Disclosure vs. Legal Bonding: Can Increased disclosure substitute for Cross-Listing♣?

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Abstract

Using a large sample of international firms we find that firms that voluntarily adopt International Accounting Standards (IAS) and firms that cross-list on US exchanges have a significantly higher Tobin's q than firms that do neither. Thus, we document a significant disclosure premium and reconfirm the cross-listing premium in Doidge et al. (2004). More importantly, we find that US exchange cross-listed firms do not exhibit a significant valuation premium relative to IAS firms. These results persist after we control for a number of country level variables and other firm-specific characteristics. We also find strong evidence suggesting that increased disclosure alone can provide a mechanism for controlling shareholders to commit to a lower consumption of private benefits of control. Overall our findings suggest that increased disclosure can act as a close substitute for US exchange cross-listings. Even though US exchange cross-listing provides a superior bonding mechanism relative to IAS adoption the net valuation effect of this superiority appears to be mitigated by the added costs associated with operating under the US legal system.

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Disclosure vs. Legal Bonding: Can Increased disclosure substitute for Cross-Listing?

This paper deals with the effects of two important and voluntary international firm decisions on corporate valuation. First, the firm's decision to increase disclosure through the adoption of International Accounting Standards (IAS) and second, the firm's decision to cross-list its shares in the United States. Adopting IAS constitutes a pure increased disclosure event, since IAS are financial reporting policies that typically require increased disclosure and restrict the number of measurement method choices relative to the firm's home country accounting standards. On the other hand, the decision to cross-list in the US entails a series of changes in the firm's trading and operating environment. These changes include increased disclosure, (especially for US exchange listings, level II and Level III ADRs), but are also argued to be associated with the stricter US legal environment and increased scrutiny and monitoring by the Securities and Exchange Commission (SEC).

Both of these voluntary corporate decisions have been supported by managers and the investment community as enhancing firm value. Arthur Levitt, the former chairman of the SEC, asserts that "high quality accounting standards result in greater investor confidence, which improves liquidity and reduces capital costs." In terms of the cross-listing decision, earlier manager surveys list many benefits of cross-listing in the US: lower cost of capital, greater access to foreign capital markets, increased ability to raise equity, increased shareholder base, greater liquidity, visibility, exposure, and prestige (Mittoo (1992); Fanto and Karmel (1997)).

More recently, Doidge Karolyi and Stulz (2004) argue that another important benefit of a US cross-listing is the improved ability of the governance structure of the

firm to bond controlling shareholders to less expropriation of firm resources. Unavoidably, the bonding benefits documented in Doidge et al. (2004) are associated with the increased required disclosure for US exchange listed foreign firms, in addition to the US legal and monitoring environments.[1] Therefore, a question that arises is whether we can distinguish between the pure disclosure benefits of cross-listings from the benefits of borrowing the US legal system, and whether significant benefits can be achieved from increased disclosure in the absence of legal bonding. In other words, can increased disclosure substitute for US cross-listings?

This question becomes even more important after the passage of the Sarbanes-Oxley Act of 2002, given the strong anecdotal evidence pointing to its added costs on cross-listings. The Sarbanes- Oxley Act significantly expands federalization of corporate law by providing for even more stringent monitoring standards and by including regulation of substantive corporate governance (see Ribstein (2005, p124-125)). A recent *Wall Street Journal* article[2] states: "This month the SEC opened the door for foreign companies to bail out of their US stock listings. Next year, several fed-up companies will indeed bolt." In addition, Marosi and Massoud (2006) find that legal bonding has not been a significant deterrent to foreign firms exiting the US capital markets after the Sarbanes-Oxley Act of 2002. As a response to this new environment there are strong calls for a distinction between disclosure law and governance law with foreign firms abiding with the first and be exempt from the second (Ribstein (2005)). The valuation

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[1] The disclosure requirements vary depending on the type of listing. They are more stringent for foreign firms choosing to list on a US stock exchange (Level II and Level III ADRS). Level II ADRs are required to reconcile home GAAP financial numbers to US GAAP, provide information on the local financial environment (Form 20-F), and can elect to either cross-list under item 17 (where no additional disclosures over the ones required under home GAAP are provided) or under item 18 (where the firm must supply all required US GAAP disclosures. Level III ADRs are required to comply with US GAAP disclosure rules.
[2] Craig Karmin, "London Calling" *Wall Street Journal*, December 23 2005, p. C.1

benefits of increased disclosure relative to those of legal bonding should therefore be of importance not only to foreign firms contemplating a US cross-listing but also market regulators around the world.

To measure the valuation benefits of increased disclosure and compare them to the benefits of a US cross-listing we extend and enhance the Doidge, Karolyi, and Stulz (2004) framework by computing a disclosure premium in Tobin's q valuations of international firms that adopt IAS, in addition to the cross-listing premium. We conjecture that a comparison between the disclosure premium and the cross-listing premium provides an upper bound for the incremental valuation benefits international firms enjoy by borrowing the US corporate governance environment through a US exchange listing (legal bonding). We proceed to investigate whether the disclosure premium is associated with the bonding of controlling shareholders to a lower expropriation of firm resources enhancing minority shareholder protection. We use the Global Vantage Database universe of firms in the year 2000 for 37 countries and find that firms that adopt IAS and firms that cross-list on US exchanges have a significantly higher Tobin's q than firms that do neither, thus documenting a significant disclosure premium and reconfirming the significant cross-listing premium in Doidge et al. (2004)[3]. More importantly, we find that US exchange cross-listed firms do not exhibit a significant valuation premium relative to IAS firms. These results persist after we control for a number of country level variables and other firm-specific characteristics including insider ownership and firm level globalization. Furthermore, we find that the disclosure premium increases with the value of growth opportunities and decreases for firms with high quality

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[3] Doidge, Karolyi, and Stulz (2007) document a significant cross-listing premium for every year from 1990 to 2005.

auditors. These findings suggest that increased disclosure alone can provide a mechanism for controlling shareholders to commit to a lower consumption of private benefits of control. This is consistent with the evidence in Durnev and Kim (2005) who find that even firms in poor legal environments can enjoy high valuations if they adopt high quality governance and disclosure practices at the firm level.

We also find the growth opportunities of US exchange listed firms are more highly valued than those of IAS firms. This indicates that US exchange cross-listings provide a superior bonding mechanism relative to IAS adoption. However, their enhanced bonding mechanism does not translate into a cross-listing premium relative to IAS firms. These findings can be reconciled by the potentially high costs US exchange cross-listed firms bear because of the added burden of the US legal system and corporate governance practices. Furthermore, we find that the growth opportunities of IAS firms are more highly valued than those of OTC cross-listings consistent with the documented disclosure premium of IAS firms relative to OTC cross-listings.

Our findings document the importance of increased disclosure on firm value in general and the importance of IAS in particular. Given the absence of a significant capital market integration benefit associated with cross-listings in recent years [Stulz (1999), Karolyi (2005)] our result that the pure disclosure premium is not significantly different from the cross-listing premium suggests that increased disclosure can act as a close substitute for US exchange cross-listings. Even though US exchange cross-listing provides a superior bonding mechanism relative to IAS adoption the net valuation effect

of this superiority appears to be mitigated by the added costs associated with operating under the US legal system[4].

The remainder of the paper is organized as follows. Section 2 discusses the benefits of increased disclosure and legal bonding associated with cross listings and derives testable empirical hypotheses. Section 3 describes the data and Section 4 reports and analyzes the empirical results. Finally, Section 5 provides some concluding remarks.

