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ABSTRACT

At the end of 1997, the foreign companies listed in the U.S. have a Tobin's q ratio that exceeds by 16.5% the q ratio of firms from the same country that are not listed in the U.S. The valuation difference is statistically significant and largest for exchange-listed firms, where it reaches 37%. The difference persists even after controlling for a number of firm and country characteristics. We propose a theory that explains this valuation difference. We hypothesize that controlling shareholders of firms listed in the U.S. cannot extract as many private benefits from control compared to controlling shareholders of firms not listed in the U.S., but that their firms are better able to take advantage of growth opportunities. Consequently, the cross-listed firms should be those firms where the interests of the controlling shareholder are better aligned with the interests of other shareholders. The growth opportunities of cross-listed firms will be more highly valued than those of firms not listed in the U.S. both because cross-listed firms are better able to take advantage of these opportunities and because a smaller fraction of the cash flow of these firms is expropriated by controlling shareholders. We find that our theory explains the greater valuation of cross-listed firms. In particular, we find expected sales growth is valued more highly for firms listed in the U.S. and that this effect is greater for firms from countries with poorer investor rights.

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1. Introduction

Why is it that less than one in ten large companies from outside the U.S. choose to list their shares on U.S. markets? Surveys of managers typically find that they perceive many benefits from listing in the U.S. In particular, they mention that firms benefit from listing because it lowers their cost of capital, gives them access to foreign capital markets, increases their ability to raise equity, increases their shareholder base, makes their stock more liquid, and adds visibility, exposure, and prestige (Mittoo, 1992, Fanto and Karmel, 1997). At the same time, the costs associated with a listing that managers report seem small in comparison to the benefits. These costs are SEC reporting and compliance requirements, as well as the direct legal costs and investment-banking fees associated with the listing. In a number of cases, the direct initial costs have even been picked up by the depository banks.[1] Given this apparent imbalance between benefits and costs, do firms that list in the U.S. benefit from listing? Are firms that list worth more than firms that do not? Why is it that we do not see more companies listing in the U.S.? Is it that the managers and controlling shareholders of firms that do not list would not benefit from listing when other shareholders might benefit from it?

To address these questions, we first compare the value of foreign firms listed in the U.S. to the value of foreign firms that are not listed in the U.S. Using the Worldscope database universe of firms, we find that the firms listed in the U.S. have a Tobin's q ratio that exceeds the q ratio of firms from the same country that do not list in the U.S. by 16.5% on average. The valuation differential of listed firms, which we call the cross-listing premium, increases as firms choose a more selective and costly listing mechanism; specifically, the valuation difference is largest for exchange-listed firms, where it reaches 37%. This valuation differential persists after controlling for country and firm characteristics.

[1] See "Concern arises over ADR payouts," by Alison Beard, Financial Times, July 23, 2001.

We argue that earlier theories of the benefits of listing in the U.S. that focus on the reduction in the cost of capital resulting from expanding the pool of shareholders by overcoming barriers to international investment cannot explain the cross-listing premium.[2] With these theories, one should see fewer listings in the 1990s when there were fewer barriers to international investment than in the 1980s. Yet, the 1990s saw a sharp increase in listings in the U.S.

Our theory explains why firms listed in the U.S. are worth more and why not all firms list in the U.S. La Porta, Lopez-de-Silanes, and Shleifer (1999) show that large foreign firms are typically controlled by large shareholders, mostly families. We argue that cross-listed firms are firms with low controlling shareholder agency costs. Firms where controlling shareholder agency costs are high do not list in the U.S. because of the threat from a U.S. listing to the private benefits from control of large shareholders. One would expect that agency costs of controlling shareholders are lower in firms with valuable growth opportunities that cannot be financed internally or with riskless debt.[3] Controlling shareholders of firms where the agency costs of controlling shareholders are low have the most to gain and the least to lose by listing in the U.S. since they have lower private benefits from control to protect and greater growth opportunities to take advantage of by accessing capital markets. La Porta, Lopez-de-Silanes, Shleifer, and Vishny (2001) show that equity is worth less in countries with lower investor protection because equity is priced to reflect the large private benefits the controlling shareholder can extract from the firm in such countries. For controlling shareholders from countries with lower investor protection to give up part of their private benefits from control, they have to benefit more from the ability to access public capital markets than controlling shareholders from countries with better investor protection. This additional benefit compensates them for the higher cost they incur in taking actions that limit agency costs. Hence, listed firms from countries with poorer investor protection must have better growth opportunities than listed firms from other countries.

[2] See Karolyi (1998) for a review of the literature on U.S. listings of foreign firms.

[3] Stulz (1990) shows that agency costs of managerial discretion are negatively related to growth opportunities. The arguments in that paper can be extended to controlling shareholders.

The paper proceeds as follows. We explain why the traditional view of the benefits from listing in the U.S. cannot explain our evidence and develop our theory in Section 2. We present our sample in Section 3. In Section 4, we show that foreign U.S. listed firms are valued more than foreign firms that are not listed in the U.S. and that the cross-listing premium is higher for exchange-listed firms. We provide tests of our theory in Section 5. We conclude in Section 6.

2. The benefits and costs from U.S. listings for foreign firms

There is a large literature on international cross-listings. Before advancing our theory for why there is a large cross-listing premium, we review existing explanations for the benefits and costs of cross-listings, as well as the empirical evidence associated with these explanations.

Much of the early literature on cross-listings was built using the insights of international asset pricing models with barriers to international investment.[4] In these models, a firm located in a country that is not fully integrated in the world capital markets typically faces a higher cost of capital because its risk has to be born mostly by investors from its country. If the firm finds a way to make it less costly for foreign investors to hold its shares, these investors share some of the firm's risk and therefore the cost of capital of the firm falls. From this perspective, a U.S. listing is a way for firms to make their shares more accessible to foreign investors and will be used only by those firms for which doing so reduces their cost of capital sufficiently to offset the costs of the listing. If two firms have the same expected cash flows but one firm has a U.S. listing and the other does not, one expects the firm with a U.S. listing to have a higher value than the firm without such a listing.

There is some support in the event study literature for the argument that listing in the U.S. reduces barriers to owning the stock and therefore decreases the listing firm's cost of capital, but this support is rather limited. The announcement of a U.S. listing is accompanied by a significant

[4] See Karolyi and Stulz (2001) for a review of this branch of the international asset pricing literature.

abnormal return that is higher for firms from emerging markets and for exchange listings.[5] For instance, Miller (1999) finds an abnormal return of 1.15% for the announcement of a U.S. listing, but this abnormal return is 1.54% for a listing for a firm from an emerging market and is 2.63% for an exchange listing. There is a stock price runup prior to a U.S. listing announcement, but the common stock of firms that list underperforms after the listing. For instance, Foerster and Karolyi (1999) document excess returns of 0.15% per week during the year preceding the listing and of -0.14% per week during the year following the listing. These changes in share values over the two years that surround a U.S. listing announcement make it difficult to infer from stock returns the magnitude of the net benefit to a U.S. listing.

A risk premium explanation for the cross-listing premium faces five difficulties. First, the event study abnormal returns are extremely small compared to the premium, but the run-up prior to listing is not. For the risk premium explanation to explain the cross-listing premium, it would have to be that the run-up prior to listing is explained by the market anticipating a U.S. listing. An alternative explanation of the run-up is plausible – firms list after having done well, so that the cross-listing premium is already there when firms list.[6] Second, if the only impact of a listing is a decrease of the risk premium, then all firms for which the risk premium would fall sufficiently to justify the transaction costs of listing would list in the U.S., but they do not. Third, the U.S. cross-listing premium is widespread across countries and is large even for countries whose capital markets were substantially integrated in world markets during the 1980s and 1990s. For instance, the risk premium argument would imply a smaller cross-listing premium for Swiss and Canadian firms than for Indian or Turkish firms. Our results show that Swiss and Canadian firms have

[5] See Switzer (1986), Alexander et al. (1988), Foerster and Karolyi (1993, 1999), Jayaranam et al. (1993), and Miller (1999). See the survey by Karolyi (1998) for dozens of related references.

[6] It is because of this endogeneity problem that we avoid event-time analysis and instead shift to cross-sectional tests for our empirical analysis. It is also worthwhile to note that Sundaram and Logue (1996) examine changes to a number of valuation ratios, such as price-to-earnings, price-to-book, around 76 ADR listings. They found a 10 percent increase relative to a benchmark sample of firms which did not list in the U.S. They associate this increase with a decline in cost of equity capital, but it is likely to be associated with the pre-listing runup documented by others. We thank David Brown and Mike Weisbach for helping to clarify this point.

among the highest cross-listing premiums, while Indian and Turkish firms have a negative cross-listing premium. Fourth, the risk premium argument cannot possibly explain the time-series pattern of listings. Listings have grown sharply over the last ten years. As markets become more integrated, a listing becomes less valuable with the risk premium argument since the cost of capital for companies is increasingly determined globally. Consequently, we should have seen a reduction in U.S. listings in the second half of the 1990s when instead we saw an increase in listings. Fifth, standard asset-pricing models cannot explain why the cross-listing premium is largest for firms that choose to list on an exchange versus those that use a private placement.

There are at least four alternate hypotheses that have been advanced to explain the benefits for foreign firms of listing in the U.S. The first hypothesis, advanced by Foerster and Karolyi (1999), is that listing in the U.S. creates value for firms if it enlarges their shareholder base. When a listing enlarges the firm's shareholder base, the firm's risk is shared among more shareholders, which reduces the firm's cost of capital. The critical difference between the shareholder base hypothesis and the capital market segmentation hypothesis is that it recognizes that simply listing shares in the U.S. does not necessarily imply that U.S. investors will become significant shareholders. U.S. investors may choose to mostly stay away from shares issued by firms they know little about. For these firms, the risk premium benefit emphasized by the asset pricing literature is not relevant and a listing in the U.S. may have little value. The shareholder base hypothesis helps understand the listing abnormal return, but not the cross-listing premium we focus on here.

The second hypothesis, advanced by Lins, Strickland, and Zenner (2000), is that firms that list in the U.S. gain value because they bypass local underdeveloped capital markets. Hence, the greater liquidity and efficiency of the U.S. capital markets makes a listing valuable for those firms that have to raise funds. Lins, Strickland, and Zenner (2000) show that firms that list in the U.S. become less credit-constrained as a result of doing so, in that their investment depends less on their cash flow after the U.S. listing than before. This hypothesis makes the critical point that

firms that list in the U.S. gain access to capital. It indirectly suggests that the firms that benefit most from a listing are those that have the best investment opportunities, which is consistent with a cross-listing premium.

A third hypothesis suggests that information disclosure plays an important role in a U.S. listing decision. Models by Cantale (1996), Fuerst (1998), and Moel (1999) assume information asymmetry or information incompleteness (similar to the shareholder base hypothesis above) and establish a signaling equilibrium in which firms try to communicate their private information regarding their quality to outside investors by listing their shares in overseas markets. Markets around the world are assumed to differ in terms of the level of information disclosure and higher levels of disclosure required by some markets, such as the U.S., reduce the cost to outside investors' of monitoring managerial actions. As a result, markets will place a higher value on such firms.

The fourth hypothesis, advanced by Coffee (1999), Stulz (1999), and Reese and Weisbach (2001), is that a U.S. listing enhances the protection of investors for firms coming from countries with poor investor protection and reduces the agency costs of controlling shareholders. A number of papers have recently provided evidence that investor protection differs across countries and that investor protection matters for how firms are governed and financed (e.g., La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 2000). Poor investor protection is associated with poorly developed financial markets, high costs of external finance, and more valuable private benefits from control. Compared to the rest of the world, investors are extremely well protected in the U.S., especially when firms are subjected to the full extent of the SEC reporting requirements. Firms in countries with poor investor protection can obtain some of the benefits of the apparatus that protects investors in the U.S. by listing shares in the U.S. In particular, firms that list shares on a U.S. exchange have to provide some of the SEC filings that U.S. firms have to provide and are subject to many of the same U.S. laws and regulations. There are limitations to the extent that investors of foreign firms listed in the U.S. benefit from U.S. laws and regulations. For instance,

shareholders of a foreign firm listed in the U.S. may face substantial obstacles in recovering damages awarded to them by a U.S. court if the firm's assets in the U.S. are small relative to the damages (Siegel, 2001).

