue that the positive effect of creating ADR programs comes from the enhanced ability to take advantage of growth opportunities.

where $C_i^A \geq C_i$. If the firm cross-lists in the U.S., the cash flow to the insider would now be:

$$W_i^A = \gamma_i(1 - e_i^A)(C_i^A + G_i) + e_i^A(C_i^A + G_i)[1 - p(m^{US}, e_i^A)] \quad (5)$$

By substituting the optimal amount of expropriation before the cross-listing into (1) we can derive the cash flow to the insider before the cross listing:

$$W_i^B = \gamma_i(1 - e_i^B)(C_i) + e_i^B(C_i)[1 - p(m, e_i^B)] \quad (6)$$

The manager of the firm will only cross-list if the benefits from the enhanced growth opportunities from the cross-listing offset the costs associated with a smaller expropriation of cash flows. In other words, a cross-listing will occur for firm i if $W_i^A > W_i^B$. Therefore, firms that cross-list are those for which:

$$G_i > C_i \frac{e_i^B [1 - \gamma_i - p(m, e_i^B)] + \gamma_i}{e_i^A [1 - \gamma_i - p(m^{US}, e_i^A)] + \gamma_i} - C_i^A = C_i \alpha_i - C_i^A \quad (7)$$

Suppose there are only two types of firms, those with good growth prospects G^+ and those with bad growth prospects G^- , where $G^+ > G^-$. Firms with good growth prospects are those for which $G^+ > C_i \alpha_i - C_i^A$ and those with bad growth prospects are the ones for which $G^- < C_i \alpha_i - C_i^A$. The market cannot distinguish which type the firm is, but the proportion of firms in the industry with good growth prospects before any cross-listings is known to be π^B . Let N^+ represent the number of firms with good growth prospects, N^- the number of firms with bad growth prospects, and $N = N^+ + N^-$ the total number of firms in this industry. Therefore, $\pi^B = N^+ / N$. We are interested in the effect of a firm's cross-listing on rival firms. We will therefore analyze the impact on other

firms in the industry (represented by firm j) if firm i cross-lists. Since the market knows that all G^+ types will list in the U.S., then, before any listings the price of firm i will be:

$$P_i^B = (1 - e_i^A)(C_i^A + G^+) \pi^B + (1 - e_i^B)(C_i + G^-)(1 - \pi^B) \quad (8)$$

The following proposition summarizes the effects of a cross-listing on the share price of the listing firm at home.

Proposition 1: If firm i cross-lists then three things will happen. First, the firm will reveal its type, G^+ . Second, as the cost of capital falls, the discounted expected future cash flows will change from C_i to C_i^A , where $C_i^A \geq C_i$. Third, the controlling shareholder will expropriate a smaller fraction of cash flow from the firm. He will now expropriate $e_i^A < e_i^B$. By all of these effects the price of firm i (the listing firm) will increase to:

$$P_i^A = (1 - e_i^A)[C_i^A + G^+] > P_i^B \quad (9)$$

Testable hypothesis: A testable hypothesis associated with Proposition 1 is that firms that cross-list their shares in the United States will realize an increase in their share price at home. As reviewed in the introduction, prior studies have found such a result.

Consider now another firm in this industry, firm j . Before the cross-listing by firm i , the price of firm j is:

$$P_j^B = (1 - e_j^A)(C_j^A + G^+) \pi^B + (1 - e_j^B)(C_j + G^-)(1 - \pi^B) \quad (10)$$

The following proposition summarizes the effects on the share price of firm j when firm i lists its shares in the United States.

Proposition 2: Once firm i cross-lists, there are two effects on the price of firm j, in the same industry as i. First, since one of the firms in the industry revealed its type, then for the firms with unknown type, the proportion of firms with good growth prospects falls. Let π^A be the proportion of firms with good growth prospects in the population of firms for which the growth prospects are unknown after the cross-listing by firm i, $\pi^A = \frac{(N^+ - 1)}{(N - 1)}$. So $\pi^A < \pi^B$ and $(1 - \pi^A) > (1 - \pi^B)$. One can look at π^B as the probability of cross-listing by firms in this industry. Since $\pi^A < \pi^B$, then following a listing the probability of listing falls for rival firms that are not cross-listed and hence have unknown growth prospects. This would lower the rival's price. The second effect on firm j would occur if there was a market liberalization effect of i's listing that leads to a decrease in the cost of capital for firm j. If this was the case, the expected future cash flows for firm j would be discounted at a lower rate, even if the firm was a low growth prospect type, not expected to cross-list. If we let C_j^A be the discounted expected future cash flows for firm j after the cross-listing by firm i, then $C_j^A \geq C_j$. The price of firm j after the cross-listing by firm i will then be:

$$P_j^A = (1 - e_j^A)(C_j^A + G^+) \pi^A + (1 - e_j^B)(C_j^A + G^-)(1 - \pi^A) \quad (11)$$

Testable hypothesis: If stock price valuations associated with U.S. cross-listings are dominated by revised perceptions of growth opportunities, then the post-listing price for rivals not listed in the U.S. should fall.

The two effects that the cross-listing of firm i has on firm j work in opposite directions. On one hand, the price of firm j might increase if the cost of capital fell with the globalization of the industry. This results from an increase in expected discounted cash flows for the firm. Stulz (1999) argues that globalization reduces the cost of capital for all firms in the country. Although globalization may be a slow process, the date of the first ADR has been thought of as a liberalization event, since the first ADR represents a firm overcoming country restrictions and foreign investment barriers. To the degree that an ADR represents an overcoming of investment barriers only for similar firms, the ADR listing would represent an industry-liberalization event. However, we might also think of an ADR as a firm-specific liberalization effect, where the cost of capital falls for cross-listed firms but not for their home-listed rivals. In this case, one would expect the growth opportunities hypothesis to dominate share pricing so that the price of j might fall because firm i revealed itself as a firm with good growth prospects, and this makes all other firms have, on average, relatively lower growth prospects.

The question of what happens to rival firms when other firms cross list in the U.S. is, therefore, an empirical one. If liberalization is an industry event, the impact on the price of the rival firm depends on whether the effect of the lower cost of capital is stronger than the effect of the rivals being seen as lower quality firms relative to the listing firm. If the effect of reduced growth prospects is stronger than the liberalization effect, then the price of the rival firm should fall. If, on the other hand, the liberalization effect is stronger, then we should observe a positive impact on rival firms. Further, if an ADR is a firm-specific liberalization event, then we should observe that the listing hurts rival firms as there is only the revision of growth opportunities to be priced.

III. Data and Methodology

We constructed our sample in the following way. First, we started with all foreign firms that listed as Level II ADR, Level III ADR, or directly on the NYSE or NASDAQ and eliminated those for which there were no data on Datastream. Then we looked for the date on which these firms announced a forthcoming listing by searching in the Lexis-Nexis database and Dow-Jones interactive. We restrict the sample by taking only those firms that have an identifiable announcement date. Next, we classified firms into industries from Datastream's (level 4) industry classification. We then searched for a rival for these firms.⁹ For each firm, we obtained the names of the firms from the same country in the same industry. Rivals were chosen by market capitalization on the day of listing. The rival firm is then the firm from the same industry who had the closest market capitalization to the original firm at the day of listing. Rival firms are firms that were not listed in the U.S. at the time of the listing by the listing firm. The result was a total of 146 firm-rival pairs from 20 countries. The listing dates of the original firms range from 1986 to 2002.