2. Increased disclosure and legal bonding valuation benefits

The link between increased disclosure and firm value has been established in previous theoretical literature. Easley and O´ Hara (2004) demonstrate that investors demand a higher return to hold stocks with greater private information. They conclude that one important implication of their theoretical model is that firms can influence their cost of capital by their selection of accounting standards. Barry and Brown (1985) suggest that the cost of capital is a function of "estimation risk" and argue that the better investors are able to assess the prospects of a company the lower its expected cost of capital. Lang, Lins, and Miller (2003), like others in the cross-listing literature, use Merton's (1987) investor recognition hypothesis to argue that a US listing creates value as the enhanced disclosure environment reduces the cost of following the firm. This increases investor base and, therefore, the demand for the firm's securities. Furthermore, Leuz and Verrecchia (2000) argue that a major link between economic theory and contemporary accounting thought is the notion that a firm's commitment to greater disclosure should lower the cost of capital. Moreover there is evidence that increased

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[4] This is consistent with the finding in Ammer et al. (2005) that cross-listing in the US leads to improvements in accounting and disclosure standards that are valued by US investors but does not increase the appeal of closely held companies, and companies headquartered in countries with weak shareholder rights suggesting that the US corporate governance system does not provide effective benefits to foreign firms.

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voluntary disclosure can act as a positive signal of firm value [see Jovanovic 1982, Verrecchia (1983), Cantale (1996), Fuerst (1998), and Moel (1999)] and reduce the private benefits of control [see Doidge, Karolyi and Stulz (2004), Coffee (1999, 2002), Stulz (1999)].

The connection between increased disclosure and value is made empirically by a number of studies. Studies such as Botosan (1997) and Botosan and Plumlee (2002) find that increased disclosure reduces the implied cost of capital. However, Easton and Monahan (2003) indicate that there is substantial measurement error in the cross-sectional variation of implied cost of capital estimates. Hail and Leuz (2004) acknowledge this limitation and point out that their results, relating the effects of cross-listing to the implied cost of capital, should be interpreted carefully and as complementary to prior return-based studies.

Other studies typically do not investigate the effects of disclosure on firm value directly. A number of papers look at the effects of increased disclosure on variables that are assumed to capture the firm's information environment, such as analyst forecast accuracy and analyst following, while other papers link these latter variables to the cost of capital or firm value. For example, Lang and Lundholm (1996) show that for US firms, analyst following and forecast accuracy are positively related to disclosure quality, Ashbaugh and Pincus (2001) find that analyst forecast accuracy improves after international firms adopt IAS, and Hope (2003), using an international sample, finds that firm level disclosures are positively related to forecast accuracy. On the other hand, Gebhardt, Lee, and Swaminathan (2001) find that firms with more accurate forecasts enjoy a lower implied cost of capital and Lang, Lins, and Miller (2003) find that higher

analyst forecast accuracy and following are associated with higher Tobin's q for firms that cross-list their shares in the US. Other papers investigate the impact of increased disclosure on variables that are linked to firm value, such as bid-ask spread, share turnover, and price volatility [e.g. Leuz and Verrecchia (2000)]. The beneficial effects of increased disclosure on firm value are also examined in the international cross-listing literature. In particular, in the presence of information asymmetry or information incompleteness the increased disclosure associated with cross-listings can function as a positive signal of firm value [Cantale (1996)], and bond controlling shareholders to less expropriation of firm resources [Doidge et al. (2004)].

In this paper, we evaluate the impact of increased disclosure on firm value directly by examining the Tobin's Q valuation measure of firms that voluntarily adopt IAS against the corresponding measure for firms that do not. IAS are a set of accounting standards promulgated by the International Accounting Standards Board (previously, the International Accounting Standards Committee) which is committed to developing a set of high quality standards increasing the transparency, comparability and convergence of accounting information around the world. In 2000, after the successful completion of a core set of standards the International Organization of Securities Commissions (IOSCO) issued a recommendation to its members to allow the use of IAS by issuers in cross-border offerings. In 2005 all publicly listed European firms had to adopt IAS for financial reporting purposes. Research in the area provides further evidence on the superiority of IAS compared to local accounting systems [Ashbaugh and Pincus (2001), Barth et al. (2008), Ding, Hope, Jeanjean and Stolowy (2005)] and suggests that IAS is of comparative quality to US GAAP [Leuz (2003), Barth et al (2006)]. Given that IAS

adoption constitutes an enhancement in the firm's information disclosure and given the theoretical evidence that links increased disclosure to firm value we expect a positive disclosure premium (higher Tobin's Q) for firms that voluntarily use IAS relative to firms that use local GAAP.[5] This leads to the following hypothesis.[6]

H1: IAS firms enjoy a positive disclosure premium in the form of higher Tobin's Q relative to firms that use local GAAP.

We proceed to compare the valuation of IAS firms with the valuation of cross-listed firms taking into account the different types of cross-listings in the US. We expect a disclosure premium for IAS firms relative to OTC listings in the US as these types of cross-listings are not associated with increased disclosure or SEC registration. On the other hand we expect US exchange listings (level II and III ADR's) to have a cross-listing premium relative to IAS firms as these cross-listings are associated with the enhanced US corporate governance system in addition to the increased disclosure associated with the listing.[7] As cross listing benefits could arise from other sources beyond bonding, the difference between the valuation of US exchange cross-listed and IAS firms is an upper bound for the valuation benefits enjoyed by cross-listed firms as a result of the more stringent US legal system.

H2: (a) IAS firms enjoy a disclosure premium relative to OTC listings.

(b) US exchange (level II and III ADRs) listings enjoy a cross-listing premium relative to IAS firms.

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[5] The degree of enhancement in the firm's information environment depends on the firm's country of origin and the quality of home country accounting and disclosure rules.

[6] All hypotheses are stated in the alternative form.

[7] Barth, Landsman, Lang, and Williams (2006) find that IAS accounting amounts are of comparable quality to reconciled US GAAP amounts reported by cross-listed firms.

Finally, we explain the disclosure premium by investigating whether the bonding benefits documented in Doidge et al. (2004) can be achieved by a pure increased disclosure event such as the voluntary adoption of IAS that is not accompanied by any change in the corporate governance regulatory environment. La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998) conjecture that high quality accounting could mitigate the negative effects of weak investor protection on the development of financial markets. This relates to the bonding hypothesis in the international cross-listing literature proposed by Doidge et al. (2004), which is based on Coffee (1999, 2002), Stulz (1999) and Reese and Weisbach (2002). This hypothesis posits that both the increased disclosure associated with a US cross-listing and the increased monitoring from US laws and regulations bond controlling shareholders to less expropriation of firm resources. In fact, the role of increased disclosure in bonding is emphasized more than the role of US laws and regulations. Siegel, (2005) suggests that even without effective law enforcement the voluntary disclosure associated with cross-listings enables firms to effectively bond themselves by building their reputation. In addition, the extent to which US laws and regulations provide an effective bonding mechanism is limited. First, the recovery of damages awarded to shareholders by US courts is contingent upon the size of the assets held by the firm in the US [Siegel, (2005)]. Second, foreign firms listed in the US do not reincorporate in a US state limiting the efficiency of corporate governance mechanisms which largely depend on the State's corporate law [Doidge, Karolyi and Stulz, (2004)]. Therefore, the increased disclosure associated with the voluntary adoption of IAS can be related to an increase in shareholder protection and a reduction in cash flow expropriation by controlling shareholders, even in the presence of a weaker corporate governance

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system. This is consistent with the evidence in Durnev and Kim (2005) who find that even firms in poor legal environments can enjoy high valuations if they adopt high quality governance and disclosure practices at the firm level.

Doidge et al. (2004) show that it is costly for controlling shareholders to relinquish control through the increased disclosure and monitoring associated with cross-listing and that they would do so in the presence of high growth opportunities, which can only be financed externally. They develop testable hypotheses regarding the bonding and monitoring benefits of cross-listing. Firms with higher growth opportunities can benefit more from the increased investor protection associated with increased disclosure not only through the reduced cash flow expropriation by controlling shareholders, but also from the fact that these growth opportunities can now be attained as external financing will be more readily available. Consistent with the latter argument, Reese and Weisbach (2002) find evidence of increased equity issuance after cross-listing in the US because minority shareholders are better protected. In the same spirit, we propose that the increased disclosure resulting from IAS adoption can be associated with similar bonding benefits which should increase with the value of growth opportunities.[8] Consistent with this conjecture, Ashbaugh (2001) finds that firms are more likely to report IAS financial information when they participate in seasoned equity offerings and Ashbaugh and Pincus (2001) find that firms tend to issue share capital in the year of or year after IAS adoption.