When a firm has high agency costs of controlling shareholders, it will find accessing public capital markets for equity or public debt to be very expensive. This is because capital providers expect that a significant share of firm cash flows will be expropriated by the controlling shareholder and therefore will only be willing to pay a price for securities issued by the firm that reflects their expectations about the extent of future expropriation of cash flows. Consequently, such firms will find it difficult or impossible to fund projects that require large amounts of outside capital. Controlling shareholders of firms that have growth opportunities that can be taken advantage of only through the issuance of securities in public markets will therefore have to find ways to align their incentives better with those of minority shareholders. A number of mechanisms are available to controlling shareholders to bond themselves to lower consumption of private benefits. In particular, they can incur the cost of developing a reputation of not extracting large personal benefits from control, they can use debt to be subject to monitoring from creditors, they can commit to a high disclosure policy, they can list in the U.S., and they can add outsiders to the board.[7]

As an example of the tradeoff faced by the controlling shareholder of a firm, think of a firm where the controlling shareholder could extract private benefits worth $100 million a year (as long as external forces – legal or political – do not prevent him from doing so). If the firm does not have to sell risky securities on external capital markets, the controlling shareholder has little reason to refrain from extracting these private benefits. However, suppose that by extracting these benefits, the controlling shareholder prevents the firm from raising capital to fund growth

[7] Gomes (2000) models the reputation mechanism and draws empirical predictions from his model. His model implies that reputation is only valuable to firms whose financing requirements outstrip their ability to finance projects internally, with bank debt, or with riskless debt.

opportunities worth $2 billion in present value. Assume also that these growth opportunities could be appropriated if the controlling shareholder could bond himself to consume only $50 million a year of private benefits. Under these circumstances, the value of the firm would increase by $2 billion plus the present value of the private benefits not consumed. If the controlling shareholder owns 50% of the shares and if his discount rate is 10%, he loses $500 million of private benefits in present value but gains $1.250 billion of increase in the value of his shares by bonding himself to limit his consumption of private benefits. If the firm lost few growth opportunities as a result of having a controlling shareholder who consumes private benefits aggressively, it would make no economic sense for the controlling shareholder to bond himself to consume less private benefits.

The growth opportunities that entice a controlling shareholder to bond himself to consume less private benefits have to be more valuable in countries with worse investor rights since the controlling shareholder gives up greater private benefits in such countries. This means that everything else equal, one would expect the proportion of firms from a country that list in the U.S. to be inversely related to the country's protection of investor rights. This prediction creates a problem for explaining the listing premium. Since we know that firms in countries with better investor protection tend to have higher valuations, this creates the possibility that listed firms have higher q's simply because more of these firms come from high firm q countries than from low firm q countries. This issue creates a possible selection bias that has to be accounted for in explaining the listing premium.

As shown by Doidge (2001), the typical non-U.S. firm that lists in the U.S. has a large controlling shareholder. By listing in the U.S., a foreign firm increases the rights of its investors, especially of its minority shareholders, and constrains the controlling shareholder in his ability to extract private benefits from control. Whether the firm lists in the U.S. or not depends on whether that shareholder finds it advantageous to do so. Controlling shareholders who find it optimal to extract as many private benefits from the firm as they can get away with will not want their firm to list in the U.S. because doing so will threaten their ability to extract benefits.

A U.S. listing decreases the controlling shareholder's ability to extract private benefits from control when the firm lists in the U.S., but this is not a cost for controlling shareholders of firms whose interests are already sufficiently aligned with those of minority shareholders. After all, they have taken steps to commit to low consumption of private benefits. Nevertheless, a listing benefits the firm by reducing its cost of outside finance. First, equity financing becomes cheaper for such a firm because the controlling shareholder's willingness to expose the firm to greater disclosure as well as to be subject to U.S. laws reinforces and signals the controlling shareholder's commitment to low consumption of private benefits. Second, the firm can better access the deep U.S. and Eurobond markets. Existing research shows that these benefits are important. Reese and Weisbach (2001) provide evidence that firms raise more equity subsequent to a listing. Strikingly, they show that the greater shareholder protection resulting from a listing means that it becomes more advantageous for firms to raise equity at home and that firms raise more equity at home following a U.S. listing. The ability to raise more equity at home for U.S. listed firms has to come from the decrease in the cost of equity capital resulting from the greater commitment of controlling shareholders to limit their consumption of private benefits.

When deciding whether to list in the U.S., the controlling shareholder of a foreign corporation trades off the cost of a constraint on the value of private benefits from control against the benefit from cheaper access to external finance. We would therefore expect the firms that benefit the most from additional external finance to be the ones that have a U.S. listing. Firms with better growth opportunities and lower controlling shareholder agency costs are therefore more likely to list in the U.S. These firms should therefore be more highly valued than firms that do not list because of their greater growth opportunities, because the value of their publicly traded securities reflects more of the value of these greater growth opportunities since they have lower controlling shareholder agency costs, and because they will be better able to take advantage of these growth opportunities by having a lower cost of capital and by having access to U.S. and international capital markets. The market value of a firm's debt and equity is the value of assets in place plus

the present value of growth opportunities. For a given value of assets in place, q increases with growth opportunities. It follows from this reasoning that U.S. listed firms should have a higher q ratio than those that do not list and that the growth opportunities of cross-listed firms will be valued more highly.

Since firms that list in the U.S. are less financially constrained and raise additional equity capital, their q is lower than the q of otherwise similar firms that do not list in the U.S. This is because firms with a lower cost of capital can exploit more marginal growth opportunities than firms with a higher cost of capital, which lowers the marginal q of firms with a lower cost of capital. This effect makes it harder for us to find evidence that cross-listed firms are valued more.

3. Data

To conduct our study, we need data for the value of firms and data for the country characteristics that are related to investor protection, capital market accessibility, accounting standards, and aggregate market liquidity. To obtain data on firms, we use Worldscope, an online financial information service of the Primark division of the Thomson Financial group.[8] The main results of this study are obtained for firms with data available for 1997. The measures of shareholder rights and legal enforcement of La Porta, Lopez-de-Silanes, Shleifer, and Vishny (LLSV, 1998) are used to control for the degree to which investors are protected in a country. Their measures are available for countries that have at least five publicly traded firms for which ownership data is available. They exclude countries from the former Soviet bloc. We include all firms in the Worldscope universe for the countries for which their measures are available. This gives us 11,757 firms from 40 countries. Of these firms, 1,167 are cross-listed in the U.S. Listing

[8] The Worldscope database coverage includes: more than 96% of the world's market value is represented, 10 to 18 years of historical data, over 24,000 public companies in more than 50 developed and emerging markets, including over 3,000 companies in all the IFC Investables Index countries. See http://www.primark.com/pfid/index.shtml?/content/worldscope.shtml for more details.

information was obtained from the Bank of New York[9] and was supplemented and cross-checked with data obtained from the NYSE, Nasdaq, OTCBB (http://www.otcbb.com/static/symbol.stm) and the September 2000 edition of the National Quotation Bureaus' Pink Sheets. For those firms that changed listing location in the U.S. (for example, from Rule 144a private placement to exchange listing) or those that subsequently raised capital, we assigned them to the class of listing according to their status as of December 31, 1997. There are more cross-listed firms than those contained in the Worldscope universe. However, we would not be able to obtain valuation data for the firms that are not in Worldscope.

The valuation measure we use is Tobin's q computed as follows. For the numerator, we take total assets, subtract the book value of equity, and add the market value of equity. For the denominator, we use total assets. After eliminating the firms for which data is not available to compute q, we are left with 955 cross-listed firms and 7,725 that are not. Our q estimate does not attempt to use replacement cost in the denominator and does not use the market value of debt in the numerator. There is nothing that we could do to avoid these simplifications in a dataset that spans 40 countries.[10]

Since we investigate how country characteristics affect the cross-listing premium, we have to compare estimates of q across countries. Firms listed on U.S. exchanges have to provide U.S. GAAP accounting statements. However, Worldscope provides firm data using local GAAP even when U.S. GAAP is available. Though attempts are made by Worldscope to make the data consistent across countries, such an effort has obvious limitations. Differences in accounting practices across countries can increase q in some countries relative to other countries. Many countries allow firms to hide reserves, so that their assets are understated. At the same time, some

[9] See Bank of New York, 1996, *Global Offerings of Depositary Receipts: A Transaction Guide*, Bank of New York American Depositary Receipt Division, New York, NY, and http://www.bankofny.com/adr.

[10] It is difficult to determine ex ante how an imperfectly-measured q will affect our analysis. If rapidly-growing firms are most likely to cross-list, they are also the most likely to have recently acquired assets and will tend to have a relatively high book value of assets. As a result, this will lead to a lower marginal q measure and is, therefore, likely to bias our tests against finding a cross-listing premium. Our thanks to Mike Weisbach for pointing this out to us.

countries capitalize R&D, while others do not. The capitalization of R&D increases the denominator of q and consequently decreases q. Because of the concern about the possible biases introduced by differences in accounting practices, we also estimate the cross-listing premium within countries.

To make firms across countries more comparable, we eliminate financial firms and require firms to be large. More specifically, we exclude firms with total assets of less than $100 million. This leaves us with 778 cross-listed firms and 4,494 firms that are not. A difficulty with Worldscope is that firms were added rapidly to the dataset during the 1990s. This makes it difficult for us to use historical data for the firms in our sample without losing many firms. In a compromise, we require firms to have three years of sales data so that we can compute a reasonably stable measure of two-years' sales growth. After imposing this requirement, we have 714 cross-listed firms and 4,078 firms that are not listed in the U.S.

We use three country-level variables obtained from LLSV (1998). They are legal origins, the index of anti-director rights, and the index of judicial efficiency. LLSV (1998) assign each country to one of four legal traditions: common law, French civil law, German civil law, and Scandinavian civil law. Their anti-director rights index aggregates six different shareholder rights and ranges from 0 to 6, where a higher score indicates better shareholder protection. The index is constructed by adding 1 when a country allows shareholders to mail their proxy to vote, it does not require shareholders to deposit shares ahead of the shareholder meeting, it allows cumulative voting or proportional representation of minorities on the board of directors, it has an oppressed minorities mechanism in place, it allows shareholders who represent less than 10% of share capital to call for an extraordinary meeting, and it gives shareholders preemptive rights that can be waived only by a shareholder's vote. The next variable is an index of judicial efficiency. This index produces a rating of the "efficiency and integrity of the legal environment as it affects business, particularly foreign firms." It takes values from 0 to 10 and judicial efficiency improves

with the score. The index is produced by Business International Corporation and LLSV (1998) use the average from 1980 to 1983.

We use a number of additional country variables in our study. First, for our information disclosure hypothesis, we employ an index of accounting standards produced by the Center for International Financial Analysis and Research.[11] The index rates companies' annual reports in 1990 for their inclusion or exclusion of 90 items. The accounting index is not available for three of our countries, namely Ireland, Pakistan, and Indonesia. In the results reported in the paper, we use a substitute index for these three countries, but none of our results are affected if we exclude these three countries.[12] Second, we use an estimate of the liquidity of markets across countries. For that purpose, we use the ratio of the dollar value of shares traded divided by the average market capitalization in 1997.[13] Third, the Millken Institute has developed a capital access index that attempts to capture the structural characteristics of the corporate finance, capital markets, and financial institutions systems of each country.[14] More specifically, it measures capital access according to the depth, breadth, and liquidity of markets – it is an equally-weighted index of variables, divided into three categories: quantitative, risk, and qualitative. The score ranges from 0 to 7, where a higher score indicates better capital access. The index focuses on market factors alone and not on political ideologies. It examines empirical market factors regulating the entry and exit, origin, and destination of capital flows. The rankings focus less upon macroeconomic policies and issues than do other economic rankings, and more upon recent revolutions in corporate finance theory and practice. We also use the total capitalization of domestic listed

[11] See Chapter 1, Volume 1 of *International Accounting and Auditing Trends* (2nd edition, 1991), Center for International Financial Analysis and Research, Princeton, New Jersey.

[12] Though we follow LLSV and use the 2nd edition (1991) rankings, we supplement it with the scores from the 3rd edition (1993) for two of the missing countries, Ireland and Pakistan. For Indonesia, there is no score, but we assign that of the median score for other Southeast Asian countries (Thailand, Malaysia, Philippines, and Singapore).