We use an event study approach to measure the impact of a firm's listing on the rival firm. We measure the abnormal returns for the rival around the date that the listing firm listed in the U.S. The methodology for measuring abnormal returns is the following. Let's call firm A the firm that listed in the U.S. and firm B the rival firm, which is not listed in the U.S. Then, normal returns for the rival (firm B) are calculated for a period

⁹ We do not use indexes of industry rivals since firms in the same industry might be very different in size and trading frequency, additionally, the effects of firms being viewed with relatively lower growth opportunities with respect to the listing firm should apply for similar firms in the industry.

before firm A lists in the U.S. If we let day 0 be the day that firm A lists in the U.S. then we calculate normal returns using days -180 to -31 (150 days prior to the event window).

To measure normal returns, the market model is applied. The equation estimated is:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (12)$$

where $E(\varepsilon_{it}) = 0$ and $Var(\varepsilon_{it}) = \sigma_{\varepsilon_i}^2$. R_{it} denotes return on security i at day t; R_{mt} is the return on the market portfolio in period t and ε_{it} is an error term with mean zero. α_i , β_i , and $\sigma_{\varepsilon_i}^2$ are parameters to be estimated by ordinary least squares. As a proxy for the market return, we use returns calculated from the corresponding Datastream local market index.

Abnormal returns are then used to measure the impact of creating an ADR program on the equity value of the firm. In order to measure abnormal returns, we first calculate the normal returns as just described for each firm. Then, using the parameter estimates $\hat{\alpha}_i$ and $\hat{\beta}_i$ for each firm, we calculate abnormal returns for days -30 to +30 (the event window) by computing:

$$\hat{\varepsilon}_{it}^* = R_{it}^* - \hat{\alpha}_i - \hat{\beta}_i R_{mt}^* \quad (13)$$

where * denotes event window variables.¹⁰ These abnormal returns measure the impact on the equity value of firm B when firm A's ADR starts to trade. The test statistic we use is a standardized abnormal return test due to Patell (1976). This test statistic can be used to test the null hypothesis that the expected value of the standardized abnormal returns is equal to zero against the alternative that the expected value of the standardized abnormal returns is not equal to zero. A precision-weighted cumulative mean abnormal return is also computed. Finally, we report a Generalized Sign Z test. The test uses the normal approximation to the binomial distribution. The null hypothesis for this test is that the fraction of positive returns is the same as in the estimation period.

IV. The Effects of Cross-listing on Rival Firms

IV.A. Impact on the rival firm around the listing date

Table 1 presents the mean cumulative abnormal returns for windows of days (-5, -1), (-5, +1), (+1, +5) and (-5, +5), as well as the event date mean abnormal return (0, 0). The table also presents the number of firms that had positive abnormal returns on that respective day, the Z statistic and the Generalized Sign Z. During a 5 day window surrounding the listing date, we find a negative and statistically significant -2.20%

¹⁰ As a further robustness check, we calculate abnormal returns using the following market model to estimate normal returns:

$$R_{it} = \alpha_i + \beta_{Wi} R_{Wt} + \beta_{Li} R_{Lt} + \varepsilon_{it}$$

where $E(\varepsilon_{it}) = 0$ and $Var(\varepsilon_{it}) = \sigma_{\varepsilon_{it}}^2$. R_{it} denotes return on security i at day t; R_{Wt} is the return on the world portfolio in period t, R_{Lt} is the return on the local market portfolio in period t, and ε_{it} is an error term with mean zero. As a proxy for the world (local) portfolio we use returns calculated from a Datastream world (local) index. The parameter estimates from this equation for each firm are $\hat{\alpha}_i$, $\hat{\beta}_{Wi}$ and $\hat{\beta}_{Li}$. Using these, abnormal returns are estimated as:

$$\hat{\varepsilon}_{it}^* = R_{it}^* - \hat{\alpha}_i - \hat{\beta}_{Wi} R_{Wt}^* - \hat{\beta}_{Li} R_{Lt}^*$$

where * denotes event window variables. The results do not vary under this specification.

abnormal return suggesting that rival firms are hurt by the listing.¹¹ We will consider announcement effects later but here we stress that identifying the announcement day when news of the listing is revealed is problematic and subject to great error, so for now we center our estimation around the first day of listing.

One may think that with rational expectations, there should only be an announcement effect and no further effect at the time of the listing. However, there are, at least, two reasons why a listing effect could still exist beyond that realized at the announcement time. First, there is always some positive probability that an announced U.S. listing may not actually occur. A recent case in point is that of BMW, the German auto firm, who decided not to follow through with an announced U.S. listing. Second, the risk-sharing effects of a U.S. listing may not be realized until the U.S.-traded shares are available for trading.

Figure 1 presents the mean cumulative abnormal returns for the 5 days around the listing date. Note the sharp decline in cumulative returns before the listing date. These results suggest that rival firms are hurt by the listing. In terms of our theoretical model, the positive effect due to stock market liberalization is dominated by the negative effect due to relatively lower growth prospects.

Next, we turn to testing whether the abnormal returns for rival firms that come from emerging markets differ from those of firms that come from developed markets. Miller (1999) studies the market reaction to ADR listings in the U.S. He uses an event study approach where the event is the announcement of a forthcoming listing in the U.S. He finds positive abnormal returns around the announcement date without any subsequent post-listing dissipation of those returns and also finds that abnormal returns

¹¹ In contrast, we find a positive event day mean abnormal return for the listing firms in our sample.

are largest for firms that list on major U.S. exchanges. In addition, Miller finds that firms from emerging markets have larger abnormal returns than those from developed markets. Over a 3-day announcement window, he finds that foreign firms in emerging markets experienced nearly double the cumulative abnormal returns of firms from developed markets; however, the difference was not statistically significant. These findings suggest that firms that list on major U.S. exchanges where disclosure requirements are stricter, benefit more from listing than firms that choose other listing mechanisms.

Having found in the previous literature a differential impact on listing firms from emerging and developed markets, we turn to answering the question of whether there is also a differential impact on rival firms of those firms listed, by looking at emerging and developed market rival firms. In order to analyze this, we subdivide the sample into 25 firms from emerging markets and 121 firms from developed markets. The results are shown in Table 2. Panel A shows the results for the developed markets sample and Panel B the results for the emerging markets sample. The mean cumulative abnormal returns over the (-5, 5) window for the developed and emerging sample are -2.35% and -1.44% respectively. The results for rival firms from emerging markets are not statistically significantly different from zero. Figure 2 presents the mean cumulative abnormal returns for the emerging and developed markets samples separately over a (-5, 5) day window. The evidence of a negative and persistent effect of the listing on rivals is stronger for firms in developed markets than those in emerging markets.