H3a: The disclosure premium is positively related to bonding benefits.

The quality of investor protection in the firm's home country can have a significant effect on the disclosure premium. The lower the country and firm level of investor protection the higher will be the loss of private benefits of control and therefore

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[8] Karamanou and Nishiotis (2005) provide empirical evidence that is consistent with this claim.

the higher will be the impact on the disclosure premium. Put differently, the bonding benefit of IAS is lower the greater the home country or firm level of investor protection.

H3b: A firm's disclosure premium is inversely related to the quality of investor protection that applies to the firm in its home country.

3. Data

To conduct the empirical analysis we use the universe of firms in the Global Vantage Database for the year 2000 to measure firm value and other firm characteristics, as well as country level variables relating to investor protection, capital market accessibility, and accounting standards. We use the La Porta, Lopez-de-Silanes, Shleifer, and Vishny (LLSV) (1998) measures of investor protection and thus we are restricted to include in our sample the countries for which these measures are available.

The initial sample of the study included 11,094 firms from 38 countries[9] which had all needed variables to calculate Tobin's q on the annual industrial and research Global Vantage database (Compustat North America and Global 2004) for the year 2000[10]. To make firms across countries more comparable we eliminated all banks, financial institutions and firms in regulated industries[11] as well as firms with less than $100 million in total assets, which gives us a sample of 5,505 firms from 37 countries.[12] Out of these 209 firms use IAS and are not cross-listed, 500 firms are cross-listed and do

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[9] We kept all countries from Global Vantage for which the use of IAS was not mandatory in the year 2000. The countries in the sample are the same as in Doidge, Karolyi and Stulz (2004) except that we do not include Peru and Canada.

[10] For firms with multiple share classes we kept only the common shares.

[11] Firms with SIC code between 6000-6999 were deleted from the sample.

[12] All firms from the Netherlands are eliminated after these refinements.

not use IAS and 4660 firms use local GAAP and are not cross-listed.[13] The cross-listed firms are identified using information from the Bank of New York.

The valuation measure, Tobin's q, is computed as in Doidge et al (2004).[14] 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. Differences in the accounting practices across countries can increase q in some countries related to other countries. For example, many countries allow firms to hide reserves, so that their assets are understated and some countries capitalize R&D, while others do not. The capitalization of R&D increases the denominator of q and consequently decreases q. Hung and Subramanyam (2007) find that total assets and book value of equity are significantly larger under IAS than under local GAAP for German firms. This tends to reduce the Tobin's q of IAS firms relative to local GAAP firms and introduces a bias against finding a disclosure premium.

For the multivariate tests the sample is further reduced due to additional data requirements. Out of the 5505 observations for which Tobin's q is available, 294 firms do not have data for the computation of sales growth, while we lose 2101 observations due to missing data on closely held shares. Additional data requirements further reduce the sample to 3033 firms. Finally, excluding firms that are both cross listed and use IAS, or use US GAAP and are not cross-listed, yields a final sample of 2968 firms. Of these, 114 firms use IAS and are not cross-listed, 277 are cross-listed and do not use IAS, while 2577 firms are neither cross-listed nor use IAS.

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[13] There are also 136 firms that are either cross-listed and use IAS or are not cross-listed, but use US GAAP. These firms are typically excluded from the analysis.

[14] Tobin's q is computed at 31 December, 2000.

For the empirical analysis we use a number of firm and country variables. We obtain the accounting standards and judicial efficiency country variables from LLSV (1998). The efficiency of judicial system variable is an index that 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 accounting standards variable, obtained from the Center for International Financial Analysis and Research, measures the quality of accounting information and is an index ranging from 0 to 90. The anti-director rights index is the revised index in Djankov, La Porta Lopez-de-Silanes and Shleifer (2005) which aggregates six different shareholder rights and ranges from zero to six, where a higher score signifies better shareholder protection. Finally, we use two additional country level variables: The country's overall liquidity, a measure of domestic market quality, computed as the ratio of the dollar value of shares traded divided by average market capitalization and the country's GNP, both taken from the *Emerging Stock Markets Factbook*.

We use a number of firm-level variables to either capture the effects of bonding or to control for factors that may be affecting the disclosure and cross-listing premiums. Bonding benefits are captured by real sales growth in 2000, the median global industry Tobin's q, and the ownership (closely held shares) variables. Audit quality, a proxy for firm investor protection, is a dummy variable that takes the value of 1 if the audit is performed by a big-four audit firm and zero otherwise.[15] The models also control for firm size, computed as the natural logarithm of total assets, capital intensity computed as the ratio of Property Plant and Equipment over Sales, and globalization which is a

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[15]Due to bankruptcies and consolidations in the audit industry the big audit firms are currently four but this variable is appropriately measured at a disaggregated level.

variable that measures the proportion of the variance of the firm's returns that is explained by the world market index. The capital intensity variable is inversely related to the level of intangibles. Globalization captures market integration and the overall globalization of the firm and is expected to be positively related to firm value. Finally, the Probit models which explain differences across sample categories also include Leverage, defined as the ratio of total liabilities to total assets. All variables are obtained from *Global Vantage*, except for ownership, Property Plant and Equipment and firm, local market, and world index returns which are obtained from *Datastream*.

4. Empirical Results

In this section we provide empirical results on both the cross-listing and disclosure premiums as well as a comparison between the two. We conduct both univariate analysis and multivariate regression analysis in order to test the empirical hypotheses of the paper.

4.1 Disclosure Premium

Table 1, panel A provides evidence on the disclosure premium and a comparison between the valuation of IAS firms with cross-listed firms. The table reports the number of firms for each country (N) and the mean and median Tobin's q of non cross- listed firms using IAS, non cross-listed firms using local GAAP, US Exchange listed firms, and OTC firms. For the latter three categories the difference in the mean (Dmn) and median (Dmd) Tobin's q between IAS firms and the corresponding category is reported for each country as well as the averages across countries. The number of firms in each country and each firm category varies widely. We have a minimum of 2 firms in Venezuela and a

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maximum of 2208 firms in Japan[16] that use local GAAP, a minimum of 0 firms (in seven countries) and a maximum of 38 firms in the UK with a US exchange listing, and a minimum of 0 firms (in four countries) and a maximum of 84 firms in Japan with OTC listings. There are 209 non-cross-listed firms that use IAS and are distributed in 16 countries. Switzerland and Germany have the most IAS firms of 61 and 55, respectively. There is considerable variation in the mean Tobin's q across countries and firm categories. For example, for the non cross-listed firms using local GAAP the mean Tobin's q ranges from a minimum of 0.69 in Colombia to a maximum of 2.55 in Turkey.

Hypothesis H1 states that IAS firms have a higher Tobin's q than local GAAP firms while hypothesis H2 states that IAS firms have higher Tobin's q than OTC cross-listed firms and lower Tobin's q than US exchange listed foreign firms. We can use the results of Table 2 for univariate tests of these hypotheses by examining the average disclosure premium along with the differences in average Tobin's q between each of the cross-listed firm categories and the IAS firms. We first compute the differences in the average Tobin's q for each country between the IAS firms and the three other categories and then we average these differences across countries. A t-statistic computed under the assumption that country observations are independent is used to evaluate statistical significance. A similar procedure is followed for the median test. The table reveals a positive highly significant disclosure premium using both the mean and median tests with a disclosure premium of 0.619 and 0.335, respectively. Therefore, our evidence is consistent with H1 indicating that increased disclosure in the form of IAS adoption has significant effects on corporate valuation. In addition, the difference in the average (median) Tobin's q across countries between IAS firms and OTC firms is 0.565 (0.223)

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[16] We run our tests without Japan and all key findings remain unchanged.

and statistically significant at the 1% level, consistent with H2, that IAS firms have higher Tobin's q than OTC listed firms. In contrast, we find that the difference in the average (median) Tobin's q across countries between IAS firms and exchange listed firms is -0.282 (-0.130), but is not statistically significant, inconsistent with our expectations reflected in H2 (b) that IAS firms have lower Tobin's q than US exchange listed firms.