[13] Our sources for liquidity, GDP per capita, and market capitalization include *The Salomon Smith Barney Guide to World Equity Markets 1999* (1999, Euromoney Institutional Investor, PLC, London) and *IFC Emerging Stock Markets Factbook 1998* (1998, http://www.spglobal.com).

stocks in 1997. Finally, we use the GNP per capita in 1997. Appendix A1 details all country-level variables used.

4. The cross-listing premium

In this section, we document that there is a cross-listing premium and that it persists even after controlling for firm and country characteristics. We do so first by providing evidence on the q of listed firms and the q of non-listed firms for each country in our sample. We then specify and estimate regressions where we control for firm and country characteristics.

Table 1 reports first for each country the number of firms (N), the mean and median total assets (TA) , and the average and median Tobin's q of firms without a U.S. listing. The number of firms per country varies widely. We have a minimum of 3 non-listed firms in Peru and Venezuela, but a maximum of 1,258 firms in Japan. There is considerable variation in q across countries, from a minimum of 0.61 in Peru to a maximum of 2.61 in Turkey. The range of median q's is more limited.

The next four columns of Table 1 show the number of firms with a U.S. listing, the average and median total assets, the average and median q, and finally the average and median difference in q between firms that are not listed and firms that are. The proportion of firms that are listed in the U.S. varies widely across countries. Greece and Pakistan have no firms listed in the U.S. that meet our data requirements, but Mexico, South Africa, and Venezuela have more firms in our sample with a U.S. listing than firms without. Japan and the UK each have more than 100 firms listed in the U.S.

Looking at total assets, listed firms are larger than non-listed firms. For the whole sample, the mean of the total assets of listed firms is almost six times larger than the mean of the total assets of non-listed firms. The median of the total assets of listed firms is almost ten times larger than

[14] See *Think Locally - Act Globally: Domestic Market Restructuring and Sustainable Global Eonomic Growth* by Glenn Yago, Thomas Hall, and Michael Harrington (Millken Institute Policy Brief, March 8, 2000).

the median of the total assets of non-listed firms. Since there are fixed costs for listing in the U.S. for a foreign firm, one would expect the firms that list to be larger. However, other reasons why larger firms are more likely to list may matter more. For instance, larger firms are likely to have more recognition by U.S. investors and are more likely to have internationally traded products. Kang and Stulz (1997) and others have shown that foreign investors invest more in larger firms and firms for which international trade is more important.

Table 1 reports the average cross-listing premium computed as follows. First, for each country, the difference between the average q of listed firms and the average q of non U.S.-listed firms is computed. Second, this difference is averaged across the countries in our sample. The average across countries of the individual cross-listing premiums is 0.221 with a t-statistic of 3.26. The average across countries of the median cross-listing premiums is 0.201 with a t-statistic of 3.68. Both the mean and median cross-listing premiums are positive for 26 countries. Two of the countries in the table have no cross-listed firms, which leaves twelve countries with a negative cross-listing premium. The average q of listed firms exceeds the average q of non-listed firms by 16.5%. One way to assess the economic importance of this valuation difference is that it exceeds the typical estimate of the diversification discount (Berger and Ofek, 1995, Lang and Stulz, 1994).

The third panel of the table reports results for Rule 144a private placement listings. These listings are capital-raising issues in which the securities are privately placed to qualified institutional buyers (QIBs) and, as a result, do not require compliance with GAAP or SEC disclosure rules. These securities trade OTC among QIBs with very limited liquidity. There are only 116 such listings from 20 countries in our sample. The UK and many other countries have none. The country with the largest number of such listings is India, which has 47, and Taiwan, which has 20. With the exception of France and Thailand, total assets of the firms using a 144a listing are lower on average than the total assets of the firms having a U.S. listing. The average cross-listing premium is positive in 11 countries and the median premium is positive in 12

countries. The average cross-listing premium for 144a listings is 0.149, which is lower than the overall cross-listing premium. In contrast, the median cross-listing premium for 144a listings is 0.255, which is greater than the overall cross-listing premium. The t-statistics for the averages of mean and median 144a cross-listing premiums are 1.05 and 2.39, respectively.

The fourth panel shows results for firms with an OTC listing. These are often referred to as Level I ADRs for non-Canadian listings. They trade OTC as Pink Sheet issues with limited liquidity and require only minimal SEC disclosure and no GAAP compliance. These firms are exempt from filing Form 20-F under Rule 12g3-2(b), which allows home country accounting statements with adequate English translation, if necessary. This is the most popular listing, in that almost half of the sample of cross-listed firms has an OTC listing. Twenty-eight countries have firms with such a listing. Typically, firms with an OTC listing have more assets than firms with a 144a listing. Sixteen countries have a positive average OTC cross-listing premium and 22 countries have a positive median OTC cross-listing premium. The average cross-listing premium for OTC listings is 0.105 and the median is 0.127; the associated t-statistics for the average and median OTC cross-listing premiums are 1.40 and 2.34, respectively.

Finally, the fifth panel shows results for exchange-listed firms. These listings comprise ordinary listings (mostly Canadian firms and New York Registered Shares for Dutch firms) and Level II and III ADRs. As the most prestigious and costly type of listing, these require full SEC disclosure with Form 20-F and compliance with the exchange's own listing rules. Thirty-two countries have firms with exchange listings. Except for Brazil, Hong Kong, New Zealand, Singapore, and Switzerland, these firms are on average larger than the other firms from their country that are listed in the U.S. The cross-listing premium is positive on average in 25 countries. The median cross-listing premium is positive in 26 countries. The average cross-listing premium is 0.486 (t-statistic across countries of 3.85) which corresponds to an average cross-listing premium of 36.5%. This average cross-listing premium is 226% the average cross-listing premium for 144a listings and 362% the premium for OTC listings. The median premium is even

larger at 0.516 (t-statistic across countries of 4.52) which amounts to a median premium of 45.6%.

Table 1 does not make it possible to evaluate the significance of the cross-listing premium for each country. To evaluate this significance, we estimated within-country regressions of q on a dummy variable that takes value one for firms with a U.S. listing. Using heteroskedasticity consistent t-statistics, we find three countries with a significant negative dummy variable, but eight countries with a significant positive coefficient. Figure 1 shows the distribution of the coefficients and of their t-statistics. It is important to remember that the statistical precision of the premium depends on the number of listing firms. Contrast, for example, the Japanese cross-listing premium of 0.26, which is modest but precisely estimated with a t-statistic of 3.83, and that of Portugal, with a cross-listing premium of 1.29 and associated t-statistic of 1.43.

The next step in our analysis is to determine whether the cross-listing premium can be explained by firm-specific and country-level variables. Tables 2 and 3 report a series of regression results of Tobin's q on a dummy variable representing a cross-listing overall ("Cross-list").

Regression (1) of Table 2 projects the q of all firms in our sample on a dummy variable, "Cross-list," that takes value one if a firm is listed in the U.S. We see that the dummy variable has a positive coefficient of 0.26 with a t-statistic of 6.26 (computed with a heteroskedasticity consistent standard error). The R-square of this regression is low, which is not surprising since the only explanatory variable is whether a firm is listed in the U.S. It could be that firms that list simply have better investment opportunities. If this were the case, then the cross-listing premium should disappear if we control for growth opportunities in the regression. In Table 2, we use two proxies for growth opportunities: sales growth over the last two years ("Sales growth" or "SG") and the median q of the global industry a firm belongs to ("Ind_G"). Regression (2) shows that the premium is significantly positive when we use these proxies for growth opportunities.

Controlling for growth opportunities reduces the premium and its significance.[15] Not surprisingly, the adjusted R-square increases substantially.

In regressions (3) through (12), we add country characteristics as independent variables to regression (2). The premium is significant in every regression. When we do not control for other country characteristics, firms with French civil law ("FL") and Germanic civil law ("GL") have lower q's, while firms with Scandinavian law ("SL") have higher q's. Tobin's q increases with the index of accounting standards ("AS") and increases with the liquidity of the domestic stock market ("LR"). Finally, firms have higher q's in countries with easier access to capital ("CAI"). We do not control simultaneously for capital access and stock market liquidity because of the correlation between these two variables.[16] However, in regression (9) we control for legal origin, accounting standards, judicial efficiency ("EJ"), and stock market liquidity. Firms with Germanic law still have low q's, firms from countries with higher judicial efficiency have higher q's, and countries with more liquid markets have higher q's. In regression (10), we replace stock market liquidity with the capital access index. The adjusted R-square drops when we do that and some variables stop being significant because their effect is subsumed by the capital access index. The capital access index has a positive significant effect as expected. Regressions (11) and (12) repeat regressions (9) and (10), but the legal origin dummy variables are replaced by the anti-director index ("AD"). The adjusted R-square is higher when we use the legal origin dummy variables and the anti-director index does not seem to have an unambiguous impact on q.

It follows from Table 2 that (1) there is a cross-listing premium, (2) it cannot be explained by our proxies for firm growth opportunities, and (3) it cannot be explained by differences in

[15] In this analysis, we excluded two firms based on very large outlier values for sales growth (SG). These firms are Eidos, plc, a UK firm listed on Nasdaq, and Hurrican Hydrocarbons, a Canadian firm listed on the NYSE. We tracked down the SEC Form 20-F filings and uncovered that the 1,577% and 2,733% growth in sales in 1996, respectively, were both due to major acquisitions.

[16] In fact, market liquidity is a key component of the capital markets equity (KE) measure which forms the CAI index together with the capital markets bonds, capital markets advanced, banking, international, sovereign, macroeconomics, and institutional measures. See Appendix 1 in *Think Locally - Act Globally: Domestic Market Restructuring and Sustainable Global Economic Growth* by Glenn Yago, Thomas Hall, and Michael Harrington (Millken Institute Policy Brief, March 8, 2000).

shareholder protection proxies, capital market development across countries, or other country factors. We need, however, to be cautious about the interpretation of the cross-listing premium. Suppose that there are high and low q countries and that, for whatever reason, the firms in high q countries are more likely to list in the U.S. We could then conclude that there is a cross-listing premium, but it would simply reflect the fact that the sample of cross-listed firms has a higher proportion of firms from high q countries than the sample of firms that are not cross-listed. Hence, the cross-listing premium would be an artifact that has nothing to do with cross-listing and would have nothing to do with our theory that advances the hypothesis that firms that cross-list have lower controlling shareholder agency costs compared to other firms from the same country. We therefore control for the endogeneity of the listing decision with respect to country characteristics, since otherwise we might wrongly attribute the premium to the firm characteristics that lead a firm to list. We attempt to control for this endogeneity by modeling an endogenous self-selection model and using a Heckman (1979) correction to control for the effect of self-selection bias induced by the firm's decision to list in the U.S.

To examine the effect of a listing on q, we define the measure of q as:

$$q_i = \alpha + \underline{\beta}' \underline{X}_i + \delta L_i + \varepsilon_i \quad \text{(valuation equation)} \qquad (1)$$

where $\underline{X}_i$ is a set of exogenous country variables, L_i, a dummy variable that equals 1 for a firm that cross-lists in the U.S., $\{\alpha, \underline{\beta}, \delta\}$, a vector of parameters to be estimated, and ε_i, an error term. The estimated parameter δ measures the relation between listing and q, but, since the firms that list are not random and their decision is related to q, L_i and ε_i are correlated, and δ will be biased. Following Greene (1997, Chapter 20), we assume that the listing decision is given by,

$$L_i^* = \underline{\gamma}'\underline{Z}_i + \eta_i \qquad \text{(listing decision equation)} \qquad (2)$$

$$L_i = 1 \ \textit{if} \ L_i^* > 0$$

$$L_i = 0 \ \textit{if} \ L_i^* < 0,$$

where L_i^* is an unobserved latent variable, $\underline{Z}_i$ is a set of variables that affect the decision to list and η_i is an error term. The correlation between L_i and ε_i will be non-zero if the exogenous

variables in the listing decision equation (2), $\underline{Z}_i$, affect q, but are not in equation (1), or if the error terms, ε_i and η_i, are correlated.

