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Disclosure and Cross-listing: Evidence from Asia-Pacific Firms

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Disclosure and cross-listing: evidence from Asia-Pacific firms

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Abstract:

Purpose – The purpose of this paper is to examine whether both country disclosure environment and firm-level disclosures are associated with cross-listing in the USA or London or otherwise.

Design/methodology/approach – The authors test the association using a sample of Asia-Pacific firms covered in the Standard and Poor's, 2001/2002 disclosure survey, capturing the country-level disclosure using the Center for International Financial Analysis and Research (CIFAR) score. The firm-level disclosure is measured using the S&P disclosure score. The authors conduct a logistic regression analysis and a two-stage least squares analysis to examine whether the outcome, cross-listing or not, is associated with the country disclosure environment and firm-level disclosures.

Findings – The authors find that Asia-Pacific firms from weak disclosure environments and having higher firm-level disclosure scores are more likely to seek listing in the USA. Further, the paper provides initial evidence that these Asia-Pacific firms are as likely to seek listing in London as in the USA. No significant difference was found in S&P scores between US and London cross-listings after controlling for the effects of other variables. This suggests that firms that cross-list in London present similar disclosure levels to firms that cross-list in the USA.

Originality/value – The paper's findings contribute to the cross-listing literature on disclosure by showing that the interaction between firm-level disclosure and country-level disclosure has an

impact on whether a firm cross-lists in the USA/London or not. The authors' comparison of US cross-listings versus London cross-listings provides the first evidence that disclosures of US and London cross-listings are not significantly different.

Introduction

This paper examines the association between disclosures and cross-listing using a sample of Asia-Pacific firms. Foreign companies have a long history of seeking a US satisfy their capital demand (Reese and Weisbach, 2002; Lins *et al.* , 2005). Cross-listing improves cross-listed firms' information environment. More analysts follow these firms than non-cross-listed firms and analysts provide more accurate forecasts for these firms (Baker *et al.*, 2002; Lang *et al.*, 2003). Moreover, cost of capital decreases for cross-listed firms (Baker *et al.*, 2002). Cross-listed firms enjoy a valuation premium (Doidge *et al.*, 2004). Benefits such as these attract firms to cross-list in the USA. However, these benefits come at the cost of increased disclosures. Cross-listing in the USA requires that foreign firms meet the disclosure requirements of the US capital market. Prior literature (Mittoo, 1992) shows that the major cost of cross-listing is from complying with the disclosure requirements of the Securities Exchange Commission (SEC). This implies that firms that already provide high levels of disclosure face lower incremental compliance cost to cross-list in the USA. It will be interesting to examine whether firms' disclosure levels are associated with their cross-listing choices given the disclosure environment at home. Specifically, whether the home country Center for International Financial Analysis and Research (CIFAR) score and a firm's Standard & Poor (S&P) disclosure score and their interaction are associated with the firm being cross-listed in the USA, London, or otherwise.

Our paper contributes to the existing literature by focusing on a sample of Asia-Pacific firms. Prior studies show that the location of and the familiarity to the firm affect investor interest in the firm (French and Poterba, 1991; Tesar and Werner, 1995; Coval and Moskowitz, 1999; Grinblatt and Keloharju, 2001; Ivkovic and Weisbenner, 2005; Chan *et al.*, 2005). Selecting a sample of firms from one region, we are able to control for regional and cultural influences that may affect cross-listing choices. Second, we examine cross-listings in London as well as in the USA. Prior studies (Hope

et al., 2007) focus exclusively on cross-listings in the USA. However, London is also a major world financial market and firms seek cross-listing there as well. Our data allow us to investigate whether there are differences between cross-listings in London and in the USA. Third, we extend prior research by examining the interaction between firm- and country-level disclosures. Many prior studies examine the difference in the country-level disclosure of firms that cross-list and those that do not cross-list in the USA. The country-level disclosure research assigns a single score to all firms of a country. It assumes that all firms from the country provide the same level of disclosure. However, this is not necessarily true. The S&P disclosure scores, a firm-level disclosure measure, indicate that firms from the same country present various levels of disclosure. For example, S&P concludes that the disclosure scores of Korean firms are spread between 5 and 62.89 (Table, panel B). Thus, it is important to examine both country- and firm-level disclosures in cross-listing decisions.

Following prior literature (Doidge *et al.*, 2004; Hope *et al.*, 2007), we use CIFAR scores as the proxy for country disclosure environment. We further define countries with an above (below) median CIFAR score a high (low) disclosure environment. Our sample includes 416 firms with both CIFAR score and S&P 2001/2002 firm score. As of June 2005, 46 per cent of them are cross-listed in the USA and/or London. Specifically, 130 are cross-listed in the USA and 103 in London. We use a logistic regression model to examine the association between disclosures and cross-listing. As expected, we find that the association between cross-listing and firm-level disclosure is affected by the home country disclosure environment. We find that Asia-Pacific firms from weak disclosure environments are more likely to seek cross-listing in the USA. We also find no significant difference in the S&P scores between US and London cross-listings after controlling for the effects of other variables.

[Table 1]

We conclude that firms that cross-list in London provide similar levels of disclosure as firms that cross-list in the USA. Our comparison of US cross-listings versus London cross-listings provides the first evidence that disclosures of US and London cross-listings are not significantly different. This is consistent with prior

research that UK firms have quality financial reporting. Cheng and Lin (2009) find that UK firms choose not to recognize good news unless it has been supported by both superior market performance and the industry norm.

While we test for the impact of S&P disclosure on cross-listing, it is also possible that cross-listing may affect S&P disclosure. Hence, we run two-stage least squares regressions to control for the possible problem of endogeneity. The main results show that the CIFAR score is not significant but S&P score is higher for firms cross-listed in the USA, and S&P scores have a greater positive impact on the choice of cross-listing in the USA for firms from low CIFAR score countries than firms from high CIFAR score countries. This suggests that these cross-listing firms differentiate themselves through having higher firm-level disclosures. As a sensitivity test, we reclassify our sample firms as exchange-listed or not exchange-listed. Our inferences are not changed. Therefore, we conclude that our finding can be generalized to both cross-listing and exchange listing. We further examine the three components of the S&P scores. Of the three component scores, the financial transparency and information disclosure score significantly interacts with the country disclosure environment in explaining cross-listing.

The remainder of this paper is organized as follows. Section 2 reviews prior literature and presents our hypothesis. Section 3 describes our model and sample. The results are reported in Section 4. Finally, Section 5 concludes the paper.

2. Literature review and hypothesis

Prior research suggests that foreign firms benefits from cross-listing. Baker *et al.* (2002) report that firms attract more analysts after they are cross-listed and they find that cross-listed firms experience a decrease in cost of capital. Lang *et al.* (2003) also observe an increase in analyst following for cross-listed firms. They find that analyst forecasts are more accurate for cross-listed firms than for non-cross-listed firms. The change in analyst following and forecast accuracy has a positive effect on market valuation. Doidge *et al.* (2004) find that the Tobin's Q of cross-listed firms is 16.5 per cent higher than that of non-cross-listed firms from the same country. In addition, the valuation premium is higher for firms that list on the major US exchanges and lower for firms that list over-

the-counter or placed privately. Cross-listing enhances firms' ability to issue equity, which relaxes the constraints on their capital (Reese and Weisbach, 2002; Lins *et al.*, 2005).