IV.B. Impact on the rival firm around the announcement date

We next study the impact on the rival firms of the announcement of a forthcoming U.S. listing. The results for the announcement dates should be taken with caution since identifying the announcement dates is subject to great error, and it may well be that the listing event is a more reliable date for analysis. Announcement dates were collected by looking at the first time there was an announcement of the forthcoming U.S. listing on either the Lexis-Nexis database or Dow-Jones Interactive. Announcements were identified for all 146 firms, but two firms had no home-market data available for the pre-announcement period so the announcement sample includes 144 firms. Table 3 presents the mean cumulative abnormal returns for the rival firms around the announcement date. The mean cumulative abnormal return around the (-5, 5) window is -0.45%, a value that does not differ significantly from zero. On the announcement date, we find a significant -0.3% abnormal return for rival firms. So only on the day that the public learns of the planned U.S. listing is there a statistically significant announcement effect.

Table 4 presents the results of subdividing this sample into 25 firms from developed countries and 119 firms from emerging market countries. The mean cumulative abnormal returns for the (-5, 5) day window around the announcement day are -0.09% and -2.17% for the developed and emerging market rival firms, respectively. In Figure 3 we can see the cumulative abnormal returns for a window of 5 days before to 5 days after the announcement of the forthcoming listing. There is a clear difference between the rival firms from developed markets and those from emerging markets. It appears as though rival firms from emerging markets are hurt more from the announcement of listing than rival firms from developed markets, but the emerging market effects are significant only for the post-announcement period. One of the reasons

we might find this is that announcement dates are very difficult to pinpoint, especially in emerging markets. The evidence indicates that the market reaction to the announcement is more prolonged in the case of emerging markets. Perhaps this is due to a slower dissemination of the information or a prolonged period required for the market to digest or assess the implications of the news. Figure 3 illustrates the differing nature of the adjustment to the announcement for the full sample, as well as for the subsamples of emerging and developed markets.

IV.C. Robustness Checks

IV.C.1. Using a different estimation window

We have calculated the abnormal returns around the listing date for our sample of rival firms around an event window of $(-30, 30)$ using as normal returns those in the estimation window $(-211, -31)$. It could be argued that our results are contaminated since the announcement date may fall inside our event or estimation window. If true, then this could make it harder to find significant results, so that the contamination would work against finding a significant listing effect. Therefore, the true impact on the rival firm may be stronger than reported. To explore this possibility, we conduct a robustness check.

First, for estimating normal returns we use the same estimation window as used for the calculation of the announcement effect. Since during these dates there was no announcement of the firm's intention to list, this should be a clean measure of the normal returns of the firm. Next, since there are some firms for which the announcement of a

future U.S. listing fell during the listing event window, we eliminated those firms from this subsample. Then an event study around the listing date is performed to see whether there is an impact on the rival firm. The sample consisted of 98 rival firms, of which 79 are from developed market countries and 19 from emerging market countries. The results, presented in Table 5, reinforce our previous findings. The mean cumulative abnormal return around a (-5, 5) window is -2.08% for the rival firms in our sample. Rival firms are hurt at the time of listing by the listing firm. When the sample is subdivided into emerging and developed markets, we find that the cumulative abnormal return around the listing day for the (-5, 5) day window is a statistically significant -2.27% for the developed markets sample, and an insignificant -1.30% for the emerging markets sample. These results are similar to those reported earlier for the full sample of firms.

V. Cross-sectional differences in abnormal returns

While theory predicts that the cross-listing effects on rival firms is indeterminate, our empirical results show that rival firms are hurt by the listing. This suggests that either the negative effect that rival firms experience because of relatively lower growth prospects is stronger than the positive liberalization effect, or that there is only a negative effect on rival firms and no positive liberalization effect. In this section, we explore the cross-sectional differences in abnormal returns for both listing and rival firms, and for both listing and announcement dates. In section A, we present tests related to the risk sharing hypothesis. In section B, we present tests related to the growth opportunities hypothesis.

V.A. The risk sharing hypothesis

Our theoretical model suggests that there might be a positive impact of the listing on rival firms if the cost of capital falls for all firms that are correlated with the listing firm. We found a net negative impact of the listing on rival firms on average. In this section, we explore cross-sectional differences in abnormal returns to see if there are individual firm differences that vary systematically with determinants of the liberalization effects on rival firms. The results of the tests presented in this section appear in Table 6, where the R^2 of each regression appears in brackets next to the coefficient, and the number in parentheses below the coefficient is the p-value. The dependent variable is always the respective cumulative abnormal return for the (-5, +5) window.

V.A.1. Correlation with the listing firm

According to the risk sharing hypothesis there should be a positive impact of the listing on rival firms, and the impact should be stronger for rivals whose returns are more correlated with the listing firm. We investigate whether the abnormal returns that firms experience depend on the correlation of their returns with the listing firm prior to the listing. We run ordinary least squares regressions where the dependent variable is the cumulative abnormal return for the (-5, 5) period around the listing and announcement days, and the independent variable is a measure of correlation. We measure correlation between the two firms' (lister/rival) returns during the estimation window period (days -211 to -31) prior to the listing and announcement dates. Results are reported in row 1)

of Table 6. We find no relationship between correlation and abnormal returns of the rival, for either listing or announcement dates. The lack of a relationship between the correlations and returns for rival firms indicates a lack of support for the risk-sharing hypothesis.

V.A.2. Time and market integration

Next, we split the sample by date of listing. The idea here is that there should be a positive impact on rivals in earlier years, as the countries are being liberalized. As the markets become more integrated, this positive liberalization effect should fall. The growth opportunities explanation of the benefits of cross-listing does not predict differences on rival firms from early or late listings. We construct a variable called “Time of listing”, which equals 1 if the firm listed in the earliest year in our sample (1986), equals 2 for the following year (1987), and so on until the last value of 17 (corresponding to the year 2002). We then run a regression where the dependent variable is the percentage cumulative abnormal returns in the (-5, +5) window, and the independent variable is “Time of listing”. The results are significant for listing date abnormal returns for both listing firms and their rivals. The negative effect on rival firms is stronger for firms that listed more recently. This is consistent with the liberalization effect being stronger for earlier listings, and smaller for later listings where market pricing may be dominated by the higher probability of lower growth opportunities. Hence, we see a stronger negative impact on rival firms as time passes. We also find that the listing event effect on listing firms is more positive for more recently listed firms. This contradicts the risk sharing hypothesis of a stronger liberalization effect in earlier years.

V.A.3. Size

The third set of results in Table 6 examines whether there is a difference in the cross-listing effects of firms according to their size. Large, well-known firms are preferred by investors and hence they are more likely to invest in these firms (see Kang and Stulz (1997), Choe, Kho and Stulz (1999) and Dahlquist, Pinkowitz, Stulz and Williamson (2003)). In fact, Christoffersen, Chung and Errunza (2004) find that large firms benefit more from stock market liberalization than small firms. Based on these findings we might expect that when firms cross-list in the U.S., we would observe differences in the benefits from cross-listing for small and large firms. In particular, we would expect to see stronger positive effects for large firms than for small firms. On the other hand, to the degree that the liberalization benefits accrue to all firms in the country, we should see positive benefits for all firms, but larger benefits for larger firms, whether a lister or a rival firm. In order to measure size, we follow Christoffersen, et al. and rank firms according to market capitalization on the day of listing. The smallest firm has size 1, the second smallest 2, and so on. The results in Table 6 show no significant impact of size on abnormal returns of listing firms or rival firms.