We can estimate (1)-(2) as a simultaneous equation system or using Heckman's (1979) two-step estimator, which is the approach we choose. Assuming that ε_i and η_i are bivariate normally distributed with means zero, standard deviations σ_ε and σ_η (normalized to one), and correlation ρ, we have the expected q of the listing firm as,

$$E(\, q_i \mid L_i = 1) = \alpha + \underline{\beta}' \underline{X}_i + \delta + \rho\sigma_\varepsilon\lambda_{i1}(\underline{\gamma}'\underline{Z}_i) \qquad (3a)$$

where $\lambda_{i1}(\underline{\gamma}'\underline{Z}_i)$ is the "inverse Mills' ratio" and is computed as $\phi(\underline{\gamma}'\underline{Z}_i)/\Phi(\underline{\gamma}'\underline{Z}_i)$, where $\phi(\cdot)$, $\Phi(\cdot)$ are the density function and cumulative distribution functions for the standard normal, respectively. The expected value of the firm that chooses not to list is similarly,

$$E(\, q_i \mid L_i = 0) = \alpha + \underline{\beta}' \underline{X}_i + \rho\sigma_\varepsilon\lambda_{i2}(\underline{\gamma}'\underline{Z}_i) \qquad (3b)$$

where $\lambda_{i2}(\underline{\gamma}'\underline{Z}_i)$ is computed as $-\phi(\underline{\gamma}'\underline{Z}_i)/[1-\Phi(\underline{\gamma}'\underline{Z}_i)]$. The difference in q for the cross-listed and non-cross-listed firm is given by,

$$E(\, q_i \mid L_i = 1) - E(\, q_i \mid L_i = 0) = \delta + \rho\sigma_\varepsilon\phi(\underline{\gamma}'\underline{Z}_i)/[\, \Phi(\underline{\gamma}'\underline{Z}_i)(1-\Phi(\underline{\gamma}'\underline{Z}_i))] \qquad (3c)$$

which shows how the estimated premium for listing will be biased upward if the correlation of the error terms, ρ, is positive, as is hypothesized for cross-listed firms. The first step of the Heckman (1979) procedure is to obtain estimates of $\underline{\gamma}$ in equation (2) using a probit model. These consistent estimates can then be used to compute values for λ_{i1} and λ_{i2}. The second step estimates equation (1) using OLS, but with an additional term, λ_i, computed as $\lambda_{i1}(\underline{\gamma}'\underline{Z}_i)L_i + \lambda_{i2}(\underline{\gamma}'\underline{Z}_i)(1-L_i)$, to correct for self-selection,

$$q_i = \alpha + \underline{\beta}' \underline{X}_i + \delta\, L_i + \delta_\lambda\lambda_i + \varepsilon_i \quad \text{(corrected valuation equation)} \qquad (4)$$

where δ_λ is a new parameter associated with $\rho\sigma_\varepsilon$ that captures the sign of the correlation between the error terms in equations (1) and (2).[17]

[17] An appendix is available from the authors on the estimation procedure and the computation of the standard errors from the Heckman covariance matrix (see also, Greene, 1997, Chapter 20; Maddala, 1983,Chapters 8 and 9).

Table 3 presents our results evaluating the effect of selection bias on the cross-listing premium. The table is divided into three sections, including the probit model results, the OLS and Heckman valuation results, the latter with country-level controls and without. We also include test results using two-stage least squares (2SLS) in which we use the same exogenous variables in the probit model along with the probability of listing in the U.S. to calculate the estimated value of listing, L_i^*. We then use the fitted value from the first-stage probit as an instrument for L_i in the second stage regression on Tobin's q.

The probit model results show that country level variables related to the legal environment and accounting standards are statistically significantly associated with the decision to list. Companies from countries with Scandinavian and, especially, Germanic laws are much less likely to list than those from English common law countries, and those from countries with poorer accounting standards are more likely to list in the U.S. When we swap the anti-directors rights amendment variable for the legal origin dummy variables, it is also significantly positively related to listing, which implies that countries with better treatment of minority shareholders rights are more likely to list in the U.S., a result that is consistent with our arguments in Section 2 and with evidence in Reese and Weisbach (2001). Since La Porta, Lopez-de-Silanes, Shleifer, and Vishny (2001) show that countries that treat minority shareholders better have higher valuations, there is the potential for our regressions to attribute to listing a premium which is simply due to the higher valuations of countries with better protection of minority shareholders. Country GNP is negatively related to listing in this specification. In either case, the pseudo-R-square, which is computed as an index from the likelihood ratio, is relatively low at 2.5 percent to 4.1 percent.

Our OLS, 2SLS, and Heckman estimates of the basic valuation model correspond to model (2) in Table 2. The dependent variable is again q but our control variables include only firm-specific variables related to past sales growth and median q of the industry to which the firm belongs. The 2SLS and Heckman self-selection models employ the probit model in column (2). When we do not control for country characteristics, the premium is positive but insignificant.

When we control for country characteristics, the premium is 0.65 and significant. λ is insignificant in both cases. When we use the probit model's fitted value in 2SLS, the premium is always significant. The control variables that are statistically important in the full model include the accounting standards (AS), the liquidity ratio (LR) variables, and the firm-specific measures for past sales growth and industry q.

The approach used in Table 3 is designed to correct for the bias in the listing premium that can arise if firms that cross-list might come from countries where firms have high valuations. An obvious issue is whether we should also take into account self-selection based on firm characteristics. There are at least two problems with doing this. First, while it is reasonable to assume that country characteristics change slowly, such an assumption is less reasonable for firm characteristics. The firm characteristics we have in our data set are for 1997. Firms make their decision of whether to list based on firm characteristics at the time of listing. Worldscope does not have information for many of our firms at the time of listing. Second, an important issue in self-selection models, such as the 2SLS and Heckman techniques, is the choice of instruments in the selection (listing decision) equation and the valuation equation. A number of authors suggest that exogenous characteristics that affect the selection ideally be used, especially if it is less likely to affect the specific firm's value (Greene, 1997, Section 20.4.4; Willis and Rosen, 1979). Obviously, firm characteristics such as growth opportunities will necessarily be closely related to firm value and hence adding such characteristics could make the selection equation and the valuation equation alternate ways of estimating the same relations. Despite these two problems we estimated a selection equation that in addition to the variables used in Table 3 uses firm size in 1997. With this additional variable, the pseudo-R-square of the probit increases sharply to 22%. With this selection equation, the estimate of the listing dummy variable is 1.79 with a t-statistic of 18.995. The Heckman lambda is –1.08 with a t-statistic of –20.07. Adding this firm-specific variable to our selection equation does not change our conclusions.

5. Interpreting the premium

Since we could not eliminate the cross-cross-listing premium by controlling for firm and country characteristics or by controlling for potential self-selection bias, we now turn to the issue of whether we can explain the premium. Firms that have controlling shareholders who extract high benefits from control will not list in the U.S. because doing so threatens their ability to extract these benefits. Consequently, the firms that will choose to list in the U.S. are those where controlling shareholders extract fewer benefits from control compared to firms from the same country that do not list in the U.S.

If the controlling shareholders do not expect to have to resort to outside financing with equity or risky debt, they will limit their consumption of private benefits from control only so as to maximize the future flow of these benefits. However, if a firm has high growth opportunities that require outside financing with equity or risky debt, the controlling shareholder has to take steps to convince outside providers of capital that the degree to which they will be expropriated will be small enough to avoid making outside funding prohibitively expensive. Hence, firms with high growth opportunities are firms where the controlling shareholders have incentives to establish mechanisms to commit to lower extraction of private benefits from control. More of the cash flows of these firms accrue to the capital providers, so that growth opportunities are valued more highly for such firms. Further, such firms find a U.S. listing more advantageous because it opens up broader capital markets to them and helps them to convince outsiders that the extent to which their controlling shareholders consume private benefits from control is limited. The increased valuation of growth opportunities for these firms should be greater if these firms come from countries with poorer protection of shareholder rights because controlling shareholders could expropriate more in these countries. Finally, one would expect private benefits from control to be most constrained in those firms that raise capital publicly through an exchange listing since those firms are the ones where the U.S. listing has the strongest impact in improving the protection of minority shareholders. This suggests a negative relation between the premium and investor

protection variables – the premium should be greatest for firms from countries with the greatest private benefits from control – and a positive relation between the premium and proxies for a firm's growth opportunities.

Exchange listings impose tighter constraints on controlling shareholders, so that we would expect that firms with better investment opportunities use an exchange listing rather than a private issue. Firms that raise capital on an exchange have controlling shareholders whose consumption of private benefits from control is more restricted compared to firms that raise capital with a 144a listing or an OTC listing or to firms that do not raise capital. All 144a firms raise capital, but 144a listings have the weakest impact on controlling shareholders since these firms do not even have to provide financial statements that use U.S. GAAP. A firm's ability to finance growth opportunities through a 144a listing is limited because of the private placement nature of the listing, so that one would expect the firms with the better growth opportunities to use an exchange listing.

We investigate in Table 4 whether the cross-listing premium is larger for exchange listings and whether, for exchange listings, it is larger for firms that raise funds. In regressions (1) to (3), we replace "Cross-list" with the separate dummy variables by type ("144a", "OTC", "Exchange") and include them alone, with the growth opportunities variables and with the country-level variables (hereafter, we only use liquidity ratio, LR, and not the broader measure of capital access, CAI). There is a small, positive, and statistically insignificant premium of 0.07 to 0.13 for 144a listings. In Section 2, we pointed out that barriers to international investment models of the cross-listing premium cannot explain why ADRs from India and Turkey have a low cross-listing premium. The regressions we are discussing can do so because all the ADRs from India and Turkey are 144a listings. For OTC listings, the premium is positive (ranging from 0.08 to 0.11) and yet significant at reasonable levels of confidence. The premium for exchange listings is large, positive (0.44 to 0.54), and statistically significant with robust t-statistics well over 5.00. The hypothesis that the coefficients for all three types of listings are equal is rejected at conventional levels of significance. Regressions (4) to (6) include a dummy variable for 144a listings and for

exchange listed firms that raise equity capital at the time of the listing or after. The cross-listing premium is significant and positive and the capital-raising exchange listings have a significantly higher premium.

In Table 5 we re-estimate our valuation models of Tables 2 and 3, but we add different combinations of interactive variables that allow us to investigate whether growth opportunities are valued more for cross-listed firms and whether the valuation differential is lower for firms from countries with better investor protection. As before, our proxies for private benefits from control are the anti-director rights index (AD), the accounting standard index (AS), and the efficiency of the judiciary (EJ). Indirectly, the proxy for the liquidity of the firm's home stock market (LR) is also a proxy for private benefits from control, but it is somewhat harder to interpret. Our proxies for growth opportunities are again two-year sales growth and the median q of the global industry a firm belongs to. We allow all of these variables to interact with the listing dummy variable (abbreviated as CL). Further, we create an additional interaction, which is the anti-director index times sales growth times the listing dummy variable.

The first result to note in each of the three models is that the dummy variable for listing is not significant. This means that the interactions explain the cross-listing premium. We control for anti-director rights, accounting standards, judicial efficiency, and turnover. Not surprisingly, we find that these variables have positive and significant coefficients, though not always significantly for AD and never so for EJ. Both of our proxies for growth opportunities have positive, significant coefficients in all specifications as before, even with the additional interactions. Turning to the interactions, we find that the coefficients on the growth proxies with CL are positive and significant (model 1). The valuation premium increases as sales growth and industry q increase, results which are consistent with our hypothesis that a listing is more advantageous to firms with better growth opportunities. As in Table 4, exchange-listed firms that raise capital have a higher cross-listing premium.

Model (2) allows for the listing dummy to interact with the growth opportunities and country-level variables. The interaction variable for the anti-director rights index with listing has a negative significant coefficient, as expected. In other words, firms from countries with better shareholder protection list when their growth opportunities are weaker than firms from countries with worse shareholder protection, so investors value more those firms that overcome the challenge and list in the U.S. The positive coefficient on the interaction variable for judicial efficiency would seem at first to be inconsistent with our theoretical discussion. However, this is not clear. The judicial system of the firm's country may be required to enforce investor rights obtained through the listing. If this effect is important, the impact of a listing would be smaller for firms coming from countries with a weak judicial system. Though liquidity of the home markets can be interpreted in parallel fashion to AD and EJ, it has an independent and negative interaction with listing for q. Firms with a given set of growth opportunities that list in the U.S. are less valuable, the more active is the home market trading environment. Finally, the greater valuation of growth opportunities associated with cross-listed firms should be negatively related to shareholder rights in the country of the firm. We therefore expect the premium of firms from countries with better shareholder protection to be less correlated with the growth opportunities of the firm. Model (3) adds this additional interaction variable (SG*AD*CL). The negative coefficient on sales growth interacted with the listing dummy and with the anti-director index is consistent with our hypothesis.