These results have two very important implications. First, the level and quality of disclosure under IAS is comparable to the disclosure imposed by a US exchange cross-listing. Consistent with this is the finding of Barth, Landsman, Lang, and Williams (2006) that IAS accounting amounts are of comparable quality to reconciled US GAAP amounts reported by cross-listed firms. Second, the change in the firm's legal environment associated with a US exchange listing does not seem to be associated with a significant valuation effect over and above what is achieved through increased disclosure. We will pursue this further in multivariate tests that follow.

4.2 Cross-listing Premium

Table 1 panel B provides evidence on the cross listing premium in order to assess the comparability of our sample with the sample in Doidge, Karolyi, and Stulz (2004). In the interest of brevity we only report the aggregate number of firms and the mean and median Tobin's q across all countries in the sample for three firm groups: exchange listed firms, non cross-listed firms (irrespective of accounting standards used, similar to Doidge, Karolyi and Stulz (2004)) and non cross-listed firms that use local GAAP. For the latter two categories we also report the average difference across countries in the mean (Dmn) and median (Dmd) Tobin'q between the corresponding firm category and

exchange listed firms. Table 1, panel B reveals a statistically significant cross-listing premium in US exchange listed international firms relative to both non cross-listed firms in general and non cross-listed firms using local GAAP. This result is consistent with the findings of Doidge et al (2004) who use 1997 data. Table 1 panel C conducts a similar analysis for OTC listed firms and finds a much lower cross-listing premium for OTC firms, which is not statistically significant according to the mean test, but is significant according to the median test.

4.3 Multivariate Regression Analysis

In this subsection we expand the previous analysis in order to determine whether the disclosure premium and its relationship to the cross-listing premium can be explained by firm-specific and country-level variables. We run regressions of Tobin's q on either a cross-listing dummy that takes the value of 1 if a firm is cross-listed, or an IAS dummy that takes the value of 1 if a firm is voluntarily using IAS. We also include in the models the country level and firm specific variables discussed in the previous section of the paper. One issue that needs to be addressed with the multivariate analysis is that of self selection bias. Based on our economic analysis we would expect high growth firms to be more likely to either cross-list or voluntarily increase their disclosure through IAS. The error in the regression models is likely to be correlated with the decision to cross-list or to adopt IAS, which creates a bias in our dummy variable estimates. In order to account for self selection bias we use the Heckman (1979) procedure. For the first step of the procedure we specify a Probit model for the choice of adopting IAS. We follow a similar methodology for the cross-listing decision.

Table 2 reports the results of five Probit models that vary in the decision choice and sample used. Models 1 and 2 are estimated on the full sample and model the decision to adopt IAS and cross-listing respectively. Models 3 to 5 are estimated on a reduced sample that includes only cross-listed and IAS firms. Model 3 models the choice between cross-listing and IAS, model 4 models the choice between exchange listing and IAS and model 5 models the choice between OTC listing and IAS. These models are later used as the first step of the Heckman (1979) procedure, but the findings of these models are interesting in their own right. The independent variables in the models are leverage, anti-directors rights, legal system, logassets, logGNP, auditors, liquidity, ownership and globalization. Table 2 also reports the number of observations and the pseudo R-square for all models. Model 1 reveals that relative to local GAAP firms, IAS firms are more likely to be in countries with lower anti-director rights and lower GNP, and are more likely to be bigger, to be audited by high quality auditors, and to be more global. Model 2 reveals that relative to non cross-listed firms, cross listed firms are more likely to be less leveraged, bigger, come from countries with lower GNP and less liquid financial markets, have lower insider ownership and are more global. Model 4 reveals that relative to IAS firms, exchange listed firms are less leveraged, bigger, and are more likely to be from common law countries with high anti-director rights. Interestingly, exchange listed firms and IAS firms do not differ significantly in terms of insider ownership, auditors, and globalization.

Table 3, reports regressions of Tobin's q on either an IAS dummy that takes the value of 1 if a firm is voluntarily using IAS or a cross-listing dummy that takes the value of 1 if a firm is cross-listed, or an exchange dummy that takes the value of one if a firm is

cross listed on a US exchange and an OTC dummy that takes the value of 1 if a firm is cross-listed on the over the counter market in the US (models 1, 2a and 2b, respectively). The models include the inverse Mills ratio (lambda) estimated from the corresponding Probit models of Table 2 (models 1 and 2, respectively). Each model includes a number of firm and country level variables as controls. All specifications include two variables to control for growth opportunities. These are the firm real sales growth in 2000 and the median global industry Tobin's q. The other firm level variables control for auditor quality, insider ownership, globalization, size and capital intensity. We also control for country level investor protection, and the quality of the domestic capital market using a market liquidity measure. The most important finding of Table 3 is that both the disclosure premium and cross-listing premium for US exchange listed firms are positive and highly significant even after we introduce a large number of controls in our multivariate models and after we control for self selection bias. OTC cross-listed firms do not have a cross-listing premium relative to non cross-listed firms. It is also noteworthy that the coefficient estimates on sales growth and industry q are positive and significant as expected and that being audited by a big four accounting firm, coming from a country with better accounting standards and higher globalization adds to firm value.

The empirical results so far document both a significant disclosure premium in IAS firms relative to firms using local GAAP and a significant cross-listing premium for US exchange cross-listings. These findings are consistent with our hypothesis H1. We now turn our attention to the relative valuations of IAS firms and cross-listed firms including the breakdown of cross-listed firms into US exchange and OTC listings. To do achieve this we conduct our analysis on the reduced sample of IAS and cross-listed firms.

We use the Probit models 3-5 from Table 2 as the first stage of the Heckman (1979) procedure and Table 4 reports the results from the second stage Tobin's q valuation equations. The sample for model 1 includes all cross-listed and IAS firms in the sample and CL is a dummy variable that takes 1 if the firm is cross-listed and zero otherwise. Model 2 includes only US exchange cross-listings along with IAS firms and the dummy variable EXCH takes the value of 1 if a firm is cross-listed on a US exchange and zero otherwise. Finally, model 3 includes only OTC cross-listings along with the IAS firms and the dummy variable OTC takes the value of 1 for OTC cross-listings and zero otherwise. The same country and firm level variables that were included in the models of Table 3 are also included here. Model 1 reveals a significant (at the 10% level) valuation premium of IAS relative to all cross-listed firms indicated by the negative coefficient estimate of the CL dummy (-0.6496). In model 2 the coefficient estimate of the EXCH dummy is -0.0237 and is not statistically significant, indicating that US exchange listed firms do not exhibit a valuation premium over IAS firms. This finding contradicts our hypothesis H2b. However, in model 3 the coefficient estimate of the OTC dummy variable is -0.8680, which is both statistically and economically significant. This last finding is consistent with our hypothesis H2ba. Sales growth, industry Tobin q, and globalization are consistently positive and significant in all three models, while logassets is negative and significant. It is interesting to note that the liquidity at the home country level as well as the country level investor protection variables do not appear to play an important role in the valuation of IAS and cross-listed firms. This result is consistent with Durnev and Kim (2005) who find that the positive relation between the legal framework and firm value becomes insignificant when firm specific governance and

disclosure practices are added to their analysis. The adjusted R-square of the models ranges from 12.53% to 17.93%.