Many of the benefits above relate to disclosure. Studies on firm-level disclosures show that higher levels of disclosure reduce the cost of following the firm (Merton, 1987), estimation risk (Barry and Brown, 1985), and/or information asymmetry (Glosten and Milgrom, 1985). Firms in Southeast Asia with high disclosure quality outperformed firms with low disclosure quality during the 1997-1998 financial crisis (Mitton, 2002). Foreign firms that adopt accounting methods that comply with US Generally Accepted Accounting Principles attract more US institutional investors and exhibit higher US ownership (Bradshaw *et al.*, 2004). Companies in emerging markets work on financial reporting and disclosure, trying to reduce the barriers to accessing global equity markets (Frost *et al.*, 2006).

Research shows that the cost associated with increasing disclosure is a concern for cross-listing decisions. Mittoo's (1992) survey reveals the main costs of cross-listing perceived by Canadian firms: meeting the SEC reporting/compliance requirements, legal/accounting/investment banking fees, and listing fees. Saudagaran and Biddle (1992) examine cross-listings on nine major exchanges. These countries are ranked based on their disclosure levels. The disclosure of a firm is proxied by the ranking of its home country. They find that firms are more likely to list on exchanges with lower disclosure requirements than their home country. Similar findings are obtained in Pagano *et al.* (2001) who examine the cross-listing decisions of European public firms between 1986 and 1997. They find that European firms are less likely to cross-list in target countries that have higher accounting standards. Miller (1999) compares the accounting standards, SEC registration, and costs of listing in the USA. Firms on the major US exchanges face higher costs and more stringent disclosure requirements. He shows that only 29 per cent of foreign firms chose to list on the major US exchanges during 1985-1995.

If firms are concerned about the cost of increased disclosure, we expect that firms with a high level of disclosure are more likely to cross-list. This is because the incremental cost of disclosure is less for them than for firms with a low disclosure level. A positive association between firm-level disclosure and the probability of

cross-listing should be observed. However, Hope *et al.* (2007) report that the firm-level disclosure is positively related to exchange listing but not significantly related to the broader cross-listing. Frost *et al.* (2006, table 8) do not find an association between firm-level disclosure and the probability of cross-listing versus non-cross-listing, the probability of cross-listing in the USA versus cross-listing in the UK or not cross-listing, or the probability of exchange listing in the USA or trading under Rule 144a in the USA versus otherwise. We expect this phenomenon to be explained by the interaction between country- and firm-level disclosures.

Coffee (1999, 2002) proposes the bonding theory to explain cross-listing. The bonding theory suggests that firms commit to less expropriation of minority shareholders by voluntarily subjecting themselves to higher disclosure standards and stronger monitoring. Cross-listing in the US market, a market widely recognized as having high disclosure requirements and strong public scrutiny, demonstrates the commitment. Reese and Weisbach (2002) report that cross-listing firms from countries with weak investor protection increase their equity issues more than their counterpart from countries with strong investor protection do. Doidge *et al.* (2004) find that cross-listing firms enjoy a higher valuation premium than firms from the same country that do not cross-list. The valuation premium is higher (lower) where the level of investor protection in the firm's home country is lower (higher). Separating the bonding effect of disclosure from that of investor rights, Hope *et al.* (2007) find that firms from weaker disclosure countries are more likely to cross-list in the USA. The valuation premium to exchange-listing firms is higher for firms from a high disclosure country than those from a low disclosure country. These results suggest that the firm's home country investor protection and disclosure environment matter.

If a firm's home country already requires a high level of disclosure and the purpose of cross-listing in the USA is to show a commitment to protect minority investors, the benefits from bonding will be less for firms from a high disclosure country than for firms from a low disclosure country. The positive association between firm-level disclosure and the probability of cross-listing in the USA will be moderated by the firm's home country disclosure level. Therefore, we expect there is an interaction between firm- and country-level disclosures. Our test hypothesis is as follows:

> *H1.* Firms from weak disclosure environments and with high firm-level disclosure scores are more likely to cross-list in the USA.

3. Model and sample

To examine our hypothesis on the association between cross-listing in the USA and the interaction of country-level disclosure environment and firm-level disclosure scores, we run the following model:

$$
\begin{aligned}
USind_i = \alpha_0 &+ \beta_1 CIFAR_i + \beta_2 S\&Pscore_i + \beta_3 CIF_i * S\&Pscore_i + \beta_4 Emerging_i \\
&+ \beta_5 Anti\text{-}dir_i + \beta_6 Judicial_i + \beta_7 French_i + \beta_8 German_i + \beta_9 Liquidity_i \quad (1) \\
&+ \beta_{10} LogGNP + \beta_{11} Leverage_i + \beta_{12} Growth_i + \beta_{13} Size_i + \varepsilon_i
\end{aligned}
$$

where:

Usind	is an indicator variable that equals 1 if a firm is cross-listed in the USA, and 0 otherwise.
CIFAR	is the disclosure score for the country in which the firm operates, data obtained from Hope *et al.* (2007).
S&P score	is the firm-level disclosure score based on the 2000 annual report.
CIF	is an indicator variable that equals 1 if the home country has a CIFAR score above the median, and 0 otherwise.
Emerging	is an indicator variable that equals 1 if the home country is an emerging economy, and 0 otherwise.
Anti-dir	is a measure of anti-director rights in the home country, data obtained from La Porta *et al.* (1998).
Judicial	is a measure of judicial rights in the home country, data obtained from La Porta *et al.* (1998).
French	is an indicator variable that equals 1 if the home country's law system is French based, and 0 otherwise.
German	is an indicator variable that equals 1 if the home country's law system is German based, and 0 otherwise; the base law system is English.

Liquidity	is the liquidity of the capital market in the home country, data obtained from Hope *et al.* (2007).
LogGNP	is the logarithm of the gross national product of the country in which the firm operates.
Leverage	is the ratio of liabilities to stockholders' equity of the firm.
Growth	is measured as the change in the assets of the firm in year t.
Size	is measured as the logarithm of sales of the firm.

The *S&P score* measures the disclosure level of the sample firm by S&P (Patel *et al.*, 2002). The S&P 2001/2002 survey examines the annual reports (both in English and the local language) of the company for the year 2000. It assigns each firm a disclosure score based on the presence of the applicable information items. These 98 information items cover ownership structure and investor relations (28 items, *Sub score 1*), financial transparency and information disclosure (35 items, *Sub score 2*), and board and management structure and process (35 items, *Sub score 3*). As high disclosure level firms incur low incremental cost to cross-list, we expect *S&P score* to be positively associated with *USind*. The CIFAR score measures a country's disclosure environment. *CIF* is an indicator variable that equals 1 if the CIFAR score is above the median, and 0 otherwise. Firms from countries with weak disclosure environments are more likely to cross-list in the USA (Hope *et al.*, 2007). In accordance with our hypothesis, *CIF * S&P score* will be negatively associated with *USind*. *Emerging* is a variable that indicates whether the country is an emerging economy as defined by the International Monetary Fund (2007) in its *World Economic Outlook* report. We include this variable in the model because previous research shows that firms from emerging markets and firms from developed markets are different. Cross-listing to gain access to external financial markets is more important to the former than to the latter (Lins *et al.*, 2005). *Anti-Dir* and *Judicial* are scores that measure protection of minority interests (La Porta *et al.*, 1998). Firms in countries with weak protection of minority interests are more likely to seek cross-listing to signal quality. Firms under *French* -or *German* -based law systems are less likely to seek cross-

listing in the USA because their public enforcement is not as effective to protect investor rights as private enforcement in the common law system (La Porta *et al.*, 2006). We use *Liquidity* as a proxy for the development of the home country capital market. We expect the coefficient on *Liquidity* to be positive. Firms that come from weak disclosure environments are also expected to have lower *GNP*. This controls for the influence of home country economic conditions. *Leverage, Growth* and *Size* are firm-specific characteristics. We expect cross-listed firms to have lower leverage, higher growth and to be larger in size.