For each model, we also estimate the regression using the Heckman correction for selection bias. The probit model is the same as the one used in Table 3. The coefficient on λ is negative and significant in models (2) and (3). This is surprising. We would have expected firms that list, which have a positive prediction error in the listing equation, to have a positive residual in the q equation. With our prior, the coefficient on λ would be positive.

We performed a number of robustness checks on the decomposition of the cross-listing premium. First, we did examine a number of extended specifications. For example, we allowed

for interaction variables of the listing dummy and sales growth with not only anti-director rights (AD) but also accounting standards (AS) and judicial efficiency (EJ). These results were not reliably significant across OLS and Heckman models, but the interaction with AS was negative and that with EJ was positive. In fact, the positive and significant coefficient on EJ with the listing dummy alone in Table 5 is displaced by the higher level interaction. The interaction effect with the accounting standards index and sales growth is weaker. Another extended specification introduced the same higher level interaction with industry q as well as sales growth. Again, these effects were weaker overall, and, if any results were reliable, it was that interaction effect with industry q, anti-director rights, and listing, which was negative and significant.

Second, in order to address the concern that our results might be sensitive to the year that we use, we reconstructed our entire database for the year 1995 using the same criteria and data sources (Worldscope, NYSE, Nasdaq, OTCBB, Pink Sheets, etc). Because of the historical bias in Worldscope and because of the rapid growth in listings in the latter half of the 1990s, the number of firms in our sample from 40 countries was reduced to 525 cross-listed firms from 778 and to 3,756 domestic firms from 4,494. We recomputed all of our country-level variables using earlier editions of the same data sources (e.g. *IFC Emerging Stock Markets Fact Book 1996*, see Section 3).[18] It is important to note that the composition of the sample by country is quite different, and may reflect artifacts of the Worldscope data rather than the reality of the markets and U.S. listings. For example, the country with the largest increase in the number of firms from 1995 to 1997 was Taiwan (305 percent) that went from 40 to 162 firms, of which 21 were listed in the U.S. Other countries with large percent increases in U.S. listings were Brazil, Colombia, India, Pakistan, and Peru, all emerging market countries. The main concern is whether the

[18] As in the analysis with 1997, we identified five very large outliers for sales growth statistics among firms. These two-year growth rates exceeded 1,500 percent.

composition change was systematic with regard to country-level or firm-specific attributes like sales growth and industry q.[19]

Table 6 presents the 1995 results. The OLS regression without the interactions has a significant cross-listing premium. Except for the anti-director rights variable that is significantly positive, the other significant variables are the same as in 1997. When we take into account the self-selection bias, the cross-listing premium becomes too large to be sensible. When we add the interactions between the cross-listing dummy variable and the other explanatory variables, the results are consistent with those for 1997 except that the SG*AD*CL variable is not significant with the OLS regression. However, it is significantly negative with the Heckman correction. Despite the smaller sample, the results for 1995 are similar to the results for 1997.

A third and final set of robustness tests examines the changes in q experienced by those firms that were not listed in the U.S. in 1995, but became so by 1997. Our objective in this experiment is to address concerns about endogeneity and self-selection bias in the cross-listing premium. Strikingly, the firms not listed in 1995 that are listed in 1997 experience an increase in q. Further, this increase is positive and significant only for OTC and exchange listed firms. Since the country characteristics that we use do not change over time (except for stock market turnover), our theory suggests that firms that list have to have experienced a change in growth opportunities. The increase in q is consistent with this. At the same time, however, it is clear that this change is not explained by changes in sales growth and a firm's industry q, so that whether a firm lists or not has information about this change in growth opportunities. We cannot exclude the possibility, though, that the act of cross-listing itself explains some of the change in q. However, this evidence is also consistent with firms listing after having done well, for whatever reasons. It is important to note, however, that the hypothesis that firms list after having done well can explain

[19] We did compute the correlation between the percent increases in U.S. listings across countries with the anti-director rights index and found a significant and positive correlation of 0.39.

why cross-listed firms are worth more, but it cannot explain why the cross-listing premium is related to investor protection in a firm's country.

6. Conclusions

We have shown in this paper that cross-listed firms have higher valuations than other firms from their country that do not cross-list. Our explanation for this result is that the firms that list are those with lower controlling shareholder agency costs. If controlling shareholder agency costs are high, the controlling shareholder is unlikely to let the firm list in the U.S. because a listing threatens his ability to extract private benefits from the firm. In support of this theory, we find that growth opportunities are valued more highly for firms that list in the U.S. and that this valuation differential is negatively related to the investor protection in the firm's country. The stock-price run-up that precedes a listing is further evidence in support of our theory, since it is consistent with firms acquiring growth opportunities and committing to lower controlling shareholder agency costs before listing.

Our work leave some issues unresolved. We attempted to control for self-selection, but doing so did not affect our conclusions. This could be because self-selection does not matter for our results, or it could be because our model of the listing decision omits important variables. Further research may produce models of the listing decision that will help in resolving this issue. Another issue that further research should address is the extent to which the greater valuation of cross-listed firms simply results from the U.S. bull market. Is it that cross-listed firms did well because they were listed in a market that did well? This explanation for the listing premium is hard to reconcile with the evidence supportive of our theory. At the same time, however, a skeptic could argue that we show that growth firms are worth more and the 1990s were a period when growth was valued more in the U.S. than it has been historically.

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Table 1. Valuation by country. Firms that do not cross-list vs. firms that cross-list.

This table shows summary statistics and the distribution of firms that do and do not cross-list as of December 31, 1997. Information on ADRs comes from BoNY. Information on firms from Canada and Israel that list their shares directly on the NYSE or Nasdaq is obtained from the exchanges' web sites. The National Quotation Bureau's Pink Sheets are used to identify Canadian firms that are directly listed on the OTC market. The first two panels compare firms that do not cross-list vs. firms that cross-list. The last three panels summarize the data on cross-listed firms based on where the firms choose to cross-list their shares, on Portal under Rule 144a, over-the-counter as OTC Bulletin Board or Pink Sheet issues, or on the NYSE or Nasdaq. Data for Total Assets (TA, in billions of USD) and Tobin's q, computed as (Total Assets – BV(equity) + MV(equity)) / Total Assets. Financial firms, firms with total assets less than $100 million, and firms with missing data are discarded. D(q) is the difference between the mean (median) cross-listed q and the mean (median) not-cross-listed q. The first row for each country reports means and the second row reports medians (in parentheses). N is the number of firms.

	Not cross-listed			***Cross-listed***				***Rule 144a***				***OTC***				***Exchange-listed***			
	N	***TA***	***q***	***N***	***TA***	***q***	***D(q)***	***N***	***TA***	***q***	***D(q)***	***N***	***TA***	***q***	***D(q)***	***N***	***TA***	***q***	***D(q)***
Argentina	13	0.83	1.15	8	3.58	1.39	0.234	1	1.42	0.99	-0.162	2	2.68	1.41	0.258	5	4.38	1.46	0.304
		(0.81)	(1.10)		(1.65)	(1.39)	(0.292)		(1.42)	(0.99)	-(0.107)		(2.68)	(1.41)	(0.313)		(1.88)	(1.39)	(0.293)
Australia	54	0.56	1.58	35	3.10	1.50	-0.083	1	2.32	2.29	0.708	24	2.32	1.52	-0.061	10	5.04	1.37	-0.215
		(0.38)	(1.45)		(1.70)	(1.46)	(0.008)		(2.32)	(2.29)	(0.839)		(1.40)	(1.47)	(0.024)		(3.89)	(1.32)	-(0.133)
Austria	33	0.57	1.04	9	2.54	1.41	0.370	0				9	2.54	1.41	0.370	0			
		(0.28)	(1.02)		(1.71)	(1.42)	(0.401)						(1.71)	(1.42)	(0.401)				
Belgium	26	2.81	1.59	2	9.64	1.34	-0.254	0				1	8.45	1.24	-0.349	1	10.83	1.43	-0.158
		(1.47)	(1.39)		(9.64)	(1.34)	-(0.056)						(8.45)	(1.24)	-(0.151)		(10.83)	(1.43)	(0.040)
Brazil	83	2.18	0.80	20	9.01	0.71	-0.098	2	4.28	0.84	0.039	15	10.43	0.65	-0.156	3	5.08	0.90	0.097
		(0.72)	(0.77)		(2.86)	(0.66)	-(0.111)		(4.28)	(0.84)	(0.074)		(1.87)	(0.65)	-(0.114)		(3.86)	(0.65)	-(0.117)
Canada	133	1.32	1.42	66	2.51	1.89	0.471	0				11	2.29	1.94	0.521	55	2.55	1.88	0.461
		(0.43)	(1.27)		(0.92)	(1.41)	(0.137)						(0.59)	(1.28)	(0.008)		(1.02)	(1.41)	(0.146)
Chile	34	0.75	0.98	17	2.58	1.40	0.418	1	1.66	1.96	0.982	1	1.66	1.96	0.982	15	2.70	1.32	0.343
		(0.36)	(0.95)		(1.17)	(1.40)	(0.451)		(1.66)	(1.96)	(1.008)		(1.66)	(1.96)	(1.008)		(0.99)	(1.26)	(0.313)
Colombia	10	0.79	0.73	1	0.90	0.87	0.134	1	0.90	0.87	0.134	0				0			
		(0.47)	(0.62)		(0.90)	(0.87)	(0.250)		(0.90)	(0.87)	(0.250)								
Denmark	49	0.61	1.77	2	5.63	1.87	0.097	0				0				2	5.63	1.87	0.097
		(0.37)	(1.27)		(5.63)	(1.87)	(0.596)										(5.63)	(1.87)	(0.596)
Finland	39	0.90	1.53	6	4.20	1.41	-0.121	3	1.41	1.24	-0.286	2	6.67	1.08	-0.444	1	7.65	2.54	1.017
		(0.43)	(1.15)		(1.95)	(1.10)	-(0.056)		(1.30)	(1.10)	-(0.058)		(6.67)	(1.08)	-(0.071)		(7.65)	(2.54)	(1.390)
France	197	2.33	1.44	28	14.75	1.62	0.186	3	17.71	1.05	-0.388	14	10.92	1.64	0.198	11	18.82	1.77	0.328
		(0.53)	(1.23)		(10.13)	(1.39)	(0.163)		(10.79)	(0.99)	-(0.241)		(7.78)	(1.36)	(0.130)		(16.44)	(1.50)	(0.274)
Germany	251	1.15	1.36	23	20.70	1.88	0.519	4	2.32	2.10	0.742	14	20.98	1.47	0.111	5	34.63	2.84	1.486
		(0.37)	(1.25)		(9.46)	(1.36)	(0.111)		(1.40)	(2.13)	(0.878)		(14.16)	(1.31)	(0.066)		(33.94)	(1.45)	(0.204)
Greece	24	0.54	1.48	0				0				0				0			
		(0.17)	(1.31)																
Hong Kong	143	0.66	1.18	44	1.88	1.23	0.059	0				43	1.92	1.23	0.054	1	0.20	1.49	0.316
		(0.26)	(0.95)		(0.28)	(1.02)	(0.070)						(0.29)	(1.01)	(0.060)		(0.20)	(1.49)	(0.545)
India	76	0.49	1.73	47	0.92	1.12	-0.607	47	0.92	1.12	-0.607	0				0			
		(0.20)	(0.95)		(0.46)	(0.86)	-(0.093)		(0.46)	(0.86)	-(0.093)								
Indonesia	43	0.45	1.07	2	2.11	2.51	1.439	0				0				2	2.11	2.51	1.439
		(0.24)	(0.99)		(2.11)	(2.51)	(1.520)										(2.11)	(2.51)	(1.520)
Ireland	7	0.79	1.45	2	4.90	1.37	-0.080	0				0				2	4.90	1.37	-0.080
		(0.66)	(1.52)		(4.90)	(1.37)	-(0.150)										(4.90)	(1.37)	-(0.150)
Israel	4	2.25	1.12	2	2.37	1.25	0.130	0				0				2	2.37	1.25	0.130
		(2.05)	(1.17)		(2.37)	(1.25)	(0.075)										(2.37)	(1.25)	(0.075)

Table 1, continued.