V.A.4. Trading Costs

Differences in home market trading costs may also be related to the risk sharing hypothesis. Firms from countries with high trading costs can overcome these costs by listing in the U.S. market. The larger the trading costs at home, the bigger the benefit we might expect from the cross-listing. The trading costs measure that we employ is an

average measure of trading costs in each country in basis points for 1999. It was gathered by Elkins/McSherry and was published in Institutional Investor. The results in Table 6 indicate only one case where trading costs are significantly related to abnormal returns. We find that for listing firms, higher trading costs in the home country are associated with larger abnormal returns at the announcement event of a forthcoming U.S. listing.

V.A.5. Regional effects

Finally, we present the results of a regression where the dependent variable is the percentage cumulative abnormal returns in the (-5, +5) window, and the independent variables are indicator variables for the home market region, where regions are defined as: Latin America, Asia, Europe, Oceania, and Canada. The hypothesis is that there are larger effects of listing for firms from less liberalized regions, like Asia and Latin America. Statistically significant results include stronger negative effects for rival firms from Asia and Canada upon the listing than for rival firms from Europe, Latin America and Oceania. Further, we see a stronger positive effect on the listing firm upon the listing announcement for firms from Asia, than for firms from other regions. Only in this latter case are the results consistent with a positive liberalization effect of cross listing.

V.B. The growth opportunities hypothesis

We now turn to testing for cross-sectional differences in abnormal returns that would support the growth opportunities hypothesis. Results are presented in Table 7. The

number in brackets next to the coefficient is the R^2 of the regression, and the number in parentheses below the coefficient is the associated p-value.

V.B.1. Industry effects

We first look at the different outcomes on rival firms from different industries. According to the growth opportunities hypothesis, rival firms should be affected depending on whether or not the listing firm and the rival are in a high or low growth industry. We expect stronger positive effects on listing firms from high growth industries, as they are better able to take advantage of growth opportunities than firms from low growth industries. Similarly, we expect stronger negative effects on rival firms from high growth industries, since they are at a relatively greater disadvantage than their low growth industry counterparts. We therefore classify our firms into one of these eight industries: resources, basic industries, general industries, consumer goods, services, utilities, information technology and financials. We then perform a regression where the dependent variable is the percentage cumulative abnormal returns in the (-5, +5) window, and we create dummy variables for our eight industries and use them as independent variables. The listing date results, presented in Table 7, suggest that the effects of rivals being seen as having lower growth opportunities relative to listing firms is stronger for firms in industries such as resources, consumer goods and information technology. Additionally, we find a significant positive effect of the listing announcement for listing firms in information technology. This result is reversed once the listing takes place. Since information technology is a high-growth industry, results for rivals at the listing date and listers at the announcement date are consistent with the growth opportunities hypothesis.

V.B.2. Corporate governance effects

According to the growth opportunities hypothesis, by listing in the U.S. firms ‘bond’ with the U.S. laws and this increased minority shareholder protection results in better access to capital markets. The manager of a firm will therefore cross-list when the increased growth opportunities from the cross-listing are larger than the costs associated with a reduced level of expropriation. In support of this hypothesis, Reese and Weisbach (2002) show that non-U.S. firms that cross-list in the U.S. obtain better access to outside capital markets because the U.S. regulatory system improves the protection of minority shareholders. Firms should then benefit differently from the cross-listing depending on their increased level of minority shareholder protection. We therefore expect a cross-sectional difference in the impact on listing firms and their rivals from countries with distinct minority shareholder protection levels. Our theory predicts higher price increases for listing firms that have a stronger increase in minority shareholder protection. We use six different measures of investor protection in the home country: legal tradition, rule of law, corruption, anti-director rights, efficiency of the judicial system, and risk of expropriation. All of them except for corruption are taken from La Porta et. al. (1998).

Legal tradition. The first measure is the legal tradition of the home country. There are two main categories of legal tradition: the common law and the civil law. Previous research (La Porta et. al.(1997, 1998, 2000)) has shown that the protection of minority shareholders’ rights is better in countries with common law tradition than in countries with civil law tradition. Therefore, we construct a dummy variable that equals one whenever the listing firm is from a country with civil law tradition. We expect to find

that rival firms from countries with civil law tradition should be hurt by more from the listing than rival firms from common law tradition, since the increase in shareholder protection from the listing is greater for those firms listing from a common law tradition country. Similarly, we expect to find that listing firms from civil law countries benefit more from the listing than firms from common law countries.

Rule of law. As a second measure of minority shareholder protection we use Rule of Law. Rule of law measures the law and order tradition in the country, and is measured as an average of values over the 1982-1995 period. The measure ranges from zero to 10, with 10 being a high law and order tradition. We expect a positive coefficient on this variable for rival firms, and a negative coefficient for listing firms.

Corruption. As a third measure of investor protection in the home country we use corruption. We measure corruption by using the Transparency International Corruption Perceptions Index (CPI) 2002. The index measures how the public perceives the level of corruption of their public officials and politicians. The CPI ranks 102 countries according to the degree of corruption perceived to exist among politicians and public officials. It is a composite index from 15 polls and surveys, and it ranges from 0 to 10, with 10 being a highly clean country with no perceived corruption. We expect to find that rival firms from cleaner countries are hurt less by the listing (a positive coefficient), while the listing firms from cleaner countries benefit less from the listing (a negative coefficient).

Anti-director rights. As a fourth measure of minority shareholder protection, we use an index of anti-director rights. The index ranges from 0 to 6, where 6 represents the strongest shareholder rights in the home country. We expect to find that strong anti-

director rights are associated with a smaller impact of the cross-listing on rival firms, and smaller impact of the cross-listing on listing firms.

Efficiency of judicial system. The fifth measure used is efficiency of the judicial system. It measures the integrity and efficiency of the country's legal environment. The measure is an average from 1980 and 1983. It ranges from zero to 10, with 10 representing high efficiency levels. We expect a positive coefficient on this variable for rival firms, and a negative coefficient for listing firms.

Risk of expropriation. Finally, we also use a measure of risk of expropriation in the home country to measure shareholder protection. It measures the risk of expropriation by the country's legal system. It is an average of the index between 1982 and 1995. It ranges from zero to 10, with 10 representing the lowest expropriation risk. We also expect a positive coefficient on this efficiency variable for rival firms, and a negative coefficient for listing firms.

The results of regressing the 11-day cumulative abnormal returns across firms against each of these measures is presented in the second part of Table 7. We regress each variable against abnormal returns one at a time since they all measure investor protection and are highly correlated. The statistically significant results support the growth opportunities hypothesis. Rival firms from countries with a stronger rule of law are hurt less by the listing announcement, while the listing firms benefit less from the announcement. Additionally, we find that rival firms from countries with a lower risk of expropriation are hurt less by the announcement of listing than rival firms from countries with higher expropriation risk.