Table I, panel A reports how we obtained our sample. The sample starts with the S&P 2001/2002 disclosure survey with firms from Asia-Pacific, emerging Asia, and Japan. In total, we have 502 firms, including 33 firms counted twice in the survey. We further exclude 33 firms from Bermuda, China, and Indonesia that do not have CIFAR scores, and 20 firms with missing data. We next check firm cross-listing status from Bank of New York, Citibank and JP Morgan American Depositary Receipt (ADR) datasets, and NYSE, NASDAQ, OTC, and London Stock Exchange web sites. As of June 2005, we have 130 and 103 firms listed in the USA and London, respectively; 42 of them are listed in both the USA and London. The remaining 225 firms are not cross-listed in the USA or London. A limitation of our sample is that these firms are pre-selected by S&P, but together these firms represent 67-80 per cent of their home country's market capitalization (Patel *et al.*, 2002; Standard & Poor's, 2007a, b). Therefore, these firms are the most likely to access foreign capital markets.

Table I, panel B reports the range of the S&P disclosure scores, CIFAR scores, number of cross-listed firms, and the distribution of the sample by country. The lowest S&P score is 5 for a firm in Korea, and the highest score is 77 for a firm in Singapore. In this sample, Taiwan has the lowest CIFAR score (58) and Australia has the highest CIFAR score (80). More firms cross-list in the USA than in London. Countries that have a fair number of firms cross-listed in London are Japan, India, and Korea. We extend prior studies to examine whether firm-level disclosure scores, in addition to CIFAR scores, may explain firm's cross-listing choice.

Table II provides descriptive statistics for firms cross-listed in the USA (panel A), the London Stock Exchange (Panel B), and non-cross-listed firms (Panel C). The statistics show that firms

cross-listed in the USA have a lower mean CIFAR score (69.431) and S&P score (47.448) than firms cross-listed in London (69.563 and 51.880, respectively). Non-cross-listed firms have a mean CIFAR score of 70.373 and S&P score of 45.548.

[Table II]

The non-cross-listed group has a higher proportion of firms from emerging economies than the cross-listed groups. US cross-listings and London cross-listings exhibit higher investor protection rights (anti-director rights and judicial rights) at home than non-cross-listed firms. The US cross-listings have the most liquid home capital market. Firms cross-listed in the USA have lower leverage, higher growth, and are larger in size than non-cross-listed firms.

4. Results

Table III, panel A presents the correlation analyses between the indicator variable of US listing and the explanatory variables. The Pearson (Spearman) correlation coefficients are in the upper (lower) diagonal. Both sets of coefficients are qualitatively similar. We report the results based on the Spearman correlation coefficients. For our sample, *Anti-dir* (coefficient=0.114, p-value=0.020) is positively correlated with *USind* , consistent with [7], [8] Coffee (1999, 2002). The correlation coefficient between *CIFAR* and *USind* is negative but not significant (coefficient=-0.017, p -value=0.726). The firm-level S&P score is positively but not significantly correlated with *USind* (coefficient=0.058, p -value=0.240). Other variables that significantly correlate with *USind* are *Emerging* (coefficient=-0.090, p -value=0.068), *Growth* (coefficient=0.219, p -value < 0.0001), and *Size* (coefficient=0.328, p -value < 0.0001). They indicate that firms listed in the USA tend to have higher anti-director rights, are less likely to be from emerging economies, are growth firms, and larger in size.

Table III, panel B focuses on the Pearson (upper diagonal) and Spearman (lower diagonal) correlation analyses between the indicator variable of London listing and the explanatory variables. The correlations show that *Judicial* and *S&P score* are significantly and positively correlated with the London listing indicator. Firms that cross-list in London are also less likely to be from emerging economies (coefficient = -0.274, p -value = <0.0001). They show high leverage (coefficient = 0.161, p -value = 0.003).

In Table IV [Figure omitted. See Article Image.], we present the test of differences in CIFAR scores, S&P disclosure scores, and other variables by cross-listing choice. Panel A compares firms cross-listed only in the USA (n =88) or in London (n =61); we eliminate firms that are cross-listed on both the US and London exchanges. The mean CIFAR score of firms cross-listed in the USA (69.682) is lower but not significantly different than that of firms cross-listed in London (70.016). The univariate analysis shows that the mean S&P score of US cross-listings (45.691) is lower than that of London cross-listings (52.395). Other variables that are significantly different between US and London listings are *Emerging*, *Judicial*, *Liquidity*, *GNP*, *Leverage*, *Growth* and *Size*. London cross-listings consist of firms from countries with higher judicial rights, less liquid capital market, and higher GNP. These firms present higher leverage, lower growth, and are smaller in size than those cross-listed in the USA.

[Table III]

[Table IV]

Panel B compares firms cross-listed in the USA (n =130) and non-cross-listed firms (n =225). Firms that cross-list in both the USA and London are included in the US sample. The mean CIFAR score of US cross-listings (69.431) is lower but not significantly different than the mean CIFAR score of non-cross-listed firm (70.373). However, US cross-listings have higher firm-level S&P disclosure scores than non-cross-listed firms (47.448 versus 45.548). Significant differences in several other variables are also observed. The non-cross-listed firms have a higher percentage of firms coming from the emerging economies than those cross-listed in the USA (0.440 versus 0.269). US cross-listings experience higher growth, are larger in size, and have better investor protection at home than non-cross-listed firms.

Logistic regression
In Table V, panel A, column (I) examines the association between *USind* and country CIFAR score. This model controls for the effects of other country-level variables such as *Emerging*, *Anti-dir*, *Judicial*, *French*, *German*, *Liquidity*, and *LogGNP*. The coefficient on CIFAR score is significantly negative (β_1 =-0.122, t -statistic =

-2.854), consistent with Hope *et al.* (2007) that firms with low country disclosure scores are more likely to list in the USA. It suggests that cross-listing in the USA may be a means for firms from low CIFAR score countries to signal their quality. Other variables significantly associated with US cross-listing are *Emerging* (β_4 =-3.515, t -statistic =-5.404) and *German* (β_8 = -3.081, t -statistic =-3.271). They suggest that firms cross-listed in the USA are less likely to be from emerging economies, and are less likely to be from German-based law systems.

Model (1) in column (II) examines the association between US listing (*USind*) and CIFAR score, firm S&P disclosure score, and the interaction of CIFAR indicator and S&P score (*CIF*S&P score*). The coefficient on CIFAR score is significantly negative (β_1 =-0.297, t -statistic =-2.664). The coefficient on S&P score is not significant. The coefficient on *CIF* S&P score* is 0.07 (t -statistic =2.558). Firms from emerging economies and German-based law systems are less likely to cross-list in the USA. Firms that cross-list in the USA have lower leverage and are larger than firms not cross-listing in the USA. The results here partially support our hypothesis that firms from a weak disclosure environment (low CIFAR score) are more likely to cross-list, but do not indicate a significant effect of firm-level disclosure score (S&P score). This may be due to the endogeneity between cross-listing and S&P score. In Table VI, we conduct a simultaneous equation system analysis to control for endogeneity.