	Not cross-listed			*Cross-listed*				*Rule 144a*				*OTC*				*Exchange-listed*			
	N	***TA***	***q***	***N***	***TA***	***q***	***D(q)***	***N***	***TA***	***q***	***D(q)***	***N***	***TA***	***q***	***D(q)***	***N***	***TA***	***q***	***D(q)***
Italy	49	4.35	1.38	13	16.67	1.54	0.160	3	3.11	2.62	1.248	5	4.59	1.11	-0.264	5	36.88	1.31	-0.068
		(1.12)	(1.08)		(5.74)	(1.23)	(0.146)		(3.25)	(2.19)	(1.114)		(5.06)	(1.09)	(0.008)		(45.93)	(1.37)	(0.290)
Japan	1258	1.82	1.02	110	13.73	1.28	0.263	0				89	9.20	1.26	0.242	21	32.93	1.37	0.354
		(0.62)	(0.95)		(5.72)	(1.10)	(0.151)						(5.18)	(1.07)	(0.119)		(16.97)	(1.25)	(0.300)
Korea	178	0.80	0.89	13	6.76	0.92	0.029	10	4.76	0.90	0.006	0				3	13.43	1.00	0.105
		(0.42)	(0.87)		(5.22)	(0.90)	(0.033)		(4.94)	(0.90)	(0.034)						(10.22)	(0.84)	-(0.030)
Malaysia	152	0.62	1.11	10	2.34	1.16	0.052	0				10	2.34	1.16	0.052	0			
		(0.26)	(0.90)		(1.17)	(0.94)	(0.044)						(1.17)	(0.94)	(0.044)				
Mexico	21	1.08	1.23	25	2.52	1.21	-0.022	4	2.18	0.90	-0.337	7	2.39	1.63	0.392	14	2.67	1.09	-0.140
		(0.52)	(1.05)		(1.41)	(1.15)	(0.107)		(1.05)	(0.81)	-(0.240)		(2.04)	(1.72)	(0.673)		(1.17)	(1.03)	-(0.019)
Netherlands	58	0.73	1.87	21	9.41	2.39	0.520	2	1.63	1.93	0.061	7	3.27	1.69	-0.183	12	14.29	2.88	1.007
		(0.36)	(1.40)		(3.96)	(1.74)	(0.341)		(1.63)	(1.93)	(0.526)		(3.96)	(1.52)	(0.117)		(5.99)	(1.81)	(0.404)
New Zealand	24	0.63	1.30	3	2.89	2.05	0.746	0				1	4.84	0.98	-0.321	2	1.91	2.58	1.279
		(0.26)	(1.23)		(2.68)	(1.10)	-(0.135)						(4.84)	(0.98)	-(0.252)		(1.91)	(2.58)	(1.348)
Norway	37	0.49	1.44	8	3.65	1.77	0.331	1	2.34	0.83	-0.607	3	2.72	2.43	0.988	4	4.68	1.51	0.072
		(0.34)	(1.24)		(1.41)	(1.37)	(0.131)		(2.34)	(0.83)	-(0.404)		(0.28)	(1.41)	(0.178)		(1.41)	(1.53)	(0.294)
Pakistan	9	0.36	1.55	0				0				0				0			
		(0.29)	(1.13)																
Peru	3	0.59	0.61	3	1.09	1.07	0.457	0				1	0.26	0.97	0.362	2	1.48	1.12	0.505
		(0.13)	(0.51)		(0.38)	(0.97)	(0.461)						(0.26)	(0.97)	(0.461)		(1.48)	(1.12)	(0.604)
Philippines	27	0.44	0.93	9	2.09	1.16	0.232	5	1.62	1.22	0.286	3	1.95	1.05	0.123	1	4.87	1.22	0.286
		(0.23)	(0.82)		(2.17)	(1.12)	(0.308)		(1.22)	(1.19)	(0.374)		(2.17)	(1.08)	(0.263)		(4.87)	(1.22)	(0.400)
Portugal	25	0.59	1.23	5	4.19	2.52	1.290	3	0.92	3.00	1.774	0				2	9.10	1.79	0.565
		(0.31)	(1.10)		(1.57)	(1.70)	(0.605)		(0.79)	(1.70)	(0.605)						(9.10)	(1.79)	(0.696)
Singapore	84	0.46	1.02	7	3.93	1.85	0.827	0				6	4.48	1.61	0.590	1	0.63	3.27	2.249
		(0.28)	(0.86)		(1.44)	(0.98)	(0.116)						(3.08)	(0.96)	(0.098)		(0.63)	(3.27)	(2.409)
South Africa	14	1.00	1.36	15	1.89	1.19	-0.166	1	1.26	0.88	-0.479	11	1.58	1.17	-0.190	3	3.27	1.38	0.025
		(0.56)	(1.06)		(1.26)	(1.13)	(0.065)		(1.26)	(0.88)	-(0.187)		(0.98)	(1.13)	(0.065)		(4.31)	(1.61)	(0.547)
Spain	56	1.96	1.51	2	28.83	1.36	-0.154	0				0				2	28.83	1.36	-0.154
		(0.52)	(1.35)		(28.83)	(1.36)	(0.003)										(28.83)	(1.36)	(0.003)
Sweden	53	1.10	1.69	10	7.66	1.27	-0.427	0				4	4.35	1.09	-0.605	6	9.87	1.39	-0.308
		(0.40)	(1.34)		(4.83)	(1.11)	-(0.223)						(3.78)	(0.99)	-(0.347)		(7.44)	(1.22)	-(0.118)
Switzerland	73	1.04	1.19	7	21.08	2.05	0.863	0				6	23.96	2.08		1	3.83	1.90	0.713
		(0.52)	(1.07)		(15.13)	(1.90)	(0.833)						(25.33)	(1.96)			(3.83)	(1.90)	(0.833)
Taiwan	141	0.59	1.89	21	1.39	2.03	0.142	20	1.30	1.90	0.009	0				1	3.23	4.68	2.789
		(0.34)	(1.63)		(1.13)	(1.52)	-(0.105)		(0.98)	(1.52)	-(0.112)						(3.23)	(4.68)	(3.049)
Thailand	73	0.53	1.10	7	0.85	1.33	0.238	2	1.67	1.01	-0.084	5	0.52	1.46	0.368	0			
		(0.21)	(1.00)		(0.73)	(1.23)	(0.230)		(1.67)	(1.01)	(0.014)		(0.28)	(1.38)	(0.380)				
Turkey	21	0.59	2.78	2	0.29	2.73	-0.050	2	0.29	2.73	-0.050	0				0			
		(0.18)	(1.90)		(0.29)	(2.73)	(0.831)		(0.29)	(2.73)	(0.831)								
UK	500	0.88	1.69	102	7.24	1.98	0.290	0				50	3.94	1.63	-0.062	52	10.41	2.32	0.621
		(0.31)	(1.37)		(3.89)	(1.58)	(0.204)						(2.91)	(1.46)	(0.090)		(4.57)	(1.78)	(0.419)
Venezuela	3	1.46	0.89	6	0.39	0.83	-0.055	0				4	0.44	0.76	-0.128	2	0.29	0.98	0.093
		(1.05)	(0.79)		(0.35)	(0.69)	-(0.102)						(0.38)	(0.64)	-(0.152)		(0.29)	(0.98)	(0.185)
Average		1.05	1.33		6.06	1.54	0.221		2.70	1.52	0.149		5.25	1.39	0.105		9.04	1.79	0.486
		(0.49)	(1.13)		(3.87)	(1.32)	(0.201)		(2.20)	(1.39)	(0.255)		(4.04)	(1.24)	(0.127)		(7.74)	(1.65)	(0.519)
Totals	4,078			713				116				348				249			

Table 2. The valuation of cross-listed firms.

This table presents results from regressions that estimate the valuation impact of cross-listing in the U.S. Information on ADRs comes from BoNY. Information on firms from Canada and Israel that list their shares directly on the NYSE or Nasdaq is obtained from the exchanges' web sites. The National Quotation Bureau's Pink Sheets are used to identify Canadian firms that are directly listed on the OTC market. The dependent variable in each regression is Tobin's q, computed as (Total Assets – BV(equity) + MV(equity)) / Total Assets on December 31, 1997. Financial firms, firms with total assets less than $100 million, and firms with missing data are discarded. Cross-list is a dummy variable that equals 1 if a firm cross-lists its shares in the U.S. and is 0 otherwise. Sales growth (SG) is the firm's 2-year sales growth rate and Ind_G is the median global industry q. Two cross-listed firms are deleted because they have extremely high sales growth rates due to acquisitions. The other explanatory variables are defined in Appendix A1. Firms from 40 different countries are represented in the sample; 710 firms are cross-listed in the U.S. and 4078 firms do not cross-list their shares in the U.S. t-statistics (in parentheses) are computed with heteroskedasticity consistent standard errors.

	(1)	***(2)***	***(3)***	***(4)***	***(5)***	***(6)***	***(7)***	***(8)***	***(9)***	***(10)***	***(11)***	***(12)***
Cons.	1.28	-0.33	-0.14	-0.36	-1.10	-0.39	-0.52	-1.51	-1.28	-1.52	-1.52	-1.64
	(101.97)	-(1.97)	-(0.83)	-(2.14)	-(5.52)	-(2.13)	-(3.05)	-(6.43)	-(4.85)	-(4.61)	-(7.48)	-(6.92)
Cross-	0.26	0.21	0.16	0.21	0.22	0.21	0.22	0.22	0.16	0.18	0.22	0.22
List	(6.26)	(5.60)	(4.19)	(5.54)	(5.74)	(5.61)	(5.82)	(5.86)	(4.09)	(4.69)	(5.83)	(5.82)
FL			-0.08						0.09	0.08		
			-(2.17)						(1.79)	(1.44)		
GL			-0.27						-0.36	-0.15		
			-(9.59)						-(7.80)	-(3.08)		
SL			0.13						0.01	0.31		
			(1.54)						(0.11)	(3.42)		
AD				0.01							0.02	-0.02
				(0.83)							(1.47)	-(1.64)
AS					0.01				0.00	-0.00	0.02	0.01
					(6.60)				(1.23)	-(0.62)	(6.73)	(2.99)
EJ						0.01			0.07	-0.02	-0.00	-0.04
						(0.91)			(7.84)	-(2.68)	-(0.34)	-(4.89)
LR							0.27		0.49		0.341	
							(9.08)		(14.73)		(10.02)	
CAI								0.27		0.36		0.28
								(7.44)		(6.63)		(5.93)
SG		0.24	0.21	0.24	0.22	0.24	0.22	0.23	0.19	0.21	0.21	0.21
		(2.66)	(2.60)	(2.67)	(2.62)	(2.67)	(2.55)	(2.63)	(2.47)	(2.55)	(2.47)	(2.53)
Ind_G		1.48	1.43	1.48	1.42	1.48	1.50	1.40	1.37	1.35	1.42	1.39
		(9.28)	(9.11)	(9.25)	(8.93)	(9.27)	(9.41)	(8.91)	(9.10)	(8.77)	(9.05)	(8.83)
Adj. R^2	1.15	8.08	10.34	8.08	9.30	8.08	9.84	9.77	14.94	11.78	11.75	10.40

Table 3. The effect of self-selection bias on the cross-listing premium.
The probit regressions estimate the probability that a foreign firm cross-lists its shares in the U.S. The regressions estimate the valuation impact of cross-listing in the U.S. using OLS, 2SLS, and the Heckman 2-stage estimator. Information on ADRs comes from BoNY. Information on firms from Canada and Israel that list their shares directly on the NYSE or Nasdaq is obtained from the exchanges' web sites. The National Quotation Bureau's Pink Sheets are used to identify Canadian firms that are directly listed on the OTC market. The dependent variable in each regression is Tobin's q, computed as (Total Assets – BV(equity) + MV(equity)) / Total Assets on December 31, 1997. Financial firms, firms with total assets less than $100 million, and firms with missing data are discarded. Cross-list is a dummy variable that equals 1 if a firm cross-lists its shares in the U.S. and is 0 otherwise. Sales growth (SG) is the firm's 2-year sales growth rate and Ind_G is the median global industry q. Two cross-listed firms are deleted because they have extremely high sales growth rates due to acquisitions. The other explanatory variables are defined in Appendix A1. Firms from 40 different countries are represented in the sample; 710 firms are cross-listed in the U.S. and 4078 firms do not cross-list their shares in the U.S. t-statistics (in parentheses) are computed with heteroskedasticity consistent standard errors. logL is the value of the log likelihood function.