V.B.3. External dependence effects

We now look at the effects on rival and listing firms from different industries, according to their degree of dependence on external finance. According to the growth opportunities hypothesis, firms from industries that rely more on external finance should benefit more from listing in the U.S., since they would be the ones for which the increased growth opportunities would be most valuable. Similarly, rival firms from industries that rely more on external finance should see the greatest relative disadvantage from the listing and should therefore be hurt more. In order to test this hypothesis, we first classify the firms in our sample into industries. Using as a guide the measure of industrial external dependence provided in Rajan and Zingales (1998), we create two variables related to external dependence. We first divide our sample into those firms that can be classified into a manufacturing industry, and those that cannot. The reason for this split is that Rajan and Zingales (1998) only classify manufacturing industries. Taking the firms that can be classified, we rank them according to the degree of external dependence of the industry and then divide them into two groups. Lowdep is an indicator variable equal to one whenever the industry's external dependence is less than 0.45. Highdep is an indicator variable equal to one whenever the industry's external dependence is greater than 0.45. We use 0.45 as the cutoff point since that will give us approximately the same number of industries in each of the two groups.¹² Since Rajan and Zingales (1998) only classify manufacturing industries, the non-manufacturing industries in our sample are not classified in either group and are captured by the constant term. We then estimate a regression where the dependent variable is the percentage cumulative abnormal return in

¹² The results do not change if we change the cutoff point so that there are the same number of firms in each group.

the (-5, +5) window around the event day, and the independent variables are Highdep and Lowdep. We expect to find that rival firms from industries that are highly dependent on external finance have a stronger negative effect from the listing than firms from other industries. Similarly, we expect that listing firms from industries that are highly dependent on external finance have a stronger positive effect from the listing than firms from other industries. The results appear in the third section of Table 7. The only statistically significant result is that the listing firms from high external dependence industries benefit more from the listing announcement than firms in other industries. This is consistent with the growth opportunities hypothesis.

V.B.4. State of the financial market

Growth opportunities may be affected by the state of the market. Specifically, we want to investigate whether there is a differential impact on rival firms according to whether the U.S. was in a bull or bear state of the stock market when the listing firm listed (or announced a listing) in the U.S. This hypothesis is drawn from the model presented in Baker, Stein, and Wurgler (2003). They derive the proposition that investment partially depends upon the nonfundamental component of stock prices. When stock prices are low, as during a bear market, market inefficiency can act like a financial constraint and discourage investment. In our case, we expect a negative impact of a U.S. listing on rival firms that is heightened during bear markets as these firms will not have access to capital that the listing firms will. In terms of Baker, Stein, and Wurgler, rival firms will be more constrained in their investment opportunities and undertake lower investment during bear markets than at other times.

We use data on the S&P composite return bull and bear markets index taken from the Global Financial Data, Inc. website.¹³ A bull or bear market is determined by analyzing the change between the highest close and the lowest close in the stock market cycle, a bear market occurs if the market declines by 15% or more. We create an indicator variable that equals one if the listing firm listed (or announced a listing) during a U.S. bear market, and zero otherwise. We then use this indicator variable as an explanatory variable for the abnormal returns of listing and rival firms. The results in the fourth section of Table 7 show statistical significance of a negative effect only for rival firms at the time of announcement of listing. We interpret this as the market pricing the relative disadvantage for rivals in investment and growth in the spirit of Baker, Stein, and Wurgler where there is a non-fundamental component of price that acts as a financing constraint and limits growth opportunities.

V.B.5. Default risk effects

In this section we examine whether there is a relationship between default risk and abnormal returns of listing firms and their rivals. We use a dummy variable to indicate whether the firm is from an emerging or developed market as a proxy for default risk. Emerging market financial constraints are more likely to raise the risk of default relative to firms in industrial countries. In addition, we allow for the effect to vary with small firms compared to larger firms. Vassalou and Xing (2004) show that small firms have, on average, higher default risk than large firms. The specification we use examines whether abnormal returns are different for firms from emerging and developed markets, and whether this difference increases in the case of small firms. We define a “small” firm

¹³ http://www.globalfindata.com/articles/bull_and_bear_markets.doc

as having a market capitalization of less than 1.5 billion dollars on the date of listing (or announcement of listing). This size was chosen based upon examination of a histogram for firm size. The data are distributed so that 1.5 billion is a “natural” cutoff. There exists a group of firms with market capitalizations of less than 1.5 billion dollars and then the data jump to 10 billion and greater for larger firms. The results are shown in the fifth section of Table 7. We find significant effects only at the time of announcement of a listing. For listing firms, we find that although firms from emerging markets benefit more from the listing announcement than firms from developed markets, the effect is much smaller for small (high default risk) firms in emerging markets. Additionally, we find that the effect of the announcement of listing is stronger (more negative) for small rival firms in emerging markets than for other rival firms. When a firm cross-lists, there is a negative impact on its primary rival firm, but this effect is stronger for small rival firms than for larger rival firms. These results are consistent with the growth opportunities hypothesis as large firms are more likely to survive to better take advantage of growth opportunities, while small firms that stay behind are at a greater competitive disadvantage and are viewed as having poorer growth prospects.

V.C. Overview of Cross-Section Evidence

Table 6 reported the evidence related to the risk sharing hypothesis and Table 7 reported the evidence related to the growth opportunities hypothesis. There are some statistically significant results to be found in both tables.

The results in Table 6 reveal that rival firms are more likely to have lower prices at home in the following situations: a) later years at the listing event; b) Asian firms at both

the announcement and listing event; c) Canadian firms at the listing event . In earlier years, it is known that markets were less integrated so that the risk-sharing effect is more likely to be relevant on cost of capital. This should be associated with an increase in the share price of the rival if the listing was a market integration event for rivals. Rivals in Asia are likely to be in more segmented markets so that there is more likely to be a significant cost of capital effect. Yet the evidence indicates negative rather than positive effects for Asian rivals associated with the listing. In those cases where statistical significance is found, the evidence is inconsistent with the risk-sharing and lower cost of capital effect that would be associated with a liberalization event.

Table 7 provides evidence that rival firms are more likely to suffer lower prices in the following situations: a) information technology firms at the listing event; b) firms from countries with a poor rule of law at the announcement event; c) firms from countries with a higher risk of expropriation at the announcement event; d) firms associated with listings during a bear market at the announcement event; and e) small firms from emerging markets at the announcement event.

Overall, the results present a picture of rivals at cross-listing events where revised perceptions of growth opportunities are likely to be dominant in firm valuation.