In Table V, panel B, we examine whether there are differences in disclosures between US cross-listings and London cross-listings. We run a logistic regression analysis of model (1) with an indicator variable for US versus London cross-listings. After controlling for the effect of other variables, the results show no significant difference in CIFAR and S&P scores between US and London cross-listings. We conclude that firms that cross-list in London have similar disclosure levels as firms that cross-list in the USA. Unlike prior literature (Lang *et al.*, 2003; Hope *et al.*, 2007) that primarily examines US cross-listings and non-US cross-listings, our comparison of US cross-listings versus London cross-listings provides the first evidence that disclosures of US and London cross-listings are not significantly different.

Simultaneous equations

Thus, far, our analysis is premised on firm disclosure affecting cross-listing choice. However, cross-listing in the USA may subsequently affect a firm's disclosure score. That is, there is endogeneity between cross-listing and disclosure score. We run our analysis again using a two-stage least squares regression with an instrumental variable estimator for the firm disclosure score. Our simultaneous equations consist of our model (1) repeated here:

[Table V]

[Table VI]

$$USind_i = \alpha_0 + \beta_1 CIFAR_i + \beta_2 S\&Pscore_i + \beta_3 CIF_i^* S\&Pscore_i + \beta_4 Emerging_i$$
$$+ \beta_5 Anti-dir_i + \beta_6 Judicial_i + \beta_7 French_i + \beta_8 German_i + \beta_9 Liquidity_i \quad (1)$$
$$+ \beta_{10} LogGNP + \beta_{11} Leverage_i + \beta_{12} Growth_i + \beta_{13} Size_i + \varepsilon_i$$

and:

$$S\&Pscore_i = \alpha_0 + \beta_1 USind_i + \beta_2 CIFAR_i + \beta_3 Anti-dir_i + \beta_4 Judicial_i$$
$$+ \beta_5 French + \beta_6 German + \beta_7 Liquidity_i + \beta_8 LogGNP + \varepsilon_i \quad (2)$$

We control the effect that cross-listing in the USA may impact the S&P firm disclosure scores. We regress S&P 2001/2002 disclosure score on an indicator variable that equals 1 if the firm is cross-listed in the USA, and 0 otherwise[1]. Table VI presents the results from the two-stage least squares regression. Panel A presents the results of model (1). Our results here show that CIFAR score is not significant but S&P score is significantly positive. S&P score is higher for firms cross-listed in the USA (β_2 =0.380, t -statistic =2.55) and S&P scores have a greater positive impact on the choice of cross-listing in the USA for firms from low CIFAR score countries than firms from high CIFAR score countries (β_3 =-0.083, t -statistic =-1.91). Firms cross-listing in the USA have higher anti-director rights and capital market liquidity at home. Panel B presents the results of model (2). The coefficient on US cross-listing indicator variable is significantly positive (coefficient =3.669, t -statistic =3.72). Cross-listing in the USA impacts the S&P scores in 2001/2002. CIFAR score also positively impacts S&P score. The anti-director rights score is negatively associated with the disclosure score and the judicial right score is not significant. Disclosure scores are lower for firms that follow the French-based law system than the English-based system. They are higher for firms from a less liquid home market and from a high GNP country.

Additional analyses

Exchange listing

We next run a two-stage analysis with our observations classified as exchange-listed or not. Exchange listing imposes stricter disclosure requirements than cross-listing which includes over-the-counter and pink sheets. The results remain qualitatively similar. In Table VII under model (1a), CIFAR score (β_1 =0.347, t -statistic =3.11) and S&P score (β_2 =0.225, t -statistic =3.80) are higher for firms exchange-listed in the USA. S&P scores have a greater positive impact on the choice of exchange listing in the USA for firms from low CIFAR score countries than firms from high CIFAR score countries (β_3 =-0.109, t -statistic =-3.31). The results support our hypothesis.

Components of S&P score

We also run the two-stage analysis with components of the S&P disclosure score. The three components are: *Sub score 1* , the firm-level disclosure score on ownership structure and investor relations; *Sub score 2* , the firm-level disclosure score on financial transparency and information disclosure; and *Sub score 3* , the firm-level disclosure score on board management structure and processes. The results are presented in Table VII under models (1b)-(d), respectively. The results remain similar for *Sub score 2* (β_1 =0.904, t -statistic =1.88, β_2 =0.505, t -statistic =2.02, and β_3 = -0.219, t -statistic =-1.93). The results of interest are not significant for *Sub score 1* or *Sub score 3*. Thus, Asia-Pacific firms with high financial transparency and information disclosures and from low country disclosure environments are particularly more likely to cross-list in the USA.

[Table VII]

5. Conclusion

This paper examines whether cross-listing in the USA is associated with both country disclosure environment and firm disclosure level. The sample consists of firms in the Asia-Pacific region that are reported on the S&P 2001/2002 disclosure survey. We measure the US listing using a dichotomous variable. We measure the country-level disclosure using the CIFAR score and firm-level disclosure

using the S&P disclosure score. Coffee (1999, 2002) and other studies suggest that firms will cross-list to an environment with stronger investor protections to signal their quality. A similar phenomenon exists with respect to disclosure. Our evidence shows that Asia-Pacific firms from a weak disclosure environment are more likely to cross-list in the USA, consistent with Hope *et al.* (2007). Additionally, we find that Asia-Pacific firms from weak disclosure environments and having higher firm-level disclosure scores are more likely to seek listing in the USA. Further, we provide initial evidence that Asia-Pacific firms from weak disclosure environments and with high firm disclosures are as likely to seek listing in London as in the USA.

This paper presents preliminary evidence that a firm's cross-listing decision is influenced by both country- and firm-level disclosures. One limitation of this paper is that our sample includes only the firms covered by the S&P survey and they are large, so our results may not be generalizable to smaller firms. Our paper is also subject to the limitation that we are unable to obtain firm-level disclosures at the time the firm cross-listed. We are making the assumption that the disclosure level during the S&P 2001/2002 survey is not much different than that at the time of cross-listing. An examination of the contemporaneous association between disclosure level and cross-listing choice may be conducted in future research when time-series data on firm-level disclosure are available. Future research may also examine the consequences of the Sarbanes-Oxley Act on cross-listings in the USA versus London and other world stock markets. This research may also be extended to examine whether disclosure environments and firm-level disclosures are associated with cross-listing in the USA or London for firms from Europe, Latin America, and other regions of the world.

Note

1. As our S&P disclosure scores are for 2000 annual reports, we run the analyses again for firms cross-listed in the USA before 2001. We obtain similar results.

References

Baker, H.K., Nofsinger, J.R. and Weaver, D.G. (2002), "International cross-listing and visibility", *Journal of Financial & Quantitative Analysis*, Vol. 37 No. 3, pp. 495-521.

Barry, C.B. and Brown, S.J. (1985), "Differential information and security market equilibrium", *Journal of Financial Quantitative Analysis*, Vol. 20, pp. 407-23.

Bradshaw, M., Bushee, B. and Miller, G. (2004), "Accounting choice, home bias, and US investment in non-US firms", *Journal of Accounting Research*, Vol. 42 No. 5, pp. 795-841.

Chan, K., Covrig, V. and Ng, L. (2005), "What determines the domestic bias and foreign bias? Evidence from mutual fund equity allocations worldwide", *Journal of Finance*, Vol. 60 No. 3, pp. 1495-534.