	Probit Model		***Basic model (3)***			***Full model (4)***		
	(1)	***(2)***	***OLS***	***2SLS***	***Heckman***	***OLS***	***2SLS***	***Heckman***
Constant	0.37	0.14	-0.33	-0.41	-0.33	-1.52	-1.76	-1.62
	(1.30)	(0.59)	-(1.97)	-(4.07)	-(3.32)	-(7.48)	-(11.41)	-(10.54)
Cross-list			0.21	0.40	0.20	0.22	1.04	0.65
			(5.60)	(1.79)	(0.95)	(5.83)	(3.67)	(2.45)
Lambda					0.01			-0.24
					(0.06)			-(1.63)
FL	-0.28							
	-(3.24)							
GL	-0.82							
	-(8.67)							
SL	-0.35							
	-(2.80)							
AD		0.12				0.02	0.00	0.01
		(4.73)				(1.47)	(0.14)	(0.56)
AS	-0.02	-0.01				0.01	0.02	0.02
	-(5.75)	-(2.65)				(6.73)	(8.23)	(7.98)
EJ	0.05	0.00				0.00	0.01	0.00
	(2.86)	(0.20)				(0.34)	(1.06)	(0.42)
LR	0.14	-0.06				0.34	0.35	0.34
	(1.93)	-(1.01)				(10.02)	(11.10)	(10.79)
SG			0.23	0.23	0.23	0.21	0.20	0.20
			(2.66)	(7.93)	(8.01)	(2.47)	(6.99)	(7.08)
Ind_G			1.48	1.53	1.48	1.42	1.46	1.42
			(9.28)	(17.38)	(16.83)	(9.05)	(16.90)	(16.39)
Log GNP	0.01	-0.14						
	(0.34)	-(7.88)						
logL	-1927	-1956						
Pseudo R^2	4.12	2.51						
Adj. R^2			8.08	7.33	8.06	11.75	11.37	11.78

Table 4. The valuation of cross-listed firms by type of listing.
This table presents results from regressions that estimate the valuation impact of cross-listing in the U.S. Information on ADRs comes from BoNY. Information on firms from Canada and Israel that list their shares directly on the NYSE or Nasdaq is obtained from the exchanges' web sites. The National Quotation Bureau's Pink Sheets are used to identify Canadian firms that are directly listed on the OTC market. The dependent variable in each regression is Tobin's q, computed as (Total Assets – BV(equity) + MV(equity)) / Total Assets on December 31, 1997. Financial firms, firms with total assets less than $100 million, and firms with missing data are discarded. 144a (OTC; Exchange) is a dummy variable that equals 1 if a firm cross-lists under Rule 144a (on the OTC market; NYSE/ Nasdaq) and is 0 otherwise. Cross-list is a dummy variable that equals 1 if a firm cross-lists its shares in the U.S. and is 0 otherwise and Capital*Exchange equals 1 if the firm raised capital and listed on an exchange. Sales growth (SG) is the firm's 2-year sales growth rate and Ind_G is the median global industry q. Two cross-listed firms are deleted because they have extremely high sales growth rates due to acquisitions. The other explanatory variables are defined in Appendix A1. Firms from 40 different countries are represented in the sample; 116 firms are cross-listed under Rule 144a, 347 firms are listed OTC, 247 are exchange listed, and 4078 firms do not cross-list their shares in the U.S. t-statistics (in parentheses) are computed with heteroskedasticity consistent standard errors.

	Type of ADR program			***Cross-list and capital raising dummies***		
	(1)	***(2)***	***(3)***	***(4)***	***(5)***	***(6)***
Constant	1.28	-0.30	-1.46	1.28	-0.31	-1.50
	(101.95)	-(1.80)	-(7.38)	(101.95)	-(1.87)	-(7.54)
144a	0.12	0.13	0.07	-0.09	-0.05	-0.11
	(1.40)	(1.58)	(0.81)	-(0.97)	-(0.56)	-(1.21)
OTC	0.10	0.08	0.11			
	(2.41)	(2.05)	(2.76)			
Exchange	0.54	0.44	0.45			
	(6.22)	(5.49)	(5.74)			
Cross-list				0.21	0.18	0.19
				(4.75)	(4.24)	(4.56)
Capital * Exchange				0.35	0.24	0.30
				(2.56)	(1.96)	(2.42)
AD			0.02			0.02
			(1.56)			(1.64)
AS			0.01			0.01
			(6.44)			(6.59)
EJ			0.00			0.00
			(0.22)			(0.24)
LR			0.35			0.36
			(9.84)			(9.92)
SG		0.23	0.20		0.23	0.20
		(2.64)	(2.45)		(2.65)	(2.45)
Ind_G		1.45	1.39		1.46	1.39
		(9.28)	(9.03)		(9.28)	(9.02)
Adjusted R^2	2.01	8.59	12.28	1.62	8.35	12.24

Table 5. Decomposing the valuation impact of cross-listing.
This table presents results from regressions that estimate the valuation impact of cross-listing in the U.S and corrects for self-selection bias using the Heckman 2-stage estimator. Information on ADRs comes from

BoNY. Information on firms from Canada and Israel that list their shares directly on the NYSE or Nasdaq is obtained from the exchanges' web sites. The National Quotation Bureau's Pink Sheets are used to identify Canadian firms that are directly listed on the OTC market. The dependent variable in each regression is Tobin's q, computed as (Total Assets – BV(equity) + MV(equity)) / Total Assets on December 31, 1997. Financial firms, firms with total assets less than $100 million, and firms with missing data are discarded. Cross-list (CL) is a dummy variable that equals 1 if a firm cross-lists its shares in the U.S. and is 0 otherwise and Capital*Exchange equals 1 if the firm raised capital and listed on an exchange. Sales growth (SG) is the firm's 2-year sales growth rate and Ind_G is the median global industry q. Two cross-listed firms are deleted because they have extremely high sales growth rates due to acquisitions. The other explanatory variables are defined in Appendix A1. Firms from 40 different countries are represented in the sample; 710 firms are cross-listed in the U.S. and 4078 firms do not cross-list their shares in the U.S. t-statistics (in parentheses) are computed with heteroskedasticity consistent standard errors.

	Regression (1)		***Regression (2)***		***Regression (3)***	
	OLS	***Heckman***	***OLS***	***Heckman***	***OLS***	***Heckman***
Constant	-1.32	-1.40	-1.31	-1.44	-1.31	-1.44
	-(6.44)	-(8.68)	-(6.26)	-(8.43)	-(6.26)	-(8.45)
Cross-list	-0.56	-0.19	-0.57	0.01	-0.56	0.02
	-(1.25)	-(0.56)	-(1.07)	(0.02)	-(1.08)	(0.04)
Lambda		-0.21		-0.39		-0.38
		-(1.43)		-(2.39)		-(2.38)
AD	0.02	0.01	0.03	0.02	0.03	0.02
	(1.36)	(0.57)	(2.01)	(1.18)	(2.01)	(1.19)
AS	0.01	0.02	0.01	0.01	0.01	0.01
	(6.81)	(8.05)	(6.04)	(6.93)	(6.04)	(6.95)
EJ	0.00	0.00	-0.01	0.00	-0.01	0.00
	(0.28)	(0.38)	-(1.09)	(0.06)	-(1.09)	(0.05)
LR	0.34	0.34	0.36	0.36	0.36	0.36
	(10.00	(10.77)	(9.54)	(10.32)	(9.54)	(10.35)
AD*CL			-0.08	-0.10	-0.03	-0.06
			-(2.25)	-(3.32)	-(1.07)	-(1.85)
AS*CL			0.00	0.00	0.00	0.00
			(0.21)	(0.20)	(0.27)	(0.13)
EJ*CL			0.05	0.06	0.05	0.05
			(2.16)	(2.50)	(1.93)	(2.23)
LR*CL			-0.13	-0.12	-0.17	-0.16
			-(1.48)	-(1.43)	-(1.88)	-(1.88)
SG	0.18	0.17	0.18	0.17	0.18	0.17
	(2.24)	(5.96)	(2.23)	(5.89)	(2.23)	(5.90)
Ind_G	1.23	1.23	1.23	1.23	1.23	1.23
	(7.97)	(12.39)	(7.99)	(12.35)	(7.99)	(12.38)
SG*CL	0.67	0.67	0.71	0.70	2.95	2.94
	(2.74)	(4.66)	(2.78)	(4.98)	(2.48)	(5.91)
Ind_G*CL	0.62	0.62	0.61	0.62	0.54	0.54
	(1.48)	(3.10)	(1.46)	(3.15)	(1.37)	(2.76)
Capital*Exchange	0.23	0.23	0.23	0.22	0.25	0.24
	(2.02)	(2.90)	(1.87)	(2.82)	(2.06)	(3.11)
SG*AD*CL					-0.54	-0.54
					-(2.14)	-(4.68)
Adjusted R^2	12.63	12.65	12.75	12.84	13.09	13.18

Table 6. Valuations in 1995.

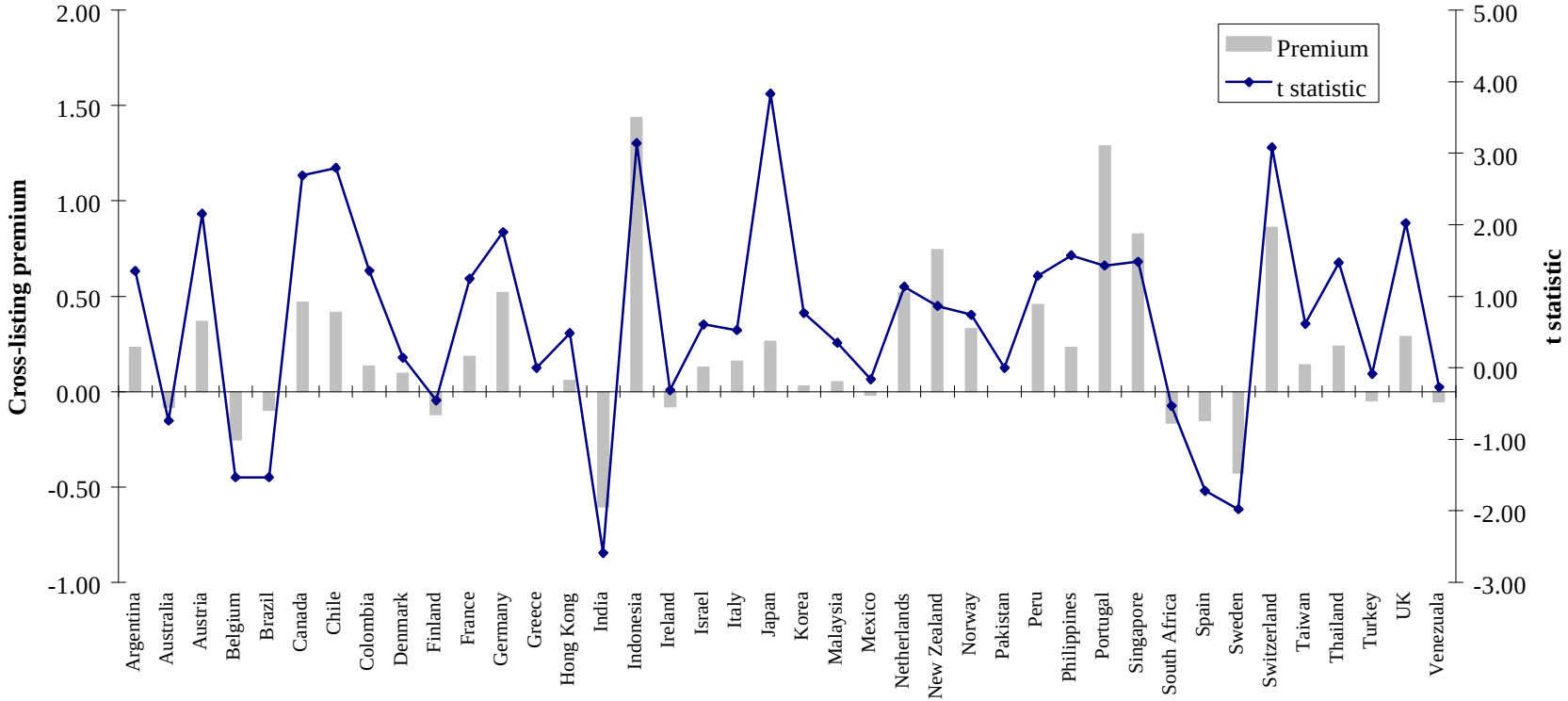
This table presents results from regressions that estimate the valuation impact of cross-listing in the U.S. and corrects for self-selection bias using the Heckman 2-stage estimator. Information on ADRs comes from BoNY. Information on firms from Canada and Israel that list their shares directly on the NYSE or Nasdaq is obtained from the exchanges' web sites. The National Quotation Bureau's Pink Sheets are used to identify Canadian firms that are directly listed on the OTC market. The dependent variable in each regression is Tobin's q, computed as (Total Assets – BV(equity) + MV(equity)) / Total Assets on December 31, 1995. Financial firms, firms with total assets less than $100 million, and firms with missing data are discarded. Cross-list (CL) is a dummy variable that equals 1 if a firm cross-lists its shares in the U.S. and is 0 otherwise and Capital*Exchange equals 1 if the firm raised capital and listed on an exchange. Sales growth (SG) is the firm's 2-year sales growth rate and Ind_G is the median global industry q. Five firms are deleted because they have extremely high sales growth rates due to acquisitions. The other explanatory variables are defined in Appendix A1. Firms from 40 different countries are represented in the sample; 527 firms are cross-listed in the U.S. and 3751 firms do not cross-list their shares in the U.S. t-statistics (in parentheses) are computed with heteroskedasticity consistent standard errors.