4.4 Interpretation of the Disclosure Premium

Since we have established the presence of a disclosure premium and its relationship with the cross-listing premium, this subsection investigates the origins of the disclosure premium. We investigate whether increased disclosure alone can function as a bonding mechanism for controlling shareholders to commit to lower expropriation of firm resources. We extend the previous analysis to provide tests for hypothesis H3 by examining whether the disclosure premium increases with growth opportunities (H3a) and whether firms from countries with a weaker investor protection environment enjoy a higher disclosure premium, (H3b). More specifically we interact the country level investor protection, liquidity, auditor, ownership, and growth opportunities variables with the IAS dummy. To conduct this analysis we concentrate on the IAS firms relative to local GAAP firms and remove all cross-listed firms from the sample. For completeness we also estimate similar models for cross listing firms relative to non cross-listed firms removing IAS firms from the sample. Table 5 reports the results for the Tobin's q valuation equations again using as a first stem in the Heckman (1979) procedure the Probit models 1 and 2 reported in Table 2. Model 1 conducts the analysis for IAS firms, model 2 for cross-listed firms and finally model 3 distinguishes between US exchange and OTC cross-listings. In model 1 the coefficient estimate of the interaction of sales growth with the IAS dummy is positive (0.4937) and highly significant indicating that growth opportunities of IAS firms are valued more than those of local GAAP firms, consistent with hypothesis H3a. We also find significant bonding effects for cross-listed

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firms in model 2. In model 3 as in Doidge, Karolyi, and Stulz (2004) we document significant bonding benefits for US exchange listed firms but not OTC cross-listings as indicated by the positive and statistically significant coefficient of the interaction of sales growth with the US exchange listed dummy and the insignificant coefficient estimate of the interaction of sales growth with the OTC listings dummy. In model 1 the coefficient estimate of the auditor interaction term is negative and significant indicating that firms that have high quality auditors have a lower disclosure premium consistent with hypothesis H3b. The country level investor protection variable interactions are not significant, while the liquidity interaction is positive and significant indicating that IAS is valued more for firms from countries with higher domestic financial market quality. We find that the coefficient estimates of the cross-listing and exchange dummies in models 2 and 3, respectively, turn negative as in Doidge, Karolyi, and Stulz (2004) but are insignificant. The IAS dummy variable in model 1 remains positive, but is not significant at conventional levels. The coefficients on sales growth, industry Tobin's q, accounting standards and globalization remain positive and highly significant in all three models, even with the additional interactions.

In summary, the results in Table 5 document significant bonding benefits associated with the disclosure premium of IAS firms and reconfirm the significant bonding benefits of US exchange cross-listed firms documented in Doidge, Karolyi, and Stulz (2004). These results along with the findings in Table 4 that US exchange cross-listed firms do not exhibit a significant valuation premium relative to IAS firms and that IAS firms exhibit a significant disclosure premium relative to OTC cross-listings seem to suggest that IAS adoption and US exchange cross-listing provide a similar bonding

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mechanism. This is somewhat surprising as US exchange cross-listing subjects firms to the US legal system and the increased requirements and monitoring of the SEC over and above the increased disclosure provided by IAS adoption. In order to evaluate this further we return to our reduced sample of only cross-listed and IAS firms and test whether the growth opportunities of US exchange cross-listed firms are valued more than those of IAS firms.

Table 6 reports the results from the Tobin's q valuation equations. Again the Heckman (1979) procedure is used with the Probit models 3-5 in Table2 serving as the first step for the models 1-3 in Table 6 respectively. The variables included in Table 4 are also included here and we interact the country level investor protection, liquidity, auditor, ownership, and growth opportunities variables with the CL, EXCH, and OTC dummies, respectively in each of the three models of Table 6. We find that in model 1 when we do not distinguish between exchange and OTC cross-listings the coefficient estimate on the sales growth interaction variable is positive but insignificant. However, in model 2, the coefficient estimate is positive (1.2583) and highly significant indicating that the growth opportunities of US exchange cross-listed firms are valued higher than those of IAS firms. This indicates that US exchange cross-listings provide a superior bonding mechanism relative to IAS adoption. However, their enhanced bonding mechanism does not translate into a cross-listing premium relative to IAS firms. These findings can be reconciled by the potentially high costs US exchange cross-listed firms bear because of the added burden of the US legal system and corporate governance practices. In model 3 the coefficient estimate of the sales growth interaction variable is negative and statistically significant indicating that the growth opportunities of IAS firms

are more highly valued than those of OTC cross-listings. This is consistent with IAS adoption offering an effective bonding mechanism and justifies our earlier finding of a significant disclosure premium. It is also consistent with our earlier finding that OTC cross- listings do not enjoy bonding benefits.

In terms of the other interaction variables the coefficient estimate of the auditor interaction is positive and significant in all three models indicating that high quality audits are valued more for cross-listed firms. Finally, the coefficient estimate of the liquidity interaction variable is negative and significant in all models indicating that the liquidity and development of the domestic capital market is valued less for cross listed firms than for IAS firms consistent with the liquidity benefits of multi-market trading enjoyed by cross-listed firms.

5. Conclusion

In this paper we document a significant valuation premium for firms using IAS relative to local GAAP firms and we reconfirm the cross-listing premium in Doidge, Karolyi, and Stulz (2004). We also find that IAS adoption provides an effective bonding mechanism albeit weaker than that of US exchange cross-listing. However, US exchange cross-listings do not exhibit a valuation premium relative to IAS firms. A possible explanation for these seemingly conflicting results is that the enhanced bonding benefits of US exchange cross-listings are mitigated by the added costs of abiding by the US legal and corporate governance system. Therefore, our findings suggest that increased disclosure through adoption of IAS can function as a close substitute to US exchange cross-listings.

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Table 1

Panel A
The table presents by-country comparisons of firm valuations between firms that adopt IAS and firms that use local GAAP or firms that are cross-listed in the US by type of cross listing as of December 31, 2000. Information on ADRs comes from the Bank of New York. Financial firms and firms with total assets less than $100 million are not included. The first two panels compare non-cross listed firms that adopt IAS to those that use domestic standards. The last two panels compare non cross-listed IAS firms to firms cross-listed on a US Exchange and to firms cross-listed on the OTC, and do not use IAS as their primary GAAP. Tobin's q is computed as ((Total Assets-Book Value of Equity) +Market value of Equity)/Total Assets. Dmn (Dmd) is the difference between the mean (median) q in each of the three last categories and the mean (median) q for firms that adopt IAS. N is the number of firms.

	IAS		NCL and Local GAAP			Exchange listed			OTC		
Countries	N	Mean Median	N	Mean/ Median	Dmn Dmd	N	Mean/ Median	Dmn Dmd	N	Mean/ Median	Dmn Dmd
Argentina			13	1.709 0.878		5	0.924 0.929		3	0.773 0.760	
Australia			95	1.587 1.141		8	1.735 1.490		16	1.673 1.523	
Austria	6	1.2309 1.101	10	0.978 0.961	0.253 0.140	1	1.049 1.049	0.182 0.052	2	1.045 1.045	0.186 0.056
Belgium	6	1.945 1.228	43	1.655 1.158	0.290 0.07				1	1.144 1.144	0.801 0.084
Brazil			53	2.086 0.989		17	2.816 1.313		8	0.777 0.799	
Chile			49	1.019 0.868		10	1.379 1.135		3	1.073 0.982	
Colombia			10	0.691 0.719					2	0.609 0.609	
Denmark	5	2.121 0.921	37	2.093 1.149	0.028 -0.228	2	2.804 2.804	-0.683 -1.883			
Finland	5	1.140 1.148	36	1.579 1.320	-0.439 -0.172	2	1.154 1.154	-0.014 -0.006	1	1.273 1.273	-0.132 -0.125
France	21	1.889 1.234	193	1.813 1.248	0.076 -0.014	12	3.739 2.013	-1.850 -0.779	6	2.102 1.400	-0.213 -0.166
Germany	55	1.990 1.542	140	1.539 1.152	0.450 0.390	8	2.036 1.558	-0.046 -0.016	3	3.684 2.907	-1.695 -1.365
Greece			53	1.541 1.268		1	1.658 1.658		4	2.048 1.280	
Hong Kong			52	0.973 0.789		3	1.959 2.298		22	1.385 0.924	
India			101	1.554 0.898		3	8.599 12.415		22	1.126 0.796	
Indonesia			69	1.330 1.121		2	1.359 1.359		1	0.938 0.938	
Ireland			18	1.767 1.264		5	2.210 2.217		2	1.247 1.247	
Israel			17	1.953 1.235		5	2.046 1.885				