Cheng, C.S.A. and Lin, S.W.J. (2009), "When do firms revalue their assets upwards? Evidence from the UK", *International Journal of Accounting and Information Management*, Vol. 17 No. 2, p. 166-188.

Coffee, J. (1999), "The future as history: the prospects for global convergence in corporate governance and its implications", *Northwestern University Law Review*, Vol. 93, pp. 641-708.

Coffee, J. (2002), "Racing towards the top? The impact of cross-listings and stock market competition on international corporate governance", *Columbia Law Review*, Vol. 102 No. 7, pp. 1757-831.

Coval, J. and Moskowitz, T. (1999), "Home bias at home: local equity preference in domestic portfolios", *Journal of Finance*, Vol. 54 No. 6, pp. 2045-73.

Doidge, C., Karolyi, G.A. and Stulz, R.M. (2004), "Why are foreign firms listed in the US worth more?", *Journal of Financial Economics*, Vol. 71, pp. 205-38.

French, K. and Poterba, J. (1991), "Investor diversification and international equity markets", *American Economic Review*, Vol. 81, pp. 222-6.

Frost, C.A., Gordon, E.A. and Pownall, G. (2006), "Financial reporting quality, disclosure, and emerging market companies' access to capital in global equity markets", working paper, State University of New York at Buffalo, Buffalo, NY, 26 April.

Glosten, L. and Milgrom, P. (1985), "Bid, ask and transaction prices in a specialist market with heterogeneously informed traders", *Journal of Financial Economics*, Vol. 14 No. 1,
pp. 71-100.

Grinblatt, M. and Keloharju, M. (2001), "How distance, language, and culture influence stockholdings and trades", *Journal of Finance*, Vol. 56 No. 3, pp. 1053-73.

Hope, O., Kang, T. and Zang, Y. (2007), "Bonding to the improved disclosure environment in the United States: firms' listing choices and their capital market consequences", *Journal of Contemporary Accounting and Economics*, Vol. 3, pp. 1-33.

International Monetary Fund (2007), *World Economic Outlook*, International Monetary Fund, Washington, DC.

Ivkovic, Z. and Weisbenner, S. (2005), "Local does as local is: information content of the geography of individual investors' common stock investments", *Journal of Finance*, Vol. 60 No. 1, pp. 267-306.

La Porta, R., Lopez-de-Silanes, F. and Shleifer, A. (2006), "What works in securities laws?", *The Journal of Finance*, Vol. 61 No. 1, pp. 1-32.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R. (1998), "Law and finance", *Journal of Political Economy*, Vol. 106, pp. 1113-55.

Lang, M.H., Lins, K.V. and Miller, D.P. (2003), "ADRs, analysts, and accuracy: does cross-listing in the United States improve a firm's information environment and increase market value?", *Journal of Accounting Research*, Vol. 41 No. 2, pp. 317-45.

Lins, K.V., Strickland, D. and Zenner, M. (2005), "Do non-US firms issue equity on US stock exchanges to relax capital constraints?", *Journal of Financial and Quantitative Analysis,* Vol. 40 No. 1, pp. 109-33.

Merton, R.C. (1987), "A simple model of capital market equilibrium with incomplete information", *Journal of Finance*, Vol. 42, pp. 483-510.

Miller, D.P. (1999), "The market reaction to international cross-listings: evidence from depositary receipts", *Journal of Financial Economics*, Vol. 51, pp. 103-23.

Mitton, T. (2002), "A cross-firm analysis of the impact of corporate governance on the East Asian financial crisis", *Journal of Financial Economics*, Vol. 64 No. 2, pp. 215-41.

Mittoo, U.R. (1992), "Managerial perceptions of the net benefits of foreign listing: Canadian evidence", *Journal of International Financial Management and Accounting*, Vol. 4 No. 1, pp. 40-62.

Pagano, M., Randl, O., Roell, A.A. and Zechner, J. (2001), "What makes stock exchanges succeed? Evidence from cross-listing decisions", *European Economic Review*, Vol. 45, pp. 770-82.

Patel, S.A., Balic, A. and Bwakira, L. (2002), "Measuring transparency and disclosure at

firm-level in emerging market", *Emerging Market Review*, Vol. 3, pp. 325-37.

Reese, W.A. Jr and Weisbach, M.S. (2002), "Protection of minority shareholder interest,

cross-listing in the United States, and subsequent equity offerings", *Journal of Financial*

Economics, Vol. 66 No. 1, pp. 65-104.

Saudagaran, S.M. and Biddle, G.C. (1992), "Financial disclosure levels and foreign stock exchange listing decisions", *Journal of International Financial Management and*

Accounting, Vol. 4 No. 2, pp. 106-48.

Standard & Poor's (2007a), *S&P Emerging Markets Indices Index Methodology*, available at: www.standardpoors.com

Standard & Poor's (2007b), *S&P Global 1200 Index Methodology*, available at: www.standardpoors.com

Tesar, L. and Werner, I. (1995), "Home bias and high turnover", *Journal of International Money and Finance*, Vol. 14, pp. 467-92.

Further reading

Bushee, B.J. (2004), "Discussion of disclosure practices of foreign companies interacting with US markets", Journal of Accounting Research, Vol. 42 No. 2, pp. 509-25.

Standard & Poor's (2001/2002), Disclosure Survey, available at: www.standardpoors.com

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Table 1.

Panel A: selection of final sample

Number of Asia-Pacific, emerging Asia and Japan firms covered by S&P 500	502	
Less: duplicate firms/disclosure scores	33[a]	
Less: firms without CIFAR scores	33[b]	
Less: firms with missing data	20	
Number of firms in sample 416		
Cross-listing status of sample firms		
US cross-listings (NYSE, NASDAQ and OTC)	130	
London cross-listings	103	
Both US and London cross-listings (counted twice)	(42)	
Total number of firms cross-listed	191[c]	46%
Not cross-listed	225	54%
Number of firms in sample	416	100%

Panel B: S&P disclosure scores, CIFAR scores, and cross-listing by country

Country	Range in S&P score	CIFAR score[d]	US cross-listing	London cross-listing	Both the USA and London	Number of firms
Australia	40-71	80	19	5	5	26
Hong Kong	44-55	73	17	1	0	20
India	20.21-62.37	61	20	11	7	41
Japan	48-67	71	22	71	19	138
Korea	5-62.89	68	14	11	8	47
Malaysia	35.11-62.77	79	4	0	0	51
Pakistan	24.47-48.94	73	0	0	0	1
Phillippines	12.21-37.76	64	2	0	0	10
Singapore	50-77	79	3	0	0	9
Thailand	20.21-65.98	66	7	0	0	11
Taiwan	14.89-38	58	6	0	0	27
Total			103	103	42	416

Notes: [a]These 33 firms appeared in both the Asia-Pacific and Emerging Asia lists; [b]we did not find CIFAR scores for firms in Bermuda, China and Indonesia; [c]this total indicates the number of cross-listings found using data from Bank of New York, Citibank, JP Morgan, NYSE, NASDAQ, OTC and London Stock Exchange web sites; [d]CIFAR scores are obtained from Hope et al. (2007)