	Regression (1)		***Regression (2)***		***Regression (3)***	
	OLS	***Heckman***	***OLS***	***Heckman***	***OLS***	***Heckman***
Constant	-1.83	-2.15	-1.42	-1.77	-1.42	-1.77
	-(6.05)	-(8.74)	-(4.96)	-(5.73)	-(4.96)	-(5.73)
Cross-list	0.14	2.40	-2.01	0.66	-2.01	0.66
	(3.10)	(5.30)	-(2.06)	(0.83)	-(2.06)	(0.83)
Lambda		-1.21		-1.60		-1.60
		-(5.03)		-(4.29)		-(4.29)
AD	0.05	0.01	0.04	0.00	0.04	0.00
	(4.11)	(0.46)	(2.92)	(0.17)	(2.92)	(0.17)
AS	0.01	0.01	0.01	0.01	0.01	0.01
	(5.15)	(2.85)	(4.90)	(2.03)	(4.90)	(2.03)
EJ	-0.00	0.03	0.00	0.03	0.00	0.03
	-(0.43)	(2.14)	(0.05)	(2.27)	(0.05)	(2.27)
LR	0.02	0.10	-0.01	0.08	-0.01	0.08
	(0.55)	(1.86)	-(0.34)	(1.27)	-(0.34)	(1.27)
AD*CL			0.07	-0.02	0.07	-0.02
			(1.86)	-(0.59)	(1.82)	-(0.57)
AS*CL			0.00	0.00	0.00	0.00
			(0.23)	(0.30)	(0.23)	(0.28)
EJ*CL			-0.02	0.03	-0.02	0.03
			-(0.52)	(1.59)	-(0.53)	(1.62)
LR*CL			0.28	0.49	0.28	0.49
			(1.87)	(4.42)	(1.84)	(4.42)
SG	0.06	0.05	0.03	0.02	0.03	0.02
	(2.12)	(2.31)	(1.51)	(0.83)	(1.51)	(0.83)
Ind_G	1.92	1.94	1.60	1.62	1.60	1.62
	(7.84)	(12.03)	(6.94)	(7.80)	(6.94)	(7.80)
SG*CL			0.15	0.16	0.13	0.19
			(1.05)	(6.10)	(0.39)	(6.72)
Ind_G*CL			1.41	1.51	1.42	1.51
			(1.80)	(7.24)	(1.80)	(7.22)
Capital*Exchange			0.35	0.37	0.35	0.37
			(2.24)	(9.49)	(2.19)	(9.47)
SG*AD*CL					0.01	-0.01
					(0.05)	-(3.51)
Adjusted R^2	7.04	7.90	8.21	9.33	8.19	9.31

Table 7. Changes in q after listing: Evidence from new listings.
This table presents results from regressions that estimate the valuation impact of cross-listing in the U.S. Information on ADRs comes from BoNY. Information on firms from Canada and Israel that list their shares directly on the NYSE or Nasdaq is obtained from the exchanges' web sites. The National Quotation Bureau's Pink Sheets are used to identify Canadian firms that are directly listed on the OTC market. Each year, Tobin's q is computed as (Total Assets – BV(equity) + MV(equity)) / Total Assets. Financial firms, firms with total assets less than $100 million, and firms with missing data are discarded. The dependent variable in each regression is the percentage change in Tobin's q from 1995 to 1997. New-list is a dummy variable that equals 1 if a firm did not have its shares cross-listed in the U.S. in 1995, but did have its shares cross-listed in 1997, and is 0 otherwise. New-144a (New-OTC; New-Exchange) are similar. ΔSales growth and ΔInd_G are the percentage changes in sales growth and the median global industry q from 1995 to 1997. Firms from 40 different countries are represented in the sample; there are 76 firms that were not cross-listed in in 1995, but were cross-listed by the end of 1997 (11 are 144a, 36 are OTC, and 30 are exchange-listed). 3824 firms do not cross-list their shares in the U.S. t-statistics (in parentheses) are computed with heteroskedasticity consistent standard errors.

	Regression (1)	***Regression (2)***	***Regression (3)***	***Regression (4)***
Constant	-0.06	-0.06	0.03	0.03
	-(11.73)	-(11.72)	(1.61)	(1.59)
New-list	0.13		0.12	
	(3.04)		(2.82)	
New-144a		-0.12		-0.12
		-(2.25)		-(2.34)
New-OTC		0.20		0.19
		(3.40)		(3.16)
New-Exchange		0.12		0.12
		(1.79)		(1.63)
ΔSales growth			0.00	0.00
			(0.52)	(0.50)
ΔInd_G			0.81	0.81
			(5.71)	(5.69)
Adjusted R^2	0.25	0.40	2.32	2.45

Figure 1. The cross-listing premium estimated from within country regressions.
This figure presents results from within country regressions that estimate the valuation impact of cross-listing in the U.S. Information on ADRs comes from BoNY. Information on firms from Canada and Israel that list their shares directly on the NYSE or Nasdaq is obtained from the exchanges' web sites. The National Quotation Bureau's Pink Sheets are used to identify Canadian firms that are directly listed on the OTC market. The dependent variable in each regression is Tobin's q, computed as (Total Assets – BV(equity) + MV(equity)) / Total Assets on December 31, 1997. Financial firms, firms with total assets less than $100 million, and firms with missing data are discarded. For each country, the premium is estimated by regressing Tobin's q on a constant and on cross-list, a dummy variable that equals 1 if a firm cross-lists its shares in the U.S. and is 0 otherwise. t-statistics are computed with heteroskedasticity consistent standard errors.



Appendix A1. Country level variables.

This table summarizes variables for: legal origin, shareholder protection, and the domestic stock markets and economies. The variables in the first seven columns are taken from La Porta, et al. (1998). English law, French law, German law, and Scandinavian law describe the origin of the legal system. Anti-director rights is an index that aggregates six different shareholder rights. Efficiency of the judicial system is an assessment of the efficiency and integrity of the legal environment as it affects business. The accounting standards rating is an index created by examining and rating companies annual reports for their inclusion or exclusion of 90 items. Liquidity ratio is the dollar value of shares traded divided by the average market capitalization in 1997 (from the *IFC Emerging Stock Markets Factbook 1998*). The Capital Access Index identifies quantitative and qualitative measures of the ability of an entrepreneur to raise capital (developed by the Milken Institute Capital Studies Group). # Dom Cos. is the number of listed domestic companies in 1997, Total MV (in billions of USD) is the total capitalization of domestic listed stocks in 1997, Per capita GNP (in USD) figures are for 1997.

	English law	***French law***	***German law***	***Scand. law***	***Anti-director***	***Efficiency judicial***	***Accounting standards***	***Liquidity ratio***	***Capital access***	***# Domestic Companies***	***Total MV***	***Per capita GNP***
Argentina	0	1	0	0	4	6.00	45	0.50	4.154	136	59	8,950
Australia	1	0	0	0	4	10.00	75	0.52	4.943	1219	697	20,650
Austria	0	0	1	0	2	9.50	54	0.71	4.289	101	36	27,920
Belgium	0	1	0	0	0	9.50	61	0.23	4.467	138	137	26,730
Brazil	0	1	0	0	3	5.75	54	0.86	3.706	536	255	4,790
Canada	1	0	0	0	5	9.25	74	0.68	4.923	1362	568	19,640
Chile	0	1	0	0	5	7.25	52	0.11	4.451	264	72	4,820
Colombia	0	1	0	0	3	7.25	50	0.10	3.649	189	20	2,180
Denmark	0	0	0	1	2	10.00	62	0.57	4.520	237	94	34,890
Finland	0	0	0	1	3	10.00	77	0.53	4.692	124	73	24,080
France	0	1	0	0	3	8.00	69	0.64	4.600	683	674	26,300
Germany	0	0	1	0	1	9.00	62	1.38	4.808	700	825	28,280
Greece	0	1	0	0	2	7.00	55	0.73	4.020	230	34	11,640
Hong Kong	1	0	0	0	5	10.00	69	1.13	5.373	658	413	25,200
India	1	0	0	0	5	8.00	57	0.43	3.907	5843	128	370
Indonesia	0	1	0	0	2	3.98	65	0.69	3.957	282	42	1,110

Appendix A1, continued.

	English law	*French law*	*German law*	*Scand. law*	*Anti-director*	*Efficiency judicial*	*Accounting standards*	*Liquidity ratio*	*Capital access*	*# Domestic Companies*	*Total MV*	*Per capita GNP*
Ireland	1	0	0	0	4	8.75	74	0.83	4.640	83	24	17,790
Israel	1	0	0	0	3	10.00	64	0.26	4.521	640	45	16,180
Italy	0	1	0	0	1	6.75	62	0.66	4.481	235	345	20,170
Japan	0	0	1	0	4	10.00	65	0.46	4.566	1805	2,217	38,160
Korea	0	0	1	0	2	6.00	62	1.88	4.519	776	42	10,550
Malaysia	1	0	0	0	4	9.00	76	0.73	4.714	708	94	4,530
Mexico	0	1	0	0	1	6.00	60	0.38	3.774	198	157	3,700
Netherlands	0	1	0	0	2	10.00	64	0.67	5.128	201	469	25,830
New Zealand	1	0	0	0	4	10.00	70	0.38	4.958	190	90	15,830
Norway	0	0	0	1	4	10.00	74	0.75	4.453	196	67	36,100
Pakistan	1	0	0	0	5	5.00	61	1.06	3.571	781	11	500
Peru	0	1	0	0	3	6.75	38	0.26	4.021	248	18	2,610
Philippines	0	1	0	0	3	4.75	65	0.35	4.137	221	31	1,200
Portugal	0	1	0	0	3	5.50	36	0.66	4.481	148	39	11,010
Singapore	1	0	0	0	4	10.00	78	0.50	5.220	303	106	32,810
South Africa	1	0	0	0	5	6.00	70	0.19	4.423	642	232	3,210
Spain	0	1	0	0	4	6.25	64	1.70	4.647	384	290	14,490
Sweden	0	0	0	1	3	10.00	83	0.68	4.627	245	273	26,210
Switzerland	0	0	1	0	2	10.00	68	1.01	5.360	216	575	43,060
Taiwan	0	0	1	0	3	6.75	65	4.62	4.775	404	288	13,599
Thailand	1	0	0	0	2	3.25	64	0.38	4.560	431	24	2,740
Turkey	0	1	0	0	2	4.00	51	1.30	3.556	257	61	3,130
UK	1	0	0	0	5	10.00	78	0.44	5.333	2046	1,996	20,870
Venezuela	0	1	0	0	1	6.50	40	0.31	3.408	91	15	3,480