V.D. Price Pressure as an Explanation

As an additional check on our results, we analyze whether the negative effects on rival firms are a result of price pressure. If the price change that rival firms experience is a result of price pressure, then we should be able to identify this by looking at price and

volume changes (Shleifer (1986), and Harris and Gurel (1986)). If the demand for stocks is downward sloping, rival firms could experience negative price reactions if equity capital flows from other firms to the ADR firm at the time of listing. Our event study analysis does reveal such negative price effects. Moreover, the price pressure hypothesis also predicts that as the demand for the rival firm shifts, causing a price change, we should also observe a change in trading volume. In particular, according to the price pressure hypothesis rival firms should experience a decrease in trading volume accompanying the price fall. We therefore compare trading volumes adjusted for market volume for the listing firms and their rivals. We find that the market adjusted trading volume increases for both listers and rivals. The average (market adjusted) trading volume increases 110% for listing firms from a year before to a year after the listing. For rival firms, there is an increase of 59%. Therefore, we conclude that the negative outcomes that rival firms experience come from a competitive effect where these firms are seen as having relatively lower growth opportunities when compared to their ADR-listing counterparts, and not from a price pressure effect.

VI. Conclusion

This paper provides theory and evidence related to the stock price effects on rival firms associated with a cross-listing in the U.S. We focus on the listing firm's major rival's stock price in the home market. The evidence indicates that when a firm cross-lists in the U.S., its primary rival in the home market that is not listed in the U.S. is hurt

by the listing. Our results are consistent with the idea that firms cross-list as a means of having better growth opportunities.

Theory suggests that the positive effect on rivals due to a decrease in the cost of capital may be dominated by the negative effects associated with rival firms being viewed as having lower relative growth prospects because of their decision not to list. The empirical evidence indicates that the effect of decreased growth prospects following the listing is the dominating effect on rival share prices. Rival firms tend to suffer when listing firms list their stock in the United States.

A public policy implication of these findings is that listing in the U.S. should be viewed as creating incentives for better disclosure and law enforcement in the home market. More transparent accounting and corporate governance standards, as well as stricter laws in the home market might serve as a partial substitute for a U.S. listing.

Given current institutional differences across countries, the effects of a U.S. listing are not all favorable for the home market of the listing firm. Those left behind without a U.S. listing tend to experience a negative price impact.

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Table 1. Mean Cumulative Abnormal Returns for Listing Event

This table presents the mean cumulative abnormal returns around the listing date for the 146 rival firms in our sample. Results are presented for the windows (-5, -1), (-5, +1), (0, 0), (+1, +5) and (-5, +5), where day 0 represents listing day. The third column is the precision-weighted cumulative mean abnormal return. The positive column reflects how many firms had positive cumulative abnormal returns in that respective window. The Z test statistic is a test of the significance of the mean cumulative abnormal return. The Generalized Sign Z is a test with the null hypothesis that the fraction of positive cumulative returns is the same as in the estimation period. The symbols *,**, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively, using a 2-tail test.

Days	Mean Cumulative Abnormal Return	Precision Weighted CAAR	Positive	Z	Generalized Sign Z
(-5,-1)	-1.37%	-0.68%	60	-1.9990**	-1.8181*
(-5, +1)	-1.59%	-0.93%	60	-2.2944**	-1.8181*
(0,0)	-0.18%	-0.26%	63	-1.7005*	-1.3214
(+1,+5)	-0.65%	-0.45%	58	-1.3206	-2.1493**
(-5,+5)	-2.20%	-1.39%	59	-2.7508***	-1.9837**

Table 2. Listing Event Abnormal Returns for Developed and Emerging Markets

This table presents the mean cumulative abnormal returns around the listing date for two sub-samples. Panel A presents the results for the developed markets sample which consists of 121 firms, and Panel B for the emerging markets sample consisting of 25 firms. Results are presented over the windows (-5, -1), (-5, +1), (0, 0), (+1, +5) and (-5, +5), where day 0 represents listing day. The third column is the precision-weighted cumulative mean abnormal returns. The positive column reflects how many firms had positive cumulative abnormal returns in that respective window. The Z test statistic is a test of the significance of the mean cumulative abnormal return. The Generalized Sign Z is a test with the null hypothesis that the fraction of positive cumulative returns is the same as in the estimation period. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively, using a 2-tail test.

Days	Mean Cumulative Abnormal Return	Precision Weighted CAAR	Positive	Z	Generalized Sign Z
Panel A. Developed Markets					
(-5,-1)	-1.30%	-0.73%	50	-1.9693**	-1.7892*
(-5, +1)	-1.68%	-1.08%	49	-2.4731**	-1.9710**
(0,0)	-0.20%	-0.27%	54	-1.6601*	-1.0619
(+1,+5)	-0.85%	-0.58%	48	-1.5654	-2.1529**
(-5,+5)	-2.35%	-1.58%	49	-2.8836***	-1.9710**
Panel B. Emerging Markets					
(-5,-1)	-1.67%	-0.44%	10	-0.4918	-0.4587
(-5, +1)	-1.15%	-0.09%	11	-0.0865	-0.0563
(0,0)	-0.05%	-0.18%	9	-0.4522	-0.8611
(+1,+5)	0.28%	0.24%	10	0.2690	-0.4587
(-5,+5)	-1.44%	-0.38%	10	-0.2865	-0.4587

Table 3. Mean Cumulative Abnormal Returns for Announcement Event

This table presents the mean cumulative abnormal returns around the announcement date for the 144 rival firms in our sample. Results are presented for the windows (-5, -1), (-5, +1), (0, 0), (+1, +5) and (-5, +5), where day 0 represents announcement day. The third column is the precision-weighted cumulative mean abnormal return. The positive column reflects how many firms had positive cumulative abnormal returns on that respective window. The Z test statistic is a test on the significance of the mean cumulative abnormal return. The Generalized Sign Z is a test with the null hypothesis that the fraction of positive cumulative returns is the same as in the estimation period. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively, using a 2-tail test.

Days	Mean Cumulative Abnormal Return	Precision Weighted CAAR	Positive	Z	Generalized Sign Z
(-5,-1)	-0.03%	0.31%	70	0.9040	0.2236
(-5, +1)	-0.29%	-0.01%	66	-0.0222	-0.4438
(0,0)	-0.32%	-0.36%	54	-2.3419**	-2.4460**
(+1,+5)	-0.10%	0.22%	63	0.6479	-0.9444
(-5,+5)	-0.45%	0.18%	64	0.3402	-0.7775

Table 4. Announcement Event Abnormal Returns for Developed and Emerging Markets

This table presents the mean cumulative abnormal returns around the announcement date for two sub-samples. Panel A presents the results for the developed markets sample which consists of 119 firms, and Panel B for the emerging markets sample consisting of 25 firms. Results are presented over the windows (-5, -1), (-5, +1), (0, 0), (+1, +5) and (-5, +5), where day 0 represents announcement day. The third column is the precision-weighted cumulative mean abnormal return. The positive column reflects how many firms had positive cumulative abnormal returns in that respective window. The Z test statistic is a test of the significance of the mean cumulative abnormal return. The Generalized Sign Z is a test with the null hypothesis that the fraction of positive cumulative returns is the same as in the estimation period. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively, using a 2-tail test.