Table II. Descriptive statistics of the variables by listing

Variable	n	Mean	SD	Minimum	Maximum
Panel A: US cross-listings					
CIFAR	130	69.431	7.432	58.000	80.000
S&P score	130	47.448	15.386	5.208	77.320
Emerging	130	0.269	0.445	0.000	5.000
Anti-dir	130	3.846	1.023	2.000	5.000
Judicial	130	8.321	2.001	3.250	10.000
Liquidity	130	1.230	1.355	0.350	4.620
GNP	130	1,054.150	1,706.680	64.600	4,812.100
Leverage	130	3.429	8.353	255.274	59.030
Growth	130	0.116	0.286	20.794	2.117
Size	130	10.137	2.516	5.569	17.752
Panel B: London cross-listings					
CIFAR	103	69.563	4.506	58.000	80.000
S&P score	103	51.880	9.724	15.957	67.742
Emerging	103	0.107	0.310	0.000	1.000
Anti-dir	103	3.864	0.755	2.000	5.000
Judicial	103	9.233	1.406	6.000	10.000
Liquidity	103	0.779	0.893	0.430	4.620
GNP	103	3,438.600	2,056.380	163.800	4,812.100
Leverage	103	3.815	8.177	255.274	59.030
Growth	103	0.086	0.267	20.794	2.117
Size	103	8.947	2.997	5.569	17.589
Panel C: non-cross-listed firms					
CIFAR	225	70.373	6.579	58.000	80.000
S&P score	225	45.548	12.29=05	13.830	71.277
Emerging	225	0.440	0.497	0.000	1.000
Anti-dir	225	3.560	0.972	2.000	5.000
Judicial	225	7.899	2.230	3.250	10.000
Liquidity	225	1.055	1.157	0.350	4.620
GNP	225	1,539.960	2,071.740	59.500	4,812.100
Leverage	225	3.803	10.645	255.274	136.115
Growth	225	0.073	0.270	20.794	2.117
Size	225	8.693	2.721	3.222	17.213

Notes: CIFAR is the disclosure score for the country in which the firm operates; S&P score is the firm-level disclosure score; *Emerging* is an indicator variable that equals 1 if the country is an emerging economy, and 0 otherwise; *Anti-Dir* is a measure of anti-director rights for the country, data obtained from La Porta et al. (1998); *Judicial* is a measure of judicial rights for the country, data obtained from La Porta et al. (1998); *Liquidity* is the liquidity of the capital market in the home country; GNP is gross national product of the country in which the firm operates and is in billions of US dollars; *Leverage* is the ratio of liabilities to stockholders' equity of the firm; *Growth* is measured as the change in the assets of the firm in year t; Size is measured as the logarithm of sales of the firm

Table III.

Panel A: Pearson (upper diagonal) and Spearman (lower diagonal) correlation analyses of US listings and explanatory variables (correlation coefficient,p-value)

	Usind	CIFAR	S&P score	Emerging	Anti-dir	Judicial	Leverage	Growth	Size
Usind	1.000	-0.062	0.016	-0.090	0.097	0.012	-0.041	0.157	0.280
		0.207	0.747	0.068	0.048	0.804	0.454	0.004	<0.0001
CIFAR	-0.017	1.000	0.576	-0.036	0.235	0.512	0.031	-0.036	-0.422
	0.726		<0.0001	0.464	<0.0001	<0.0001	0.569	0.513	<0.0001
S&P score	0.058	0.443	1.000	-0.259	0.118	0.433	-0.008	0.002	-0.296
	0.240	<0.0001		<0.0001	0.016	<0.0001	0.879	0.976	<0.0001
Emerging	-0.090	-0.072	-0.333	1.000	0.151	-0.426	0.074	0.141	-0.027
	0.068	0.140	<0.0001		0.002	<0.0001	0.182	0.011	0.588
Anti-dir	0.114	0.343	0.043	0.205	1.000	0.676	-0.102	0.053	-0.499
	0.020	<0.0001	0.383	<0.0001		<0.0001	0.064	0.338	<0.0001
Judicial	0.017	0.594	0.509	-0.524	0.521	1.000	-0.102	-0.149	-0.590
	0.726	<0.0001	<0.0001	<0.0001	<0.0001		0.065	0.007	<0.0001
Leverage	-0.072	0.051	0.218	-0.010	-0.086	0.020	1.000	-0.053	0.144
	0.191	0.352	<0.0001	0.855	0.122	0.723		0.245	0.009
Growth	0.219	-0.050	-0.021	0.221	0.095	-0.186	-0.004	1.000	0.168
	<0.0001	0.364	0.701	<0.0001	0.086	0.001	0.932		0.002
Size	0.328	-0.498	-0.317	0.078	-0.329	-0.663	0.177	0.246	1.000
	<0.0001	<0.0001	<0.0001	0.113	<0.0001	<0.0001	0.001	<0.0001	

Panel B: Pearson (upper diagonal) and Spearman (lower diagonal) correlation analyses of London listings and explanatory variables (correlation coefficient, p-value)

	London	CIFAR	S&P score	Emerging	Anti-dir	Judicial	Leverage	Growth	Size
London	1.000	-0.041	0.211	-0.274	0.094	0.259	0.035	-0.059	-0.017
		0.404	<0.0001	<0.0001	0.057	<0.0001	0.525	0.291	0.731
CIFAR	-0.035	1.000	0.576	-0.036	0.235	0.512	0.031	-0.036	-0.422
	0.475		-0.0001	0.464	<0.0001	<0.0001	0.569	0.513	<0.0001
S&P score	0.236	0.443	1.000	-0.259	0.118	0.433	-0.008	0.002	-0.296
	<0.0001	<0.0001		<0.0001	0.016	<0.0001	0.879	0.976	<0.0001
Emerging	-0.274	-0.072	-0.333	1.000	0.151	-0.426	0.074	0.141	-0.027
	<0.0001	0.140	<0.0001		0.002	<0.0001	0.182	0.011	0.588
Anti-dir	0.078	0.343	0.043	0.205	1.000	0.676	-0.102	0.053	-0.499
	0.113	<0.0001	0.383	<0.0001		<0.0001	0.064	0.338	<0.0001
Judicial	0.290	0.594	0.509	-0.524	0.521	1.000	-0.102	-0.149	-0.590
	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		0.065	0.007	<0.0001
Leverage	0.161	0.051	0.218	-0.010	-0.086	0.020	1.000	-0.053	0.144
	0.003	0.352	<0.0001	0.855	0.122	0.723		0.245	0.009
Growth	-0.076	-0.050	-0.021	0.221	0.095	-0.186	-0.004	1.000	0.168
	0.173	0.364	0.701	<0.0001	0.086	0.001	0.932		0.002
Size	-0.077	-0.498	-0.317	0.078	-0.329	-0.663	0.177	0.246	1.000
	0.117	<0.0001	<0.0001	0.113	<0.0001	<0.0001	0.001	<0.0001	

Notes: *USind* is an indicator variable that equals 1 if the firm is cross-listed in the USA, and 0 otherwise; *London* is an indicator variable that equals 1 if the firm is listed on the London Stock Exchange, and 0 otherwise; *CIFAR* is the disclosure score for the country in which the firm operates; *S&P score* is the firm-level disclosure score; *Emerging* is an indicator variable that equals 1 if the country is an emerging economy, and 0 otherwise; *Anti-Dir* is a measure of anti-director rights for the country, data obtained from La Porta et al. (1998); *Judicial* is a measure of judicial rights for the country, data obtained from La Porta et al. (1998); *Leverage* is the ratio of liabilities to stockholders' equity of the firm; *Growth* is measured as the change in the assets of the firm in year t; and *Size* is measured as the logarithm of sales of the firm