Countries	IAS N	Mean Median	NCL and local GAAP N	Mean/ Median	**Dmn Dmd**	Exchange listed N	Mean/ Median	**Dmn Dmd**	OTC N	Mean/ Median	**Dmn Dmd**
Italy	31	1.511 1.344	65	1.889 1.311	-0.378 0.033	2	1.804 1.804	-0.293 -0.460	4	2.112 1.218	-0.601 0.126
Japan			2208	1.094 0.945		21	2.315 1.339		84	1.254 1.134	
Korea			127	0.870 0.814		5	1.200 0.900		8	0.955 0.945	
Malaysia	1	4.957 4.957	174	1.464 0.885	3.493 4.072				7	1.057 1.034	3.899 3.923
Mexico			28	1.102 1.075		8	0.974 0.884		9	1.232 1.030	
New Zealand			26	1.403 1.135		1	0.719 0.719		1	3.643 3.643	
Norway	1	2.092 2.092	37	1.475 1.164	0.617 0.928	3	1.243 1.223	0.850 0.869	4	3.040 0.973	-0.948 1.119
Pakistan			21	1.133 1.032					2	1.104 1.104	
Philippines			37	0.826 0.759					4	1.116 1.145	
Portugal	1	0.963 0.963	17	1.320 1.254	-0.367 -0.291	1	1.556 1.556	-0.593 -0.593	3	1.611 1.022	-0.648 -0.059
Singapore			101	1.248 0.992		2	1.737 1.737		7	1.193 0.993	
South Africa	3	1.421 0.942	42	1.499 1.305	-0.078 -0.363	3	1.188 1.149	0.233 -0.207	10	1.181 1.220	0.240 -0.278
Spain	1	3.457 3.457	65	1.568 1.177		5	1.435 1.220	2.022 2.237	4	1.764 1.573	1.694 1.884
Sweden	3	1.412 1.438	73	1.878 1.292	-0.466 0.146	3	2.208 1.683	-0.796 -0.245	3	1.443 1.303	-0.031 0.135
Switzerland	61	2.353 1.537	43	2.086 1.301		3	2.139 2.521	0.215 -0.984			
Taiwan			122	1.072 0.899		3	2.039 2.146		22	1.301 1.117	
Thailand			65	1.054 0.920					10	1.403 1.417	
Turkey	7	1.343 1.240	20	2.555 1.786	-1.212 -0.546	1	2.599 2.599	-1.256 -1.359	2	1.591 1.591	-0.248 -0.351
UK	2	0.888 0.888	398	1.830 1.295	-0.942 -0.407	38	2.454 1.667	-1.566 -0.779	32	1.622 1.401	-0.733 -0.213
Venezuela			2	0.792 0.792		1	0.470 0.470		4	0.979 0.809	
All Firms - All Countries	**209**	**1.943 1.344**	**4660**	**1.324 1.009**	**0.619* 0.335***	**184**	**2.225 1.474**	**-0.282 -0.130**	**316**	**1.377 1.121**	**0.565* 0.223***

Table 1, Panel B:

This panel presents comparisons of firm valuations between firms that are listed on a US stock exchange (excluding IAS adopters) to all not cross-listed firms (NCL) in the sample or to not cross-listed firms that use local GAAP.

Exchange			NCL			NCL and local GAAP		
All firms All countries	N	Mean Median	N	Mean/ Median	**Dmn** **Dmd**	N	Mean/ Median	**Dmn** **Dmd**
		2.225		1.371	0.853*		1.324	0.901*
	184	1.474	4953	1.023	0.451*	4660	1.009	0.465*

Table 1, Panel C:

This panel presents comparisons of firm valuations between firms that are listed on the OTC (excluding IAS adopters) to all not cross-listed firms (NCL) in the sample or to not cross-listed firms that use local GAAP.

OTC			NCL			NCL and local GAAP		
All firms All countries	N	Mean Median	N	Mean/ Median	**Dmn** **Dmd**	N	Mean/ Median	**Dmn** **Dmd**
		1.377		1.371	0.006		1.324	0.054
	316	1.121	4953	1.023	0.098*	4660	1.009	0.112*

^, *: represent statistical significance at the 5%, and 1% level, respectively.

Table 2

This table presents results of the Probit models on differences between sample categories. The first (second) column models the differences between IAS (cross-listed) firms and firms that are not cross-listed and use domestic GAAP. The third, fourth and fifth columns model the differences between IAS vs. cross-listed firms, IAS vs. Exchange listed firms, and IAS vs. OTC listed firms. Leverage is the ratio of total liabilities to total assets. Anti-Dir is the anti-director index obtained from Djankov et al. (2005). Legal system is a dummy variable that takes the value of 1 if the firm is from a code law country and 0 otherwise. lassets is the natural logarithm of total assets. Lgnp is the natural logarithm of country GNP. Auditor takes the value of 1 if the firm is audited by a big-four audit firm. Liquidity is the ratio of the value of country shares traded divided by average market capitalization. Ownership is the percentage of closely held shares X 100. Globalization is the proportion of the variance of the firm's returns that is explained by the world market index.

	Model 1 IAS=1	Model 2 CL=1	Model 3 CL=1 IAS=0	Model 4 Exch=1 IAS=0	Model 5 OTC=1 IAS=0
constant	2.5207***	-2.1895***	-3.8806***	-3.4302*	-5.4993***
	0.0012	0.0002	0.0053	0.070	0.0005
Leverage	-0.3522	-0.5383***	-0.8061*	-1.3818**	-0.2185
	0.1304	0.0012	0.0797	0.0174	0.6603
Anti-dir	-0.9833***	0.0444	0.9386***	0.8440***	1.0787***
	0.001	0.5677	0.0001	0.0001	0.0001
Legal system	0.1999	-0.0859	-0.8893**	-1.1186**	-0.7802
	0.4970	0.5681	0.0335	0.0221	0.1098
lassets	0.1715***	0.5277***	0.3587***	0.4580***	0.2657***
	0.0001	0.0001	0.0001	0.0001	0.0003
lgnp	-0.1583***	-0.1639***	0.0315	-0.0620	0.1299
	0.0004	0.0001	0.6951	0.5777	0.1772
Auditor	0.5576***	0.1174	-0.5996***	-0.3901	-0.7154***
	0.0001	0.2334	0.0028	0.1179	0.0016
liquidity	-0.0009	-0.0013**	-0.0004	-0.0011	0.0003
	0.3086	0.0284	0.7977	0.5812	0.8919
Ownership	-0.0023	-0.0081***	-0.0060	-0.0022	-0.0089**
	0.3419	0.0001	0.1168	0.6240	0.0501
Globalization	1.7079**	1.1960*	-1.0196	0.1841	-2.4516
	0.0398	0.0638	0.4495	0.9099	0.2161
No of obs.					
D=1	114	277	277	99	178
D=0	2577	2577	114	114	114
Pseudo R²	0.2866	0.2621	0.4442	0.4838	0.4767