Days	Mean Cumulative Abnormal Return	Precision Weighted CAAR	Positive	Z	Generalized Sign Z
Panel A. Developed Markets					
(-5,-1)	-0.08%	0.31%	58	0.8166	0.0049
(-5, +1)	-0.43%	-0.06%	54	-0.1285	-0.7287
(0,0)	-0.31%	-0.34%	46	-1.9848**	-2.1959**
(+1,+5)	0.30%	0.52%	57	1.3719	-0.1785
(-5,+5)	-0.09%	0.49%	58	0.8771	0.0049
Panel B. Emerging Markets					
(-5,-1)	0.19%	0.34%	12	0.3883	0.5310
(-5, +1)	0.36%	0.24%	12	0.2320	0.5310
(0,0)	-0.38%	-0.51%	8	-1.2969	-1.0862
(+1,+5)	-1.98%	-1.29%	6	-1.4734	-1.8947*
(-5,+5)	-2.17%	-1.45%	6	-1.1226	-1.8947*

Table 5. Mean Cumulative Abnormal Returns for Listing Event: Robustness Check

This table presents the mean cumulative abnormal returns around the listing date for 98 rival firms in our sample. We calculate normal returns using days (-211,-31) before the announcement date. For firms with no announcement date, we calculate normal returns using days (-211,-31) around the listing date. If the announcement date fell within 30 days of the listing date, the firm was eliminated from this sample. Panel A presents the results for our full sample of 98 rival firms. Panel B presents the results for the developed markets sample consisting of 79 firms. Panel C contains results for the emerging markets sample consisting of 19 firms. Results are presented for the windows (-5, -1), (-5, +1), (0, 0), (+1, +5) and (-5, +5), where day 0 represents the listing day. The third column is the precision-weighted cumulative mean abnormal returns. The positive column reflects how many firms had positive cumulative abnormal returns in that respective window. The Z test statistic is a test of the significance of the mean cumulative abnormal return. The Generalized Sign Z is a test with the null hypothesis that the fraction of positive cumulative returns is the same as in the estimation period. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively, using a 2-tail test.

Days	Mean Cumulative Abnormal Return	Precision Weighted CAAR	Positive	Z	Generalized Sign Z
Panel A. All Rival Firms					
(-5,-1)	-1.41%	-0.77%	43	-1.8070*	-1.1931
(-5, +1)	-1.54%	-0.85%	39	-1.7142*	-1.9788**
(0,0)	-0.10%	-0.10%	43	-0.5284	-1.1931
(+1,+5)	-0.57%	-0.35%	43	-0.8152	-1.1931
(-5,+5)	-2.08%	-1.18%	41	-1.9272*	-1.5860
Panel B. Developed					
(-5,-1)	-1.06%	-0.57%	34	-1.2647	-1.5412
(-5, +1)	-1.43%	-0.85%	30	-1.5986	-2.4094**
(0,0)	-0.19%	-0.17%	34	-0.8184	-1.5412
(+1,+5)	-1.02%	-0.69%	32	-1.5193	-1.9753**
(-5,+5)	-2.27%	-1.38%	31	-2.1237**	-2.1924**
Panel C. Emerging					
(-5,-1)	-2.90%	-1.84%	9	-1.5453	0.4552
(-5, +1)	-2.01%	-0.89%	9	-0.6302	0.4552
(0,0)	0.29%	0.26%	9	0.4878	0.4552
(+1,+5)	1.30%	1.53%	11	1.2905	1.3842
(-5,+5)	-1.30%	-0.04%	10	-0.0247	0.9197

Table 6. Cross-sectional differences in cumulative abnormal returns: Risk sharing hypothesis

This table presents the results of a series of regressions where the dependent variable is the percentage cumulative abnormal returns around the (-5, +5) day window around the listing and announcement dates for both the listing firm and its rival. The number inside each cell represents the coefficient estimate resulting from an OLS regression, next to the coefficient, the corresponding R^2 of the regression appears in brackets. P-values are shown in parenthesis under the coefficient.

	Rival Firm Listing Date	Rival Firm Announcement Date	Listing Firm Listing Date	Listing Firm Announcement Date
1) Correlation with the listing firm	-0.3630 [0.000] (0.9018)	-1.6804 [0.003] (0.5352)		
2) Time of listing	-0.2510 [0.020] (0.0904)	0.0419[0.001] (0.7808)	0.4316 [0.043] (0.0166)	0.1331[0.004] (0.4833)
3) Size	-0.0124 [0.003] (0.5742)	0.0212 [0.009] (0.3186)	0.0065 [0.001] (0.8008)	0.0271 [0.010] (0.3170)
4) Trading costs	-0.0094 [0.001] (0.7132)	-0.0313 [0.011] (0.2026)	-0.0084 [0.001] (0.7792)	0.0623 [0.032] (0.0399)
5) Regional Effects:				
Europe	-1.5326 (0.1376)	0.1711 (0.8659)	-1.0749 (0.3902)	0.0451 (0.9708)
Asia	-5.2718 (0.0017)	-2.8303 (0.0859)	-0.4126 (0.8346)	4.7712 (0.0179)
Latin America	0.3369 (0.8805)	-2.5779 (0.2357)	-3.1400 (0.2416)	-1.0233 (0.6979)
Oceania	-2.6614 (0.3651)	0.7687 (0.8021)	-0.5590 (0.8732)	1.4643 (0.6945)
Canada	-2.1438 [0.036] (0.0573)	0.2351 [0.028] (0.8249)	-1.3471 [0.006] (0.3708)	-2.0121 [0.058] (0.1759)

Table 7. Cross-sectional differences in cumulative abnormal returns: Growth opportunities hypothesis

This table presents the results of a series of regressions where the dependent variable is the percentage cumulative abnormal returns around the (-5, +5) day window around the listing and announcement dates for both the listing firm and its rival. The number inside each cell represents the coefficient estimate resulting from an OLS regression, next to the coefficient, the corresponding R^2 of the regression appears in brackets. P-values are shown in parenthesis under the coefficient.

	Rival Firm Listing Date	Rival Firm Announcement Date	Listing Firm Listing Date	Listing Firm Announcement Date
<i>1) Industry Effects:</i>				
Resources	-5.0140 (0.0328)	-0.4639 (0.8402)	-2.9968 (0.3527)	-1.5615 (0.6324)
Basic Industries	-1.2618 (0.5010)	1.2948 (0.4977)	0.3287 (0.8817)	0.7869 (0.7331)
General Industries	0.3253 (0.9113)	-1.7309 (0.5487)	-4.5654 (0.1861)	0.5863 (0.8665)
Consumer Goods	-2.7325 (0.0469)	-0.9964 (0.4676)	0.0692 (0.9668)	0.4289 (0.8024)
Services	-0.9145 (0.5967)	-1.7795 (0.2862)	0.5210 (0.8082)	-3.0299 (0.1541)
Utilities	-2.9238 (0.3175)	2.0127 (0.4856)	1.1853 (0.7306)	-3.8244 (0.2740)
Information Technology	-5.7444 (0.0011)	-0.1190 (0.9458)	-6.0442 (0.0070)	4.7743 (0.0402)
Financials	-0.1693 [0.066] (0.9013)	-0.3645 [0.018] (0.7870)	-0.9211 [0.062] (0.5797)	0.4677 [0.061] (0.7813)
<i>2) Corporate Governance Effects:</i>				
Civil	0.2315 [0.000] (0.8633)	-0.4561 [0.001] (0.7276)	-1.3547 [0.005] (0.4035)	-1.0547 [0.003] (0.5233)
Rule of Law	0.4314 [0.007] (0.3094)	0.7872 [0.026] (0.0533)	-0.1516 [0.001] (0.7666)	-1.0818 [0.034] (0.0349)
Corruption	0.2482 [0.004] (0.4764)	0.5371 [0.018] (0.1094)	-0.0867 [0.000] (0.8362)	-0.6174 [0.016] (0.1439)
Antidirector Rights	-0.0996 [0.000] (0.8388)	-0.3425 [0.004] (0.4685)	0.2412 [0.001] (0.6813)	0.5201 [0.006] (0.3802)
Efficiency of the Judicial System	-0.1114 [0.000] (0.8345)	0.4270 [0.005] (0.4113)	0.4127 [0.003] (0.5129)	0.0626 [0.000] (0.9223)
Risk of Expropriation	0.1880 [0.000] (0.8187)	1.3392 [0.020] (0.0898)	0.1618 [0.000] (0.8677)	-1.0490 [0.009] (0.2842)