Table IV. Test of differences in variables by listing

Panel A: US listings versus London listings

Variable	US listings (mean value) n = 88	London listings (mean value) n = 61	Wilcoxon-Z statistic	p-value (Z-test)	p-value (t-test)
CIFAR	69.682	70.016	-0.880	0.189	0.190
S&P score	45.691	52.395	2.735	0.003	0.004
Emerging	0.318	0.066	-3.677	0.000	0.000
Anti-dir	3.909	3.967	-0.431	0.333	0.334
Judicial	8.153	9.619	4.936	<0.0001	<0.0001
Liquidity	1.326	0.607	-4.137	<0.0001	<0.0001
GNP	414.028	4,156.900	9.389	<0.0001	<0.0001
Leverage	2.375	4.023	3.189	0.001	0.001
Growth	0.069	-0.030	-4.041	<0.0001	<0.0001
Size	9.968	7.883	-7.206	<0.0001	<0.0001

Panel B: US listings versus non-cross-listings

Variable	US listings (mean value) n = 130	Non-cross-listed (mean value) n = 225	Wilcoxon-Z statistic	p-value (Z-test)	p-value (t-test)
CIFAR	69.431	70.373	-0.388	0.349	0.349
S&P score	47.448	45.548	1.983	0.024	0.024
Emerging	0.269	0.440	-3.193	0.001	0.001
Anti-dir	3.846	3.560	2.804	0.003	0.003
Judicial	8.321	7.899	2.084	0.019	0.019
Liquidity	1.230	1.055	1.034	0.151	0.151
GNP	1,054.150	1,539.960	0.242	0.404	0.404
Leverage	3.429	3.803	-0.405	0.343	0.343
Growth	0.116	0.073	2.851	0.002	0.002
Size	10.137	8.693	5.375	<0.0001	<0.0001

Notes: CIFAR is the disclosure score for the country in which the firm operates; S&P score is the firm-level disclosure score; Emerging is an indicator variable that equals 1 if country is an emerging economy, and 0 otherwise; Anti-Dir is a measure of anti-director rights for the country, data obtained from La Porta et al. (1998); Judicial is a measure of judicial rights for the country, data obtained from La Porta et al. (1998); Liquidity is liquidity of the capital market in the home country; GNP is gross national product of the country in which the firm operates and is in billions of US dollars. Leverage is the ratio of liabilities to stockholders' equity of the firm; Growth is measured as the change in the assets of the firm in year t; and Size is measured as the logarithm of sales of the firm

Table V. Logistic regression of cross-listing indicator on disclosure scores

Parameter	(I) Estimate	(I) *t*-statistic	(II) Estimate	(II) *t*-statistic
Panel A: USA vs others				
Intercept	11.079***	2.578	10.481	0.981
CIFAR	-0.122***	-2.854	-0.297***	-2.664
S&P score			0.010	0.510
CIF S&P score*			0.070***	2.558
Emerging	-3.515***	-5.404	-1.317*	-1.559
Anti-dir	0.170	0.541	-0.409	-0.873
Judicial	-0.064	-0.330	0.128	0.535
French	-0.155	-0.193	-0.180	-0.155
German	-3.081	-3.271	-5.606***	-3.763
Liquidity	-0.099	-0.330	0.458	0.874
LogGNP	-0.109	-0.305	0.672	1.071
Leverage			-0.034*	-1.560
Growth			0.260	0.298
Size			0.646***	5.605
No. of observations	416		327	
Log likelihood ratio X^2	5.413		284.246	
p-value	0.144		0.877	
Panel B: USA vs London				
Intercept	-331.675	0.000	-236.151	0.000
CIFAR	3.890	0.000	3.360	0.000
S&P score			0.409	1.148
CIF S&P score*			-0.398	-1.035
Emerging	68.671	0.000	46.328	0.000
Anti-dir	-15.775	0.000	-12.100	0.000
Judicial	7.409	0.000	4.881	0.000
French	18.488	0.000	11.842	0.000
German	-22.238	0.000	10.072	0.000
Liquidity	19.802	0.000	14.881	0.000
LogGNP	6.457	0.000	-2.996	0.000
Leverage			-0.097	-0.591
Growth			11.131**	1.811
Size			0.362	0.589
No. of observations	149		127	
Log likelihood ratio X^2	0.000		34.175	
p-value	0.000		1.000	

Notes: Significant at: *10, **5 and ***1 per cent levels, respectively; USind is an indicator variable that equals 1 if the firm is cross-listed in the USA, and 0 otherwise; CIFAR is the disclosure score for the country in which the firm operates; S&P score is the firm-level disclosure score; CIF is an indicator variable that equals 1 if the country has high CIFAR score (above the median), and 0 otherwise; Emerging is an indicator variable that equals 1 if the country is an emerging economy, and 0 otherwise; Anti-dir is a measure of anti-director rights for the country, data obtained from La Porta et al. (1998); Judicial is a measure of judicial rights for the country, data obtained from La Porta et al. (1998); French is an indicator variable that equals 1 if the country's law system is French-based, and 0 otherwise; German is an indicator variable that equals 1 if the country's law system is Germanbased, and 0 otherwise; Liquidity is the liquidity of the capital market in the home country; LogGNP is the logarithm of the gross national product of the country in which the firm operates and is in billions of US dollars; Leverage is the ratio of liabilities to stockholders' equity of the firm; Growth is measured as the change in the assets of the firm in year t; and Size is measured as the logarithm of sales of the firm:

$$USind_i = \alpha_0 + \beta_1 CIFAR_i + \beta_2 S\&Pscore_i + \beta_3 CIF_i^* S\&Pscore_i + \beta_4 Emerging_i + \beta_5 Anti-dir_i$$
$$+ \beta_6 Judicial_i + \beta_7 French_i + \beta_8 German_i + \beta_9 Liquidity_i + \beta_{10} LogGNP \qquad (1)$$
$$+ \beta_{11} Leverage_i + \beta_{12} Growth_i + \beta_{13} Size_i + \varepsilon_i$$

Table VI. Two-stage least squares regression of cross-listing indicator on disclosure scores

Variable	Estimate	t-statistic
Panel A: model (1)		
Intercept	-26.229**	-1.67
CIFAR	0.000	0.00
S&P score	0.380**	2.55
CIF S&P score*	-0.083*	-1.91
Emerging	2.822*	1.98
Anti-dir	1.772**	2.07
Judicial	0.225	0.87
French	6.722**	2.27
German	1.725	0.89
Liquidity	2.502**	2.27
LogGNP	-0.252	-0.34
Leverage	0.000	0.000
Growth	0.000	0.000
Size	0.000	0.000
Number of observations	326	
Adjusted R^2	-0.009	
Panel B: model (2)		
Intercept	-9.519	-0.59
Usind	3.669***	3.72
CIFAR	0.693***	4.18
Antidir	-4.618***	-4.40
Judicial	0.615	0.93
French	-13.822***	-4.14
German	-6.713	-1.60
Liquidity	-3.983***	-3.28
LogGNP	4.155***	2.78
Number of observations	326	
Adjusted R^2	0.632	