*, **, ***: Significant at the 10%, 5% and 1% level, respectively

Table 3

This table presents regression results estimating the effect of IAS or Cross-listings on firm value controlling for self-selection based on the models in Table 2 (columns 1 and 2). The dependent variable is Tobin's q. Dias (Dcl, Dexch, Dotc) takes the value of 1 if the firm is not cross-listed and uses IAS (Dcl= 1 if the firm is not using IAS and is cross-listed and 0, Dexch=1 if the firm is not using IAS and is listed on a US exchange, Dotc=1 if the firm is not using IAS and is listed on the OTC) and 0 if the firm is non cross-listed and uses domestic GAAP. Anti-Dir is the anti-director index obtained from Djankov et al. (2005). Judeff is judicial efficiency taken from La Porta et al. (1998). Salesgr is real sales growth for year 2000. Ownership is the percentage of closely held shares X 100. AcctStand is an index measuring the quality of accounting standards taken from La Porta et al. (1998). Indq is global industry Tobin's q. Liquidity is the ratio of the value of country shares traded divided by average market capitalization. Globalization is the proportion of the variance of the firm's returns that is explained by the world market index. Capital Intensity is the ratio of property plant and equipment to total sales. lassets is the natural logarithm of total assets. Auditor takes the value of 1 if the firm is audited by a big-four audit firm. Lamda is the inverse Mills ratio in the Heckman model. The results are obtained after outlier elimination based on a cutoff of ± 2.5 of the studentized residual.

	Model 1	Model 2a	Model 2b
Constant	-0.4330**	-0.3048	-0.3432
	0.0318	0.1201	0.0808*
Dias	0.5563***		
	0.0088		
Dcl		0.2625*	
		0.0935	
Dexch			0.3259**
			0.040
Dotc			0.1240
			0.456
Anti-dir	-0.0411	-0.0652***	-0.0652***
	0.1241	0.0013	0.0013
Judeff	-0.0025	-0.0034	-0.0034
	0.7692	0.6974	0.6946
Salesgr	0.2160***	0.2336***	0.2347***
	0.0001	0.0001	0.0001
Ownership	-0.0001	-0.0001	-0.0001
	0.7995	0.8293	0.8219
AcctStand	0.0098***	0.0102***	0.0106***
	0.0004	0.0001	0.0001
Indq	1.1306***	1.1252***	1.1122***
	0.0001	0.0001	0.0001
Liquidity	-0.0005**	-0.0005**	-0.0005**
	0.0152	0.0115	0.0117
Globalization	0.6820***	0.8741***	0.8829***
	0.0033	0.0001	0.0001
Capital Intensity	-0.0001***	-0.0001***	-0.0001***
	0.0001	0.0001	0.0001
lassets	-0.0044	-0.0139	-0.0091
	0.6771	0.4109	0.5935
Auditor	0.1191***	0.1681***	0.1668***
	0.0007	0.0001	0.0001
Lambda	-0.1926*	-0.0388	0.0041
	0.0811	0.6492	0.9620
N	2626	2785	2785
Adjusted R²	0.2248	0.2222	0.2237

*, **, ***: Significant at the 10%, 5% and 1% level, respectively

Table 4

This table presents regression results estimating the relative valuation benefits of IAS to those of Cross-listed firms controlling for self-selection based on models in Table 2 (columns 3, 4, 5). The dependent variable is Tobin's q. CL (EXCH; OTC) takes the value of 1 if the firm is cross-listed in the US (cross-listed on a US exchange; cross –listed on the OTC), and O if the firm uses IAS. Anti-Dir is the anti-director index obtained from Djankov et al. (2005). Judeff is judicial efficiency taken from La Porta et al. (1998). Salesgr is real sales growth for year 2000. Ownership is the percentage of closely held shares X 100. AcctStand is an index measuring the quality of accounting standards taken from La Porta et al. (1998). Indq is global industry Tobin's q. Liquidity is the ratio of the value of country shares traded divided by average market capitalization. Globalization is the proportion of the variance of the firm's returns that is explained by the world market index. Capital Intensity is the ratio of property plant and equipment to total sales. lassets is the natural logarithm of total assets. Auditor takes the value of 1 if the firm is audited by a big-four audit firm. Lamda is the inverse Mills ratio in the Heckman model. The results are obtained after outlier elimination based on a cutoff of ± 2.5 of the studentized residual.

	Model 1	**Model 2**	**Model 3**
Constant	1.6342	1.5370	1.4877
	0.1904	0.4355	0.2884
CL	-0.6496*		
	0.0721		
EXCH		-0.0237	
		0.9665	
OTC			-0.8680*
			0.0540
Anti-dir	-0.3307*	-0.3541	-0.1985
	0.055	0.1255	0.3651
Judeff	0.0046	-0.0210	0.0385
	0.9101	0.7827	0.3084
Salesgr	0.6095***	0.7601***	0.3897***
	0.0001	0.0015	0.0082
Ownership	-0.0016	-0.0036	-0.0002
	0.4847	0.2765	0.9478
AcctStand	0.0172	0.0343*	0.0047
	0.1036	0.0525	0.6640
Indq	0.8955***	0.7485**	0.9684***
	0.0001	0.0278	0.0002
Liquidity	-0.0003	-0.0007	0.0005
	0.7950	0.7158	0.6093
Globalization	1.8420**	3.5228***	2.3616**
	0.0366	0.0031	0.0190
lassets	-0.1399***	-0.2090**	-0.1206**
	0.0094	0.0173	0.0322
Auditor	0.1620	0.1370	0.0589
	0.1797	0.4428	0.6925
Lambda	-0.3103*	-0.2458	-0.2826
	0.0885	0.3425	0.2241
N	381	206	285
Adjusted R²	0.1253	0.1791	0.1631

*, **, ***: Significant at the 10%, 5% and 1% level, respectively

Table 5
This table presents regression results estimating the effects of bonding and investor protection on firm value for IAS or Cross-listed firms, controlling for self-selection based on the models in Table 2 (columns 1 and 2). The dependent variable is Tobin's q. Dias (Dcl, Dexch, Dotc) takes the value of 1 if the firm is not cross-listed and uses IAS (Dcl= 1 if the firm is not using IAS and is cross-listed and 0, Dexch=1 if the firm is not using IAS and is listed on a US exchange, Dotc=1 if the firm is not using IAS and is listed on the OTC) and 0 if the firm is non cross-listed and uses domestic GAAP. Anti-Dir is the anti-director index obtained from Djankov et al. (2005). Judeff is judicial efficiency taken from La Porta et al. (1998). Salesgr is real sales growth for year 2000. Ownership is the percentage of closely held shares X 100. AcctStand is an index measuring the quality of accounting standards taken from La Porta et al. (1998). Indq is global industry Tobin's q. Liquidity is the ratio of the value of country shares traded divided by average market capitalization. Globalization is the proportion of the variance of the firm's returns that is explained by the world market index. Capital Intensity is the ratio of property plant and equipment to total sales. lassets is the natural logarithm of total assets. Auditor takes the value of 1 if the firm is audited by a big-four audit firm. Lamda is the inverse Mills ratio in the Heckman model. The results are obtained after outlier elimination based on a cutoff of ± 2.5 of the studentized residual.