	Rival Firm Listing Date	Rival Firm Announcement Date	Listing Firm Listing Date	Listing Firm Announcement Date
3) External Dependence Effects:				
High External Dependence	-1.7152 (0.2425)	0.7662 (0.5918)	0.0066 (0.9971)	3.5148 (0.0543)
Low External Dependence	-1.0758 [0.010] (0.5359)	0.7880 [0.003] (0.6391)	-1.9650 [0.008] (0.3583)	1.2418 [0.0289] (0.5605)
4) State of the Financial Market Effects:				
Bear Market	-0.7700 [0.002] (0.5761)	-2.7342 [0.029] (0.0398)	0.0643 [0.000] (0.9700)	1.0572 [0.003] (0.5426)
5) Default Risk Effects:				
Emerging	-0.0034 (0.9988)	2.3042 (0.2790)	-3.759 (0.1488)	7.5263 (0.0037)
Small * Emerging	1.9041 [0.005] (0.5439)	-9.1397[0.076] (0.0020)	5.1275 [0.019] (0.1650)	-10.3156 [0.075] (0.0050)

Figure 1. Cumulative Average Abnormal Returns for Rival Firms.

Abnormal returns are calculated for each of the 146 rival firms in our sample. The abnormal returns are based on a market model using Datastream's corresponding local market index. The abnormal returns were then aggregated across firms and time. This figure presents the mean cumulative abnormal returns around the listing date (day 0) for a (-5, +5) day window.

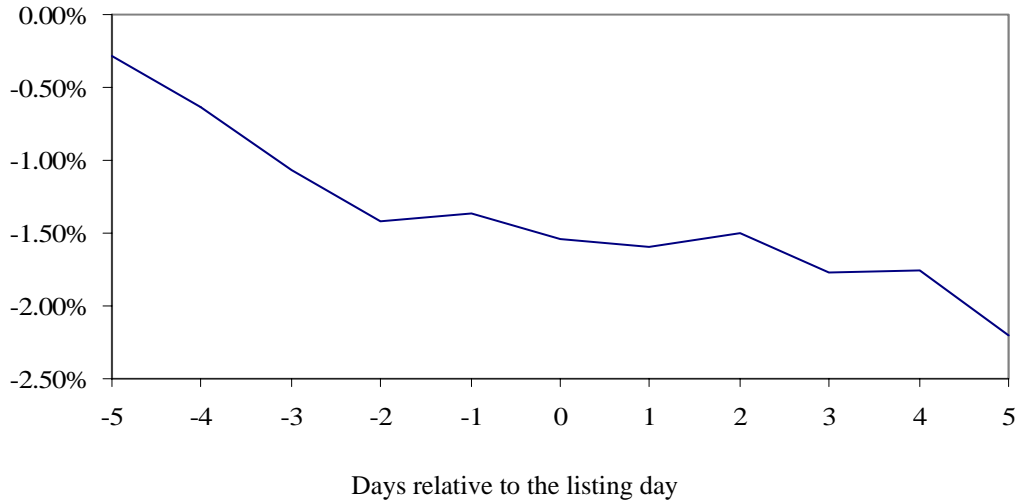


Figure 2. Cumulative Average Abnormal Returns for Rival Firms: Emerging and Developed Markets

Abnormal returns are calculated for each of two sub-samples, the first consisting of 25 firms from emerging markets and the second of 121 firms from developed markets. The abnormal returns are based on a market model using Datastream's corresponding local market index. The abnormal returns were then aggregated across firms and time. This figure presents the mean cumulative abnormal returns around the listing date (day 0) for a (-5, +5) day window.

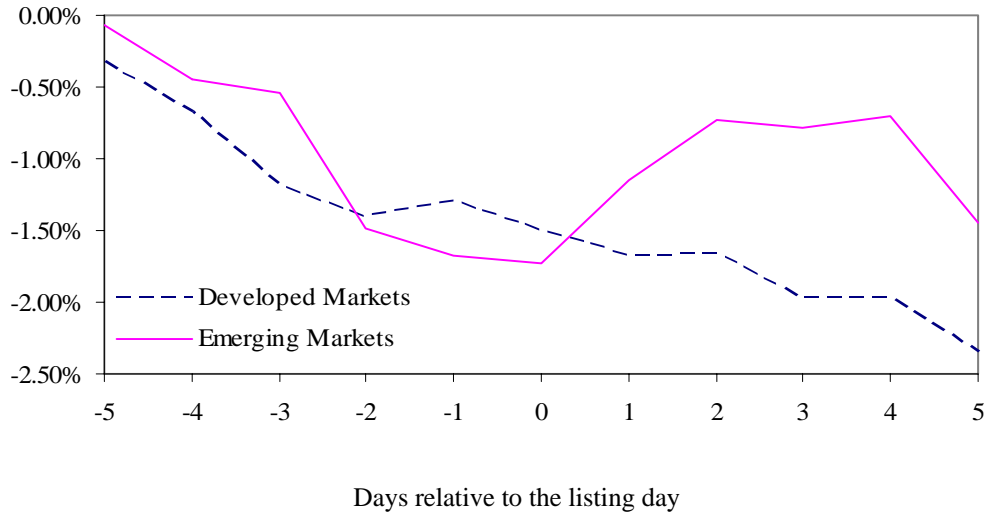


Figure 3. Cumulative Average Abnormal Returns for Rival Firms Around Announcement Dates: All, Emerging and Developed Markets

Abnormal returns are calculated for each of the 144 rival firms that have available announcement dates in our sample. The abnormal returns are based on a market model using Datastream's corresponding local market index. The abnormal returns were then aggregated across firms and time. This figure presents the mean cumulative abnormal returns around the announcement date (day 0) for a (-5, +5) day window for the 144 rival firms in our sample. It also shows the cumulative average abnormal returns of each of our two sub-samples, the first consisting of 25 firms from emerging market countries and the second consisting of 119 firms from developed market countries.