Notes: Significant at: *10, * *5 and * * *1 per cent levels, respectively; *USind* is an indicator variable that equals 1 if the firm is cross-listed in the USA, and 0 otherwise; *CIFAR* is the disclosure score for the country in which the firm operates; *S&P score* is the firm-level disclosure score; *CIF* is an indicator variable that equals 1 if the country has high CIFAR score (above the median), and 0 otherwise; *Emerging* is an indicator variable that equals 1 if the country is an emerging economy, and 0 otherwise; *Anti-dir* is a measure of anti-director rights for the country, data obtained from La Porta et al. (1998); *Judicial* is a measure of judicial rights for the country, data obtained from La Porta et al. (1998); *French* is an indicator variable that equals 1 if the country's law system is French based, and 0 otherwise; *German* is an indicator variable that equals 1 if the country's law system is German based, and 0 otherwise; *Liquidity* is the liquidity of the capital market in the home country; *LogGNP* is the logarithm of the gross national product of the country in which the firm operates and is in billions of US dollars; *Leverage* is the ratio of liabilities to stockholders' equity of the firm; *Growth* is measured as the change in the assets of the firm in year t; and *Size* is measured as the logarithm of sales of the firm:

$$
\begin{aligned}
USind_i = {} & \alpha_0 + \beta_1 CIFAR_i + \beta_2 S\&Pscore_i + \beta_3 CIF_i^* S\&Pscore_i + \beta_4 Emerging_i \\
& + \beta_5 Anti - dir_i + \beta_6 Judicial_i + \beta_7 French_i + \beta_8 German_i \\
& + \beta_9 Liquidity_i + \beta_{10} LogGNP + \beta_{11} Leverage_i + \beta_{12} Growth_i + \beta_{13} Size_i + \varepsilon_i
\end{aligned} \quad (1)
$$

$$
\begin{aligned}
S\&Pscore_i = {} & \alpha_0 + \beta_1 USind_i + \beta_2 CIFAR_i + \beta_3 Anti - dir_i + \beta_4 Judicial_i \\
& + \beta_5 French + \beta_6 German + \beta_7 Liquidity_i + \beta_8 LogGNP + \varepsilon_i
\end{aligned} \quad (2)
$$

Table VII. Two-stage least squares regression of cross-listing/exchange-listing indicator on disclosure scores

Variable	Model (1a) Estimate	t-stat.	Model (1b) Estimate	t-stat.	Model (1c) Estimate	t-stat.	Model (1d) Estimate	t-stat.
Intercept	249.103***	-3.52	-438.579	-0.49	-119.765**	-1.96	-166.606	-1.47
CIFAR	0.347***	3.11	3.376	0.49	0.904*	1.88	1.315	1.44
S&P score	0.225***	3.80	1.830	0.49	0.505**	2.02	0.550	1.48
*CIF*S&P score*	-0.109***	-3.31	-1.183	-0.49	-0.219*	-1.93	-0.498	-1.47
Emerging	2.057***	3.15	3.931	0.41	4.140*	1.74	5.303	1.33
Anti-dir	1.864***	3.27	17.773	0.49	3.243*	1.84	5.824	1.46
Judicial	-0.276	-1.73	-2.822	-0.47	-0.590	-1.3	-0.722	-1.1
French	6.057***	3.55	62.502	0.49	7.835*	1.86	-1.716	1.47
German	-1.360	-1.46	-22.620	-0.51	-5.312*	-1.84	-8.783	-1.4
Liquidity	2.756***	3.65	26.376	0.49	5.495**	2.00	9.357	1.48
LogGNP	1.605***	2.97	14.714	0.49	3.653*	1.89	7.047	1.46
Leverage	0.000	0.00	0.000	0.00	0.000	0.00	0.000	0.00
Growth	0.000	0.00	0.000	0.00	0.000	0.00	0.000	0.00
Size	0.000	0.00	0.000	0.00	0.000	0.00	0.000	0.00
No. of obs.	326		326		326		326	
Adjusted R^2	0.0109		-0.0403		-0.021		-0.0304	

Notes: Significant at: *10, **5 and ***1 per cent levels, respectively; Exchind is an indicator variable that equals 1 if the firm is exchange-listed in the USA, and 0 otherwise; *USind* is an indicator variable that equals 1 if the firm is cross-listed in the USA, and 0 otherwise; *CIFAR* is the disclosure score for the country in which the firm operates*; S&P score* is the firm-level disclosure score; *Sub score 1* is the firmlevel disclosure score on ownership structure and investor relations; *Sub score 2* is the firm-level disclosure score on financial transparency and information disclosure; *Sub score 3* is the firm-level disclosure score on board management structure and processes; *CIF* is an indicator variable that equals 1 if the country has a high CIFAR score (above the median), and 0 otherwise; *Emerging* is an indicator variable that equals 1 if the country is an emerging economy, and 0 otherwise; *Anti-dir* is a measure of anti-director rights for the country, data obtained from La Porta et al. (1998); *Judicial* is a measure of judicial rights for the country, data obtained from La Porta et al. (1998); *French* is an indicator variable that equals 1 if the country's law system is French based, and 0 otherwise; *German* is an indicator variable that equals 1 if the country's law system is German based, and 0 otherwise; *Liquidity* is the liquidity of the capital market in the home country; *LogGNP* is the logarithm of the gross national product of the country in which the firm operates and is in billions of US dollars; *Leverage* is the ratio of liabilities to stockholders' equity of the firm; *Growth* is measured as the change in the assets of the firm in year *t*; and *Size* is measured as the logarithm of sales of the firm:

$$Exchind_i = \alpha_0 + \beta_1 CIFAR_i + \beta_2 S\&Pscore_i + \beta_3 CIF_i^* S\&Pscore_i + \beta_4 Emerging_i \\ + \beta_5 Anti-dir_i + \beta_6 Judicial_i + \beta_7 French_i + \beta_8 German_i \\ + \beta_9 Liquidity_i + \beta_{10} LogGNP + \beta_{11} Leverage_i + \beta_{12} Growth_i + \beta_{13} Size_i + \varepsilon_i \quad (1a)$$

$$USind_i = \alpha_0 + \beta_1 CIFAR_i + \beta_2 Subscore1_i + \beta_3 CIF_i^* Subscore1_i + \beta_4 Emerging_i \\ + \beta_5 Anti-dir_i + \beta_6 Judicial_i + \beta_7 French_i + \beta_8 German_i \\ + \beta_9 Liquidity_i + \beta_{10} LogGNP + \beta_{11} Leverage_i + \beta_{12} Growth_i + \beta_{13} Size_i + \varepsilon_i \quad (1b)$$

$$USind_i = \alpha_0 + \beta_1 CIFAR_i + \beta_2 Subscore2_i + \beta_3 CIF_i^* Subscore2_i + \beta_4 Emerging_i \\ + \beta_5 Anti-dir_i + \beta_6 Judicial_i + \beta_7 French_i + \beta_8 German_i \\ + \beta_9 Liquidity_i + \beta_{10} LogGNP + \beta_{11} Leverage_i + \beta_{12} Growth_i + \beta_{13} Size_i + \varepsilon_i \quad (1c)$$

$$USind_i = \alpha_0 + \beta_1 CIFAR_i + \beta_2 Subscore3_i + \beta_3 CIF_i^* Subscore3_i + \beta_4 Emerging_i \\ + \beta_5 Anti-dir_i + \beta_6 Judicial_i + \beta_7 French_i + \beta_8 German_i + \beta_9 Liquidity_i \\ + \beta_{10} LogGNP + \beta_{11} Leverage_i + \beta_{12} Growth_i + \beta_{13} Size_i + \varepsilon_i \quad (1d)$$