	Model 1		Model 2		Model 3
Constant	-0.4773 (0.0219)	Constant	-0.1707 (0.4160)	Constant	-0.1698 (0.4170)
Dias	0.5679 (0.6070)	Dias		Dias	
Dcl		Dcl	-0.6190 (0.2063)	Dcl	
Dexch		Dexch		Dexch	-0.8033 (0.2435)
Dotc		Dotc		Dotc	-0.6365 (0.3421)
Anti-dir	-0.0203 (0.4836)	Anti-dir	-0.0728*** (0.0008)	Anti-dir	-0.0724*** (0.0008)
Judeff	0.0001 (0.9877)	Judeff	-0.0024 (0.7891)	Judeff	-0.0025 (0.7767)
Salesgr	0.2163 (0.0001)	Salesgr	0.2156*** (0.0001)	Salesgr	0.2155*** (0.0001)
Ownership	-0.00007 (0.9022)	Ownership	-0.0001 (0.8165)	Ownership	-0.0002 (0.7749)
AcctStand	0.00935 *** (0.0010)	AcctStand	0.0088*** (0.0020)	AcctStand	0.0088*** (0.0020)
Indq	1.1345 *** (0.0001)	Indq	1.1295*** (0.0001)	Indq	1.1294*** (0.0001)
Liquidity	-0.0005** (0.0212)	Liquidity	-0.0005** (0.0110)	Liquidity	-0.0005** (0.0103)
Globalization	0.7229 *** (0.0022)	Globalization	0.8452*** (0.0002)	Globalization	0.8557*** (0.0002)
Capital intensity	-0.0001*** (0.0001)	Capital intensity	-0.0001*** (0.0001)	Capital intensity	-0.0001*** (0.0001)
lassets	-0.0116 (0.2917)	lassets	-0.0183 (0.2910)	Lassets	-0.0176 (0.3109)
Auditor	0.1043 *** (0.0055)	Auditor	0.1555 *** (0.0001)	Auditor	0.1566*** (0.0001)
Ownership*Dias	-0.0020 (0.4061)	Ownership*Dcl	-0.0005 (0.8006)	Ownership*Dexch	-0.0002 (0.9355)
				Ownership*Dotc	0.0002 (0.9369)
Salesgr*Dias	0.4937 *** (0.0030)	Salesgr*Dcl	0.3628 ** (0.0137)	Salesgr*Dexch	0.9876*** (0.0001)
				Salesgr*Dotc	-0.0835 (0.6622)
Anti-dir*Dias	0.2819 (0.1192)	Anti-dir*Dcl	0.0763 (0.2066)	Anti-dir*Dexch	0.0686 (0.4403)
				Anti-dir*Dotc	0.0468 (0.5638)
Judeff*Dias	0.050 (0.4029)	Judeff*Dcl	-0.0161 (0.6242)	Judeff*Dexch	0.0027 (0.9660)
				Judeff*Dotc	-0.0083 (0.8275)
Auditor*Dias	-0.6069*** (0.0001)	Auditor*Dcl	0.0612 (0.5060)	Auditor*Dexch	0.0916 (0.5353)
				Auditor*Dotc	0.0592 (0.6131)
Liquidity*Dias	0.0093 *** (0.0036)	Liquidity*Dcl	-0.0003 (0.6413)	Liquidity*Dexch	-0.0018 (0.1252)
				Liquidity*Dotc	0.0002 (0.8006)
AcctStand_Dias	-0.010 (0.5791)	AcctStand_Dcl	0.0125 (0.1171)	AcctStand_Dexch	0.0246* (0.0562)
				Acct Stand_Dotc	0.0029 (0.7834)
Indq*Dias	-0.5019* (0.0654)	Indq*Dcl	-0.0276 (0.8905)	Indq*Dexch	-0.5540** (0.0350)
				Indq*Dotc	0.5335 (0.1297)
Lambda	-0.3867*** (0.0076)		-0.0929 (0.2959)		-0.0768 (0.3965)
N	2628		2784		2784
Adjusted R²	0.2325		0.2271		0.2335

Table 6

This table presents regression results estimating the relative effects of bonding and investor protection on firm value for IAS or Cross-listed firms, controlling for self-selection based on in Table 2 (columns 3, 4, 5). The dependent variable is Tobin's q. CL (EXCH; OTC) takes the value of 1 if the firm is cross-listed in the US (cross-listed on a US exchange; cross –listed on the OTC), and O if the firm uses IAS. Anti-Dir is the anti-director index obtained from Djankov et al. (2005). Judeff is judicial efficiency taken from La Porta et al. (1998). Salesgr is real sales growth for year 2000. Ownership is the percentage of closely held shares X 100. AcctStand is an index measuring the quality of accounting standards taken from La Porta et al. (1998). Indq is global industry Tobin's q. Liquidity is the ratio of the value of country shares traded divided by average market capitalization. Globalization is the proportion of the variance of the firm's returns that is explained by the world market index. Capital Intensity is the ratio of property plant and equipment to total sales. lassets is the natural logarithm of total assets. Auditor takes the value of 1 if the firm is audited by a big-four audit firm. Lamda is the inverse Mills ratio in the Heckman model. The results are obtained after outlier elimination based on a cutoff of $\pm$ 2.5 of the studentized residual.

Model 1			Model 2			Model 3		
constant	1.7682		constant	1.0499		constant	1.0111	
	(0.3677)			(0.6749)			(0.5585)	
CL	-1.2118							
	(0.5101)							
			EXCH	-0.5139				
				(0.8272)				
						OTC	-1.4000	
							(0.3433)	
Anti-dir	-0.1392		Anti-dir	-0.1094		Anti-dir	-0.0692	
	(0.6113)			(0.7585)			(0.7856)	
Judeff	0.0561		Judeff	0.1021		Judeff	0.0714	
	(0.5349)			(0.3382)			(0.2911)	
Salesgr	0.5880**		Salesgr	0.4746		Salesgr	0.6903***	
	(0.0199)			(0.1107)			(0.0003)	
Ownership	-0.0035		Ownership	-0.0031		Ownership	-0.0040	
	(0.3378)			(0.4634)			(0.2014)	
AcctStand	-0.0047		AcctStand	-0.0018		AcctStand	-0.0046	
	(0.8660)			(0.9557)			(0.8243)	
Indq	0.5737		Indq	0.5558		Indq	0.5528*	
	(0.1686)			(0.2581)			(0.0769)	
Liquidity	0.0087*		Liquidity	0.0096		Liquidity	0.0088**	
	(0.0825)			(0.1047)			(0.0200)	
Globalization	3.2838***		Globalization	3.5107***		Globalization	1.4427	
	(0.0002)			(0.0034)			(0.1525)	
lassets	-0.1390**		lassets	-0.1529*		lassets	-0.0713	
	(0.0201)			(0.0843)			(0.2518)	
Auditor	-0.2619		Auditor	-0.2139		Auditor	-0.3199	
	(0.2260)			(0.3782)			(0.1305)	
Lambda	-0.1735		Lambda	-0.0712		Lambda	-0.0673	
	(0.3983)			(0.7863)			(0.8018)	
Salesgr*CL	0.3153		Salesgr*EXCH	1.2583**		Salesgr*OTC	-0.6702**	
	(0.3384)			(0.0136)			(0.0219)	
Ownership*CL	-0.0024		Ownership*EXCH	-0.0047		Ownership*OTC	0.0006	
	(0.6057)			(0.4670)			(0.8970)	
Anti-dir*CL	-0.2184		Anti-dir*EXCH	-0.2882		Anti-dir*OTC	-0.0295	
	(0.4121)			(0.3792)			(0.8922)	
Judeff*CL	-0.0710		Judeff*EXCH	-0.1681		Judeff*OTC	-0.0403	
	(0.4925)			(0.2822)			(0.6191)	
Auditor*CL	0.6521***		Auditor*EXCH	0.7399**		Auditor*OTC	0.5027**	
	(0.0068)			(0.0367)			(0.0141)	
AcctStand*CL	0.0298		AcctStand*EXCH	0.0561		AcctStand*OTC	0.0122	
	(0.3250)			(0.1686)			(0.6095)	
Indq*CL	0.7982		Indq*EXCH	0.2678		Indq*OTC	1.0475**	
	(0.1211)			(0.6939)			(0.0427)	
Liquidity*CL	-0.0101**		Liquidity*EXCH	-0.0140**		Liquidity*OTC	-0.0086**	
	(0.0498)			(0.0266)			(0.0274)	
N	381			206			284	
Adjusted R²	0.2173			0.2160			0.1956	